UNDERSTANDING THE FUNCTIONS OF IT-ENABLED TRANSPARENCY IN ORGANIZATIONS: A THEORETICAL EXPLANATION FROM A CASE STUDY OF HIGH-GROWTH VENTURES

by

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Abstract

This dissertation examines how people use information technologies to generate transparency in organizations. Transparency has long been considered a core feature of the contemporary digital workplace (Zuboff, 1988). Transparency is defined here as a functional affordance provided by information technologies which, once appropriated, contribute to solve three types of problems faced by organizations: mobilizing the workforce, pooling work artefacts among occupational communities, and reporting accountability.

An inductive theory building case study of four similar high-growth ventures from the business and entertainment software industries was conducted. The findings indicate that appropriations of information technology compete with alternative practices to fulfill transparency functions and a set of coherent contextual conditions have been found to influence the type of appropriations that will emerge and be selected in a given organization. Appropriations of information technology also exhibit functional equivalence, as distinct appropriations of technology were observed to fulfill the same transparency function with the same level of adequacy.

This research contributes to information systems and social informatics theory by synthesizing and extending previously disparate studies to develop a theoretical explanation of how information technology appropriations fulfill transparency functions within an organization. Because of the nature of the cases studied in this research, this research also has implications for researchers and practitioners interested in how information technology gets appropriated by high-growth ventures in the “creative” and “new media” industries.
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Chapter 1

Introduction

Observers and pundits have recently declared that the core feature of the contemporary digital workplace is its transparency (Cohen & Prusak, 2001; Ghoshal & Bartlett, 1997; Thompson, 2007). According to this computerization discourse, information becomes a learning resource instead of a source of power in a transparent organization, facilitates seamless coordination and innovation, and fosters cohesion and workplace democracy (Turner, 2006).

Well before the era of “web 2.0” however, the linkage between transparency and technology had been explored by academics. Zuboff’s (1988) ethnographic study suggested that organizations cannot enjoy the benefits associated with transparency without first incurring a radical transformation of their core operating principles. She also warned that transparency might serve the purpose of workplace control. Recently, the notion of transparency has gained renewed interest in the information systems and social informatics literatures and it has been used for building explanations about the social consequences of information technology (e.g. Cunha, 2005; Elmes, Strong, & Volkoff, 2005; Kohli & Kettinger, 2004; Lindgren, Henfridsson, & Schultze, 2004; Sia, Tang, Soh, & Boh, 2002; Street & Meister, 2004).

Surprisingly, despite much hype about the role of information technologies for transparency, very few systematic empirical studies have been conducted to investigate this topic. More specifically, while the idea of transparency is powerful, intuitive, and attractive, we know little about what it actually means in practical terms and how it can be observed. How do we distinguish between a transparent organization and an opaque organization? What criteria should be used to assess that an organization is indeed transparent? What assumptions underlie the use of one set of criteria instead of another? What implications does the use of one set of criteria over
another have for the various facets of organizing? These questions have yet to be answered by information systems and social informatics researchers.

These challenges are tied to the fact that the idea of transparency is fundamentally grounded in a metaphor. Because it is a metaphor, a variety of meanings have been attached to the term, making the construct quite equivocal. For instance, transparency could mean that “you can see what others are doing and more easily know who is engaged in work related to yours” because of “open *access to information* about what the organization is doing” (Cohen & Prusak, 2001, pp. 91, emphasis added). An alternate meaning that has been proposed is that “members of transparent organizations create an *understanding* of the following: (1) the goals of the organization; (2) the members of the organization; (3) their place in the structure of the organization; (4) their tasks and responsibilities; (5) the prerequisites of their actions: upon whom and what do they depend?; (6) the effects of their own actions: who is affected by their actions? who depends and in which way on their actions?; (7) the importance of their actions for the organization as a whole” (Herrmann, Hoffmann, Kunau, & Loser, 2002, pp. 61, emphasis added).

While *access to information* could be either considered a behaviour or an attribute of a socio-technical structure, *understanding* refers to insight, which is a cognition, something quite different semantically from a behaviour.

An additional problem with the construct of transparency is that its domain overlaps with those of a diversity of other concepts, such as opacity (e.g. Tapscott & Ticoll, 2003, p. 103), visibility and invisibility (e.g. Star & Strauss, 1999), information sharing (e.g. Pfeffer, 1998, pp. 118-121), awareness (e.g. Schmidt, 2002) and secrecy (e.g. Pfeffer & Salancik, 1977, p. 24; Suchman, 1995, p. 56; Vaughan, 1996, p. 238) among others. Each of these concepts has a domain which intuitively overlaps with the one of transparency, but commonalities and differences have not yet been formally acknowledged. While the construct of transparency has a number of drawbacks because of the broadness of its domain, it still provides the advantage of
acting as a linking pin for what have been – until now – unrelated research streams about control, coordination, adaptation, learning, power, and the use of information systems, among others.

It is not surprising that contradictory consequences may have been attributed to transparency; these attributions might well depend on the facet of transparency and its function that is highlighted by researchers. The concept of IT-enabled transparency has been used in explanations for breakdowns and challenges in the coordination of work at both the interactional (Heath & Luff, 2000; Schmidt & Bannon, 1992) and at the organizational levels (Allen, 1994; Elmes, Strong, & Volkoff, 2005; Kellogg, Orlikowski, & Yates, 2006; Street & Meister, 2004); for why providing information to low status and peripheral workers of the organization may foster their commitment (Sproull & Kiesler, 1991) and their feeling of empowerment (Zuboff, 1988); as well as for why technologies aiming to increase accountability may be co-opted for impression management (Cunha, 2005). In studies using a critical epistemology, the call for transparency has been identified as a rhetorical device often employed by managers to legitimize the deployment of technology within organizations (Doolin, 2004).

More importantly, despite the Janus-faced nature of transparency in Zuboff’s (1988) automate/informate theory, little research took up the challenge to extend and refine her findings in contemporary settings. Like many classics, many studies that draw insights from Zuboff (1988) either do so at a surface level in a ceremonial manner or refer to her elaboration of Foucault’s (1975) panopticon metaphor to theorize about the possibility that transparency might serve workplace control and monitoring. A search through the ISI Web of Science database in October 2006 indicated that out of 237 references from IS and OB/OT journals which cite

\[\text{References:}\]

Zuboff’s (1988) book, only 6 studies mentioned the words “transparency”, “transparent”, “visibility” or “visible” in the title or abstract as part of the focus of their study.

The paucity of research could mean that Zuboff’s (1988) construct of transparency is uninteresting and provides little explanatory power for the effects of information technology. This interpretation, while possible, loses its plausibility when one considers the popularity of the automate/informate theory proposed by the book. More than twenty years after its publication, Zuboff’s (1988) book has become one of the most cited publications from the information systems and social informatics literature. A search through the Google Scholar database, as of May 2010, indicated that it had been cited a total of 4,542 times; a citation count much higher than many classics of the information systems and social informatics literature (Table 1).

<table>
<thead>
<tr>
<th>Publication</th>
<th># of total citations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Davis (1989)</td>
<td>7,595</td>
</tr>
<tr>
<td>Zuboff (1988)</td>
<td>4,542</td>
</tr>
<tr>
<td>Davis et al. (1989)</td>
<td>4,467</td>
</tr>
<tr>
<td>Daft and Lengel (1986)</td>
<td>4,038</td>
</tr>
<tr>
<td>Orlikowski (1992)</td>
<td>2,122</td>
</tr>
<tr>
<td>DeSanctis and Poole (1994)</td>
<td>1,610</td>
</tr>
<tr>
<td>Barley (1986)</td>
<td>1,605</td>
</tr>
<tr>
<td>DeSanctis and Gallupe (1987)</td>
<td>1,453</td>
</tr>
<tr>
<td>Markus (1983)</td>
<td>1,306</td>
</tr>
<tr>
<td>Keen and Scott Morton (1978)</td>
<td>1,286</td>
</tr>
</tbody>
</table>

Table 1. Sample of citations of classics in the information systems and social informatics literature

Thus, the contradiction created by the scarcity of research about the construct of transparency and by the popularity of the book suggests that the theory might have reached a “taken-for-granted” and unquestioned status in the literature. Thus, far from being an
uninteresting object of inquiry, research about the multiple functions of transparency implied by Zuboff’s influential (1988) theory appears to be in need of a revival.

1.1 Research questions and summary of findings

The purpose of this dissertation is to gain an understanding of (1) the nature of the construct of transparency and its constituting elements, (2) the reasons why it varies from one organization to another, and (3) its consequences for work in organizations. Put differently, I investigate the following broad questions: does transparency vary across organizations and if so, how and why?; and, what are the implications for organizations and their participants of such variations in transparency? More specifically, I investigate the following sub-questions to help me build a conceptual framework that addresses these questions:

1. What is IT-enabled transparency in organizations?
2. How do people appropriate information technology to generate transparency in organizations?
3. What contextual conditions account for the specific appropriations of information technology that emerge among organizations to generate transparency?
4. What are the consequences of IT-enabled transparency for work in organizations?

These research questions are answered through an inductive, theory building case study of four similar high-growth ventures from the business and entertainment software industries. The cases were sampled following a panel survey of industry insiders in order to identify organizations that were polar opposites in terms of transparency. Fifty-five interviews with 52 representatives of top management and key occupational groups within the organizations were conducted. Following the examination of the meanings that have been associated with transparency, functionalist assumptions (Markus, 2004; Merton, 1968; Stinchcombe, 1968) were employed to provide a basic framework upon which theory building was conducted.

The evidence gathered indicates that transparency is a functional affordance provided by information technologies which, once appropriated, ensures that an organization solves three types of organizational “problems”: (1) mobilizing the workforce, by fostering commitment, trust
and legitimacy; (2) pooling artefacts, by reducing dependencies between tasks and speeding up problem solving; and (3) reporting accountability, by proving that tasks were done, by controlling dispersed resources, and by articulating and meshing lines of work. Appropriations of technology compete with alternative practices to fulfill these transparency functions and a set of coherent contextual conditions have been found to influence the type of appropriations that will emerge and be selected in a given organization. Appropriations of technology exhibit functional equivalence, as distinct appropriations of technology were observed to fulfill the same transparency function with the same level of adequacy.

In specific, the combination of conservative growth aspirations, little time pressure and abundant slack resources facilitates the emergence of appropriations that will successfully fulfill the need for transparency to pool artefacts and to report accountability. As growth aspirations, time pressures and the lack of slack resources increase, the capacity to learn and to reflect about local needs and technology is hampered while a concern for waste avoidance becomes predominant and diverts attention away from technology appropriations. In addition, the combination of certain attributes of workforce demography and labour relations practices facilitates the emergence of appropriations that will successfully fulfill the need for mobilizing transparency. An organization whose workforce assumes career mobility and who reduces the employment relationship to a transactional exchange hinders the emergence of technology appropriations aiming to generate transparency that fosters commitment and establishes the legitimacy of top management.

1.2 Content and format of the dissertation

This dissertation is organized as follows. Chapter two provides a review of the meanings which have been associated with transparency among the social sciences and humanities literatures. Chapter three explains the theory elaboration research design that is employed to answer the research questions. Chapter four sketches the functional analysis assumptions that
have been employed as the groundwork to build theory from the data. Chapters five to eight provide an analysis of the findings from each individual case. The evidence gathered concerning the technology appropriations enacted in each organization as well as the contextual conditions that influence these appropriations are described in detail. The reporting structure for these four chapters is identical. Also, to facilitate comparison and reading, a few tables and figures have been duplicated from one chapter to the other. Chapter nine ends the dissertation by providing an integrative account of the findings and by discussing their implications.
Chapter 2

The Meanings of Transparency among
the Social Science and Humanities Literatures

The task undertaken in this chapter is derived from the first research questions of this study. A first objective is to identify fundamental dimensions of the notion of transparency. The objective is not to unify the various conceptualizations of transparency because, as it will be seen, there are incommensurable differences between the conceptualizations of transparency across the social science and humanities literatures; instead the objective is rather to map the diversity of conceptualizations transparency has had in a few core social science and humanities literatures. Throughout this review, implications for the conceptual refinement of the notion of IT-enabled transparency will be singled out.

This literature review is organized as follows. First, the method followed to review the literature is presented. Second, the concept of transparency is explored across various literatures of the social sciences and humanities. This exploration will begin with transparency’s multiple meanings in philosophy and architecture, and will end with its meanings in the information systems literature. Third, a synthesis of the literature is attempted and elementary dimensions of the concept of transparency are proposed to guide future information systems research.

2.1 Method followed to conduct the literature review

This section presents and explains the steps followed to conduct the literature review about the concept of transparency.

Because transparency is a metaphor and little is known about its manifestation, a survey of its uses across the literatures of the social sciences might provide helpful hints and starting points. The review needs to be broad in order to capture the full diversity of meanings it has been attributed. This review is necessarily incomplete to some extent because a census of the literature
across the literatures would be impractical. However, reasonable efforts were made to find out
illustrative, representative, and seminal works that employed the metaphor of transparency or
related concepts (e.g., secrecy and visibility) within each literature. It is believed that the essence
of ideas relating to transparency were captured in each field because I was heedful of reviewing
what appeared to be highly cited works, or works that were published in journals that were in the
top of their field as characterized by the impact factor metric of the *ISI Journal Citation Report*.
The ISI Journal of Citation Report provides a reasonable, albeit imperfect, assessment of the
importance of outlets in each field, because it captures how journals are valued from the
perspective of various academic communities. The table in Appendix 1 lists the fields of social
sciences and the humanities that were surveyed as well as a sample of publication outlets on
which keyword and full-text searches for “transparency”, “visibility”, “opacity”, “secrecy”,
“privacy” and their derivatives were conducted.

When references were deemed to be highly relevant to the current study (i.e., they had an
explicit focus on a concept called “transparency”, “visibility” or “secrecy” for instance), forward
and backward searches were conducted with the ISI Web of Science (Webster & Watson, 2002).
This search identified works that were not published in the prominent outlets of each field, but
that nevertheless had significant influence.

In addition, a search through Google Books was made using keywords such as
“transparency”, “visibility”, “opacity”, “secrecy”, among others, to identify relevant publications.
Google Books allow full text search of monographs, which are not inventoried in the traditional
academic databases. The relative importance of books versus journal articles varies between
academic fields. For instance, while information systems and organizational studies highly value
journal outlets, philosophy and the arts and architecture fields seem to highly value books as
academic contributions.

Tables with illustrative quotes about transparency for each of the surveyed fields can be
found in Appendix 2. These tables were used to analyze the meaning of transparency across the
literature through an inductive approach. For each quote, the root metaphor behind the concept, as employed in the quote, was inferred. Furthermore, to provide contextual information, the topic of each study was outlined.

2.2 Transparency across the literatures

This section surveys the literature about the concept of transparency. This review is organized in three sections. First, the fields of philosophy and architecture from the humanities are surveyed. Second, fundamental social science literatures are reviewed: social psychology, sociology, anthropology, economics and political science. Third, the concept of transparency is reviewed in a few applied social sciences: accounting, corporate governance, operations management, organization studies and information systems. Some cross-disciplinary works about transparency are difficult to associate with a literature in particular. Thus, the classification of works among the literatures is to some extent arbitrary; the classification’s only purpose is to provide a useful and practical heuristic to organize a massive amount of information about the concept of transparency.

2.2.1 Lexicographical meanings of transparency and related terms

What is the meaning of transparency? Obviously, this question is critical to any discussion of the concept of “transparency”. In the *Webster’s New World Dictionary* there are two entries under the noun *transparency* and five entries under the adjective *transparent*. Under the physical senses of *transparency* and *transparent* are “a piece of transparent or translucent material”, “capable of being seen through”, “neither opaque nor translucent”, “transmitting light rays so that objects on the other side may be distinctly seen”, “so fine in texture or open in mesh that objects on the other side may be seen relatively clearly”, “sheer, gauzy, diaphanous”. Under non-physical meanings, one finds “easily understood”, “very clear”, “easily recognized or detected”, “obvious”, “without guile or concealment”, “open”, “frank”, and “candid”. According
to the dictionary, the etymological roots of *transparent* suggest that the word means “to appear through, across, over”.

It is interesting to examine the meanings of other semantically related words. In the same dictionary there are two entries under the noun *visibility* and three entries under the adjective *visible*. Under the physical senses of *visibility* and *visible* are “the relative possibility of being seen under the conditions of distance, light, and atmosphere prevailing at a particular time”, “that can be seen”, “perceptible to the eye”, “so constructed as to bring to view parts or elements that are normally not perceptible”. Under the non-physical meanings, one finds “that can be perceived or observed”, “apparent”, “evident”, and “manifest”.

There are also two entries under the noun *opacity* and five entries under the adjective *opaque*. Under the physical meanings of *opacity* and *opaque* are “not letting light pass through”, “not reflecting light”, “not shining or lustrous”, “dull or dark”, “not allowing electricity, heat, etc. to pass through”. Under the non-physical senses, one finds “hard to understand”, “obscure”, “slow in understanding”, “obtuse”.

There are six entries under the nouns *secrecy* and *secret*, as well as four entries under *secret* as an adjective. The meanings attributed to these words are “kept from public knowledge or from the knowledge of a certain person or persons”, “withdrawn”, “remote”, “secluded”, “keeping one’s affairs to oneself”, “something not revealed, understood or explained”, “beyond general knowledge or understanding”, “mysterious”, “esoteric”, “concealed from sight or notice”, “hidden”.

As for the related words *open* and *openness*, their meaning is even more ambiguous than those above. There are a total of 48 entries under the adjective *open* and verb *to open*. The most relevant physical meanings of *open* are “a state which permits access, entrance or exit”, “not closed, covered, clogged or shut”, “a state which permits freedom of view or passage”, “not enclosed”, “unobstructed”, “unsealed”, “revealed”, and “not covered over”. Under the non-physical senses are “free to be argued or contested”, “not closed to new ideas” (as in an open
mind), “free from discriminatory restrictions based on race, religion, etc.”, “not regulated”, “characterized by social mobility, political freedom, diversity of opinion” (as in an open society), “not closed against access”, “accessible”, “available”, “not hidden or secret”, “generally known”, “public”, “frank”, “candid”, “honest”.

What is particularly interesting about these meanings of the words transparent, visible, opaque, secret, and open is their ambiguity. First, their referent is not obvious. Is it an attribute of the membrane, boundary, layer or skin that separates two objects or is it an attribute of the objects themselves? Second, two broad patterns in the non-physical meanings of these words emerge upon close inspection. They either refer to the fundamental notion of access – “a way or means of approaching, getting, using”, “that can be got, obtained” – or of insight – “to get or perceive the meaning of”, “to know or grasp what is meant by”, “to know thoroughly, grasp or perceive clearly and fully the nature, character, functioning, etc.”. Both ideas imply the notion of possession or of “having” something. However, that “something” is different for each notion. The notion of access implies the possession of some kind of materiality; the notion of insight implies the possession of meaning or of knowledge. These two fundamental notions can be used to classify the lexicographical meanings of the words transparent, visible, opaque, secret, and open (Table 2).
Two meanings do not fit well with the above classification: “free to be argued or contested” and “not closed to new ideas” (as in an open mind). These two ideas appear to be related to a distinct fundamental notion from access or insight. The two phrases appear to be related to the notion of openness to experience as defined by psychologist Carl R. Rogers (1961). He noted about the “open person” that she or he is “far more realistic in dealing with new people, new situations, new problems. It means that his [her] beliefs are not rigid, that he [she] can tolerate ambiguity. He [she] can receive much conflicting evidence without forcing closure upon the situation” (Rogers, 1961, p. 115).

2.2.2 Transparency in the humanities: Philosophy and architecture

This section will explore the idea of transparency as it is treated in two fields of the humanities: philosophy and arts and architecture. While these two fields may appear remote from our practical and research interests, they are nevertheless essential in order to understand the assumptions that underlie the notion of transparency. Furthermore, a call for broader examination of social phenomena through the lens of philosophy and the humanities in general was made by
Zald (1996), in the case of organization studies, and by March and Sevón (1984), in the case of information systems. An inquiry of the meaning of transparency in these fields is important because “the social science discourse is embedded in a larger civilizational and philosophical discourse” and because transparency can be considered as one of those issues “to which social scientists and organizational scholars much attend that have strong philosophical traditions of analysis” (Zald, 1996, p. 259). This exploration will first begin by the field of philosophy and will be pursued in the field of architecture in the following section.

Classical and French philosophy

Philosophy is a very broad field and one that has a very long history. A complete survey of the idea of transparency and the debates it generated could fill many pages; this survey will attempt to be brief and succinct. The objective is not to identify which perspective on transparency is valid or invalid, but instead to identify how the idea of transparency has been employed so that it can provide hints as to how transparency might be conceptualized. To do this survey, I will focus on two usages of the idea of transparency in the philosophical literature. First, I will examine the meaning of illumination according to classical philosophy. Then, I will discuss the literature in the philosophy of mind, in which there is a debate over whether our thoughts and perceptions are transparent to the mind. Afterwards, I will examine the literature in political philosophy, in which there is a debate over whether transparency acts as a catalyser for moral progress or as a tool for domination. As we will see, French philosophers have had a particular interest in issues related to transparency. Afterwards, I will derive implications for the investigation of transparency from this analysis.

Illumination in classical philosophy. A philosophical discussion of transparency would be incomplete without a discussion of the metaphor of light in Western philosophy. At the origin of the metaphor of light in Western philosophy is Plato’s account of how knowledge of immutable, eternal truths is gained. Plato’s metaphor of illumination is pervasive in the
Enlightenment project and in modern philosophy. In *The Republic*, Plato made the analogy that our ability to come into contact with constructs of the mind by means of reason is analogous to our access to ordinary material objects through sight:

“- Why, you know, I said, that the eyes, when a person directs them toward objects on which the light of day is no longer shining, but the moon and stars only, see dimly, and are nearly blind; they seem to have no clearness of vision in them?

- Very true.

- But when they are directed toward objects on which the sun shines, they see clearly and there is sight in them?

- Certainly.

- And the soul is like the eye: when resting upon that on which truth and being shine, the soul perceives and understands, and is radiant with intelligence; but when turned toward the twilight of becoming and perishing, then she has opinion only, and goes blinking about, and is first of one opinion and then of another, and seems to have no intelligence” (Book VI, 508 b-e, in Plato, 1901, p. 204).

What allows our cognitive powers to come into contact with “truth” is the intellectual light of reason, the analogous to the corporeal light of the sun. This intellectual light actually makes constructs of the mind intelligible. While the origin of this light has been debated over ever since – some philosophical traditions attribute it to God, others to individual reason –, the idea that knowledge is gained from illumination is a fundamental metaphor of Western philosophy. Knowledge is the state of having seen. Visibility is knowledge; opacity is ignorance.

**Transparency in the philosophy of the mind.** Descartes suggested that we have privileged access to the content of the mind through introspection (Kornblith, 1998). Introspection is the process by which we come to form beliefs about our own mental state. We form beliefs about the mental states of others through perception; when I see a person crying, I might infer that she is sad. The process used to determine our own mental states is not observation, as it is difficult to observe our own behaviour. Instead, the process used to determine our own mental states is introspection, by orienting the “mind’s eye” inward. As such,
Descartes considered that introspection let us have “privileged” access to our mental states. This means that introspection makes us in a better position than anyone else to acquire knowledge about the content of the mind. Among the mechanisms that allow such privileged access, there is the claim of the transparency of experience, which is also called the claim of self-intimation (Kornblith, 1998). A mental state is self-intimating if it is impossible for a person to be in that mental state and not know that she is in that mental state. Introspection allows us to have complete access to all of the mind’s content. The transparency of experience thesis means that the mind cannot be uninformed about itself; the mind is transparent to itself. In other words, there is no subconscious process out of reach of the “mind’s eye”. Descartes stated this thesis in the following way:

“For there is nothing that we can understand to be in the mind, regarded in this way, that is not a thought or dependent on a thought it would not belong to the mind qua thinking thing; and we cannot have any thought of which we are not aware at the very moment when it is in us.” (Descartes, 1996, p. 74).

An important clarification needs to be made, however. The kind of access that is to be understood from the transparency thesis is not that all of the mind’s content need to be displayed to the mind’s eye at all times. The transparency as understood by Descartes is that the mind’s content has to be accessible “in principle”. This means that for the transparency thesis to hold, mental states need to have the capacity of being brought to consciousness at any time. Descartes acknowledged the role of memory. Let me illustrate this point. It is common wisdom that liquid water vaporizes at 100°C (212°F). Before reading the last sentence, your consciousness did not actively “contain” this belief. This does not mean that you didn’t hold the belief, since you brought it to consciousness through recall prompted by my mentioning of the fact. This is why the transparency thesis suggests that any mental states are accessible in principle. Some are more easily accessible than others, but they are nevertheless accessible. It is possible for the mind’s eye to come into possession of the mind’s content at any time.
The transparency of experience thesis has been significantly challenged since Descartes’ time (Kornblith, 1998). The challenges are numerous and it is not within the scope of this research to review these. Suffice to say that Freud’s distinction between the conscious, preconscious, and the unconscious suggests there are mental states that we hold but that we cannot access. In metaphorical terms, unconscious mental states evade the gaze of the mind’s eye. This led some to suggest that the transparency of experience thesis is only tenable for the conscious realm (Kornblith, 1998).

**Transparency in Rousseau’s political philosophy.** The idea of transparency was central to most of Jean-Jacques Rousseau’s philosophical writings (Starobinski, 1988). For Rousseau, transparency in human relationships is a necessary condition for the establishment of a good and just humanity. He assumed that the essence of people is intrinsically good and everything that is external to it (i.e., appearances) are evil, because it hides, obfuscates, transforms this essence. In human relationships, politeness, fear, coolness, reserve lead to mistrusts, betrayal, suspicion, and corruption. The consequences of these betrayals and suspicions are why Rousseau considered appearances as evil. To lift the veil of appearances is to reach for the good and true nature of people. Minds are separate from one another and people cannot communicate the immediate, direct evidence of their thoughts, intents, and convictions. Rousseau held that this state of affairs is the product of historic conditions, not of the human nature. People themselves created the obstacles to transparency:

> “Before Art had fashioned our manners and taught our passions to speak in ready-made terms, our morals were rustic but natural; and differences in conduct conveyed differences of character at first glance. Human nature was, at bottom, no better; but men found their security in how easily they saw through one another, and this advantage, to the value of which we are no longer sensible, spared them a good many vices.” (Rousseau, 1997, pp. 7-8).

Because this opacity was of people’s own doing and not due to people’s intrinsic essence, Rousseau romantically believed that the compromised state of transparency could be restored
(Starobinski, 1988). To achieve this transparent society however, Rousseau thought that our existing languages were too limited and constrained. He considered that language is prone to misinterpretations and ambiguities, a situation which creates unintended appearances in human communication. Language constitutes a symbolic mediation that interrupts the pure reciprocity of people’s gazes through their minds. People are not transparent to each other, but opaque to each other. Rousseau considers that this opacity is the root of many misjudgements, misunderstandings, and human pain. As Charles Dickens later put it elegantly: “A wonderful fact to reflect upon, that every human creature is constituted to be that profound secret and mystery to every other” (Dickens, 1859/1997, p. 21).

Rousseau believed that “some form of action is possible and that by our own free will we can devote ourselves to lifting the veil from the face of truth” (Starobinski, 1988, p. 13). Transparency would allow to “break up the patches of darkness that blocked the light, eliminate the shadowy areas of society, demolish the unlit chambers where arbitrary political acts, monarchical caprice, religious superstitions, tyrannical and priestly plots, epidemics and the illusions of ignorance were fomented” (Foucault, 1980, p. 153). This is the dream that entertained the French revolutionaries and the proponents of the Enlightenment. Rousseau dreamed of “a new social order in which humans would be utterly open to each other’s gazes, a utopia of mutually beneficial surveillance without reprobation or repression.” (Jay, 1993, p. 92). Transparency is thus unambiguously good for Rousseau; illumination is synonymous of moral and societal progress. While the intent of this call for the restoration of a transparent society is clear, the means to achieve it are left undefined and are believed to be difficult to put in action. Rousseau’s call for the restoration of a transparent society is still highly reminiscent of Plato’s, in which through illumination the Truth and the Good are to be seen by people.

**Transparency in Foucault’s political philosophy.** If Jean-Jacques Rousseau considered transparency as benevolent, Michel Foucault considered it as malevolent. In *Discipline and Punish*, Foucault (1975) attempted to problematize the Enlightenment idea that greater
transparency meant social progress. Instead, he highlighted the unanticipated effects of transparency as a tool for social domination. Illumination is not anymore empowering and liberating, but disciplining. Foucault’s ideas had profound influence on many social science research communities in general and have also been appropriated to a significant extent by the information systems research community².

Foucault (1975) analyzed the social mechanisms that allowed domination to extend beyond the boundaries of an all-seeing sovereign or a despotic revolutionary state. Foucault (1975) introduced the notion of panopticism³, which refers to a visual structure, and a brilliant environment where the supervisor can see everything unnoticed, and where the prisoners can’t see but can be seen at every moment. Panopticism is the essence of the surveillance system implied by the architecture of the Panopticon, a prison which was designed by the English philosopher Jeremy Bentham in the 18th century (Figure 1).

![Figure 1. Plan of the Panopticon, as drawn by Bentham (1791) in “Panopticon or the Inspection House” (copyright expired; reproduced under public domain rights of usage)](http://commons.wikimedia.org/wiki/File:Panopticon.jpg)

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² Zuboff (1988) was one of the first researcher to appropriate Foucault’s ideas to explain the role of
³ Panopticism means « to see everything » in Greek.
The architecture of the Panopticon is described as follow by Foucault:

“at the periphery, an annular building; at the centre, a tower; this tower is pierced with wide windows that open onto the inner side of the ring; the peripheric building is divided into cells, each of which extends the whole width of the building; they have two windows, one on the inside, corresponding to the windows of the tower; the other, on the outside, allows the light to cross the cell from one end to the other. All that is needed, then, is to place a supervisor in a central tower and to shut up in each cell a madman, a patient, a condemned man, a worker or a schoolboy. By the effect of backlighting, one can observe from the tower, standing out precisely against the light, the small captive shadows in the cells of the periphery. They are like so many cages, so many small theatres, in which each actor is alone, perfectly individualized and constantly visible” (Foucault, 1975, p. 233).

In the Panopticon, power is visible and unverifiable. Power is visible because the prisoner can always see the central tower from where he is monitored. Power is also unverifiable because the prisoner can’t know whether he is actually seen or not. Hence, the Panopticon has the potential to become an auto-regulated system where the norm is interiorised by the prisoners themselves. The norm does not need to be enforced by the supervisor although the potential to do so exists in the hierarchical supervision implied by the design. Power is inscribed in the architecture of the Panopticon due to the visibility it creates in the mind of the prisoner, as opposed to the traditional form of the dungeon where prisoners are enclosed, put in obscurity, and hidden.

In essence and in Foucault’s (1975) words, Bentham’s Panopticon is the blueprint of the ideal “political technology” which can be applied to any social system where a large number of individuals need to be controlled or monitored simultaneously. Bentham’s design is the product of logic and reason; it was meant to be a design that could be applied by large institutions such as schools, hospitals, prisons, and factories. A panoptic system is one where the basis of control and power is visibility both in the ones that exercise power and in the mind of those who are controlled. In such a system, an asymmetry exists because “to see” and “being seen” are
dissociated. The exercise of power is independent from action and the one who originates it; it is therefore automatic:

“He who is subjected to a field of visibility, and who knows it, assumes responsibility for the constraints of power; he makes them play spontaneously upon himself; he inscribes in himself the power relation in which he simultaneously plays both roles; he becomes the principle of his own subjection” (Foucault, 1975, p. 236).

A panoptic system is also one that is characterized by the examination of the information brought by the scrutiny of behaviour: “But one finds in the programme of the Panopticon a similar concern with individualizing observation, with characterization and classification, with the analytical arrangement of space” (Foucault, 1975, p. 237). Thus, according to Foucault (1975), a panoptic system is an ideal type of power and control system because it is the most economical and efficient.

Although the perspective implied by Bentham’s Panopticon is quite pessimistic about the potential of illumination in contrast to Plato and Rousseau, Foucault (1975, 1980) argued that its design did not consider and underestimated the potential for resistance. For any attempt to illuminate and to make transparent, resistance and subversion is to be found.

Architecture

The design principle of transparency has a long and complex history in architecture, although it is typically associated with the 20th modernist century architecture of Walter Gropius, Ludwig Mies van der Rohe and early Phillip Johnson. Initially and still today, transparency was considered as a modernist ideal which symbolized technical, social, aesthetical, and ethical progress. Following World War II, a controversial essay by Rowe and Slutzky (1963) introduced a new kind aesthetic ideal to be pursued by architects with their distinction between literal and phenomenal transparency. Since the end of the nineties, transparency became associated with the “light construction” movement, which can be seen as a renewal of the modernist ideal but with a different kind of sensibility or what Riley ironically labelled a “poststructuralist modernist”
movement (Davidson & Riley, 2002, p. 50). This evolution of the notion of transparency in architecture is briefly explained in the following lines. Implications from this analysis are then drawn for the notion of transparency.

**Transparency as an aesthetic component of modern architecture.** In the beginning of the 20th century, transparency became the trademark of modern architecture. Transparency symbolized technical, social, aesthetical and ethical progress. In other words, transparency became the epitome of the principles of the Enlightenment applied to architecture. This application was made possible by technical advances in materials, most notably in steel and in glass materials. This new potential for “glass architecture” is best illustrated through the following passage originally written in 1914 by utopian German novelist Paul Scheerbart:

> “We live for the most part in closed rooms. These form the environment from which our culture grows. Our culture is to a certain extent the product of our architecture. If we want our culture to rise to a higher level, we are obliged, for better or for worse, to change our architecture. And this only becomes possible if we take away the closed character from the rooms in which we live. We can only do that by introducing glass architecture, which lets in the light of the sun, the moon, and the stars, not merely through a few windows, but through every possible wall, which will be made entirely of glass – of colored glass. The new environment, which we thus create, must bring us a new culture” (Scheerbart, 2002, p. 345)

Paul Scheerbart’s ideas inspired a large number of what became the main figures of modern architecture. Modern architecture’s main principles were the following: the universal transparency of building materials, spatial penetration, the ubiquitous flow of air, light, and physical movement, and the dissipation of the distinction between interior and exterior (Vidler, 2002). Walter Gropius’s Bauhaus in Dessau, Germany is generally considered as one of the first iconic building putting transparency as a main architectural feature. The principle of the dissipation of the boundary between interior and exterior is probably best illustrated by the glass house designed by Philip Johnson in 1949; a house he has occupied almost all of his life:
What is interesting about the transparency instantiated in this house is that while there is a dissipation of the boundary between interior and exterior, we still “see” the house; it is not made absolutely “invisible”. Per necessity, the structural frame of the house is still left visible. Ironically, the house is isolated by small hills, as well as located in a remote location and not visible at all from nearby roads, which ensures the privacy of its inhabitants.

On a second level, transparency was also used to open up the structural features of constructions to inspection (Vidler, 2002). The skin of buildings is made transparent with glass materials and, in the absolute, it even disappears. One example of such kind of transparency is the Eiffel Tower, which structural iron frame and mechanisms are exposed for all to see (Fierro, 2003). Although this effect was pursued for functional reasons rather than aesthetical reasons by Gustave Eiffel’s (it allowed the wind to pass through the tower, making it more stable), modern architects pursued the same objective for aesthetic reasons. Buildings become bodies; their

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5 http://www.flickr.com/photos/mjkmjk/483130093/
functions displayed like anatomical models and their walls hiding no secrets (Vidler, 2002). This revelation is also intended to be both moral and didactic (Fierro, 2003). The revelation is moral in the Rousseauist sense exposed in the previous section. This revelation is also didactic because to reveal the functioning and inner workings of constructions is to allow people to examine these and learn from them.

On a third level, the disintegration of exterior boundaries and the revelation of structural features have also been pursued mainly for symbolic reasons. The Grands Projets in France which were built between 1981 and 1998 are one such example. The Grands Projets consisted of a series of monumental constructions that were intentionally meant to symbolize the opening up of the French society and of the French state: “the dominant idealism of many of the Grands Projets was based on a principle of accessibility, an opening of a previously closed and therefore elitist French culture to the general public” (Fierro, 2003, p. 33). These series of constructions, which included among others the Institut du Monde Arabe, the Grande and Petite Pyramide du Louvre, the glass greenhouses, and the Bibliothèque Nationale de France, gave predominance to glass as their material. Another recent example of such a symbolic use of the design principle of transparency is Norman Foster’s addition to the German parliament, the Reichstag. Its cupola is extensively made of glass and part of the parliament chamber can be seen, but cannot be heard:
This application of transparency to symbolize the democratic ideal is not without critics, however. For instance, Whiteley (2003) noted that security undermines the symbolic value of the Reichstag. Because the parliament chamber is not physically accessible and because politicians can only be seen, not heard, the design fails to deliver upon its promise: “The separation may be for understandable reasons; nevertheless, it does raise the question as to whether architectural transparency can deliver, as opposed to just symbolize or represent, true openness and accountability” (Whiteley, 2003, p. 14). In that sense, symbolic transparency acts as simulacrum.

**Literal and phenomenal transparency.** Inspired by cubist paintings and by gestalt psychology, Rowe and Slutzky published two controversial essays (1963, 1971) that distinguished between literal and phenomenal transparency: “Transparency may be an inherent quality of substance, as in a glass curtain wall; or it may be an inherent quality of organization” (Rowe & Slutzky, 1963, p. 46). Literal transparency was defined as a material condition of constructions that made them pervious to air and light. As such, the Glass House and the Reichstag illustrated previously are all instances of literal transparency at work.

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[8](http://www.flickr.com/photos/eyedeaz/2969500462/)
In comparison, phenomenal transparency is a subtle construct of the mind at the source of pleasurable sensations of equivocality. Phenomenal transparency is akin to an optical illusion, in which the mind fills the wholeness of an object passing in front of or behind each other: “phenomenal transparency might be perceived when one plane is seen at no great distance behind another and lying in the same visual direction as the first” (Rowe & Slutzky, 1971, p. 288). Put concretely, phenomenal transparency occurs when figure and ground oscillate when looking at the façade of a construction. Both figure and ground, while in reality on different planes, are perceived simultaneously on the same plane. Constructions that display such feature are equivocal because the distinction between deep and shallow space is unstable. Rowe and Slutzky add that in such facades, “figures are able to interpenetrate without optical destruction of each other” (Rowe & Slutzky, 1963, p. 45). To illustrate their case, they ground their analysis on constructions by modern architect Le Corbusier. In the 1971 essay, they demonstrated that phenomenal transparency is an aesthetic feature of architectures of all historic periods, not only of modernity.

While Rowe and Slutzky (1963) meant phenomenal transparency to be a feature of facades of 3D buildings, it can be illustrated for our purpose by referring to the images used in gestalt psychology. For instance, in the following figure, it is unclear what constitutes the foreground and what constitutes the background. Perception is unstable and cannot be settled without intentional closure of the mind.
In the above image, the black figures and the white vase move between foreground and background as one changes its focus. While both are actually on the same plane, they appear to be on different planes; these planes being interchangeable, however.

The idea of phenomenal transparency has been challenged on the grounds that (1) it only applies to the façade of buildings and (2) that the method followed by Rowe and Slutzky (1963, 1971) to demonstrate their argument is questionable (e.g., Haag Bletter, 2002; Mertins, 2002). Nevertheless, the distinction between literal and phenomenal transparency is still influential nowadays (Gannon, 2002), both because it was a controversial idea when first introduced and because it still is a pleasant aesthetical feature pursued by architects.

2.2.3 Transparency in fundamental social sciences: Social psychology, sociology, anthropology, economics, political science

This section will explore the idea of transparency according to the writings in social psychology, sociology, anthropology, economics and political science. Each of these fields has an interest into human behaviour at the individual, group, and societal level.

Social psychology

In social psychology, four streams of research have relevance for our study of transparency. First, Asch (1952) suggested that as groups grow in size and in complexity, they create an inherent blindness for its members. A second stream of research is interested in the
consequences of the illusion of transparency: the extent to which the self is knowable for others in interpersonal relationships. The third stream of research is concerned with social facilitation and commitment processes, which are partly caused by the publicity of behaviour. The fourth stream of research evolves around privacy regulation theory, which is concerned with how people manage informational boundaries in their interpersonal relationships. Each stream is reviewed and implications for the study of transparency are subsequently drawn.

**The natural blindness of groups.** In a seminal treatise of social psychology, Asch (1952, pp. 251-268) discussed the idea that coordination of a group is impeded by the pattern that as a group grows in size, the ability to obtain a complete view of its activities decreases. Despite this problem, Asch (1952) noted that most groups are still able to go on and coordinate satisfactorily as if they were controlled by an omniscient overseer, which in reality does not exist. While he did not use the word transparency in his discussion, he did use the words obscurity, blindness and lack of awareness which have a closely related meaning:

“Much that happens in groups is known to some of their members and not to others. There is also much in group action that in the absence of special methods of observation remains unknown to all of the members. This is not in itself a surprising fact, since individuals are often not aware of the relations between their own actions. But the fact is significant; gaps in psychological representation must have consequences for group functioning. They become particularly important with increases in the size and complexity of groups” (Asch, 1952, p. 265, emphasis added).

By psychological representation, it is apparent that Asch is referring to a kind of insight, of knowledge of the group’s activities that its members must have in order to function. Because of the interdependence of group activities, some group activities are only possible when its members have a complete understanding or at least, knowledge of the group’s activities. Asch (1952) suggested that this knowledge consisted of the objectives of the group as well as of the relationships between acts and consequences for the group and its members. Because simultaneous face-to-face contact with every member of the group is impossible, the knowledge
of the general purpose may no longer be available to many or most of the members. Because of this lack of intimacy, consequences of local acts for remote members of the group are also less evident.

**The illusion of transparency in interpersonal relationships.** Social psychologists have also found that people overestimate other people’s ability to know their internal states. This bias has been called the illusion of transparency: the overestimation of the extent to which internal sensations leak out and are apparent to others (Gilovich & Savitsky, 1999). This bias explains why interpersonal communication can be so difficult at times and prone to misunderstandings. Because people infer that others know more than they actually know about prior experiences, emotions, etc., people do not put as much emphasis as they probably should on communicating these experiences and emotions. This bias has also been found to be related to social anxiety, more particularly to speech anxiety and to fears of embarrassment (Epley, Savitsky, & Gilovich, 2002; Savitsky & Gilovich, 2003). While the domain to which the term “transparency” is applied is different from Asch (1952), the illusion of transparency nevertheless also refers to the idea that people misestimate the degree to which others have knowledge of their internal states.

**Social facilitation and commitment processes.** One of the oldest phenomena of interest to social psychologists is what happens to behaviour when it is accomplished in the presence of others. This effect, called social facilitation, was compactly stated by Zajonc (1965). The presence of others appears to favour the emission of dominant responses by triggering arousal. When people are observed by others or when they think that they are observed by others, people’s drive increase. This means that the performance of activities that people master will be enhanced by being accomplished in public, while the performance of activities that involve learning will be reduced. Following Zajone’s (1965) formulation, social facilitation processes attracted a large research interest from social psychologists between the 1960’s and the 1980’s.

Related to the idea of social facilitation is the idea that behaviour accomplished in public has the potential to induce commitment. In his review of experimental studies about
commitment, Kiesler (1971) hypothesized that the explicitness of an act, which is defined as the degree of publicity or of unambiguousness of the act, facilitate the pledging or binding of the individual to behavioural acts. To commit one’s self means that acts become less changeable, less revocable. Acts that other people have knowledge of are more difficult to deny, and lay one open to possible calls to justify them. Thus, from this stream of research, it can be deduced that “transparency”, if we accept the idea that it is conceptually similar to publicity, observability, explicitness or visibility, could be defined a condition where people have knowledge of an act that an individual or group have accomplished. Similarly, it could also refer to an equivalent condition where the same individual or group believes that others have knowledge of one or more of their acts. This phenomenon has been investigated in studies of “public consciousness” of the self (Fenigstein, Scheier, & Buss, 1975) and in the previously mentioned studies about the illusion of transparency in interpersonal relationships.

Privacy regulation theory and self-disclosure. The notion of transparency is also closely related to the notion of privacy, which has been extensively studied in environmental and social psychology. Altman (1975) put forward privacy regulation theory, where privacy was defined as “the selective control of access to the self or to one’s group by regulation of input from others through use of barriers and regulation of personal output in the form of communication with others” (p.24). Privacy as an interpersonal function is deemed to be fundamental to personal and social viability; boundary regulation is seen as essential to a clear sense of self. Individuals or groups which have difficulty in opening and closing their boundaries might have an ambiguous sense of their identity. Both complete closeness and complete openness are assumed to be dysfunctional. Complete closeness means that it is difficult to position one self in comparison to others; complete openness means that it is difficult to separate one self from others’ identity.

Altman’s (1975) conceptualization of privacy has five properties. First, privacy involves a temporal, dynamic process during which rules are enacted to manage boundaries about what is known about the self or about the group by others. Interpersonal interactions provide one way to
open and close boundaries; the physical environment provides another through devices, mechanisms and territorial displays. Second, two kinds of privacy coexist: desired privacy and actual privacy. Third, privacy is described along a curvilinear relationship, whereas people could experience less privacy than desired (actual < desired); a momentary optimal level of privacy (actual = desired); too much privacy compared to what is desired (actual > desired). Variation along the curve is associated with different consequences. When actual privacy is more than desired, social isolation and loneliness might be experienced; when actual privacy is less than desired, crowding and scrutiny might be experienced. Fourth, Altman (1975) considered privacy as bi-directional, which means that it involves the input from others as well as the outputs that one provides to others. There exists a dialectical relationship between the degree of closeness and the degree of openness one allows these inputs and outputs to cross boundaries. Fifth, as implicitly stated in the above definition, privacy is thought to apply as well to individuals as to groups.

Petronio (1991) extended Altman’s (1975) privacy regulation theory into the realm of communication. Petronio (1991) argued that when people disclose private information, they rely upon a tacit rule-based management system as a heuristic to manage accessibility. These rules are negotiated through symbolic interaction and allow people to regulate their autonomy when disclosing and receiving private information about their self. This tacit rule-based management system is a functional requirement for “going on” since the disclosure of private information can be risky and has to be calibrated to the scripts of the social situation at hand (e.g. Goffman, 1959). As people’s boundary systems intersect, rules are developed and drawn upon to regulate the flows of information across the boundaries. Rules emerge to regulate all the spheres of life the self might be implicated: individual, occupational or cultural, for instance.
Sociology

Classic sociologists such as Coser (1961), Garfinkel (1967), Goffman (1959), Merton (1968), Shils (1956), Simmel (1906), and Weber (1948) all referred at one point to the notion of visibility, publicity, and secrecy in their writings. Their contribution is surveyed chronologically and according to the unit of analysis that they emphasized: the study of symbolic interactions (the micro-foundations of institutions) or the study of social structures at an occupational or societal level.

Micro-sociology: Transparency from an interactionist and ethnomethodological perspective. Goffman (1959) and Garfinkel (1967) have analyzed the role of secrecy and observability in interpersonal interactions within a social structure. Both grounded their analysis on a practice perspective of human behaviour, which means that interpersonal interaction is the unit of analysis. The ideas of each are reviewed below.

Goffman (1959) considered that secrecy has a functional role for the projection of people’s or groups’ identity. Goffman (1959) put forward a dramaturgical analysis of how people present and project their image of self to others given the social situation at hand. He compared social interactions and rituals to a theatrical performance. As the theatre metaphor implies, people act out the situation according to scripts intersubjectively agreed upon on a front stage. This acting out necessarily implies that people have to relegate part of their identity to a hidden, backstage. By-standers to the social situation might have access to the front stage but not necessarily to the backstage. When by-standers get access to the backstage, they might obtain “destructive” information about the performance which would undermine its credibility. In Goffman’s (1959) dramaturgical metaphor, secrecy consists of restrictions in access: “It is to be noted then that during the performance we may expect to find correlation among function, information available, and regions of access, so that, for example, if we knew the regions into which an individual had access we would know the role he played and the information he
possessed about the performance” (Goffman, 1959, pp. 144-145). Thus, secrecy puts barrier to access to information about the nature and demands of a given social performance.

Ethnomethodology, a particular branch of micro-sociological inquiry, is concerned with the study of accountability or the “activities whereby members produce and manage settings of organized everyday affairs” by making those activities “observable and reportable, i.e. available to members as situated practices of looking-and-telling” (Garfinkel, 1967, p. 1). Accountability in this latter ethnomethodological sense is closely related with accountability in a psychological sense, which means “the implicit or explicit expectation that one may be called on to justify one’s beliefs, feelings, and actions to others” (Lerner & Tetlock, 1999, p. 255). The difference between these two conceptualizations of accountability is that Garfinkel’s is continuously enacted in ongoing interactions with others. People behave so as to make their actions identifiable by others, a strategy which renders these actions potential targets for justifications and explanations. In other words, accountability is concerned with how people involved in interactions signify their actions to make their meaning recognizable for others. Through this recognition, people define the situation they are involved in and act according to this definition of the situation. For Garfinkel (1967), practices of accountability are what makes collective action and a negotiated social order achievable.

**Macro-sociology: The functions of transparency in social structures.** Classic macro-sociology grounded in functionalism elaborated to some length about the nature and consequences of the concept of “transparency”.

Georg Simmel (1906) considered secrecy as a functional aspect of human relationships and social structures. Secrecy is functional because it makes possible “a second world alongside the obvious world, and the latter is most strenuously affected by the former” (Simmel, 1906, p. 462). A common tendency, when thinking about secrecy, is to idealize and heighten the importance of what is concealed. Something secret is thought to be necessarily something essential and significant, which justifies the need for uncovering secrets. What this view does not
consider, however, is that this second, parallel worlds allows many sorts of purposes to arrive at realization that would not have occurred in public. Simmel (1906) argued that some degree of secrecy was inherent and necessary to any society:

“If there were such a thing as complete reciprocal transparency, the relationships of human beings to each other would be modified in a quite unimaginable fashion. [...] the reciprocal knowledge, which is the positive condition of social relationships, is not the sole condition. On the contrary, such as those relationships are, they actually presuppose also a certain nescience, a ratio, that is immeasurably variable to be sure, of reciprocal concealment” (Simmel, 1906, pp. 447-448).

In addition to being an attribute of a relationship (i.e., of a tie in a social network), Simmel (1906) hinted that secrecy also consists of a feeling of personal possession, which is foregone by others. Thus, for Simmel (1906), secrecy is synonymous with the patterns of (restrained) access to information within a social structure. Variations in this pattern of restrictions should generate variations in the “habits” of a group (Simmel, 1906, p. 483).

Max Weber (1948) also wrote about secrecy. In an essay originally published in German in 1922, Weber (1948) suggested that secrecy is a hallmark of the relationship between parliaments and governmental bureaucracies. Because their autonomy is at stake, governmental bureaucracies have a natural inclination to guard against the intrusion of others in their affairs. He also suggested that bureaucracies put barriers to what others know about their activities and intentions when external entities threaten bureaucracies’ autonomy and survival:

“The tendency toward secrecy in certain administrative fields follows their material nature: everywhere that the power interests of the domination structure toward the outside are at stake, whether it is an economic competitor of a private enterprise, or a foreign, potentially hostile polity, we find secrecy” (p.233).

According to Weber (1948), secrecy is one of the most cherished values of bureaucracies. Bureaucracies defend their right to keep their actions and intentions secret by legitimizing their right to hold “official secrets” (p.233) through rhetoric and discursive practices.
Moore and Tumin (1949) elaborated on the social functions of ignorance, or what they called the general condition of “not knowing” within a social structure. Ignorance becomes an outcome of secrecy when the latter is achieved purposively. In their analysis, they proposed five social functions of ignorance. First, ignorance helps the sustenance of a privileged position. Privileged positions are sustained because ignorance allows for inequality and differentials to exist between individuals or groups. This kind of ignorance is exemplified in situations of negotiations between consumers and experts, of competition between experts and potential competitors, where role differentiation is necessary to maintain power, where rewards are unequal so to avoid claims of unfairness, where surprise differentiates between successful and failed projects. Second, ignorance reinforces the status quo within a social structure by obfuscating the nature of alternatives and their consequences, as well as by keeping mum over deviations from normative standards. In other words, it inhibits learning and change. Third, ignorance also preserves the fairness of competitions by protecting the bases of competition. In sports, in business as in politics, when competitors know the strategy of their rivals, they may profit unfairly from this information. Fourth, ignorance preserves stereotypes. Stereotypes facilitate socialization in organizations. In organizations, people do not usually need to know everything there is to know about others in order for interactions to function well. Too much knowledge about the other roles that people fill in their life may be detrimental and destructive in an organization. Ignorance also helps to preserve ethnic and cultural stereotypes. Fifth, ignorance serves as an incentive. In some work situations, when people do not know what is coming next, they have an incentive to expect the unexpected and prepare accordingly.

Shils (1956) elaborated on the intricate relationship between publicity, secrecy, and privacy in a functional analysis of the excesses of McCarthyism in the beginnings of the Cold War. In his book, he defined privacy, secrecy and publicity as follow:

“The right to privacy restricts the power of outsiders to uncover or to force the disclosure of private matters. Privacy is the
antithesis of publicity, which is the disclosure of information to a broad public [...]. The restriction on publicity imposed by secrecy has by its nature an element of coercion in it. Privacy is the voluntary withholding of information reinforced by a willing indifference. Secrecy is the compulsory withholding of knowledge, reinforced by the prospect of sanctions for disclosure. Both are enemies, in principle, of publicity” (p.22-26).

For Shils (1956), societies need to achieve an intricate balance between the right to privacy and the power of authorities to impose publicity. Publicity emerges from a need to achieve like-mindedness and solidarity. For Shils (1956), publicity served the purpose of eliminating differences in ideological beliefs. When there are undue and illegitimate pressures for publicity, when the rights to privacy are denied, the consequences could be of an intensification of secrecy. The fear of secrecy has partly its basis in the fact that it is impossible to assess the extent to which it is employed.

Merton (1968) provided a relatively unnoticed, but nevertheless quite substantive, contribution on the topic of visibility and observability. Building upon the writings of Simmel on secrecy, Merton (1968) considered visibility and observability as fundamental features of social structure. Indeed, about a quarter of the 106-pages essay “Continuities in the theory of reference groups and social structure” is dedicated to the elaboration of the theoretical ramifications of visibility in social structures. He defined visibility as the following:

“‘Visibility,’ then, is a name for the extent to which the structure of a social organization provides occasion to those variously located in that structure to perceive the norms obtaining in the organization and the character of role-performance by those manning the organization. It refers to an attribute of social structure, not to the perceptions which individuals happen to have” (p.404).

Note that Merton (1968) used the terms “visibility” and “observability” interchangeably. Visibility describes the extent to which attitudinal displays and behaviours of a role occupant are observable by the members of a role-set, which may be status-superiors, peers or status-inferiors.
As Merton (1968) explicitly mentioned, visibility and observability are not a property ascribed to individuals, but to social structures and most particularly to the role concept.

Visibility is functional for the exercise of social control within a social structure. When norms are visible, it is easier to spot deviant behaviours and readjust them to prevailing norms. When norms are ambiguous, it is difficult to do so. Because authority is always conditional upon the willing conformity of those subject to it, visibility also makes it easier to exercise authority within normative limits. And when behaviours are not visible within a social structure, it is difficult to assess the extent to which norms are being respected.

Merton (1968) identified two mechanisms, which facilitate or curb visibility within a social structure. He defined mechanisms as “arrangements of the parts and processes of group structure” (Merton, 1968, p. 395). The first mechanism consists of differentials in communication. These differentials in communication result from the shape of the social network of communication. Positions within the network are attributed with varying differentials of visibility. Compared to the others, the individual that occupies the central position of a network has a better opportunity to observe the norms and the behaviours of all those at the extremities of the network. Merton also opens up the possibility that “structural devices” (p.396) might be used to offset these differentials in communication. For instance, in large groups and organizations, he referred to “accounting procedures” (p.396) which keep authorities informed about role-performance.

The second mechanism consists of differentials in motivation. Roles within a social structure are accountable to varying degrees for knowing about the role-performance of the members of their role-set. Some roles have the responsibility to keep informed about the attitudinal displays and role-performance of others, while others are not held responsible to do so. This could be interpreted as an “information-pull” perspective on motivation. Similarly, people who fill roles that are responsive to those who need to know what is going on may also have the responsibility to keep them informed about any deviations from normative standards or
expectations. This could be interpreted as an “information-push” perspective on motivation. Thus, independently of individual differences to do so, roles have differing degrees of motivation to keep themselves informed about the norms and behaviours of others or to keep others informed about their behaviour.

Merton (1968) also identified two “obstacles to visibility” (p.401), which, in comparison to mechanisms, only act to reduce visibility within a group. The first obstacle Merton described is highly similar to what March and Simon (1958) called “uncertainty absorption”. As channels of communication increase in length (i.e., their number of network nodes in the communication channel increases), observability gets filtered and the information finally distributed may become decoupled from the actual situation. People at the top of a social structure experience a visibility mediated by the accounts of those they communicate with.

The second obstacle identified by Merton (1968) consists of homophily, which refers to the tendency of people to affiliate and associate with others that share the same attributes as themselves. This may make communication easier within the subgroup, but it hinders communication between subgroups. Hence, homophily reduces the visibility of norms and role-performance.

Merton (1968) considered full visibility as dysfunctional. He warned that the extent to which groups deploy the mechanisms to enhance visibility is limited by the norms of the group. The extent to which authorities are allowed to keep informed about the details of role-performance depends on the normative expectations of the group members. If too much visibility is created, resistance might occur. Complete visibility of norms or of role-performance could be as dysfunctional as a complete lack of it. Following Simmel (1906), Merton (1968) proposed that resistance to visibility and observability suggests that some provision for insulation from observability may be necessary to assure group viability:

“It [resistance] suggests that it may be useful to think in terms of there being, for various social structures, some functionally
optimum degree of visibility. It indicates, further, that this optimum does not coincide with complete visibility” (p.398).

The main argument against complete visibility is that people need some degree of leeway and discretion in fulfilling role expectations. If all behaviour or norms of decisions were observable, undue call to justify these actions could be attempted. Goals displacements could follow, since preventing violations of norms and rules may become the objective of the role under scrutiny. In that sense, too much visibility could hinder those who fulfill their roles from accomplishing their main function. Strict application of normative standards would lead to “undue strain” (p.398), hence some degree of institutionalized permissiveness is necessary for the group to remain viable. Some degree of deviance has to remain invisible. Merton (1968) went even a step further by suggesting that:

“we are led to the idea that differing social structures require, for their effective operation, differing degrees of visibility. Correlatively, it is being suggested that differing social structures require arrangements for insulation from full and uninhibited visibility if they are to function adequately: arrangements which, in the vernacular, are described as needs for privacy, or as the importance of secrecy” (Merton, 1968, p. 398, emphasis in the original).

According to a search in the ISI Web of Science for work that explicitly references Merton’s (1968) essay, his theorization of visibility/observability within role-sets remained relatively unnoticed in the mainstream sociological literature. There are notable exceptions, however. Coser (1961) elaborated on the relationship between power, visibility and conformity; her contribution will be further discussed below. Friedkin (1983) extended Merton’s (1968) ideas by empirically assessing the extent to which people are aware of behaviours of the members of their social networks. Jaworski (1990) compared Merton’s (1968) contribution to Simmel’s (1906) initial ideas about secrecy. Schwartz (1968) suggested that rules of withdrawal from visibility are necessary for groups to remain viable; his contribution will also be outlined below.
Finally, Warren (1968) introduced a “visibility” contingency in his empirical analysis of the bases of power in organizations.

Coser (1961) elaborated on Merton’s (1968) ideas about the visibility within role-sets from an empirical study of role relationships within an hospital ward. The definition of visibility and observability she adopted is the same as Merton’s (1968), although she nuanced it somehow:

“The extent to which role performances within an organization are open to observation by others is structurally determined. Observability provides transparency of social arrangements and makes modeling behaviour possible. [...] Who observes whom, when, where, and how must be more or less established and therefore roughly predictable if a social structure is to operate with a certain amount of stability. Regulation of observability [...] is a structural requirement” (Coser, 1961, pp. 28-29).

Coser (1961) introduced the idea that visibility/observability is regulated within a social structure. She contended that variations in visibility/observability are as much important in social structures as the distribution of authority. She also suggested that obstacles to visibility may be both social and technical. Obstacles are social in the sense that social structures regulate patterns of interpersonal relationships as already noted by Merton (1968) and technical in the sense that “an apparatus both physical and social of telephones, paper records and intermediary persons such as secretaries, assistants, etc.” affects “the patterned amounts and kinds of observability” (Coser, 1961, p. 29).

Coser (1961) dissociated the ideas of access to observation and power. She identified four patterns of visibility/observability and their associated demands for conformity and in which there is an “interest” from role-partners about the status-occupant (Table 3). This “interest” usually takes the form of a dependency in a power relationship, for instance. Two types of conformity are identified by Coser (1961) following Merton (1968): attitudinal and role-performance (or put differently, behavioural). Attitudinal conformity occurs when people “grant legitimacy to designated institutional values and norms” (p.29). Role-performance conformity
occurs when, “whatever their attitudinal position”, people “act in accord with values and norms” (p.29).

<table>
<thead>
<tr>
<th>Patterns of visibility/observability</th>
<th>Demands for conformity on the role-occupant</th>
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<tr>
<td>(1) Role-partner with authority ⇒ Role-occupant</td>
<td>Role-performance (behavioural) conformity</td>
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<tr>
<td>(2) Role-partner with authority ≠ Role-occupant</td>
<td>Attitudinal conformity</td>
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<tr>
<td>(3) Role-partner who is subordinate ⇒ Role-occupant</td>
<td>Role-performance (behavioural) conformity</td>
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<tr>
<td>(4) Role-partner who is subordinate ≠ Role-occupant</td>
<td>Both role-performance (behavioural) and attitudinal conformity</td>
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⇒: means “has access to observation of the behaviour of”
≠: means “does not have access to observation of the behaviour of”

Table 3. Patterns of visibility/observability and types of conformity (Coser, 1961)

In case (1), a role-partner with authority has access to observation of the behaviour of the role occupant. In those cases, there are demands on the role occupant to conform behaviourally to normative expectations of role-partners, whatever their own attitude towards the norms and values instantiated by the behaviours. In case (2), the role-partner with authority is denied access to observation. The behaviour of the role-occupant is invisible. In those cases, the role-partners exert pressures for attitudinal conformity. Attitudinal conformity means that the role occupant will grant legitimacy to the norms and values of the role-partner. When the role-occupant buys-in the norms and values, behaviour should generally follow them, which reduces the demands on making behaviour visible. In case (3), the power relationship is inversed: the role-occupant has authority and the role-partner is a subordinate who has access to observation of the role-occupant’s behaviour. In those circumstances, the subordinate may be in a position to obtain “guilty knowledge”. However, the role-partner, as a subordinate, does not have the power to restrict the amplitude of deviant behaviour of his or her superior. This might create strain due to conflicts in normative expectations of the subordinate. This position nevertheless allows the subordinate role-partner some room to exert social control in the sense that he or she can save the role-occupant from their own mistakes. They are in no position to question the norms and values
of the role-occupant but they are in a position to remind them of these when deviations occur. In case (4), the role-occupant is invisible to the subordinate role-partner. The subordinate role-partner will attempt to get any information about either behaviour or attitudes. According to Coser (1961), this situation appears ripe for the emergence of gossip and rumours. Subordinates will attempt to guess “what’s going on” and infer the behaviours, as well as the norms and values, of their superiors.

A little later, Schwartz (1968) elaborated on the ideas of Simmel (1906), Moore and Tumin (1949), Merton (1968) and Coser (1961). He contended that social structures exhibit institutionalized rules “as to who may and who may not observe or reveal information about whom” (1968). His main contribution was to suggest that the existence of rules of withdrawal from visibility and the respect of those rules was an index of group solidarity. To keep aspects of behaviour invisible within a social structure allows constructive deviance and prevents undue strain. When people are able to withdraw from visibility into obscurity, they can decouple themselves from the identity and the role they fulfill in a social structure.

Two other studies that adopted a macro-sociological perspective about secrecy, transparency, visibility, etc. have been identified. Lowry (1972) was concerned with the security systems of nation states. In his paper, he defined secrecy as “the possession of special, hidden, and unacknowledged information” (p.438). While the domain of his analysis was quite different from the other sociologists that have been reviewed up to this point, he similarly suggested that “secrecy as an elaborate social system of rules, rituals, codes, and penalties” is a fundamental attribute of social structure. Hence, he also contended that the flows of information that make norms and behaviours visible in a social structure are governed by a system of institutionalized rules.

Inspired partly by the work of Simmel (1906), Holzner and Holzner (2006) recently analyzed the global trend toward transparency in governments, public agencies, non-governmental organizations, and private organizations. In their macro-sociological analysis of
this trend, they defined transparency as “the social value of open, public, and/or individual access to information held and disclosed by centers of authority” (Holzner & Holzner, 2006, p. 13). They considered transparency as powerful and unstoppable trend toward the desire to achieve an open society (as defined by Popper (1945)) where personal responsibility and freedom is valued over authoritarianism. Transparency relies upon norms of disclosure and upon an infrastructure, social and technical, which supports and allows for this disclosure to take place effectively.

**Anthropology**

Two perspectives from the field of anthropology about the notions of visibility and transparency will be discussed. The first does not consider visibility or transparency as a state of a social entity, but as an ongoing practical accomplishment. This is why some anthropologists refer instead to the “practice of seeing”. In contrast, the second perspective considers transparency as an attribute of organizing communities of practice that facilitates apprentices’ learning. Each is reviewed in turn and implications are drawn for the study of transparency.

Anthropology, and more particularly cultural anthropology, is concerned with cultural variations in social entities. For anthropologists, the act of seeing cannot be disassociated from the cultural, the professional, and the technological context in which it occurs (Goodwin, 1994; Goodwin & Goodwin, 1996). What people see is determined not only by their physical location, but also by their social position in an organizational and professional structure, as well as by the multiple artefacts that are used in accomplishing work. Seeing is conceptualized from a practice perspective, which means that everyday life is an ongoing process of embodied activity. For Goodwin (1994), seeing consists of the activities of (1) coding a phenomena into artefacts; (2) highlighting, which means making salient some aspects of the physical environment; (3) producing and articulating material representations. Thus, Goodwin (1994) challenged the idea that seeing constitute a psychological phenomena of perception by posing it as an activity embedded in rhetorical debates.
In another study, Goodwin and Goodwin (1996) studied how people in the operations rooms of an airport construct the objects and ways of knowing that define their professional worlds. They found that how each community of professionals involved in the activities of coordinating ground action “see” airplanes depends on the particular position they occupy in a social structure. Three contingencies affect this position. First, the division of labor and the interdependencies between activities provide an organizational context in which the activity of seeing takes place. Second, professional norms and knowledge provide a lens that filters what gets seen and what is not seen. Third, the act of seeing depends on the juxtaposition of the multiple artefacts available in accomplishing work; seeing is multimodal in the sense that people rely upon multiple material artefacts to build a picture of the situation: notes, reports, computer screens, documents, etc. The findings of Goodwin and Goodwin (1996) suggest that any view of the “big picture” by the members of a social structure will necessarily be incomplete. Each member occupies a distinct social position which implies a varying set of interpersonal ties and information technologies. Furthermore, a particular way of seeing may be credited or discredited depending on the power of the one who does the “seeing”. Jasanoff (1998) described in minute details how judges can legitimize experts’ vision of evidence that cannot be discerned to the naked eye (D.N.A. analyses are such an example).

In the particular subfield of cognitive anthropology, researchers have employed the idea of transparency to refer to “the cultural organization of access” (Lave & Wenger, 1991, p. 102). In their theory of practice-based learning, Lave and Wenger (1991) suggested that transparency is an important enabler of legitimate engagement in the practice of a community, which in turn should result in learning. They affirmed that transparency “does not apply to technology only, but to all forms of access to practice” (Lave & Wenger, 1991, p. 102). Lave and Wenger (1991) are ambiguous about “what” is accessible. Their definition somewhat blurs the distinction between the ideas of access to material artefacts and of insight. While they suggest that apprentices need to have access to the tools of the trade (p.102), they also suggest that they need
to have access to the meaning of what they are doing (p.105). This confusion is due to their use of the idea of access, which encompasses the notion of insight: “insofar as the notion of transparency, taken very broadly, is a way of organizing activities that makes their meaning visible” (p.105). Thus, for Lave and Wenger (1991), transparency refers both to the notion of access to material artefacts (such as information) and to the notion of insight.

**Economics**

While the notion of transparency is applied in various streams of economic inquiry such as market competition, corporate governance, and political economy, the notion of transparency in each of these streams shares the same core elements. These will be reviewed below and implications are drawn for the study of transparency afterwards.

Put broadly, the economic notion of transparency has its origins in the economics of information (Stiglitz, 2000). Transparency corresponds to perfect symmetry of information between two entities, while opacity corresponds to asymmetry of information between two entities. When the set of information items held by one entity is identical to the set of information items held by a second entity, perfect symmetry (transparency) is said to occur. A lack of transparency is not easy to resolve because obtaining information is costly (Stiglitz, 2000). The costs of obtaining information can be decomposed in the costs of searching for the information, of getting hold of the information (buying), and of processing the information.

In a review of the contributions of the economics of information, Stiglitz (2000) states that asymmetry of information creates two distinct problems: the selection problem and the moral hazard problem. The selection problem occurs when a buyer does not have full information about the attributes of the products she or he is buying. For instance, an investor would need information about the financial condition of an organization before purchasing its stock. The moral hazard problem occurs in principal-agent relationships when there is a lack of information about the agent’s behaviour. For example, a lack of information about a borrower’s use of money
creates a moral hazard for the lender. In both cases, the term transparency has been used to refer to a state of complete and perfect information about the attributes or the behaviour of a product/agent.

In financial economics, the notion of transparency also refers to the degree of information available about markets, products, operations and prices (Porter & Weaver, 1998) or about an organization’s financial condition (revenues, costs) and risk taking (Ball, Robin, & Shuang Wu, 2003). In general, transparency means disclosure of information about procedures, objectives, operations, transactions, or any information that might be relevant for investors’ and regulators’ purposes. For instance, Porter and Weaver (1998) defined transparency as “the amount of trading information that is made publicly available on a timely basis following a completed transaction” (p.231). While there is acknowledgement that a lack of transparency will lead to dissipation and misallocation of resources, economists do not agree on the means most appropriate to achieve transparency (Stiglitz, 2000).

**Political science**

Transparency is commonly employed by political scientists to explain conflict resolution between states (Finel & Lord, 1999), to explain compliance to international rules by states (Mitchell, 1998) or to underline the importance of public accountability in preventing potential disasters caused by the secret routines of military agencies (Eden, 2004). A typical definition of transparency in political science is: “legal, political, and institutional structures that make information about the internal characteristics of a government and society available to actors both inside and outside the domestic political system” (Finel & Lord, 1999, p. 316). Thus, for political scientists, transparency refers to social mechanisms that facilitate access to information by the public. In other words, transparency is defined by the means making information accessible about a particular government. By counting the presence or absence of means or social mechanisms, political scientists build indexes of transparency that indicate the relative ability of
observers to access information about a government’s capabilities, intentions, and decision-making procedures. Examples of such means include a free press, open government hearings, public websites, reporting requirements, agency oversight, etc. (Finel & Lord, 1999).

Finel and Lord (1999) also established a distinction between transparency as *access* and transparency as *insight*. They argued that transparency should not refer to any notions of understanding, since it complicates its empirical assessment and diminishes its value as a theoretical explanation: “it should be noted that transparency affects the amount and type of information observers receive rather than its interpretation […] the distinction between information availability and assessment is crucial for discussing transparency in a useful way and it is important not to conflate the two” (Finel & Lord, 1999, p. 317). This distinction was also made by Eden (2004, p. 304), who suggested that there is the visibility of government actions on the one hand and the comprehensibility of government actions on the other. Finel and Lord (1999) also argued that a state of “total” transparency is not equal to a state of perfect information; such a state only exists in formal models, not in reality where information is incommensurable.

A third interesting note about transparency in political science is that it is recognized that a given degree of transparency reflects a choice (Florini, 1998). Hence, while political scientists recognize that increases in transparency may be caused by factors exogenous to government actions, it is mostly a motivated choice. They argue that governments strategically design the mechanisms through which information is made available to the public: “Transparency is manipulable via the regime’s information system – the actors, rules, and processes by which the regime collects, analyzes, and disseminates information” (Mitchell, 1998, p. 110).
2.2.4 Transparency in applied social sciences: Accounting, governance, operations management, organization studies, information systems

This section will examine three applied fields of management: accounting, operations management, organization studies and information systems. For each of these fields, the definitions and meanings of transparency are identified. A discussion of implications for the study of transparency will also follow each.

Accounting

In accounting, there are five meanings of transparency and visibility that could be identified. The first, and the most widely employed in the literature surveyed, pertains to transparency as disclosure, as access to information. The second pertains to transparency as the understanding of accounting statements, or more precisely, as insight. The third meaning consists of transparency as informativeness. The fourth meaning identified borrows from the philosophy theory of truth as correspondence to consider that accounting statements should transparently represent the economic reality of an organization. The fifth meaning comes from the critical accounting literature, which investigates how accounting statements and practices make organizational behaviour exposed to public notice through numbers. Each of these meanings is reviewed in the following paragraphs.

First, the idea of transparency has been employed to refer to the degree to which organizations disclose, make available and accessible, information about the financial and operational status of its activities. This conceptualization of transparency is the most common and widely employed in the accounting literature. Bushman, Piotroski, and Smith (2004) identified two components to their construct of transparency as disclosure: financial transparency and governance transparency. A third kind of transparency is corporate social disclosure, which consists of information about the consequences and implications of an organization’s activities for the wider society (Richardson & Welker, 2001). What seems of particular interest to accounting researchers is whether the type of disclosure (financial, governance, vs. social) and the
quality of disclosure (the amount and clarity of information made available) affect variables of accounting interests. For instance, Richardson and Welker (2001) found that the disclosure of financial information decreased the cost of capital, but that corporate social responsibility information increased the cost of capital of certain types of firms. Their explanation for this result is that the disclosure of corporate social information benefits stakeholders other than equity investors. Another area of investigation concerns whether disclosure practices differ from one institutional and market contexts to another (e.g. Khanna, Palepu, & Srinivasan, 2004).

Second, the idea of transparency as insight is also found in the accounting literature. Insight in an accounting context refers to the extent to which accounting statements and the financial information disclosed are understood and clear of ambiguity. For instance, Ball, Robin, and Wu (2003) defined transparency as “the ability of users to ‘see through’ the financial statements to comprehend the underlying accounting events and transactions in the firm” (p.237). Another similar definition is proposed by Bushman, Chen, Engel, and Smith (2004) who defined transparency as “the clarity of the activities and performance of the firm to outsiders” (p.168). This definition has been adopted in studies that investigated similar kinds of phenomena as transparency defined as access to information. Ball et al. (2003) studied if accounting standards and codes’ impact of transparency was offset by auditing firms’ incentives. Bushman et al. (2004) investigated if organizational complexity and corporate governance practice affected the transparency of accounting statements. In both of these contexts, instead of being defined as access, transparency is defined as the understanding of an organization’s activities from the available accounting statements.

The third meaning attributed to the term transparency in the accounting literature is the idea of informativeness found in information theory. Informativeness is a technical term employed to refer to the proportion of noise in contrast to real, substantial information contained in a signal. The measurement and conceptualization in vogue in the accounting literature is the one originally proposed by Blackwell (1953). When transparency is defined as such, the concept
is usually applied and measured through mathematical modelling. This conceptualization of transparency has been applied in studies of how coordination is achieved in a game theoretic context where accounting statements are involved (e.g. Anctil, Dickhaut, Kanodia, & Shapiro, 2004). It has also been applied in studies about the informativeness of earnings in foreign markets (Bhattacharya, Daouk, & Welker, 2003).

The last two connotations of the term transparency come from the critical accounting literature. The fourth meaning is provided by MacIntosh (2002). In his post-structural analysis of accounting practices, he elaborated a sceptic account of whether accounting statements are actually able to reflect “transparently” the underlying economic realities of the organization. From his perspective, current accounting practices rely upon a correspondence theory of truth, which means that there exists a one-to-one relationship between accounting signs and the objective, discrete elements of reality upon which their faithfulness may be assessed. Because the correspondence theory of truth has been discredited by a large number of philosophical analyses, he warns that over-reliance on this assumption about accounting statements is misleading. Instead, MacIntosh (2002) considers accounting practices as discursive practices part of a language game where economic reality is objectified based on debates about legitimacy, knowledge, and the nature of truth. Thus, this conception of transparency considers it as a kind of clear, unambiguous, direct, and unmediated correspondence between a sign and its referent. As the connection between a sign and its referent is blurred, opacity increases.

The last meaning of transparency found in the accounting literature refers to the idea of exposure to public notice. Accounting practices and their product, accounting statements, are said to create “visibility” within an organization: “Essentially, accounting is a way of making things visible” (Swieringa & Weick, 1987, p. 294). This visibility is enacted when accounting statements are put to use in practice. For instance, cost accounting was introduced to make visible the waste of human effort, a waste less obvious than the waste of material resources (Miller & O’Leary, 1987). There is debate in the accounting literature as to how this visibility
comes into existence, however. Some analysts, such as Boland (1987) and Hopwood (1987),
argue that visibility is an invention; it is socially constructed by the discursive practices. Others,
such as Morgan and Wilmott (1993) as well as Roberts and Scapens (1985), suggest that
accounting practices are selective in what they render visible, and that how they do so comes
from giving a phenomenon attention and by translating them into numerical values that can travel
through space and time. By doing so, accounting practices provide upper level managers with a
“presence” at lower levels of the organization (Roberts & Scapens, 1985, p. 451). By creating
distinct patterns of visibility in organizations, accounting numbers have the potential to
“significantly change organizational participants’ perceptions of the problematic and the
possible” (Burchell, Clubb, Hopwood, & Hughes, 1980, p. 16). Another proposed implication for
this capacity of accounting practices is that it can make it easier to induce commitment
(Swierenga & Weick, 1987). By making activities visible in certain ways, accounting statements
propel people into action.

**Institutional and corporate governance**

In the literature about institutional and corporate governance, “transparency” is a
concept of fundamental interest. The study of transparency in governance has some overlaps
with the literature in political science reviewed earlier. Both literatures share a common interest
about the disclosure of information to the public as a mean to support an open society. In contrast
to the literature in political science which is focused on nation-states, the institutional and
corporate governance literature is rather concerned with the transparency of private and public
organizations from the perspective of their stakeholders and constituency. It also has had a great
interest in elaborating the ethical principles to which organizations should abide. It generally
considers transparency as the fundamental “right-to-know” of not only the financial purveyors,
but also the stakeholders and the constituency of institutions and corporations.
Put generally, the governance literature considers transparency as stakeholders’ *access to information* about the activities and practices of private and public organizations. Access to information may come from voluntary or coerced disclosure of information. The following definition is prototypical of the definitions found in the governance literature: “transparency is fundamentally about the availability of information to all the actors within the firm, principals, agents and stakeholders alike […]. Transparency mechanisms require increased material disclosure of corporate information in a manner that allows shareholders and stakeholders to be fully informed” (Hebb, 2006, p. 386). The particular mechanisms to make information are left unspecified, but it is suggested that they might include news releases and conferences, publications, reports, and access to documents, facilities and people employed by the institutions.

Hanson (2003) contended that any discussion of transparency raised the issue of (1) what information should be disclosed and (2) to whom. On another level, Stevenson (1980) distinguished between access and disclosure. Disclosure most often appear in mandates and consists of “mechanisms that are generally designed to produce information in a form that is condensed and comprehensible and permits comparability among different firms” (Stevenson, 1980, p. 13). The cost to make information available is borne by the organization, not the user of the information. In contrast, access “puts the burden of requesting the information on the outsider who seeks it” (Stevenson, 1980, p. 13). The advantage of access over disclosure is that information can take the form of narratives and is not constrained by standardized formats. However, it has the potential to create a cost to both the user, who needs to follow the required procedures and hurdles, if any, to get the information, and organizations, which have to dedicate resources to respond to a variety of inquiries.

The kind of information to disclose differs on whether the disclosing entity is an organization or a government. For organizations, whether public or private, the information concerns “financial/operating results, ownership structure, members of Board of Directors and management, quantitative and qualitative matters concerning employees and other stakeholders in
the corporation, governance structures and policies, corporate targets and prospects, execution of
unusual and complex transactions on derivative products and their level of risk” (Mallin, 2002, p. 253). Others also argue that the policies and resource allocation decisions that have
environmental and societal implications should also be accessible or disclosed by organizations (Stevenson, 1980). For governments, the information concerns “accepted practices related to
capital markets, including the legal and judicial system, the government’s macroeconomic and
fiscal policies, accounting norms and practices (including corporate governance and the release of
information), ethics, corruption, and regulations, customs and habits compatible with the norms
of society” (Millar, Eldomiaty, Choi, & Hilton, 2005, p. 166). Put more simply, transparency
refers to the extent to which the public is informed of the procedures and outcomes of
government and organizational decision making (Smythe & Smith, 2006, p. 33).

Three motivations underlie the need for transparency in institutional and corporate
governance. First, agency problems create the need to align the interests of the stakeholders (the
principal) and the managers (the agents) of public and private organizations. When there is a lack
of direct democratic accountability, opportunities for activities that are not in the best interest of
an organization’s stakeholders (which could include both shareholders and the public at large)
arise (Stiglitz, 2003). Requests for greater corporate social responsibility and for greater
accountability create pressures for increased transparency in governmental and organizational
decision making. Because organizations are relentless in the pursuit of their goals (Scott, 2003),
their conduct becomes pathological when their goals become displaced, that is, the means to
accomplish the goals become ends by themselves. Disclosure of information about decision-
making practices helps to ensure that organizations’ goals are aligned with those of its
stakeholders and not of its managers. The need to believe in a just and legitimate system is a
second explanation which has been put forward as to why disclosure of information is necessary
(Stevenson, 1980). When information about resource allocation decision is disclosed, it is easier
for stakeholders to assess the fairness of practices (Leventhal, Karuza, & Fry, 1980). Or, if
outcomes are not in one’s interest, at least, the outcomes are more likely to be judged as fair because the process to arrive at the outcome was disclosed (Leventhal et al., 1980). Thus, the transparency of procedures increases the sense of justice and fairness. Furthermore, literature in social psychology has found that the transparency of procedures and decisions increases the tendency of resource allocators to use parity (equality) instead of equity as criteria (Leventhal et al., 1980). The third motivation for transparency in organizational and institutional matters concerns the prevention of illegal and unethical behaviour from the leaders of organizations and institutions. This concern applies to both governmental and private organizations.

**Operations management**

In operations management and management science, “transparency” has been referred to as *access to information* about actual inventory levels, point of sales data, and demand forecasts by supply chain partners (Swaminathan & Tayur, 2003). The term “information sharing” has also been employed to refer to the same concept. Information sharing could be said to be synonymous with the notion of access to information, since it consists of access to a pool of information for which ownership is shared or for which the usage rights have been given.

The function of transparency in supply chain management is to increase the efficiency of a supply chain. It has been said that greater access to information (transparency) about a partner’s inventory level helps reduce buffer stocks (Swaminathan & Tayur, 2003). Providing access to forecast information also facilitates the coordination between multiple partners in a supply chain (Swaminathan & Tayur, 2003). When upstream supply chain partners lack information about inventory levels of downstream supply chain partners, demand and predicted sales lead to the “bullwhip effect” (Lee, Padmanabhan, & Whang, 1997). The bullwhip effect occurs when “the orders to the supplier tend to have larger variance than sales to the buyer (i.e., demand distortion), and the distortion propagates upstream in an amplified form (i.e., variance amplification)” (Lee et al., 1997, p. 546). In other words, as we move upstream through a supply
chain (beginning with the final point of sales), the variance of orders placed have a much larger variance than the original customer demand. It also means that suppliers who only base their demand forecast on their immediate order data will be misled by the variations in the data (Lee et al., 1997). To eliminate the inefficiencies caused by the bullwhip effect, it is advocated that the supply chain’s downstream participants (i.e. the retailers) give access to the information about their sales data and inventory levels to the supply chain’s upstream participants (Lee et al., 1997).

However, it has also been observed that the facilitated coordination provided by providing access to common pools of information depends on a number of contingencies: the existence of adequate incentives and penalty schemes (Cachon & Fisher, 2000; Chen, 1999; Swaminathan & Tayur, 2003), the degree of uncertainty about demand (Cachon & Fisher, 2000), the number and heterogeneity of firms in the supply chain (Cachon & Fisher, 2000; Lee, So, & Tang, 2000), the number of inventory sources (Cachon & Fisher, 2000), the capacity constraints of the supply chain’s partners (Gavirneni, Kapuscinski, & Tayur, 1999), the competing environment (Li, 2002). Moreover, while it has been said that a reduction of the inefficiencies in a supply chain by information sharing should benefit the whole system, the literature is still silent on how these benefits are distributed across the supply chain (Lee et al., 1997).

**Organization studies**

Organization studies analysts considered the idea of transparency from four different but overlapping perspectives. Transparency is analogous to the idea of (1) a pattern of access to and distribution of information as a property of organization design, (2) individual insight, (3) collective insight, and (4) scrutiny. While each of these perspectives implies a different set of assumptions about the unit of analysis, they complement each other. Furthermore, organizational analysts vary in their specification of what is the subject of transparency. The following lines discuss theses perspectives.
**Transparency as a pattern of access to information.** As it was discussed earlier, transparency can be conceptualized as a kind of *access to information*. Transparency as a kind of access to information is the meaning put forward in popular management books by Cohen and Prusak (2001) and by Tapscott and Ticoll (2003):

> “Transparency means you can see what others are doing and more easily know who is engaged in work related to yours. […] Those physically transparent spaces literally create transparency: open access to information about what the organization is doing” (Cohen & Prusak, 2001, p. 91).

> “Transparency, then, we define as the accessibility of information to stakeholders of institutions, regarding matters that affect their interests” (Tapscott & Ticoll, 2003, p. 22).

A number of concepts have been introduced in the organizational studies over the years to characterize how organization design supports or hinders access to information: structural secrecy, the variable disjunction of information, information buffers, information load, and the practice of display. Structural secrecy, the variable disjunction of information, information buffers, and information load all refer to attributes of the *structure* of an organization, while the practice of display is a practice grounded in the *agency* of organizational members. The following paragraphs discuss each of these concepts.

The idea of transparency could be considered as analogous to the idea of secrecy. Some organizational studies analysts consider that organization designs vary according to their degree of *structural secrecy* (Vaughan, 1996, p. 238). Structural secrecy refers to “the way that patterns of information, organizational structure, processes, and transactions, and the structure of regulatory relations systematically undermines the attempt to know and interpret situations in all organizations” (Vaughan, 1996, p. 238). Structural secrecy is one of the three mechanisms proposed by Vaughan (1996) to explain how NASA engineers normalized small deviations from expectations over time and how these “normalizations of deviance” resulted in the Challenger accident. Secrecy derives from the structural features of organization design:
“Secrecy is built into the very structure of organizations. As organizations grow large, actions are, for the most part, not observable. The division of labor between subunits, hierarchy, and geographic dispersion segregate knowledge about tasks and goals. Distance – both physical and social – interferes with the efforts of those at the top to ‘know’ the behaviour of others in the organization – and vice versa.” (Vaughan, 1996, p. 250)

Structural secrecy thus refers to a partition in the sets of information held by people within an organization. The opposite of structural secrecy could be considered as a kind of integration where the set of information held by people within an organization is common. Some analysts of organizations suggest, however, that this integration presents difficult practical challenges to resolve.

Analogous to the idea of structural secrecy is the condition of variable disjunction of information proposed by Turner (1978) in his account of how organizations generated technological disasters by a structurally induced “failure of foresight”. Organization design exhibits variable disjunction of information, which means “a complex situation in which a number of parties handling a problem are unable to obtain precisely the same information about the problem, so that many differing interpretations of the situation exist” (Turner, 1978, p. 50). This condition of organization design varies because information is continually exchanged between people; the set of information held by people expands or narrows as people access, acquire, and exchange information. However, Turner (1978) argued that the opportunity cost of these behaviours when the task is complex and turbulent creates a situation where complete information cannot be obtained. In an earlier paper, Reeves and Turner (1972) also argued that variable disjunction of information creates the necessity that people assert the legitimacy and credibility of the information they hold when attempting to impose a definition of the situation:

“People who have to operate in a situation in which there is disjunction of information are unlikely to reach complete consensus about the information which describes the total situation, simply because of the problem of convincing others of the status of their own set of information and thus of the validity
of their analysis of the situation and their suggestions for action.”  
(Reeves & Turner, 1972, pp. 90-91)

While this notion holds an interesting explanatory potential, it is not clear from Turner’s writings if the condition of variable disjunction of information varies from one organization to another or if it is simply a “given” of organizational structures in general. It appears, however, that the concepts of variable disjunction of information and of structural secrecy refer to the same domain, that is, a structurally induced dispersion of data within an organization.

A third idea analogous to structural secrecy is the idea of information buffers proposed by Kmetz (1984) in his study of the workflow in aircraft electronics repair. Adopting an information processing perspective, Kmetz (1984) defined information buffers as “pools or collections of information formed to support decision making or monitoring of workflow variables” (p.272). Information buffers serve a decoupling function within systems exhibiting highly interdependent activities (this function had also been noted by Pfeffer and Salancik (1977, p. 19)). This function generates two effects. On the one hand, they provide the opportunity for local problem solving and decision making when front-line people are faced with unexpected contingencies. On the other hand, information buffers preclude system-wide adaptations because the diagnosis of wider patterns of interrelated small deviations is made more difficult. Kmetz’s (1984) description of the particularities of information buffers is worth quoting in full.

“They may be formed formally or informally and at any level of the hierarchy. Buffer content is hypothesized to vary significantly both between buffers and within buffers over time. Buffers can be specific to processes in the workflow or to members of the organization. They can consist of samples of formal data or can be pools of information on nonsanctioned behaviours or outcomes. They can be used as repositories for routine information from process monitoring or to meet specific exceptions. Information buffers are very similar to buffers or in-process inventories in manufacturing organizations in decoupling interdependencies in the workflow, both in timing of the processes and in rates of material flow. In other respect, they are quite dissimilar – they are used at the discretion of those having access to them, and their very existence can be denied, if necessary” (Kmetz, 1984, p. 272).
This quote highlights three dimensions of information buffers. First, their content can be of data, procedures or decision rules. Second, their degree of formalization varies from explicit written or electronic data to tacit knowledge held in the memory of people. Third, the degree to which they are sanctioned and approved by the organization varies. These three dimensions of information buffers have the drawback of infusing a lot of malleability in how the concept can be put to use in organizational analysis, though.

Information buffers could exist because the nature of the organization’s activities makes them necessary to achieve efficient coordination. As such, it could be considered as a “naturally” occurring attribute of organizational structure due to the division of labor in an interdependent set of activities. But they could also exist because people extract some benefits from their use. Information buffers provide secrecy and their existence could thus be motivated by the desire to influence resource allocation (Pfeffer, 1977). When their use is motivated by political instead of technical reasons, information buffers could cloak the information used to make decisions, the decision-making processes, or even the results of the decision making (Pfeffer, 1977).

Information buffers within an organization appear to have a direct relation to the analogous conditions of variable disjunction of information and structural secrecy. As the number and the size of information buffers increase, the disjunction of information increases; as the number and the size of information buffers decrease, the disjunction of information decreases. This means that structural secrecy varies according to the existence and nature of information buffers within an organization.

A fourth idea relates to the idea of transparency as access to information: *information load*. Adopting an information processing perspective, Huber and Daft (1987) referred to information load as a mix of the quantity, ambiguity, and variety of information that people need to process in organizations. At that time, Huber and Daft (1987) predicted that the diffusion and adoption of sophisticated information technologies would increase information load in organizations because information would become more easily accessible: “we can anticipate
rapid increases in the availability of existing information as the technologies mature and become widely used” (Huber & Daft, 1987, p. 133). Thus, as information load increase, people will take action to cope with that increase in order to avoid the unpleasant feeling of overload. Weick (1995, p. 87) suggested that overload can be experienced as an occasion for sensemaking. How people direct their attention to deal with the flow of information provides one way to cope with overload. Thus, increase in information load puts a premium on the sensemaking capacities of people.

Fifth, the idea of display practices described by Kellogg, Orlikowski and Yates (2006) also relates to the idea of transparency as access to information. Based on their ethnographic study of a new media consulting organization they suggested that display practices enable members of various occupational communities to coordinate. Display practices consist of “rendering work visible to others on the project; making schedules and plans available to others” mostly through the use of information technologies, such as calendaring systems, email systems, document management systems, etc. (Kellogg et al., 2006, p. 40). People posted documents, plans, assignments, schedules, and work in progress so as to make them available to see by other members of the organization. Kellogg et al. (2006) employed the word transparency in their description of the effects of display practices: display practices allow “keeping information and ideas transparent” (p.40). Notice however that their use of the word transparency could have been replaced by the words available or accessible with no change in meaning whatsoever. Based on the interpretive stance of the study, it is reasonable to assume that to make information accessible through display practices does not mean that the meaning of information is also accessible, especially since Kellogg et al. (1996) suggested that people engage also in the practice of representation, which means “rendering work legible” (p.40). Thus, the elaborate description by Kellogg et al. (2006) of display practices hint to how information is made accessible within an organization.
The above discussion highlighted the concepts analogous or related to the idea of transparency as access to information in the organizational studies literature. Structural secrecy, variable disjunction of information, information buffers, information load, and practices of display are images that provide ways to think about access to information. The inquiry into the concept of transparency will now continue into another stream of related ideas, that is, transparency as individual insight.

**Transparency as individual insight.** A second set of ideas related to transparency can be identified in the organizational studies literature. This set of ideas considers transparency as a particular kind of insight at the individual or collective level within an organization. From this perspective, transparency is considered as a product of people’s sensemaking. To render transparent means to clarify, to eliminate ambiguity. This line of thought is discussed below.

Adler and Borys (1996) proposed that “enabling” organizations provide people with an understanding of *(a)* their task and tools and of *(b)* the broader system from which the task is part. The former is labelled *internal transparency*, while the latter is labelled *global transparency*.

Internal transparency refers to the degree that workers are provided with “visibility into the processes they regulate by explicating its key components and by codifying best-practice routines” (Adler & Borys, 1996, p. 72). In a coercive organization, procedures consist of a list of duties to be fulfilled but without any rationale provided about them. There is an under-reliance on people’s skills because there is no reason to explain the inner workings of the processes in which they are embedded. In an enabling organization however, people have a comprehension of the process’ underlying theory (the *what*, *why*, and *how*) because they are provided with status information, metrics, and clear procedures. This kind of insight is echoed by Weick’s (1990) discussion of how people deal with technologies characterized by continuous, stochastic and abstract events, such as those found in nuclear power plants. In these situations, a premium is put on people’s ability to imagine, visualize, infer, and extrapolate weak and cryptic signals because the actual activities taking place cannot be seen; they are decoupled from direct perception.
Weick (1990) considers that people’s understanding of their task in such context needs to be constantly fine-tuned and updated. Otherwise “the gradual decoupling of a mental model of a process from the actual steps that occur in that process allows events to unfold that ramify in their consequences and grow increasingly incomprehensible” (Weick, 1990, p. 33). From this perspective, transparency corresponds to how well people understand the functioning of the tasks they are responsible for.

Adler and Borys (1996) also proposed global transparency which corresponds to the insight people have of how their role fits into the larger organizational system. In their words, global transparency refers to “the intelligibility for employees of the broader system within which they are working” (Adler & Borys, 1996, p. 73). In a coercive organization, this insight is restricted to the higher levels of the organizations and people at the front-line are kept in the dark about the status of the organization. Front-line people’s insight is restricted to their componentized part in the operating processes and the procedures of the process reinforce this restriction. On the other hand, an enabling organization facilitates front-line people’s insight by providing “a wide range of contextual information designed to help them interact creatively with the broader organization and environment” (Adler & Borys, 1996, p. 73). Instead of restricting people’ capabilities to make sense of their surroundings, the procedures of an enabling organization provide people with an understanding of the organization’s orientations and of top management initiatives.

This type of insight has also been explored by other organizational studies analysts. For instance, Parker and Axtell (2001) provided evidence that a worker’s integrated understanding, “an understanding of how her or his job relates to the bigger picture and an understanding of what other departments do” (p.1089) helps her or him take the perspective of others in organizations. Their operationalization of integrated understanding contained four items which concerned how people understand how their work contributes to the work of the overall department, how their department as a whole works, how their work affects the work of other departments, and the jobs
of the people who they pass work to (Parker & Axtell, 2001). In their survey of front-line production workers, Parker and Axtell (2001) found that workers that had high degrees of integrated understanding had more positive attributions about their suppliers. When errors and failures would occur, they would tend to blame circumstances instead of internal factors. In other words, front-line workers with a global view of the work system were less inclined to fall for the fundamental attribution error, which consists of attributing failures to dispositional attributes rather than to contextual attributes.

Pasmore (1998) also suggested that people’s understanding of their broader organizational environment was necessary for them to improvise when faced with unanticipated contingencies. He suggested potential components of such an understanding: “In organizations, people need to understand what’s happening in order to help their organization perform flexibly. The more they know about what the organization does – what it’s up to, what’s going on in the world, what the customer wants, what other people do, what shape the organization is in financially, what the possibilities are – the more they can take action freely without fear for causing problems for someone else” (Pasmore, 1998, p. 562). For Pasmore, insight into the broader organizational environment is a functional requisite for adaptation to unforeseen contingencies.

Another synonym of global transparency or integrated understanding that researchers of organizations of high-reliability organizations employ is situational awareness. In the human factors literature, situational awareness refers to what “knowing what is going on’ entails” but more particularly, it means “the perception of the elements in the environment within a volume of time and space, the comprehension of their meaning and the projection of their status in the near future” (Endsley, 2000, p. 5). People are aware of what is going on when they are able to articulate explicitly with words a plausible story of what is happening. Put differently, insight is a product of sensemaking: the ongoing retrospective development of plausible images and stories that rationalize what people are doing (Weick, Sutcliffe, & Obstfeld, 2005). Sensemaking
is what allows people to deal with situations where too many or too few meanings are at hand. Sensemaking occurs when people get interrupted or aroused by equivocal inputs (Weick, 1995). The meaning of what is going on in organizations is not always evident: “Situations of ambiguity are common. The patterns of exposure to events and the channels for diffusing observations and interpretations often obscure the events” (March & Olsen, 1976, pp. 62-63). In those occasions where automatic processing becomes controlled processing, people bracket, freeze, and impose discrete labels on a continuous flow of experience. Sensemaking allows people to cope with the confusion triggered by equivocal inputs and energizes them to go on with their projects. This story is then used as a “springboard into action” (Weick et al., 2005, p. 409) because it identifies decision points, that is, potential alternatives about what can be done (Klein, 1998).

When considered as analogous to situational awareness as a product of sensemaking, transparency means that as it increases, people’s awareness of the effects of their past, current, and future actions in the organization increases. Klein (1998) argued that this capacity distinguishes experts from novices, among other things:

“Experts perceive a situation as the patterns and relationships that grew out of the past and will grow into the future, not just the cues that exist at the moment. All these are perceived at the same time; all are part of their situation awareness. The ability to see the past and the future rests on an understanding of the primary causes in a domain and the ability to apply these causes to run mental situations” (Klein, 1998, p. 156).

In other words, situational awareness has also been labelled alternately as “having the bubble” (Roberts & Rousseau, 1989), or as seeing the “big picture” (Klein, 1998).

Certain factors influence the processes that compose situational awareness. Klein (1998, p. 303) argued that attention driven by beliefs, goals and expectations (a top-down cognitive process) directs how people notice elements of the environment (a bottom-up cognitive process) and consequently the other two situational awareness processes. Thus, in order to maintain situational awareness, it is not only necessary to be able to elaborate a story about what is going
on, but also to update continuously this story that was elaborated from past cues in order to reflect present cues (Weick et al., 2005). This means that adjustments or suspension of beliefs, goals and expectations may provide the necessary leeway for present cues to be noticed. In order for people to better make sense of what actually goes on (e.g., have a refined awareness of the situation), some a priori knowledge appears to be necessary. Klein (1998, p. 225) identified seven knowledge elements that people need in order to be better at accomplishing situational awareness:

- The purpose of the task (the higher-level goals).
- The objective of the task (an image of the desired outcome).
- The sequence of steps about what needs to be done (i.e., the organization’s plan).
- The rationale for what needs to be done (i.e., the organization’s the plan).
- The key decisions that may have to be made.
- Antigoals (unwanted outcomes).
- Constraints and contingencies to watch for.

**Transparency as the juxtaposition of individual insights.** While the previous section discussed transparency as insight at the individual level, the present section discusses insight at a higher level of analysis; that is at the group, organizational or network level. When considered at those higher levels, insight does not reside in some sort of “meta” entity (e.g., a group mind). Instead, insight is assumed to reside in the quality of the ties that connect people within an organization. In other words, it consists of the juxtaposition and overlap of individual insights (Weick, 1979, p. 109).

For Weick (2002), situation awareness is distributed within an organization. The juxtaposition of individual insights exhibits the insight of the organization *as a whole*. There is a limit to what people can become aware of when considered from an organizational perspective because of the boundedness of rationality, (March & Simon, 1958; Weick, 1979, p. 109). When people are interdependent, it is difficult for a single individual to obtain a complete, total reading of what is going on at all times. Furthermore, insight resides in the equivalent elements (i.e., in the “connections” between people’s understanding of the situation) rather than in the common elements of people’s understanding of the situation (Weick, 1979, p. 109). This is so
because interdependence engenders the condition of variable disjunction of information that was discussed earlier.

“When information is distributed among numerous parties, each with a different impression of what is happening, the cost of reconciling these disparate views is high, so discrepancies and ambiguities in outlook persist. Thus, multiple theories develop about what is happening and what needs to be done, people learn to work interdependently despite couplings loosened by the pursuit of diverse theories, and inductions may be more clearly associated with effectiveness when they provide equivalent rather than shared meanings” (Weick et al., 2005, p. 418).

In other words, total understanding of the situation is collective and formed by the juxtaposition of individual understandings, as in the fish-scale model of omniscience by Campbell (1969). The interdependence of action also means that people only become aware of what events are actually unfolding by organizing sensemaking resources appropriately in order to pay close attention to the ongoing flow of activities:

“We people in systems with higher reliability tend to pay close attention to operations. Everyone, no matter what his or her level, values organizing in order to maintain situational awareness. Resources are deployed so that people can see what is happening, can comprehend what it means, and can project into the near future what these understandings predict will happen. In medical care settings, sensitivity to operations often means that the system is organized to support the bedside caregiver” (Weick, 2002, p. 196).

Weick (2001) proposed seven properties of sensemaking which can be affected by organizational design and that help people notice more cues about what is usually set aside, that enable them to collectively elaborate meaningful diagnosis of what is going on, and that extend their foresight into the ramifications of what is actually going on. How organization design strengthens or maintains those resources affect how people make sense of their situation; that is, how they become aware of their situation and how successfully they update their sense of the situation. Organization design affect social context (does the design encourage conversation?), identity (does the design give people a distinct, stable sense of who they are and what they represent?),
retrospect (does the design preserve elapsed data and legitimate use of those data?), salient cues (does the design help people notice novel cues?), ongoing projects (does the design enable people to be resilient in the face of interruptions?), plausibility (does the design encourage people to accumulate and exchange plausible instead of accurate accounts?), and enactment (does the form encourage action or hesitation?). These properties are what allow people to disengage from their earlier stories about what is going on in favour of a newer, fresher one.

Adopting a network lens is another way to consider transparency as a pattern of individual insights. In her study of the flight departure process at four major North American airline companies, Gittell (2001) introduced the concept of *relational coordination* to explain the efficiency of cross-functional coordination. Relational coordination suggests that the insight front-line workers have of their organization system can be expressed by the strength of the ties that connect them. Relational coordination represents “an awareness of [front-line workers’] relationships to the overall work process and to other participants in that process” (Gittell, 2000, p. 518, emphasis added). This definition is quite close to the one of global transparency by Adler and Borys (1996). Seven attributes of ties compose the measure of relational coordination: (1) frequent, (2) timely, and (3) problem solving-oriented communication and by (4) helping, (5) shared goals, (6) shared knowledge, and (7) mutual respect among workers (Gittell, 2000). Groups and organizations that exhibit high levels of relational coordination should perform better at accomplishing their collective tasks than groups and organizations that exhibit lower levels.

To assess relational coordination, front-line workers are asked to rate these attributes for each of the functions that take part in the process. For instance, the flight departure process is composed, among others, of ticket agents, gate agents, baggage agents, operations agents, ramp agents, cabin cleaners, caterers, flight attendants, pilots, etc. Individual ticket agents would rate the seven attributes with regard to the gate agents (as a whole), then with regard to the baggage agents, and so on. While relational coordination was introduced to assess the strength of cross-function ties, the same could be done for within-function ties (Gittell, 2000). Two components
thus compose relational coordination: a behavioural component (frequent, timely, problem-solving communication and helping) and a cognitive component (goals, knowledge, respect). The two components are conceptually distinct, but they need to be merged because they reinforce each other. Statistical analyses supported this argument, since the Cronbach’s alpha for the index in Gittell (2000) is 0.878.

The concept of relational coordination is a network attribute analogous to the idea of transparency as a pattern of individual insights. More precisely, the seven attributes do not assess situation awareness per se (that is, in the ready-at-hand moment, “right now, right here”); they instead act as proxies for situation awareness. In other words, they are “process indices” of situation awareness (Endsley & Garland, 2000). The stronger the patterns of tie (as expressed by the average of the seven attributes across the network), the greater situation awareness is assumed to be, as a whole.

The domain of the seven attributes of relational coordination overlaps with the seven properties of sensemaking identified by Weick (1995). Weick (2002) contended that “small improvements in seeing can occur when individuals enlarge their personal repertoires of what they can do. But larger improvements in seeing should occur when people with more diverse skills, experience, and perspectives think together in a context of respectful interaction” (p.186-187, emphasis added). Thus, as the seven attributes of relational coordination increase, there should be more varied and richer conversations since problem-solving communication contains more advices, less instructions (social context); a defined rather than vague identity because of pro-social behaviours and the reduction of distance between goals and knowledge domains (personal identity); diagnosis and projections more closely coupled with history because interactions are respectful of what people know and have to say (retrospect); more novel, discrepant cues exchanged since communication is frequent, timely, and respectful (salient cues); a better capability to prevent and solve breakdowns through frequent, timely, problem solving and helping communication (ongoing projects); an emphasis on plausible rather than accurate
accounts since frequent and timely communication facilitates the adjustments that compensates a lack of accuracy (plausibility); bolder action because frequent, timely and problem solving communication facilitates commitment and manipulation (enactment).

This discussion tried to show that when transparency is understood as a kind of insight attributed to a collective, some organizational analysts not only look at how people make sense of their situation individually, but also how the arrangement and quality of their connections with others affect what they see as a whole. The sensemaking recipe of (Weick, 1979, p. 134) “how can I know what I think until I see what I say?” becomes “how can we know what we think until we see what we say?”. Thus, understanding does not reside in the overlaps of the individual understanding, but in the nature of the connections between individual understandings.

**Transparency as mutual understanding.** In the literature about “open-book management”, transparency has been defined as a kind of mutual understanding with respect to operational and financial information. In one of the main practitioner-oriented publication about open-book management, Case (1998) defined transparency the following way: “you have to create a transparent company, a company in which everyone, not just those at the top, sees and understands the real numbers. What are the real numbers? They’re the numbers that management uses to run the business and to gauge its performance” (p.2-3). In a theoretical paper about the consequences of open-book management, Ferrante and Rousseau (2001) refined this definition and contended that transparency “means that information means the same thing to all parties” (p.104). They suggest that transparency means “mutuality” (Ferrante & Rousseau, 2001, p. 104). They distinguished between making information accessible and making sure that everyone agrees on the meaning of the information. Only the latter is considered to refer to transparency. Information access is not considered to be part of the domain of transparency because of the problem of meaning that has two sources. First, people need to be business literate, to have some knowledge about the logic and theory behind the information in order to understand operational and financial information. Second, because people are embedded in different contexts, there is the
problem of intersubjectivity, which is achieved only through conversation, discussion, debate, argumentation, deliberation about the information. This kind of transparency, especially when it concerns decisions about resource allocation in organizations, is suggested to foster organizational commitment and feelings of fairness among employees because it signals that employees are valued and trustworthy members of the organization (Colquitt, 2001; Ferrante & Rousseau, 2001; Tyler, Degoe, & Smith, 1996).

**Transparency as scrutiny and surveillance.** While transparency was directed from the self to the environment (e.g., from the self to others) in the previous treatments, transparency is also sometimes targeted to the self according to organizational analysts. The line of sight is reversed; from how much I see of what others do (through access to information, situation awareness, or mutual understanding), it becomes how much others sees of what I do. In that context, transparency is analogous to the *scrutiny* or *surveillance* of behaviour, a phenomenon that has been treated at some length by sociologists and organizational analysts (and information systems analysts, as it will be seen further).

An elaborate treatment of the consequences of scrutiny has been provided by Sutton and Galunic (1996). They defined scrutiny as “an intensive and obtrusive form of attention from others, comprising: (1) persistent attention to the leader or his or her organization; (2) close and persistent performance monitoring and evaluation; (3) frequent interruptions; and (4) relentless questions about events that have occurred, are occurring, and will occur, along with requests that the reasons for such actions be explained” (Sutton & Galunic, 1996, p. 203). This definition was put forward for the purpose of studying how executives and their organizations dealt with pressures from the media and stakeholders. In addition to having the above attributes, they suggested that scrutiny exhibits other attributes. First, they suggested that scrutiny occurs in episodes; scrutiny varies over time according to shifts in preoccupations by the media and stakeholders. Episode should be triggered when there is something novel or important about the organization. Second, scrutiny occurs through a variety of interpersonal and technological
means. The nature of face-to-face interactions and of technologies used to monitor and examine
behaviour makes the intensity of scrutiny vary. Technological means also imply that scrutiny
may occur without the knowledge of the scrutinized. Third, scrutiny implies a blend of obtrusive
and unobtrusive examination. Degrees of scrutiny range from passivity to pro-activity.

Sutton and Galunic (1996) extensively reviewed the literature on monitoring, interruptions, and intrusive behaviours to summarize the consequences of scrutiny on organizational decision makers. They identified cognitive, emotional, task and relational outcomes of scrutiny. In terms of cognitive outcomes, they suggested that scrutiny triggers cognitive overload, since the feeling of being observed generates distraction, and focuses attention on how the self appears to others and on how to explain such appearances. In terms of emotional outcomes, scrutiny triggers negative affect in terms of evaluation apprehension during interruptions. In terms of task outcomes, scrutiny creates frequent delays in ongoing tasks, focuses attention and effort toward symbolic activities away from other, more substantive, activities. Scrutiny also creates greater adherence to injunctive norms (what most others approve or disprove), less adherence to descriptive norms (what most others do). In other words, it might increase the scrutinized’s focus on pleasing the scrutinizer (on doing what ought to be done), which might conflict with doing what is in the best interest of the situation (what is typically done). It also generates attention and effort toward well-rehearsed acts, away from acts that require learning or creativity (as per the predictions of social facilitation processes reviewed previously). It also generates greater perseverance at ongoing and planned activities. In terms of relational outcomes, scrutiny is deemed to generate distrust between the monitored and the scrutinizer. This distrust phenomenon is robust even when starting conditions are of high trust, since a self-fulfilling prophecy is triggered by the act of scrutinizing.

Sutton and Galunic’s (1996) definition could also be applied to intra-organizational behaviour. This idea was elaborated earlier by Salancik (1977a, 1977b) in a set of two related theoretical articles. Instead of employing the word scrutiny, he used the words publicity
(Salancik, 1977a) and visibility (Salancik, 1977b): “While all action and behavior is by definition observable, publicity refers to the extent to which others know of the action and the kinds of persons who know of it” (Salancik, 1977a, p. 7). As such, scrutiny would refer to how actively people within an organization are the objects of attention, monitoring, examination, inquiry, and observation by others. Attention, monitoring, examination, inquiry, and observation are all proactive means by which action becomes visible and public. Depending on who is the observer, scrutiny implies that people will need to enact more justifications in order to account for their actions. This accountability pressure would result in commitment, because people are more strongly bound to their actions (Salancik, 1977a, 1977b).

An interesting nuance is added by Pfeffer and Salancik (1978) to the above ideas. They argued that to be visible, behaviour does not have to be directly observed. When the outcomes are observable, it is sometimes possible to infer the actions that caused them. This means that “The important thing about visibility for it to constrain behaviour is that the social actor thinks the behaviour can be observed or inferred from observable outcomes” (Pfeffer & Salancik, 1978, p. 105). Hence, the mere belief of being the object of attention, monitoring, examination, inquiry, and observation by others, even if that is not actually the case, is sometimes sufficient for inducing commitment. This argument echoes the earlier discussion on Foucault (1975) and how people came about to self-regulate.

The focus of transparency: transparency of what?. While the above discussions focused on the various forms that transparency might take in organizations, it did not specify the focus of transparency; in other words, the transparency of what? Organizational analysts proposed a number of focuses over the years; they will be briefly surveyed.

In the literature about high-reliability organizations, Reason (1997) discussed how latent conditions need to be made visible in order to prevent accidents and disasters. Latent conditions consist of undetected vulnerabilities that might amplify the consequences of an error or mistake by a front-line worker that might be otherwise trivial. Examples of latent conditions of are “poor
design, gaps in supervision, undetected manufacturing defects or manufacturing failures, unworkable procedures, clumsy automation, shortfalls in training, less than adequate tools and equipment” (Reason, 1997, p. 10). Latent conditions result from the scarcity of resources in an organization, the allocation decisions made to deal with this scarcity by the top levels of the organization. Weick (2002, p. 183) enlarged the domain of Reason’s (1997) definition of latent conditions to include the “unnoticed events” that are at odds with the accepted beliefs about hazards and the norms for avoiding those hazards. In other words, latent conditions also encompass the notion of errors.

The work of DeSanctis, Staudenmeyer and Wong (1999) suggests that *interdependencies* within an organization (or a group) might also be the object of transparency. Many definitions of interdependence exist in the organizational studies literature (Staudenmayer, 1997). Thompson (1967) provided a seminal one; he conceptualized interdependence as a contingent relationship among tasks or activities that follows a Guttman-type scale ranging from pooled, sequential, to reciprocal. DeSanctis et al. (1999) argued that virtual groups and organizations make, in contrast to traditional modes of organizing, certain interdependencies more visible and others more invisible. Their discussion didn’t elaborate on the nature of these interdependencies, however.

Likewise, the work of Perrow (1984) suggests a focus of transparency similar to interdependencies: *interactions* between elements of a socio-technical system. To understand the role of organization design in the occurrence of large-scale disasters, Perrow (1984) put forward a theory of “normal” accidents. According to this theory, organizations which processes are characterized by tight coupling and interactive complexity are prone to fail eventually, despite the tactics, designs, and strategies employed by its people to make them failure proof. Normal accident theory suggests two dimensions to characterize work processes: 1) linear/complex interactivity and 2) loose/tight coupling. Interactivity refers to the nature of interactions among the parts of a work system. When characterizing interactivity, the nature of interactions is of more significance than the degree of interactivity. Interactions can be characterized either as
linear or as complex (Perrow, 1984). Linear interactions are “those in expected and familiar production or maintenance sequence, and those that are quite visible even if unplanned” (Perrow, 1984, p. 78). In comparison, complex interactions are “those of unfamiliar sequences, or unplanned and unexpected sequences, and either not visible or not immediately comprehensible” (Perrow, 1984, p. 78). The greater the interactive complexity of a work system is, the greater the likelihood that deviations amplify into unanticipated consequences. The other dimension suggested by normal accidents theory is coupling, which can be either tight or loose. Put shortly, coupling means the degree of “slack or buffer or give between two items” (Perrow, 1984, p. 90). Another way of thinking about coupling is to conceive it as the degree of responsiveness between parts of a system. In comparison to tightly coupled systems, waste may not severely impair the performance of a loosely coupled system as a whole. When systems are interactively complex and tightly coupled, unexpected small interactions could cascade into larger consequences (e.g., accidents, disasters). Thus, in interactively complex systems, such as chemical processing plant, nuclear power plants, weapon systems, and hospitals, there is a premium put on making interactions more visible, comprehensible, and thus, more linear.

In Kellogg et al.’s (2006) ethnography of a web design organization, the focus of transparency consists of the artefacts produced by work, the time commitments, and the work assignments of people. By artefacts, what is meant are the documents, reports, technical specifications, prototypes, and other kinds of work in progress used for the accomplishment of work. Time commitments are made available through a common scheduling application (such as MS Outlook). Work assignments describing project objectives, task responsibilities, and due dates of deliverables are also the focus of transparency. All of these are made available to others through display practices.

The three types of information identified by Pfeffer (1977) that can be kept secret within an organization provide three potential focuses of transparency. All of these types of information revolve around decision making practices about resource allocation within organization. First,
there is the information used and the premises upon which decisions are based in organization. Second, there are the procedures employed to make decisions which can be kept secret from part of the organization. And third, the outcomes of decisions can be kept secret. These three types of information are analogous to the content of information buffers, as defined by Kmetz (1984): data (i.e., information used to make decisions), procedures (e.g., process followed), and decision rules (e.g., premises used to make decisions).

In their theoretical paper about the consequences of ‘open-book’ management, Ferrante and Rousseau (2001) identified other types of information that could be the focus of transparency. When an organization adopts open-book management, the information made available to the workers usually consists of financial statements (e.g., budget, balance, income, expense reports, cash-flow sheet), financial indicators (e.g., broad performance metrics), operational indicators (e.g., specific metrics about work and production processes), as well as specific information about departments, workgroups, and the position people occupy.

As mentioned earlier, Adler and Borys (1996) identified two types of transparency, internal and global. These two types of transparency can be differentiated on the basis of what they make transparent. For internal transparency, the focus consists of the internal functioning of equipment and processes in which people are involved. The second type of transparency identified by Adler and Borys (1996), global transparency, focuses on the relationship between a task or a role and the whole to which it contributes. The focus of global transparency as understood by Adler and Borys (1996) includes, but is not limited to, the notion of interdependencies discussed earlier. In other words, global transparency refers to the meaning of the task or the role for the whole system. Thus, in addition to referring to the task contingencies (the antecedents and effects of the task upon others), the focus of global transparency consists of why tasks are accomplished a certain way and not another. Put differently, the “what” of Adler and Borys’ (1996) global transparency refers to the complexity and broadness of the theoretical context underlying tasks (the “why”, their rationale, their purpose). This idea is analogous to the
kind of understanding depicted previously by Pasmore (1998) and the seven types of knowledge necessary for situation awareness identified by Klein (1998, p. 303).

For Salancik (1977a, 1977b), as well as for Sutton and Galunic (1996), the focus of transparency appears to be people’s discrete actions: the acts of getting something done. Thus, this notion is quite broad and encompassing; it could include many kinds of accomplishments such as decisions, activities, performances, etc.

The table that follows summarizes the focuses of transparency that have been identified in the previous discussion.
Information systems

In the following lines, I will discuss how the idea of transparency and its related terms have been employed in the information systems literature. Information systems analysts have put forward a diversity of conceptualizations for the idea of transparency. The situation that appears to prevail in the information systems literature is that a few terms (transparency and visibility)
refer to many different concepts. Often, this was done without clearly defining and specifying what the terms transparency, visibility, opacity, etc. referred to. While some analysts might argue that diversity is a desirable property for an academic field, others have argued that diversity that lacks governing guidelines is undesirable (Robey, 1996). The review of the information systems literature identified 34 instances of the use of the concept transparency or other closely related terms (note: these instances can be found in Appendix 2). Within the 34 instances, the concept had not been explicitly defined in 14 instances; for those cases, the meaning of the term had to be inferred from the context in which the word was used, which was not always a straightforward exercise. The table below shows these instances and the specified or inferred meaning by the authors. This table will then be discussed according to the main meanings found in the information systems literature: transparency (1) as access to information, (2) as a condition of having knowledge of (akin to insight), (3) as information sharing, (4) as psychological safety, (5) as exposure to public notice.

**Transparency as access to information.** Out of the 34 instances found, 12 instances referred to transparency as a pattern of *access to information*. This meaning of transparency was found in three domains of information systems research: in studies about information systems internal to an organization, in studies about electronic markets, and in studies about privacy issues in e-commerce. One example of such definition is Street and Meister (2004) who defined “internal” transparency as “an outcome of communication behaviours within an organization that reflects the degree to which employees have access to the information requisite for their responsibilities” (p.477). Another such definition is provided by Benko and McFarlan (2003): “Transparency refers to the fact that organizations have become easier to see into and out of […] extraordinary amounts of information are available on a reasonably democratic basis” (p.37). For information systems analysts, transparency appears to mean that information is made available for the people who need it, in a timely, complete, accurate manner. This information concerns measures of behaviours and outcomes (Bloomfield & McLean, 2003; Kohli & Kettinger, 2004),
competence of the organization (Lindgren, Henfridsson, & Schultze, 2004), cross-functional information that spans organizational units, geographical distance, and history (Elmes et al., 2005). Others have also made specific reference to the availability of data, not information: “Because an ES allows for real-time data visibility across functions, outputs are being shared continuously. […] Even if data are visible to all, it may not be ready for use by another group” (Volkoff, Strong, & Elmes, 2005, p. 118).

In studies about electronic markets, transparency is considered as an enabler of market efficiency by making prices, vendor, customer, and product attributes known to all participants (Cousins & Robey, 2005). In that context, Zhu (2004) provided a definition that is self-referential, because it defines transparency as visibility: “Information transparency is defined as the degree of visibility and accessibility of information” (p.670). Granados, Gupta, and Kauffman (2006) provided a more specific definition: “Market transparency specifies the extent to which information is made available to market participants, including pricing, product, and supplier information. […] We define opaque markets as those where information is incomplete or distorted” (p.150).

In studies about privacy issues in e-commerce, transparency refers to the extent to which organizations disclose the policies about access, collection, and distribution of their customers’ personal information. More precisely, Awad and Krishnan (2006) recently defined transparency as “features that give consumer access to the information a firm has collected about them and how that information is going to be used” (p.14).

**Transparency as insight.** In seven instances, the term “transparency” was employed to refer to the condition of having knowledge of, or on a deeper level, of insight. This definition is the second one that was implicitly proposed by Street and Meister (2004):

“A measurable result of the management team’s communication process should then be the degree to which management personally understands what is going on throughout the enterprise. While many authors discuss such outcomes without
specifically defining an outcome measure (arguing more is better), there is a consistent theme in several literatures that supports a construct called internal transparency” (Street & Meister, 2004, p. 477, emphasis added).

Understanding what is going on could mean many things at once. Possible boundaries on the concept are suggested by the following:

“In particular the members of transparent organization create an understanding of the following: (1) The goals of the organization; (2) The members of the organization; (3) Their place in the structure of the organization; (4) Their tasks and responsibilities; (5) The prerequisites of their actions: upon whom and what do they depend?; (6) The effects of their own actions: Who is affected by their actions? Who depends and in which way on their actions?; (7) The importance of their actions for the organization as a whole” (Herrmann et al., 2002, p. 61).

Information technology’s role is portrayed as important in creating a transparent organization. Zuboff (1988) argued that it is the informating capacity of information technology that provides transparency:

“Action-centered skills (acting-on and acting-with) are built into the technology as it substitutes for bodily presence – that is automation. At the same time, activities are made transparent. They are exposed in detail as they are textualized in the conversion to explicit information – that is informating” (Zuboff, 1988, p. 181, emphasis added).

What is ambiguous about Zuboff’s (1988) writing is that she used both the terms transparency and visibility interchangeably in her description of the informating capacity of information technology. For instance, the following passage about the informating capacity of information technology employs both terms:

“Digital technologies – the combination of computers and communication networks – bestow a new and global transparency on everything they touch. Processes, objects, and events are translated into information (data, text, image, and sound) and connected to a wider network, thus making them visible and accessible anywhere, anytime. This transparency contributes to what has been called the unique ‘informating’ capacity of digital technologies, when a complex, three-dimensional world that includes everything from factories to
blood cells can be digitized and transformed into information, becoming visible, knowable, shareable, mobile, and manageable in wholly new ways” (Zuboff & Maxmin, 2002, p. 291).

However, because of her emphasis on the necessity for “intellective skills” (abstracting, hypothesis-testing, reasoning skills) and for “acting-with” skills (interpersonal skills), and on the problem of interpreting the symbolic outputs of information technology, it is reasonable to infer that she was referring to a kind of understanding, of *insight* gained from having access to information. For instance, Zuboff (1988) mentioned that: “Significance is not a transparent feature of the data from the system; rather, significance is a construction that emerges from the application of intellective skill to the available data” (p.80-81). Thus, having access to information alone does not mean that transparency occurs; the combination of [access to information] + [intellective skills] + [acting-with skills] is more likely to achieve transparency as insight. This conclusion appears to gain support when she commented about the consequences of transparency: “Informating assumes that making the organization more transparent will evoke valuable communal insight” (Zuboff, 1988, p. 305).

Another important nuance about the concept of transparency as insight is that it follows a certain partition within an organization. In other words, an organization is stratified according to how transparency is distributed (i.e., who gets the insight about what goes on). In a 1991 interview (Zuboff & Stewart, 1991), she contended the following about transparency:

“The question is, Who benefits from this transparency? In the informed organization, you give it to everyone so people can all do their jobs better. In the old-style automation paradigm, you give it only to the managers so they can have a better view of what their workers are doing, thus increasing top-down control” (Zuboff & Stewart, 1991, p. 88).

In other words, the understanding of the organization that people gain by using information technologies is dependent on the structure of access to information. Having access to information is an essential prerequisite for understanding and being “in-the-know”. Zuboff (1988) argued that the structure of access to information derives from the structure of authority
and dependence. Thus, transparency might be employed as a technique of surveillance, by reinforcing hierarchical control, or it might be employed to delegate decision-making and empower workers.

Such partition of insight evidently raises issues of value conflicts (Allen, 2005) about who has the legitimacy to know what information about whom, and from which system. This suggests that researchers may approach the study of transparency in organizations from three complementary perspectives: (1) an empirical one which attempts to understand the actual partition of information in an organization (as many of the aforementioned study have attempted to do); (2) an institutional one which attempts to understand the legitimacy and power-related negotiations surrounding the establishment of the partition of information in organizations (as Allen (2005) did for instance), and (3) an ethical/moral one which examines the rightfulness of a certain partition of information arrangement in an organization. Such distinction thus means that researchers need to be careful to “differentiate information as a normative phenomena involving moral expectations (whether for protection or revelation and whether based on law, policy or custom) from the actual empirical status of the information as known or unknown” (Marx & Muschert, 2009, p.224).

**Transparency as information sharing.** Two studies defined information visibility as *information sharing*. Such a definition is illustrated by Straub and Watson (2001) when they comment on information visibility: “It is inevitable that information sharing between the firm and complementors (suppliers, outsourcers, strategic partners) and supplementors (competitors) will increase with the advancement of net-enablement” (p.341). Another instance where visibility was associated with information sharing is found in Swaminathan and Tayur (2003): “Visibility and Information Sharing: The prevalence of ERP allows firms to have access to data across their supply chains, which could be used for gaining better efficiency and effectiveness” (p.1391). The image evoked by the term information sharing is one of a Venn diagram where each circle represents the set of information of each participant and the overlaps represent common pools of
information. The problem with the use of the words “shared information” is that it could refer to both a process (the act of sharing, dividing, and distributing information) and an outcome (the part of the whole that is held in common by two or more entities). Hence, it seems that discussions of information sharing refer instead to access to information. To share information is to give, provide, and allow access to information. It is thus not surprising to see Swaminathan and Tayur (2003) refer to access to information in their definition of visibility as information sharing.

**Transparency as psychological safety.** Marchand, Kettinger, and Rollins (2001) provided a definition of transparency that stands out in comparison to the rest of the information systems literature. In their study about how organizations manage information, they suggested that transparency is one dimension of the broader concept of “information orientation”. They defined transparency as “treating errors, mistakes, failures, and surprises as constructive learning opportunities” (Marchand et al., 2001, p. 103). Their definition means that transparency occurs when people disclose and report their errors, mistakes, and failures in an honest and frank manner. This definition is quite close to the concept of psychological safety, which was introduced by Edmondson (1999) in the organizational studies literature. She defined psychological safety as the shared beliefs held by members of a group that the group is safe for interpersonal risk taking (Edmondson, 1999). In a study about how groups are able to learn from their errors and mistakes, she found that groups with high psychological safety had a significantly higher learning rate than groups that did not. The groups were also more effective than groups that scored low on psychological safety. Groups with high psychological safety discuss errors and mistakes without putting undue pressure on group members. In other words, groups with high psychological safety treat errors and mistakes as learning opportunities; they should be more transparent according to Marchand et al.’s (2001) definition.

**Visibility as exposure to public notice.** In twelve other instances, information systems analysts employed the term “visibility” to refer to the condition of exposure to public notice. In
those cases, the problem of meaning was usually obviated (whether to see means *to comprehend* or simply *to notice*) and the mechanisms that make entities visible or transparent are left unmentioned. Visibility as exposure to public notice does not necessarily mean that the “noticing” occurs. More precisely, it means that the entity has the potential of being noticed, since it is vulnerable (exposed) to being noticed. For the purpose of illustration, such an implicit definition of transparency/visibility is found in Argyris (1971) in his early study about the resistance to the implementation of information systems: “the MIS expert may ask that behaviour, policies, practices and norms that have been operating covertly be surfaced so that their contributions to the problem be made explicit. This requirement can be threatening because what has been hidden may be incriminating to some participants” (p.277, emphasis added). In this passage, things that were concealed from public notice are made visible when they are made explicit. Doolin (2004) also provided such a definition: “Scrutinizing clinical procedures and explicitly linking patient treatment decisions to standard costs make clinical activity visible and susceptible to intervention by management, who can then influence clinical decisions” (p.349). Cunha (2005) proposed a similar articulation: “Managers used the process of representing work to manage their visibility to senior management and the visibility of their employees’ representation work” (p.9). Others were not as specific by leaving unmentioned the mechanism through which transparency or visibility is achieved: “In the same way, ERP implementation can be observed as a technology of power that enables a much greater visibility of one’s workplace behavior” (Sia, Tang, Soh, & Boh, 2002, p. 25). Others imply that there are mechanisms that underlie transparency and visibility but they do not mention them either: “In settings such as control centres and news rooms, where people are engaged in concurrent independent activities which require real time coordination at particular moments, we find personnel using various practices and procedures through which they render particular actions ‘visible’ to others in relatively unobtrusive and non demanding ways” (Heath, Svensson, Hindmarsh, Luff, & Vom Lehn, 2002, pp. 333-334). Following Goffman (1959), Star and Strauss (1999) also discussed how requirement analysis make some kinds of work more
visible than others: “For any requirements analysis, understanding where in the relationship of visible to invisible work one would locate a given set of work practices is crucial” (p.22).

The idea of visibility has also been employed in information systems studies that investigate human-computer-interaction issues. Kasper (1996) deemed visibility as important to the calibration of a decision-support system (DSS) by requiring that “the user see the DSS work and at work, that the user see the logical operations performed by the DSS and their application to a specific problem” (p.224). This perspective on visibility originates from Norman’s (1988) principles of good design, in which he singled out visibility of functions as a reminder of the purpose of controls.

2.2.5 Synthesis and definition for transparency

In this section, I derive implications from this extensive literature review for the study of transparency. There are six main implications that can be derived from this collection of diverse and sometimes conflicting ideas about transparency (Table 5).

<table>
<thead>
<tr>
<th></th>
<th>Definition</th>
<th>There is no universally agreed definition of the concept of transparency; hence, any definition of <em>transparency</em> entails a choice among different theoretical assumptions.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Meaning</td>
<td>Some literatures refer to transparency as making something <em>hidden from</em> public notice while others refer to transparency as making something <em>exposed to</em> public notice.</td>
</tr>
<tr>
<td>3.</td>
<td>Function</td>
<td>Transparency is generally posited to fulfill a purpose within social systems.</td>
</tr>
<tr>
<td>4.</td>
<td>Orientation</td>
<td>The idea of transparency evokes the image of a perceptual field created and oriented by a <em>line of sight</em> that has an origin and a target. Depending on the assumptions made, the orientation of the line of sight varies between from the <em>self to others</em> and vice versa.</td>
</tr>
<tr>
<td>5.</td>
<td>Mechanism</td>
<td>The mechanism which creates the line of sight instantiating transparency varies between <em>access</em> and <em>insight</em>.</td>
</tr>
<tr>
<td>6.</td>
<td>Instrumentality</td>
<td>The extent to which transparency is controllable varies; some literatures assume that human agency has great instrumentality, others assume that transparency is a given of the situation.</td>
</tr>
</tbody>
</table>

Table 5. Summary of implications
**Definition.** One obvious finding of the review is that there is no universally agreed definition of the concept of transparency. Each literature has a different conception of the idea behind the term “transparency”. What complicates attempts to synthesize and unify these ideas is that different labels are also employed to refer to what seems to be similar ideas. Terms like secrecy, visibility, and seeing all seem to be used by the literatures to convey what are sometimes similar ideas across them. Thus, any attempts to a “definite” and “essential” meaning of transparency risk confronting claims that the definition violates assumptions of any given literature.

Nevertheless, I believe that it is necessary to attempt such synthesis, at least for the purposes of this study. Concepts serve a goal and usually have no meaning outside the nomological network of concepts in which they are embedded. As such, concepts exist mainly because they provide the building blocks (along with mechanisms) of explanations of puzzles to be solved. Hence, the synthesis I will provide does not attempt to supersede the meanings employed in each of the literatures, but to dig out the promising conceptual nuggets that may help us understand what could be meant when people talk about such a thing as “organizational” transparency.

**Meaning.** The second major implication from the literature review concerns the meaning of the word “transparency” when it was explicitly employed. Two distinct meanings have been found: transparency as invisibility and transparency as visibility. Note that some authors never actually employed the word “transparency” in their writings, although they evoked an idea that other authors labelled with the word “transparency” (e.g. "privacy" Altman, 1975; "awareness" Asch, 1952; "opacity" Feldman & Pentland, 2003; "seeing" Goodwin, 1994; "explicitness" Kiesler, 1971; "visibility" and "observability" Merton, 1968; "ignorance" Moore & Tumin, 1949; "publicity" Salancik, 1977a; "secrecy" Shils, 1966; "scrutiny" Sutton & Galunic, 1996; "structural secrecy" Vaughan, 1996; "secrecy" Weber, 1948; "seeing" Weick, 1979; "awareness" Weick, 2002).
A few consider that the word transparency evokes the image of something that is hidden from public notice: something that is “there” and exists, but that cannot be seen or perceived by the visual senses. Logically, to render invisible means that something else will now be visible (thus, the etymological root of “to appear through”). Not surprisingly, this is the conceptualization of transparency found in the architecture literature (Fierro, 2003; Rowe & Slutzky, 1963; Vidler, 2002). This idea is also found in the information systems literature concerned with technological infrastructure (Star & Ruhleder, 1996). An infrastructure that is transparent is one that disappears from view; that is outside “awareness”. When people use information technologies, the components that make the information technology work the way it actually does (the network, the power supply, the databases, etc.) tend to fleet out of consciousness; the infrastructure disappears, it becomes transparent. To put it into Heidegger’s words, infrastructure becomes “unready-at-hand” from “ready-at-hand” only when it breaks down; that is when it pops into awareness (Winograd & Flores, 1987).

The major part of the literature appears to consider that the word transparency evokes the image of something that is exposed to public notice: something that is acknowledged to exist in a perceptual field in a clear, obvious, and open manner. The conceptualizations of transparency found in philosophy (Descartes, 1996; Foucault, 1980; Starobinski, 1988), social psychology (Gilovich & Savitsky, 1999), sociology (Garfinkel, 1967; Simmel, 1906), anthropology (Lave & Wenger, 1991), economics (Morris & Shin, 2002; Prat, 2005; Stiglitz, 2000), political science (Finel & Lord, 1999, 2000; Florini, 1998; Jervis, 1985) organization studies (Adler & Borys, 1996; Case, 1998; Ferrante & Rousseau, 2001; Kellogg et al., 2006), accounting (Ball et al., 2003; Bushman, Piotroski et al., 2004; Richardson & Welker, 2001), institutional and corporate governance (Hebb, 2006; Otness, 2002; Stiglitz, 2003), operations management (Akkermans & Vos, 2003), and information systems (Kohli & Kettinger, 2004; Street & Meister, 2004; Zuboff, 1988) are consistent with this idea.
These two meanings may appear irreconcilable. This may be only an appearance due to how these meanings are framed. I propose that the conflict between the perspectives of transparency as visibility and transparency as invisibility has its origins in the root metaphor that is employed to refer to transparency. If we go back to the lexicographical meanings of the word transparency, we find that the word transparency connotes two different things, depending on whether the word is employed to refer to the physical realm or to the non-physical (conceptual) realm.

In the physical realm, transparency connotes the attribute of something that is “capable of being seen through”, “neither opaque nor translucent”, or “transmitting light rays so that objects on the other side may be distinctly seen”. Each of these phrases refers to the idea that something disappears, vanishes from view. In other words, when something is transparent in the physical realm, it is said to be invisible.

In the non-physical realm, transparency connotes the attribute of something that is “easily understood”, “very clear”, “easily recognized or detected”, “obvious”, “without guile or concealment”. Each of these phrases refers to the idea that something is potentially perceptible, conspicuous to the “eye of the mind” to employ an expression of Descartes. In other words, when something is transparent in the non-physical realm, it is said to be visible.

Therefore, when concepts referring to the idea of “transparency” are employed, the assumption that the idea of transparency is analog to the physical realm or to the non-physical realm is inevitably made implicitly. This implies that the assumptions about which realm “transparency” is an analogous need to be made explicit by information systems and organizational studies analysts. Note that some analysts resolve this ambiguity by avoiding the word transparency or by supplementing it by implicit or explicit references to the words invisibility (e.g. Star & Strauss, 1999), visibility (e.g. Merton, 1968; Zuboff, 1988) or observability (e.g. Coser, 1961; Merton, 1968), instead of solely relying on the word transparency to make their case.
Function. Whether the idea of transparency is rooted in the physical or the non-physical realm, the literature review shows that transparency usually has a function; transparency is assumed to do something within a social system. The macro-sociology literature employed the idea of transparency (and relatively equivalent ideas such as privacy, secrecy, and ignorance) to build functional explanations of social dynamics. For instance, Merton’s (1968) theory states that the function (consequence) of transparency is to ensure social control, that is the identification, prevention, and correction of behaviours that deviate from norms within a role-set. In the information systems literature, Zuboff (1988) proposed that transparency generated by technologies could serve the functions of controlling work or of fostering empowerment, depending on how technologies were appropriated in an organization.

Orientation. The review suggests another commonality across all literatures: the word “transparency” evokes the image of a perceptual field created and oriented by a line of sight that has an origin and a target. The target can be said to be transparent to the origin. The word transparency necessarily implies the existence of an observer and an actor, to use socio-psychological terms (Gilbert & Malone, 1995), or of a subject and an object (Foucault, 1975), to use sociological terms. While all literatures implied an origin and a target for transparency, orientation varies across literatures.

Three orientations can be found about the idea of transparency. Transparency can flow (1) from others to the self, (2) from the self to others, (3) from both the self and others at the same time. These orientations are applicable to the individual level of analysis, but also to higher levels of analysis, such as group and organizational levels of analysis. These distinctions are illustrated by Figure 5 below.
Consider the following examples. The illusion of transparency in social psychology (Gilovich & Savitsky, 1999) implies that people overestimate how much others know about their inner states. In this case, the orientation of transparency flows from *self* to *others*. This orientation is the same that is implicitly employed by the literature about commitment (Kiesler, 1971; Salancik, 1977a), social facilitation (Zajonc, 1965), and scrutiny (Sutton & Galunic, 1996) for instance. These streams of literature have in common that they study what happens to people (or to a group of people) when they are exposed to public notice (orientation #2 in Figure 5). In comparison, the institutional and corporate governance literature refers to transparency as something that allows stakeholders (*self*) to obtain information and knowledge about the decision making practices and outcomes of an organization (*others*). Thus, the orientation of transparency varies between orientation #1 and orientation #2 in Figure 5, depending on the focus of inquiry. In other words, the orientation is a distinction mostly made for analytical purposes depending on what phenomenon is being studied.
The orientation aspect of transparency has a crucial role in the argument developed by Zuboff (1988) about the automating and informating capacities of information technology. Buried in the dense sentences of her argument is the contention that a particular type of transparency is attached to each capacity. The automating capacity, by making information flow from the bottom-upward and information access contingent upon the hierarchical authority structure of the organization, is associated with *vertical* or *unilateral* transparency or in other words, orientation #1 from the perspective of the manager and orientation #2 from the perspective of the front-line workers. The *informating* capacity, by not putting any horizontal or vertical restrictions on information flows and access, is associated with *universal transparency* or in other words, orientation #3. Zuboff (1988) elaborated on this distinction between automating and informating in the following way:

“This rendering of panoptic power reflects an important evolution of the original concept. It rests on a new collectivism in which “the many” view themselves and each views “the other”. Horizontal visibility is created even as *vertical visibility* is intensified. The model is less one of Big Brother than of a workplace in which each member is explicitly empowered as his or her fellow worker’s keeper. Instead of a single omniscient overseer, this panopticon relies upon shared custodianship of data that reflect mutually enacted behaviour. […] Shared *universal transparency* can create a sense of mutual participation in and responsibility for operational and behavioural events. Joint access to the behavioural text can mean opportunities for joint learning” (Zuboff, 1988, pp. 351, 361; emphasis added).

Recall that a similar argument was made in the passage by Zuboff and Stewart (1991) quoted previously in this chapter.

The conclusion that can be drawn from the above is that any analysis of transparency will be incomplete without taking into consideration the orientation of the concept. To assess transparency on a scale from “high” to “low” provides an incomplete picture because such an approach is silent about who gets to see who and what. Let’s imagine the following scenario. Assuming that the “self” consists of a manager and that the “others” consists of his subordinates,
transparency might be high on orientation #1, low on orientation #2, and average on orientation #3 if one assumes an averaging aggregation mechanism. The implications for each orientation of transparency might be quite different.

**Mechanism.** The literature suggests that the mechanisms which create transparency vary. These mechanisms reflect the distinctions found in the reviews of the lexicographical meanings of the word transparency. Part of the literature suggests that transparency is generated by making something physically available or accessible, most generally information. The other part of the literature suggests that transparency is generated by the condition of insight, of having knowledge of. While some authors are silent about the mechanisms (e.g. Simmel, 1906), others confuse the mechanisms (e.g. Zuboff, 1988), and another set of authors explicitly distinguish the mechanisms (e.g. Finel & Lord, 1999).

Two explanations could be put forward to account for the existence of the two mechanisms. The first is that some authors assume that once access is provided, insight necessarily follows. Insight is implicitly assumed to occur. Access is deemed as a necessary but insufficient condition for transparency to exist, but cognition (insight) is not deemed as a concern for the phenomena studied. This assumption might be pragmatic for the purposes of some fields of inquiry where researchers are less interested in understanding cognitive phenomena in comparison to others issues (e.g., economics, accounting, institutional and corporate governance, operations management). To study access without studying insight is sufficient to explain the phenomena of interest. Figure 6 shows the process by which transparency is achieved and implied when insight is assumed to be a tacit mechanism.

![Figure 6. Insight as a tacit mechanism for transparency](image_url)
The second explanation is that some authors might consider that access is not the only mechanism that should be considered when studying any transparency-related phenomena. This means that access is not the only and sufficient condition for transparency to occur. Other variables that influence insight might enter into the explanation. For instance, Zuboff (1988) argued that access to information is a necessary, but insufficient condition for the attainment of transparency; intellective skills are needed in order to make sense of the outputs of information technology.

![Diagram](image_url)

**Figure 7. Insight as an explicit mechanism for transparency**

**Instrumentality.** Literatures also vary in their assumptions about the extent to which transparency is amenable to conscious and purposeful manipulation. Some literatures assume that human agency has great instrumentality, others assume that transparency is a given of the situation.

For instance, in the organization studies literature, Vaughan (1996) identified *structural secrecy*, a concept that could have been labelled transparency without any change in its meaning, as one of the causes leading to the normalization of deviance at NASA in the events leading up to the Challenger accident. Vaughan (1996) argued that because structural secrecy is a by-product of the division of labor, whatever means that would be taken to attenuate structural secrecy are
almost destined to fail. She further argued that independently of the particular partition of tasks the division of labor involved, the conditions fostering the variable disjunction of information (Turner, 1978) are generated. Thus, from the perspective adopted by Vaughan (1996), transparency is a structural given of the situation not amenable to manipulation by human agency.

In comparison, Zuboff’s (1988) and Merton’s (1968) ideas suggest that transparency might be controllable through managerial intervention. Zuboff (1988) put the emphasis on the configuration of access in information technology, information sharing, and on training as three mechanisms through which managers can alter transparency. Merton (1968) identified two mechanisms that may have implications in an organizational context: the communication structure between roles and the roles’ motivation and expectation to be informed and to inform others. Both of these mechanisms are amenable to managers’ control. Interestingly, the mechanism of altering the communication structure between roles identified by Merton (1968) engulfs the mechanism of altering the structure of information access permissions in an organization.

2.3 Conclusion

This review of the concept of transparency across a broad and inclusive set of literatures has permitted me to assemble the foundations of a conceptualization for transparency. The main insights gained from this review are that (1) there is no joint agreement about the essence of transparency and attempts to identify this may be fruitless due to the divergence in ontological and epistemological perspectives; (2) transparency could as well refer to the condition of being hidden as to the condition of being exposed to public notice depending on whether transparency is grounded in a physical or a non-physical metaphor; (3) the concept of transparency usually fulfills a function within a social system; (4) in a social context, transparency evokes a perceptual field with an oriented line of sight between at least two entities (people, groups, organizations,
etc.); (5) transparency emerges either at the moment of access or at the moment of insight; (6) transparency is amenable to control up to a certain extent, depending on the assumptions made.

This review also provided cues about what indicators might be useful in assessing the orientation and the intensity of transparency. To empirically assess the transparency of an organization, one may employ as an indicator, for instance:

- the partition of information spaces across the organization (Kmetz, 1984; Turner, 1978; Vaughan, 1996);
- the partition of information access permissions and obligations between roles (Street & Meister, 2004; Zuboff, 1988);
- the nature and content of information that is exchanged between roles and the motives that people follow in those exchanges (Cunha, 2005; Heath et al., 2002; Swanson, 1992);
- the actual knowledge and awareness that people have of what goes on in the organization in terms of actions, outcomes, events, and resource allocation decisions (Herrmann et al., 2002; Holzner & Holzner, 2006; Merton, 1968; Pasmore, 1998; Weick, 2002).

Thus, the insight gained from the literatures also suggests that the consequences of transparency are various and far-reaching. Many consequences might be engendered from variations in orientation and intensity of transparency. Despite the insights gained, this literature review has also shown the fragmented and early state of theorizing about the nature and the functions of transparency in organizations. These insights provide the basis of an answer to research question #1 and will be further elaborated upon in the next chapters.
Chapter 3

Research Design

This chapter discusses the research design that I employed to elaborate a theory of how technology appropriations are enacted in organizations to satisfy transparency functions and why they vary among organizations. I first motivate the choice of an exploratory theory elaboration case study design. Next, I present and explain the data collection procedures that I employed. I present the rationale underlying the choice of four similar high-growth ventures from the business and entertainment software industries as well as the choice of interview and documentary sources of data. I also describe the procedures that I employed to analyze the data collected: building a case database and a chain of evidence, elaborating descriptive codes, and engaging in an iterative explanation-building and pattern-matching process.

3.1 Overview of the research design

The goal of this study is to develop a theory that enables one to learn something about (1) how transparency manifests itself in organizations, (2) how people appropriate technologies to satisfy transparency functions, (3) why technology appropriations may vary from one organization to another, and (4) what consequences different types of transparency engender. Rather than attempting to test a particular theory deducted from the literature, I sought to understand the socio-technical dynamics that generate different types of transparency. While the literature provided clues and hints about answers to these questions, the phenomenon of transparency was not understood well enough at the onset of this study to provide a coherent, parsimonious, and powerful account of the functions of transparency and how they relate to information technology use. An important first step in answering the research questions outlined above is gaining a better understanding of how transparency is experienced by organizational participants and how they employ technologies to fulfill the need for transparency. Confirmatory
designs were deemed as less appropriate for my purposes since my research questions relate to a “real-life” phenomenon in need of better understanding (Yin, 1994). Without firm a priori empirical foundations about the phenomenon, confirmatory designs that emphasize theory testing and prediction at this stage appeared to be premature.

An exploratory case study design (Eisenhardt, 1989), which mixes inductive and deductive theory elaboration processes from qualitative data in an iterative fashion, better fits the need to provide detailed, vivid, and illustrative portrayals of people appropriating technology to fulfill transparency functions. It also allowed me to collect data about contextual elements that couldn’t be identified a priori and that might provide insights into the research questions (Paré, 2004). Another important consideration for this research design is that I did not adopt “blank slate” assumptions; prior theorizing from the literature provided an orienting frame from which overlaps, contradictions, refinements, and qualifications could be found (Miles & Huberman, 1994, p. 22).

Based on the assumptions and definitions that are specified in chapter four, the exploratory case study examines the functions of IT-enabled transparency in four high-growth ventures from the entertainment and business software industries. The four organizations were selected in order to maximize the variation of theoretical attributes that were believed a priori, based on the literature, to be related to transparency functions in organizations. The data collected was principally qualitative in nature: I conducted 55 interviews with 52 representatives of top management and other key occupational groups within the organizations. I also relied upon extensive secondary documentary sources to provide insights into the origins of the contextual conditions faced by the organizations. The overall research design is illustrated in Figure 8. In the next sections, I will explain the data collection and analysis procedures I followed and adapted from the guidelines put forward by Eisenhardt (1989), Miles and Huberman (1994), Paré (2004), and Yin (1994).
3.2 Data collection procedures

3.2.1 Case selection

The selection procedure I adopted was inspired by the sampling procedure employed by Ouchi and Johnson (1978) as part of their research program which led to the formulation of the “Theory Z” organizational ideal type. The procedure is equivalent to the common procedure in experimental psychology of administering a test to screen for the trait under study. It yields a sample consisting of the cases which score highest and lowest on the attributes under investigation. In other words, it provides a comparative sample based on polar opposites rather than a truly representative sample. This procedure is often referred to as replication based on theoretical sampling of contrasts and extremes, or polar opposites (Eisenhardt, 1989; Yin, 1994). The sample consists of what is thought a priori to be extremes in the distribution of cases and not necessarily the modal or typical cases. Note however that the attributes that are chosen a priori may not necessarily be the ones that end up being theoretically significant in the final explanation, as this research design is exploratory, not confirmatory. This is no critical flaw since this procedure is only useful in the sense that it acts as a ploy to maximize empirical diversity and
thus the chance that significant differences can be observed in the phenomena studied (Becker, 1998, pp. 71-83).

For the purpose of this study, I choose to focus on four cases, which originated from a specific industry and geographical space in order to follow the advice that comparing similar contexts should lead to insights into the effects particular to different technologies (Leonardi & Barley, 2008; Markus, 2000). The objective was thus to select two organizations which, a priori, exhibit high transparency and two which exhibit low transparency. By focusing on a single industry and holding the broader institutional and task contexts mostly constant, the objective was to compare “apples with apples, and oranges with oranges” as the saying goes. Such an approach thus allowed me to reduce significant sources of variations in technology appropriations to satisfy transparency functions in organizations that could be due to broad, macro institutional pressures that are less amenable to managerial intervention. While these sources are crucially important and interesting to study, it was believed that given the current knowledge about technology appropriations and transparency functions, focusing on a single industry provided a better opportunity to tease out significant findings by comparing organizations that faced similar contextual challenges. Yet, focusing on what seems to be a priori similar contexts does not reduce sources of variation completely. As I explain in chapter nine, significant variations in contextual conditions were still found to influence differences in how technology appropriations were enacted to satisfy transparency functions despite this procedure. Figure 9 illustrates the steps of the procedure employed.
Identification of theoretical criteria for the selection of industry sector

The first criterion used to choose the industry from which the cases were selected consists of the intensity of information technology utilization. The idea is to select one industry where information technology plays a core role in activities, either as production technology or as a support technology to industry processes.

The second set of criteria used to discriminate industries is comparability and size of the population. The industry needs to be composed of a large sample of firms that are of comparable size. The more the organizations that compose an industry are alike in terms of size, the more valid the comparison will be between the contrasting cases. The assumption here was that variation in size had to be minimized, since small and large firms face different business challenges. The size of the population of firms in an industry matters both for theoretical and pragmatic reasons. The larger the number of firms within a given industry, the more likely that diversity in practices within the industry also increase (that may not be always the case, but as a general principle, it makes sense). Pragmatically, a large number of firms in an industry reduce
the risk of not getting access to contrasting cases. If access is denied to a specific firm, it is possible to use next best alternative and so on.

The third criterion used to discriminate industries is location. The industries need to be composed of organizations that are for the majority headquartered in Eastern Ontario or Quebec. While I do have financial resources at my disposition to cover travelling expenses, it will be more time-efficient and easier to get in contact with potential informants if the organizations are located in Eastern Ontario and Quebec.

The fourth criterion to be used to discriminate industries is the extent of local headquarters. To answer the research questions, I need to collect data from individuals that hold the power to make decisions about what technology to appropriate and other significant practices. I will be more likely to get access to these various roles if the industries are composed of organizations that are locally headquartered. If I had chosen an industry mostly composed of branches with headquarters outside of Quebec or Eastern Ontario, I may have missed some of the key dynamics that surrounds transparency functions simply because they would have been outside my reach.

<p>| | |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>(1)</td>
<td>Intensity of information technology utilization</td>
</tr>
<tr>
<td>(2)</td>
<td>Diversity of organizations, but of comparable size</td>
</tr>
<tr>
<td>(3)</td>
<td>Location: Eastern Ontario and Quebec</td>
</tr>
<tr>
<td>(4)</td>
<td>Extent of local headquarters</td>
</tr>
</tbody>
</table>

Table 6. Theoretically-based criteria to select industries

Selection of industry sectors

The 2002 North American Industry Classification Systems (NAICS) was employed as a basis to classify industries within the Canadian economy. To assess the intensity of information technology utilization, the Survey of Electronic Commerce and Technology (survey #4225) by
Statistics Canada\textsuperscript{7} was used as a source of data (Appendix 3). In the spring of 2007 when this case sampling procedure took place, the latest year for which data was available was 2005. The survey collects information on information technology such as the use of computers, Internet and web sites, as well as the deployment of electronic commerce applications from a sample of Canadian organizations.

Of particular interest in this survey are five variables: (1) the percentage of organizations that are presently using an intranet, (2) the percentage of organizations that are presently using network and information security technology, (3) the proportion of employees in the industry’s organization that have direct access to a personal computer, (4) the proportion of employees in the industry’s organizations that have direct access to email, (5) the proportion of employees in the industry’s organizations that have direct access to the Internet. These five variables appear to have face and content validity for an index of the extent of information technology utilization per industry.

To facilitate comparison across industries and sources of data, Z scores were computed. Z scores provided a better basis for comparison than absolute rankings, since they retain information about the distribution of the data. Hence, with Z scores, it is possible to assess how much an industry sector departs from the mean of the economy. To cross-check the validity of the data obtained from the survey, the industry rankings were reviewed by an information technology consultant with more than 30 years of experience in various industry sectors. No anomalies were found by the consultant. The top 10 and the bottom 10 industry sectors according to the index of the intensity of information technology utilization are presented on the next page.

\textsuperscript{7} A brief summary of the procedures employed to conduct the survey is provided in Appendix 3.
<table>
<thead>
<tr>
<th>Rank</th>
<th>Description (NAICS Code)</th>
<th>Intranet</th>
<th>Security</th>
<th>Computers</th>
<th>Email</th>
<th>Internet</th>
<th>Mean Z</th>
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<tr>
<td></td>
<td><strong>Top 10 industries</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>1</td>
<td>Information services and data processing services (518)</td>
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<td>1.74</td>
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<td>1.64</td>
<td>2.03</td>
<td>2.00</td>
<td>1.62</td>
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<td>0.84</td>
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<td><strong>Bottom 10 industries</strong></td>
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<td>-0.53</td>
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<td>-1.13</td>
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<td>Food manufacturing (311)</td>
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<td>-1.18</td>
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<td>Transit and ground passenger transportation (485)</td>
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<td>-1.90</td>
<td>-1.03</td>
<td>-0.98</td>
<td>-1.02</td>
<td>-1.15</td>
</tr>
<tr>
<td>92</td>
<td>Wood product manufacturing (321)</td>
<td>-0.56</td>
<td>-0.35</td>
<td>-1.95</td>
<td>-1.41</td>
<td>-1.60</td>
<td>-1.17</td>
</tr>
<tr>
<td>93</td>
<td>Agriculture, forestry, fishing and hunting (110)</td>
<td>-1.31</td>
<td>-1.39</td>
<td>-1.31</td>
<td>-1.05</td>
<td>-0.96</td>
<td>-1.20</td>
</tr>
<tr>
<td>94</td>
<td>Truck transportation (484)</td>
<td>-1.30</td>
<td>-2.02</td>
<td>-1.01</td>
<td>-1.00</td>
<td>-0.90</td>
<td>-1.24</td>
</tr>
<tr>
<td>95</td>
<td>Gasoline stations (447)</td>
<td>-1.18</td>
<td>-1.95</td>
<td>-1.03</td>
<td>-1.52</td>
<td>-1.42</td>
<td>-1.42</td>
</tr>
<tr>
<td>96</td>
<td>Food and beverage stores (445)</td>
<td>-0.83</td>
<td>-1.97</td>
<td>-1.56</td>
<td>-1.57</td>
<td>-1.59</td>
<td>-1.50</td>
</tr>
<tr>
<td>97</td>
<td>Accommodation and food services (720)</td>
<td>-1.01</td>
<td>-2.02</td>
<td>-1.73</td>
<td>-1.69</td>
<td>-1.72</td>
<td>-1.64</td>
</tr>
</tbody>
</table>

Source: Statistics Canada, Survey of Electronic Commerce and Technology 2005
Legend:
Intranet: Z-score of the % of organizations that are presently using an Intranet
Security: Z-score of the % of organizations that are presently using security systems
Computers: Z-score of the % of employees that have direct access to a computer
Email: Z-score of the % of employees that have direct access to email
Internet: Z-score of the % of employees that have direct access to the Internet at work

Table 7. Intensity of information technology utilization (ranked by Mean Z scores)
The second set of criteria that need to be considered for industry sector selection is that the sectors need to have a large number of organizations, but that are of relatively comparable size, the organizations of the industry sector need to have its majority of headquarters locally, in Eastern Ontario or the province of Québec. Following a close examination of the top 10 industry sectors in corporate directories such as Industry Canada’s Strategis and Les Affaires 500 the best fit was the “Computer systems design and related services” sector. The sector, as defined by the NAICS, includes not only IT consulting and business software organizations, but also multimedia and video games organizations. Hence, for the purpose of simplicity, it will be referred to as the business and entertainment software industry.

The business and entertainment software industry does have an intensive utilization of information technology, which is mainly due to the nature of the output produced by the industry sector. In the computer systems design sector, information technology is not only used to automate support work processes, but is also part of the core operating work processes. Workers in those organizations are considered typical knowledge workers and they are staffed on projects found to be the contemporary workplace environment.

A final list of 40 organizations of comparable size which were locally owned or headquartered in the Province of Québec were drawn from the Les Affaires directory\(^8\). The organizations were all relatively small, as they ranged from 75 employees to 600 employees.

**Identification of theoretical criteria to select organizations**

The goal of the research design is to select contrasting cases based on their *a priori* assessed degree of internal *transparency*. Because such assessment cannot be made without having some *a priori* knowledge of the cases, the procedure to select cases relied on an assessment of *perceived* internal transparency from a panel of industry insiders. As already mentioned, the use of this procedure was motivated by the need to maximize diversity of

\(^8\) The directory may be found at the following address: [http://www.lesaffaires.com/](http://www.lesaffaires.com/)
organizational practices, and was not intended to fulfill any confirmatory role based on a particular hypothesis.

The assumption here is that industry insiders, as a group, are able to pinpoint the extreme cases based on organizational traits that have been suggested to be related to transparency functions in past literature. One paragraph descriptions of the prototypes of two organizations, one exhibiting high internal transparency and another exhibiting low internal transparency were written in both French and English based on these traits. The traits derived from the literature are given in the table that follows.

<table>
<thead>
<tr>
<th>Traits of a transparent organization</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Open-book management is practiced</td>
<td>Ferrante and Rousseau (2001)</td>
</tr>
<tr>
<td>(6) Little information is classified as confidential</td>
<td>Pfeffer (1977) Zuboff (1988)</td>
</tr>
<tr>
<td>(7) Employee, teams, and unit objectives are public</td>
<td>Lawler (1993) Street and Meister (2004)</td>
</tr>
<tr>
<td>(8) Information about individual outputs, compensation and rewards is public</td>
<td>Lawler (1993)</td>
</tr>
</tbody>
</table>

Table 8. Traits of a transparent organization derived from the literature
A potential threat to the validity of this procedure is that one of the descriptions may be more socially desirable than the other. To reduce this threat, each description was written in as a neutral, attractive, and positive tone as possible. The short descriptions were pre-tested with a convenience sample of 5 expert-raters in organizational studies and information systems (one master and one doctoral student, as well as three practitioners) in order to ensure that the short descriptions are clear and that none of the two descriptions presents socially desirable traits. The procedure followed for the pre-test consisted of asking informants to read both short descriptions, and then indicate how much they agree or disagree with each of the following statements (on a scale ranging from [1] strongly disagree to [5] strongly agree):

1. The firms are different with regard to how they are managed.
2. One firm is better managed than the other, based on whichever criteria I feel is more relevant.
3. Firm A is *transparent* with regard to its information handling practices.
4. Firm B is *not transparent* with regard to its information handling practices.

The short descriptions were modified following the scores and the comments provided by the raters. Two iterations were necessary for the raters to agree about statements #1, #3, #4. An additional iteration was necessary to make the raters to approach agreement on statement #2. The short descriptions that have been written based on these traits are found below.
**Firm A**

At Firm A, managerial practices focus on cohesion and motivation. Information about major resource allocation procedures and decisions are discussed openly with employees to maximize buy-in. Managers monitor and collect ideas for improvement from front-line employees. Operational metrics and strategic plans are widely distributed and accessible across business units and authority levels. Information about Firm A’s relative performance in comparison to its competitors is made available to middle managers and employees. To classify information as confidential at Firm A is the exception, not the norm.

**Firm B**

At Firm B, managerial practices focus on discipline and expediency. Availability of information about major resource allocation procedures and decisions follows the structure of accountability. Budgets and schedules are closely monitored by managers so they can initiate rapid corrective action. Strategic plans are carefully distributed to those in appropriate authority positions to use the information. Information about Firm B’s relative performance vis-à-vis its competitors is collected and discussed at a strategic level to facilitate control and prevent leaks to competitors. To classify information as confidential at Firm B is common and provides security for key intellectual property and knowledge assets.

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**Table 9. Short descriptions used in sampling questionnaires**

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*Rating the organizations from the business and software industry*

Once the pre-tests were completed, a survey using a small panel of industry insiders was performed. Comparable cases from the business and entertainment software industry were selected by asking the industry insiders to rate the 40 organizations, by using the short descriptions as a guide, in terms of transparency. I compiled a sample frame from publicly available directories of financial analysts following the industry and prominent managers working in the industry. I also compiled a list of trade journal editors and trade association officers of the industry (e.g. *Information Technology Association of Canada, Canadian Advanced Technology Association, Canadian Interactive Digital Software Association, Alliance NumériQC, Fédération Informatique du Québec, Réseau Inter LogiQ, Regroupement des Producteurs Multimédia*). In total, 50 potential respondents were included in the sample frame.
An electronic questionnaire containing the pair of short descriptions and an alphabetically-ordered list of the organizations sampled in step 3 (see Figure 9 above) was designed. Half of the questionnaires had the transparent condition listed first, and the other half of the questionnaires had the not transparent condition listed first. The questionnaires were randomly assigned to respondents. In the questionnaire, I asked the respondents to identify as many organizations as possible in this industry that they believe are “basically like Firm A” and as many organizations as possible that they believe are “basically like Firm B”. A third category was “I don’t know”.

An invitation to fill the electronic questionnaire was sent by email to the 50 industry insiders. The invitation presented the broad objectives of the research and assured that participants’ responses would be kept confidential. A reminder email was sent one week later to all insiders; the email also included a note thanking those that had already responded for their participation. Three days later, I contacted all insiders by phone to further increase the response rate. The procedure yielded 15 responses in total for a 30% response rate.

The data was analyzed through exploratory cluster analysis, in a procedure similar to that employed by Ouchi and Johnson (1978). The objectives of the analysis was to determine (1) the proportion of organizations that are members of the classes “basically like Firm A”, “basically like Firm B” or “neither like Firm A nor Firm B”; and (2) the prototypical organizations for each class. The number of “votes” from each category for the organizations were first counted and organized in a matrix.

From this matrix, a cluster analysis was conducted with SPSS. Cluster analysis is a data analysis technique that aims at sorting different objects into groups in a way that the degree of association between two objects is maximal if they belong to the same group and minimal otherwise. The procedure is conceptually similar to latent class analysis but the purpose is exploratory instead of confirmatory. The particular technique that was employed is k-means clustering, which allows setting an a priori number of clusters. The clustering algorithm was
stopped after three steps, since three clusters were hypothesized to exist: organizations that are basically like Firm A, organizations that are basically like Firm B, and those that are not like Firm A nor B or that have unknown practices. Each cluster was then inspected to identify candidates for the most representative of Firm A, of Firm B, and of the others. The results of the procedure are shown in Table 10.

One difficulty I encountered at this step was that it became clear that industry insiders had uneven knowledge of the organizations included in the sample; they knew about the practices of 6 organizations on average. This may be explained by the fact that the organizations were relatively small and thus may have lacked media coverage, or the industry insiders might not have had the opportunity to interact with the organizations.
### Table 10. Results of Sampling Questionnaire

<table>
<thead>
<tr>
<th>Cluster</th>
<th>&quot;Transparent&quot; Votes</th>
<th>&quot;Not Transparent&quot; Votes</th>
<th>&quot;Don’t Know&quot; Votes</th>
<th>Cluster</th>
</tr>
</thead>
<tbody>
<tr>
<td>CasualGames</td>
<td>5</td>
<td>0</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>Firm 1</td>
<td>5</td>
<td>2</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>Firm 2</td>
<td>4</td>
<td>1</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>EdgeSoft</td>
<td>6</td>
<td>4</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Firm 3</td>
<td>5</td>
<td>3</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Firm 4</td>
<td>4</td>
<td>2</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>Firm 5</td>
<td>3</td>
<td>1</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>Firm 6</td>
<td>3</td>
<td>1</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>Firm 7</td>
<td>2</td>
<td>0</td>
<td>13</td>
<td>1</td>
</tr>
<tr>
<td>Firm 8</td>
<td>2</td>
<td>0</td>
<td>13</td>
<td>1</td>
</tr>
<tr>
<td>Firm 9</td>
<td>5</td>
<td>4</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>TradSoft</td>
<td>3</td>
<td>2</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>Firm 10</td>
<td>2</td>
<td>1</td>
<td>12</td>
<td>1</td>
</tr>
<tr>
<td>Firm 11</td>
<td>2</td>
<td>1</td>
<td>12</td>
<td>1</td>
</tr>
<tr>
<td>Firm 12</td>
<td>2</td>
<td>2</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>Firm 13</td>
<td>1</td>
<td>2</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>Firm 14</td>
<td>1</td>
<td>2</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>Firm 15</td>
<td>3</td>
<td>4</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Firm 16</td>
<td>1</td>
<td>3</td>
<td>11</td>
<td>2</td>
</tr>
<tr>
<td>Firm 17</td>
<td>0</td>
<td>2</td>
<td>13</td>
<td>2</td>
</tr>
<tr>
<td>Firm 18</td>
<td>0</td>
<td>2</td>
<td>13</td>
<td>2</td>
</tr>
<tr>
<td>Firm 19</td>
<td>3</td>
<td>5</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Firm 20</td>
<td>3</td>
<td>5</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Firm 21</td>
<td>1</td>
<td>4</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>Firm 22</td>
<td>0</td>
<td>3</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>Firm 23</td>
<td>1</td>
<td>5</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>Firm 24</td>
<td>1</td>
<td>5</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>Firm 25</td>
<td>1</td>
<td>5</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>Firm 26</td>
<td>0</td>
<td>4</td>
<td>11</td>
<td>2</td>
</tr>
<tr>
<td>Firm 27</td>
<td>0</td>
<td>4</td>
<td>11</td>
<td>2</td>
</tr>
<tr>
<td>Firm 28</td>
<td>3</td>
<td>7</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Firm 29</td>
<td>2</td>
<td>6</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Firm 30</td>
<td>0</td>
<td>5</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>Firm 31</td>
<td>3</td>
<td>8</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Firm 32</td>
<td>2</td>
<td>7</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Firm 33</td>
<td>0</td>
<td>6</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>BigGames</td>
<td>2</td>
<td>9</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Firm 34</td>
<td>2</td>
<td>9</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Firm 35</td>
<td>0</td>
<td>8</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Firm 36</td>
<td>2</td>
<td>11</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

**Selection of the organizations and field entry**

Between January 2008 and April 2008, I approached the “top 4” organizations within the the most and least transparent clusters to participate in my study. I made initial contact by email with an executive from each organization and then followed-up with a phone call one week later if I hadn’t received a response. A spreadsheet was used to keep track of the interactions with the organizations and key informants. The participation of the first three cases was secured from two
weeks to six weeks after initial contact (EdgeSoft, CasualGames, BigGames\(^9\)). Due to the difficulty of getting a fourth case coming from the “not transparent” clusters (or simply ranked much lower in comparison to the two “transparent” cases), I approached additional cases coming from the “transparent” and “mixed” clusters. Since I had already recruited two cases from the entertainment software sub-sector (CasualGames and BigGames), I approached organizations from the business software development sub-sector. TradSoft thus became the fourth case of the study. All organizations are ventures which have experienced significant growth in the past and/or continue to experience such growth. TrafSoft and EdgeSoft operate in the business software development industry, while BigGames and CasualGames operate in the entertainment software (video games) sub-sector\(^10\). The following table provides an overview of the organizations’ attributes.

<table>
<thead>
<tr>
<th>Ownership</th>
<th>TradSoft</th>
<th>EdgeSoft</th>
<th>BigGames</th>
<th>CasualGames</th>
</tr>
</thead>
<tbody>
<tr>
<td>Founder-CEO</td>
<td>Publicly-traded corporation</td>
<td>CEO</td>
<td>Founders-CEO</td>
<td></td>
</tr>
<tr>
<td>Product</td>
<td>Vertical Business Software</td>
<td>Vertical Business Software</td>
<td>Console Video Games</td>
<td>Casual Video Games</td>
</tr>
<tr>
<td>Location</td>
<td>Large Canadian city</td>
<td>Canada, France, UK</td>
<td>Large Canadian city</td>
<td>Mid-sized Canadian city</td>
</tr>
<tr>
<td>Employees (2008)</td>
<td>97</td>
<td>178</td>
<td>425</td>
<td>114</td>
</tr>
<tr>
<td>Age (in years)</td>
<td>28</td>
<td>8</td>
<td>16</td>
<td>10</td>
</tr>
</tbody>
</table>

Table 11. Description of selected cases

\(^9\) Throughout this dissertation, the names of the organizations are pseudonyms to preserve anonymity.

\(^10\) To better understand the broad macro dynamics faced by BigGames and CasualGames, a descriptive overview of the entertainment industry’s features is provided in Appendix 7. This description was written at the time that I went to the field to collect the interview data for this research as a way to better understand the contexts of BigGames and CasualGames since very few systematic overviews of the entertainment software industry were available at the time. In comparison, the dynamics of the business software development industry had been researched and discussed in much further detail (e.g. Sawyer (2000) examined the key institutional, cultural, and business differences between the management of business software development processes in comparison to customized IS development processes, while Cusumano (2004) later provided an examination of software business models).
In my initial contact with the organizations, I provided a short synopsis of the purpose of the study, as well as a short summary of the previous research I have already done in order to establish my credibility. I explained the relevance of the research in terms of how their participation would contribute in building an understanding of how their use of information technology may impact bottom-line results and internal communication. I thus made clear that this study didn’t consist of an “audit” and that I wouldn’t be acting as a consultant since I would not provide them with any expert opinion on their activities apart from a summary of the research findings. I made clear that I may ask questions about sensitive issues. I also made sure that the purpose of each interview was understood and agreed upon by each potential informant. To make sure that my questions were relevant to my participants’ context, I reviewed beforehand publicly available documentary sources to become familiar with the organization’s history and business.

3.2.2 Unit of analysis

The literature review suggested that transparency might manifest itself at two levels. It might be described at the level of entire organizational units (in a way analogous to “organizational culture” or “organizational climate” concepts); or it might be described at the level of roles (occupations) because of systematic differences due to social structure (Merton, 1968). I thus concurrently focused during the interviews on how transparency manifests itself within specific occupations and between occupations within an organization. This means that two levels of analysis were used to make sense of the data collected: (1) the level of the occupations – within-occupations – and (2) the level of the organization – between-occupations. In other words, the case study will consist of embedded units of analysis (Dubé & Paré, 2003; Yin, 1994).

At the occupation level, I was interested in what technologies workers employed to conduct their tasks and the ranges of information access, gathering, manipulation, and sharing practices implicated. These practices were assumed to influence how the members of each
occupational community experienced transparency. Furthermore, I allowed for coverage of both technology appropriations and non-technological practices. I catalogued the use of these practices through multiple perspectives from my various informants.

At the organizational level, I catalogued the interdependencies between occupations, as well as how the practices of one set of occupations affect the other occupations in terms of transparency. This analysis is necessary because the jurisdictions of occupations vary not only in terms of task responsibilities but also in terms of information technology access permissions and managerial responsibilities (i.e., who gets to know what, from whom, about whom and how). These variations affect how occupation members interact with each other and how transparency manifests itself for the organization as a whole.

### 3.2.3 Procedures & data sources

This research used qualitative methods to gather data from two main sources within each organization (Yin, 1994). Gathering evidence from multiple data sources addresses potential problems of construct validity within a case study because these different sources “provide for multiple measures of the same phenomenon” (Yin, 1994, p. 92). The comparison of these multiple measures allows for triangulation. My research design included data from two sources: interviews with key informants as well as documentary evidence.

**Interviews with key informants**

The goal of the interviews was to provide accounts and narratives of the main appropriations technology enacted in the organization. I needed to collect data not only from one occupation in particular but from a representative sample of occupations within the units under investigation, because I was interested in how various occupations use information technologies and how they interact in doing so. For instance, at CasualGames and BigGames, I made sure that I interviewed enough informants from the managerial, technical, and artistic communities. Since organizations vary in their formal structure and in the labels they use to designate positions, a
mixed process of maximum variation and opportunistic sampling was used (Paré, 2004). The main objective pursued by the technique was to ensure that representatives from each occupational group across authority levels, occupational groups, and functional units were sampled. I also tried to obtain informants with varying seniority from each occupational group. I also asked to meet with key IT personnel to better understand the technologies that were deployed in the organization. The specific process followed to conduct the interviews in each organization unfolded as follow.

The first contact with EdgeSoft was made in December 2007 and it was agreed upon that I would begin conducting interviews in early January 2008 after the holiday break. At the beginning of my first visit at EdgeSoft’s offices, my primary contact (one of the VPs) gave me a tour of EdgeSoft’s offices and provided me a short overview of the organization’s activities. It was obvious from my visit at EdgeSoft’s offices that the organization was on a growth spurt: it was in the midst of office reorganization after doubling the space rented. One half of the office space was getting renovated and newly acquired cubicles were in the wait of new hires. On that same day, I also interviewed EdgeSoft’s CEO. My primary contact subsequently provided me with the contact information (email and phone number) of the members of the executive team which had agreed to participate in the study. I contacted each executive in the next few days and set up appointment with each of them in the following weeks (VP IT&QA, VP R&D, VP Service Delivery, VP Sales). After their interviews, the members of the executive team provided me with the contact information of workers and middle managers from their respective team. I contacted by email each person who had been identified by the executives and set up appointments at EdgeSoft’s offices or in a nearby café. As my study had not been publicized outside the executive team, my emails provided brief details such as identifying me as a doctoral student doing research on the use of information technology at EdgeSoft and an overview of the type of information which was sought. Furthermore, I noticed that my visit didn’t appear to be high on the organizational priority list at EdgeSoft, as interviews were rescheduled on a few occasions
and email invitations for interviews went without response for a long time for a few informants. Overall, I visited EdgeSoft’s offices on eight occasions over a period of two months, between January and March of 2008. I used the time off between each visit to calibrate and refine my semi-structured interview protocol to EdgeSoft’s context. Furthermore, as it became clear through the interviews that the VP Organizational Development had an important role to play in key IT infrastructure and organizational design decisions, I approached her directly for an interview. Due to travel commitments, her interview took place over the phone, the only interview done over the phone among the 55 conducted for this study.

The first contact with CasualGames was made in early December 2007. In mid-January 2008, after a phone discussion about the objectives of the study, the Founder-CEO agreed to organize my visit. Since extensive time was required to travel to CasualGames’ offices (2 ½ hours train ride), the Founder-CEO arranged a first round of interviews with members of the executive team (Founder-CEO, VP Finance, VP Sales, Operations Director) to occur on a single day at the end of January. I arrived at CasualGames offices early in the morning and was provided a cubicle desk, without walls like every other worker’s desk at CasualGames, from which I could spend time between interviews to prepare and write notes. On my arrival, I was struck by a few specific observations. First, I felt that despite my effort to put on a “neutral” casual attire of black dress pants, white shirt, and sweater I clearly stood out from the dress code at CasualGames, where t-shirts, polos and jeans were the common attire. Second, while waiting to meet with CasualGames’ Founder-CEO, a young artist, not looking older than a newly graduated high schooler, was doodling beside me, waiting for a job interview with the VP HR. After that first day of interviews, arrangements were made with the Operations Director for a second round of interviews over two days in early February 2008. I provided her with a list of criteria to select informants; she identified appropriate people and set up the interviews schedule. I kept the same routine during those two days as I was provided the same desk.
The first contact with BigGames was made early December 2007. At the end of January 2008, I got entry into the organization when the executive committee agreed to participate in the study. I first met with the VP HR for an interview. After the interview, I provided her with a list of criteria to select informants; she identified appropriate people and provided me with their contact information in a follow-up email. I took upon contacting each informant in the next few days and managed to arrange interviews from the beginning of February to the end of March 2008. I visited BigGames offices on seven different occasions during that period. Similar to the strategy I used at EdgeSoft, the time off between each visit was spent calibrating and refining my semi-structured interview protocol to BigGames’s context. As few workers benefited from a private office, most interviews were conducted in conference rooms.

The first contact with TradSoft was made in early March 2008. I first reached out to TradSoft’s Founder-CEO, but he wasn’t initially interested in participating in the study. Two weeks later, I received a phone call from one staff member at TradSoft telling me that the Founder-CEO had changed his mind. After discussing with her the list of potential informants for the study, she arranged for a two days visit at the end of March. In comparison to the field work I had just completed at CasualGames and BigGames, TradSoft’s offices were much more conventional, with large wooden desks, an open floor plan with private offices, and corporate dress attire. When entering TradSoft’s offices, I was also struck by the fact that the first office one sees is the Founder-CEO’s office, which stands right at the entrance with its large doors opened. During those two days where I conducted ten interviews, I spent lunch time with TradSoft’s workers. The way I was handled between the interviews gave me the impression that my visit had been carefully choreographed, at least to a much greater extent than at EdgeSoft, CasualGames, and BigGames, where I sometimes felt invisible amidst the general turbulence and frenzy of daily activities.

The main criterion for ending data collection through interviews was theoretical saturation, when it was felt that the marginal value of conducting additional interviews was low.
(e.g. newer informants tended to provide similar answers to the ones provided by previous informants). The point where saturation was reached varied from one organization to another. Saturation was reached after 10 interviews at TradSoft, while it was reached after 16 interviews at CasualGames. Three times it was necessary to meet the same informant more than once, in order to clarify issues that arose during the conduct of the study, giving a total of 55 interviews from 52 informants. While this approach might not yield a truly representative sample of informants as random assignment might provide, it is nevertheless appropriate for an exploratory case study design since “qualitative samples tend to be purposive, rather than random” (Miles & Huberman, 1994, p. 27). The tables below provide an overview of the occupations and positions of the informants that were interviewed. With the exception of one interview which was conducted in English, all interviews were conducted in French.

<table>
<thead>
<tr>
<th>Occupation (Role)</th>
<th>TradSoft</th>
<th>EdgeSoft</th>
<th>BigGames</th>
<th>Casual Games</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEO</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Executives</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Managers</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Workers</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>IT Manager</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
<td>12</td>
<td>14</td>
<td>16</td>
</tr>
</tbody>
</table>

Table 12. Distribution of informants across occupations (roles)
The actual interviews were conducted as follow. First, I described the study’s purpose in general terms and the kind of information that I sought during the interview. I restated that my presence and study in the organization didn’t consist of an “audit” and that I was not acting as a consultant since I would not provide them with any expert opinion on their activities; my interest was simply to learn from their experience with information technology in order to build some general knowledge about “best practices”. Such an approach seemed to have reduced any assessment fears that informants may have had, especially among middle managers and workers. To reduce the feeling of intrusion, interviews were conducted in locations at the convenience and time chosen by the informant. With the informant, I set a time limit to the interview that was commonly agreed – the average time of all interviews was 1 hour 15 minutes. The shortest interview took 35 minutes and the longest was two hours. I gave informants the opportunity to ask any questions she or he might have about my study. I asked permission to record and take notes during the interview, and I provided confidentiality guarantees by stating that I will not discuss what we had discussed in the interviews with others in the organization and that I would use pseudonyms in any publications that would follow from the research.
The protocol used during the interview was open-ended and the questions were derived from the literature review conducted in the previous chapter. The generic interview protocol is found in Appendix 4. Questions from the interview protocol were tailored to the informant’s position and occupation in the organization. In all organizations, specific sub-questions evolved from the first wave of interviews to the last in order to gain insights into areas that hadn’t been covered well by previous interviews or that seemed to need further attention. During the interviews, I tried to triangulate statements that were made by other informants in order to ensure validity, especially if they seemed intuitively odd or puzzling. If I felt that a question might raise sensitive issues with the informant during the flow of the conversation, I always first declared “Please feel free not to answer this next question”. The interviews were also used to identify any sources of documentary and archival evidence that may be useful for my study. At the end of each interview, I asked the informant if he or she had any questions or comments about the interview and encouraged a more open discussion if time permitted. I notified my informant that the interview had come to an end when the commonly agreed time limit had been reached; in some occasions, I felt that more time was needed and I asked to extend the interviews or to schedule a second interview at their convenience. Although I wanted my presence in the organizations to cause as little disruption as possible, informants were generally very enthusiastic about the discussion and in many occasions thought that the questions addressed issues that were in (sometimes, dire) need of greater attention.

After each interview, meeting notes were written down. Interview notes were filed in a cabinet in my office. Interview recordings were downloaded onto my computer and backups were kept in a hard disk drive at a second secure location. The transcription of the interview was also added to the interview file once available. Each interview file was assigned a number and a time-stamp. An interview record was created in an Excel spreadsheet to help keep track of the evidence collected. This procedure not only helped the conduct of the data collection and analysis, but also it also helped produce a chain of evidence (Yin, 1994). Note that this case
database also contained information about the informants contacted (name, phone, email, title, date of contact).

**Documentary & archival evidence**

Documentary and archival evidence was also sought. As mentioned in the previous section, documents were sometimes identified during the interviews with the informants. This kind of evidence was collected because it complemented the retrospective accounts of my informants and provided insights into the context of the organization. The degree of accessibility of documentary evidence varied from one organization to another. The major obstacle was not a lack of cooperation, but the low level of formalization of the organizations studied since the organizations studied were small ventures. In particular, their degree of formalization and documentation of their IT and organizational policies and strategies was found to be very low. For instance, only TradSoft had formalized an organizational chart.

Position advertising provided official statements about occupational role contents in the organizations. These documents were useful in identifying the various task responsibilities of the informants.

Annual reports, financial proxies, annual notices, special reports, and analyst reports proved useful to get acquainted with the organizations’ history and the main aspects of the context of the organizations. In particular, all such documentation available through SEDAR (a free governmental Canadian financial database) about EdgeSoft (a publicly traded company) was downloaded and consulted. In addition, press releases of the organizations were obtained from databases such as PR Newswire and Lexis-Nexis. Newspapers and magazines stories about the organizations were also obtained from the Eureka.ca database. Past versions of the organizations websites and press releases were also obtained from Archive.org, a public repository of internet websites. These past versions of the websites were especially useful for understanding and identifying shifts in business strategy by the organizations, as well as key personnel moves.
through the years. All these sources of documentary evidence provided a way to better understand the origins of the context faced by each organization. The documentary evidence that was collected is listed in Appendix 5. In the appendix, the evidence is refered to by the date when the document was published and by naming the type of source (newspaper, magazine, web site, official documents, etc.), but without explicitly naming the title of the source as this would put at risk the anonymity of the organizations that participated in this study.

The profile of the organizations was also obtained from LinkedIn, the professional social networking web site\(^\text{11}\). Since this may appear as an odd source of data, I will explain why it is useful for the purpose of this research. LinkedIn provided a supplementary source of evidence about the strength of such loyalty or commitment can be found in the extent that workers are active on the job market and “keep their options open” to employment opportunities elsewhere. The LinkedIn data allowed unobtrusive assessment of people’s intentions to quit the organization through the proportion of workers that are registered on professional social networking applications. While LinkedIn is an application that provides various affordances to further one’s professional goals, one of its key and core feature is how it provides affordances to create and maintain and online vita and job references. While the proportion of workers registered on LinkedIn is obviously a very crude measure of loyalty or intentions to quit on its own, it is still very useful in its ability to triangulate and confirm the qualitative evidence provided by the interviews conducted for this research. As it will be shown in the findings chapters, the LinkedIn data was very consistent with the interview data.

Finally, marketing material and technical white papers were also collected, when available, about the technologies that were deployed in the organizations. These documents were useful in gaining an understanding of the features of the technologies that were appropriated by workers as well as those that were not appropriated.

\(^{11}\) [http://www.linkedin.com](http://www.linkedin.com)
3.3 Data analysis & validation procedures

The analysis of the data collected was broken down into two steps: (1) a within-case analysis that focused on how the various occupations appropriated technologies and how these appropriations affected the functions of transparency for the whole organization (research questions #1, 2 and 4), and (2) a between-case analysis that compared the findings among the organizations in order to tease out differences and contextual influences on how appropriations were made by each organization to satisfy transparency functions (research question #3). The task of analyzing the data was guided by functional analysis assumptions which are presented in chapter four. In the following sections, I further explain the steps that I took to prepare, code, analyze the data and the rationale for these steps.

3.3.1 Preparation of the data for codification & analysis

Interviews were first transcribed verbatim. Field and interview notes were also summarized in short memos to facilitate their future retrieval and use. Second, all interview transcripts and memos, as well as the documentary evidence that had compatible formats were imported into Atlas.TI and assigned a unique file number. The third step taken to prepare the data for codification and analysis was to organize the case study database (Paré, 2004). The database for each case contained the following items: (1) unprocessed data, which included hard-copies of interview transcripts, interview notes, memos of field notes, print-outs of the contacts and informants spreadsheet; (2) contact information for the case (business cards, directories); (3) printouts of data coded with Atlas.TI; (4) coding schemes (and their revisions); (5) memos, figures, models, and other “pattern-coding” produced during the analysis the data; (6) print-outs of drafts, comments and corrections made to parts of the analysis.

3.3.2 Codification and data analysis

Data analysis proceeded with the following steps. First, descriptive codes were defined and applied to the qualitative data. Second, explanation building and pattern-matching
approaches to within-case and between-case levels of analysis were employed to derive answers to the research questions. Each step is discussed below.

**Descriptive codes**

According to Miles and Huberman (1994), codification is not a neutral activity, because it consists of a preliminary kind of analysis. Codification basically consists of noticing a set of coherent cues from the mass of indefinite (and sometimes murky) data, bracketing this set of cues, and providing this set of cues with a label that act as an index for this set of cue. The purpose of codes in qualitative data analysis is to reduce complexity by (1) facilitating data retrieval and by (2) facilitating comparison of similar or dissimilar sets of data and interpretation of patterns.

There are three ways to create a descriptive coding scheme (Paré, 2004). The coding scheme might be created a priori based on theoretical grounds and left unchanged during the analysis, which has a rather confirmatory nature. The coding scheme might be created only after some initial probe of the data was conducted. The third way consists of developing a preliminary coding scheme that will be refined once data analysis has begun. This final approach is the one that was adopted for this research.

Descriptive codes are not entirely atheoretical, since a good descriptive coding scheme should be guided by the research questions and theoretical framework underlying the research (Miles & Huberman, 1994; Paré, 2004). A good coding scheme is also one that provides an operational definition of each code, inclusion and exclusion criteria, and examples of real text for each code (Paré, 2004). The result of the final iteration of the descriptive coding scheme can be found in Appendix 6.

Throughout their iterative elaboration, descriptive codes were applied to “chunks” of data (Paré, 2004). For the purpose of this research, chunks were applied to uninterruptted statements
where an informant expressed a specific idea about an issue, event or practice. Some chunks were those composed of a single sentence while others were composed of multiple sentences.

To ensure the reliability of the descriptive codes, check-coding procedures took place (Miles & Huberman, 1994; Paré, 2004). To do so, two faculty members and one master student were enrolled and instructed to code a randomly selected sample of data chunks from the interview transcripts that I had previously coded. Two sets of data chunks were tested: those related to contextual conditions and those related to the types of transparency functions. The coding results (Table 14) were compared on a pairwise basis by computing Cohen’s kappa coefficient (Paré, 2004). The overall kappa coefficient for contextual conditions was 0.75 and the coefficient for transparency functions was 0.81. While the results do not demonstrate perfect agreement, they do show substantial agreement. On the basis of the results of the inter-coder reliability assessment, I could go on with the next steps of the data analysis process: explanation-building and pattern-matching (Paré, 2004; Yin, 1994).

<table>
<thead>
<tr>
<th>Coders</th>
<th>Contextual Conditions</th>
<th>Researcher</th>
<th>2</th>
<th>0.83</th>
<th>0.72</th>
<th>0.67</th>
<th>0.77</th>
<th>0.85</th>
<th>0.85</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td>3</td>
<td></td>
<td>0.67</td>
<td></td>
<td>0.77</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Researcher</td>
<td></td>
<td>0.83</td>
<td></td>
<td>0.72</td>
<td>0.67</td>
<td>0.77</td>
<td>0.85</td>
</tr>
<tr>
<td></td>
<td>Transparency Functions</td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.77</td>
<td>0.84</td>
<td>0.78</td>
<td>0.77</td>
<td>0.77</td>
<td>0.85</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Researcher</td>
<td></td>
<td>0.77</td>
<td>0.77</td>
<td>0.85</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 14. Pairwise kappa coefficients

**Pattern-matching and explanation-building**

Pattern-matching consists of comparing the data with patterns predicted from theory. As such, pattern-matching consists of a confirmatory approach. In comparison, explanation-building also matches patterns from the data with patterns predicted from theory, but the theory is built while engaging in the exercise of pattern-matching. In this research, explanation-building took
place before pattern-matching, but multiple iterations of each approach were necessary in order to settle on a final explanation (which is discussed in chapter nine).

Pattern-matching and explanation-building occurred at both the within-case and between-case levels of analysis. At the within-case level of analysis, I focused on how the various occupations appropriated technologies and on how these appropriations affected the functions of transparency for the whole organization (research questions #1, 2 and 4). At the between-case level of analysis I compared the findings among the organizations in order to tease out specific aspects of technology and contextual conditions that could account for why appropriations differed from one case to the other (research question #3).

The analysis was also supported by triangulating the evidence between interview data and documentary data. I also put information in tables and displays, and by making matrices of categories based on the coding scheme (Miles & Huberman, 1994). Careful attention was paid to generating alternative explanations for the patterns of data analysed. In fact, the process of pattern-matching and explanation-building involved multiple thought experiments. These thoughts experiments comparing alternative explanations were the motor of the iterative process, as the best fit pattern was kept for analysis with patterns of data and so on.

As the iteration progressed, a set of assumptions drawn from functional analysis (Chapter 4) were found to be particularly enlightening for identifying patterns in the data. These assumptions are not a theory to validate, but instead an “analytical paradigm”, which consists of a set of broad, basic propositions from which theories of the middle-range can be elaborated (Merton, 1968). In particular, it is during the iterative cycle between pattern-matching and explanation-building that it became evident that technology appropriations made at EdgeSoft, TradSoft, BigGames, and CasualGames were aimed to fulfill three types of transparency functions: mobilizing the workforce, pooling work artefacts, and reporting accountability. When technology appropriations didn’t succeed in satisfying one type of transparency function, the data showed that people increased their efforts to find functional alternatives, either technology-based
or “offline”. Such a finding means that transparency exhibits equifinality; that is, a diversity of technology appropriations were made with the purpose of generating the same types of transparency and functional equivalents arose when they failed to do so. Therefore, functionalist assumptions (Markus, 2004; Merton, 1968; Stinchcombe, 1968) were adopted for the rest of the iterative cycle of pattern-matching and explanation building.

Furthermore, the sorting out of salient and influential contextual conditions (for this study, top management’s preferences and aspirations, time pressures, slack resources, workforce demography, and workforce relations) on technology appropriations was not done in a theoretical void isolated from previous literature. Hence, while such “going back” to the literature might sound like heresy, it was useful for two reasons: it ensured that the particular contextual conditions that were identified as significant didn’t have “reinvented” labels; and, existing theories pertaining to the contextual conditions provided a springboard from which I could generate further alternative explanations of why the observed technology appropriations that fulfilled transparency functions differed from one organization to another (research question #3).

3.3.3 Validation

Although exploratory case studies are now well accepted within the social informatics and information systems communities, they are particularly prone to validity and reliability issues if not executed properly. Yin (1994) listed the following validity and reliability threats that need to be assessed, identified, and dealt with by case study researchers. Each of these threats is discussed next.
**Construct validity**

The extent to which a particular measure captures the most prototypical elements of a concept’s domain

**Internal validity**

The extent to which there are no plausible rival explanations for the cause-effect relationships contended

**External validity**

The extent to which explanations for the cause-effect relationships can be generalized to other settings

**Reliability**

The extent to which the patterns of data from which explanations are derived can be replicated by following the same procedures

Table 15. Validity and reliability issues in exploratory case study designs (Yin, 1994)

**Construct validity**

To deal with threats to construct validity, three approaches were employed in this research. First, two sources of evidence were used in the data collection. Each data collection method has strengths and weaknesses. Interviews have the advantage of being targeted and insightful, but they also have the disadvantages of being sensitive to errors in questionning, poor recall by the informant, and self-presentation biases. Documents have the advantages of being unobtrusive, exact, generally reliable, and of providing a broad coverage of issues depending on the nature of the documents, but they also have the disadvantage of exhibiting reporting bias. The second approach employed to deal with construct validity was to build a chain of evidence (Yin, 1994). Such an approach has already been discussed in section 3.3.1 and 3.3.2 and it ensures that a trail can be followed from the theoretical explanation I derived to the codes, data, concepts and research questions, and back. Also, in the chapters that follow, all references to the data are made by using one of two alternative formats to establish a chain of evidence. Quotes from informants are referred to by unique Atlas.TI quotation number in which the quote is contained. Documentary evidence is referred to by the date when the document was published and by naming the type of source (newspaper, magazine, web site, official documents, etc.), but without explicitly naming the title of the source as doing so would put at risk the anonymity of the organizations that participated in this study.
Internal validity

To deal with threats to internal validity, I exposed the logic underlying the explanation that is proposed in chapter nine. In doing so I was careful to make explicit a number of potential rival explanations and to demonstrate why they are not logically coherent with the data. Furthermore, the iterative theory elaboration process tried to ensure through occasional “retreats” to the literature that no alternative explanations were overseen.

External validity

Threats to external validity were dealt with by clearly specifying the boundaries of theory derived from the data. These boundaries conditions and other limitations to generalizability are discussed in further detail in section 9.4.

Reliability

To address threats to reliability, I used a case study protocol, I developed a case study database, and I maintained a chain of evidence. How each of these tactics was pursued is discussed in this chapter.

3.4 Conclusion

This chapter discussed the research design that I employed to elaborate a theory of how technology appropriations are enacted in organizations to satisfy transparency functions and why they vary among organizations. I approached four similar high-growth ventures from the business and entertainment software industries following a panel survey of industry insiders in order to identify polar opposites. I conducted 55 interviews with 52 representatives of top management and other key occupational groups within the organizations. I also relied upon extensive documentary sources to provide insights into the origins of the contextual conditions faced by the organizations. In this chapter, I have also outlined the main procedures that I employed to analyze the data collected: building a case database and a chain of evidence, elaborating descriptive codes, and engaging into an iterative explanation-building and pattern-
matching process. The next chapter outlines the main assumptions that provide the broad conceptual framework within which the data was analyzed and the theoretical explanation derived.
Chapter 4

Theoretical Assumptions

While the literature provides multiple conceptualizations of transparency, there is still no established theory about the linkage between transparency and information technology in organizations. The objective of this research is to build such a theory with a qualitative, inductive, and exploratory case study. Thus, consistent with the tenets of exploratory case studies (Dubé & Paré, 2003; Eisenhardt, 1989), this chapter makes explicit the functionalist assumptions (Markus, 2004) upon which a theory was elaborated from the evidence gathered. The assumptions outlined in this chapter were not held at the onset of the data collection process, but instead emerged following multiple iterations of the data analysis process described in chapter three. After substantial engagement with the data collected, it was recognized that three types of transparency could be identified across organizations and that for each type of transparency a diversity of technology appropriations had been enacted. The recognition that transparency exhibit equifinality spurred the explication of the functionalist assumptions which guided the rest of the data analysis process. Most strands of theory building methods legitimize such use of the literature for the specification of assumptions and concepts as a useful and appropriate step as part of the theory elaboration process (Dubé & Paré, 2003; Eisenhardt, 1989; Miles & Huberman, 1994).

The assumptions that will be laid out in this chapter form what Merton (1968) called an “analytical paradigm”, which consists of a systematic statement of “the array of assumptions, concepts, and basic propositions” (p.69) employed in social inquiry. Analytical paradigms stand on a higher plane than explanations of specific social phenomena, which Merton referred to as “grounded theories of the middle range” (p.5). In comparison to analytical paradigms, theory refers to “an inference from data or observations suggesting a general principle that lies behind them as their cause, their method of operation or their relation to other phenomena” (Weick,
1984, p. 112). Because analytical paradigms are not grounded in data or observations, even though they once were at the time of their initial elaboration, they lack accuracy and they travel easily from one social phenomenon to the other. They are generally too broad to explain particular phenomena. Merton (1968) provided Marx’s historical materialism and in Durkheim’s functionalism as examples of analytical paradigms. Today, Giddens’ (1984) structuration theory and the institutionalism of the Chicago school (Barley, 2008) could also be considered as analytical paradigms for longitudinal, process-based studies of social change that need to take into account both the institutional and the interactional levels of analysis. In other words, analytical paradigms are the foundations upon which theories are built; they provide the tools to build theory in the form of a given logic and a given vocabulary. Merton (1968) argued that any sound social research should make explicit the analytical paradigm in which it is grounded: “If true art consists in concealing all signs of art, true science consists in revealing its scaffolding as well as its finished structure” (p.70). Because most of the explanations of social phenomena are discursive, the logic underlying explanations may be buried in “the avalanche of words” (Merton, 1968, p. 69). In the following sections, I follow Merton’s (1968) advice by laying out the functionalist assumptions that will be employed to elaborate a theory about the linkages between transparency and information technology.

4.1 Functional analysis

Functional analysis was chosen as the basis to elaborate theory from the evidence that was gathered. During the data collection phase, it became clear that the organizations investigated were appropriating different technologies to achieve the same types of transparency. A functional analysis is indicated whenever there happens to be a pattern of equifinality in a social phenomenon: “Whenever we find uniformity of the consequences of action but a great variety of the behavior causing those consequences, a functional explanation in which the consequence serves as a cause is suggested” (Stinchcombe, 1968, p. 80). It has been found to be
an “unusually good starting point in organizational theory. Looking for unexpected functions and dysfunctions is a useful pretext to become absorbed into a phenomenon and to think about it carefully” (Weick, 1979, p. 55). Functional analysis explains the persistence and maintenance of behaviors, practices or social arrangements given a set of contextual conditions; if the contextual conditions change, then the behaviors will change. Functional analysis provides an alternative explanation to institutional theory, which explains persistence without relying upon the consequences of behavior and by accounting for how the behavior becomes objectified and external instead (e.g. Zucker, 1977); and to power-based explanations, which explain persistence of behavior through coercion (e.g. Pfeffer & Salancik, 1978).

Functional analysis has a long history in the social sciences in general, and in sociology and anthropology in particular. Its origins date back, among other sources, to Émile Durkheim’s theory of mechanical and organic solidary. Following a number of criticisms which led to the development of alternative analytical frameworks that put greater emphasis on the role of discourse and symbolic interaction, functional analysis has somehow fallen in disrepute among social science researchers since the 1970’s. Within the various social science communities, and in sociology in particular, a stigma became associated with functionalism: “it is true that most of us have consigned functionalism to the closet of intellectual history as a theoretical identity to be avoided rather than sought” (Demerath, 1996, p. 338). Yet, functional analysis as a style of theorizing is still quite pervasive in social sciences in general and in information systems and organization studies in particular: “read almost any part of the literature, and note how often consensual collectivities and stable institutions will their futures by taking steps to ensure that their latent needs are met and kept in some sort of balanced equilibrium” (Demerath, 1996, p. 338). For instance, Scott (2003) argued that most organizational theories that he categorized as “natural models” of organizations included, implicitly or explicitly, functional arguments in their explanations.
“A number of natural system theorists implicitly or explicitly adopt an organic imagery, in which the organization is treated as a social system with certain needs or requirements that must be met if it is to survive. Just as the human body requires a continuing flow of oxygen, a need met by the lungs and circulation of blood, social systems are presumed to require the development of mechanisms to meet their needs to gather and circulate relevant information to decision makers. […] many of our most important insights into the nature of organization structure and process have their origins in functional reasoning” (Scott, 2003, pp. 60-61)

Among the “natural models” of organizations that implicitly employed functional arguments in their logic, Scott (2003, p. 108) included Weick’s organizing as evolution framework (i.e. the need to reduce equivocality; Weick, 1979), resource dependence theory (i.e., the need to eliminate noxious constraints; Pfeffer & Salancik, 1978), institutional theory (i.e., the need for legitimacy; Dimaggio & Powell, 1983; Meyer & Rowan, 1977), and organizational ecology (i.e., the need for fitness; Hannan & Freeman, 1977). Despite the lack of explicit attention from researchers, functional analysis remains implicitly pervasive in the language employed to formulate theories and explanations of social phenomena to this day.

### 4.2 Basic elements of functional analysis

At the core of a functional analysis is a coherent set of ideas which were explained in much detail by Merton (1968) and Stinchcombe (1968). Merton (1968) provided a systematic empirical approach from which functional explanation can be elaborated, while Stinchcombe (1968) unpacked the logic underlying functional explanations. The basic elements of functional analysis are summarized in the following table.
1. A functional requirement which must be satisfied if a social system (group, organization, society, etc.) is to survive, or to operate with some degree of effectiveness.

2. A behavior(s) through which the functional requirement is met.

3. Causal forces, tensions or difficulties, which tend to upset the functional requirement, to keep it from happening regularly unless the behavior(s) causes it.

4. A range of possible variation in the behaviors that can satisfy the functional requirements (which referred to as “functional alternatives,” “functional equivalents,” or “functional substitutes”).

5. A selection process (evolution, competition, satisfaction, reward from others, planning, wanting) which causes the behavior(s) maintaining the functional requirement to be selected or reinforced.

6. Contextual constraints on the variation of behaviors that can fulfill the functional requirement.

<table>
<thead>
<tr>
<th>Table 16. Basic elements of functional analysis (Merton, 1968, pp. 104-109; Stinchcombe, 1968, pp. 87-88)</th>
</tr>
</thead>
<tbody>
<tr>
<td>First, there is the notion of functions, which are the “requirements which must be satisfied if the organism is to survive, or to operate with some degree of effectiveness” (Merton, 1968, p. 103). Radcliffe-Brown (1935) similarly proposed that the function of a behavior, practice, or social arrangement is “the part it plays in the social life as a whole and therefore the contribution it makes to the maintenance of the structural continuity” (p.396). In other words, a function is the contribution which a behavior, practice or social arrangement makes to the total activity of which it is a part. Functional analysis assumes that the consequences of some behavior, practice, or social arrangement are essential elements of the causes of that behaviour (Stinchcombe, 1968, p. 80). Many researchers of organizations have identified functions that must be fulfilled if an organization is to survive, or to operate with some degree of effectiveness. For instance, March and Simon (1958, p. 2) proposed that organizations must satisfy the need for converting conflict into cooperation, for mobilizing resources, and for coordinating efforts in order to survive. Weick (1995, p. 170) suggested that organizations have to set up practices that will fulfill the needs for swift socialization, for control over dispersed resources, for legitimacy in the eyes of stakeholders, for measurable outcomes, and for accountability. The identification of functions is not without problems however. Suffice to say for now that functional analysis assumes that recurrent behaviors, practices, and social arrangements observed in a social system usually fulfill a purpose in its functioning; that is, they tend to maintain a function necessary for the continuance and “efficient” operation of the social system.</td>
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</tbody>
</table>
Second, functional analysis assumes that functions act as homeostatic variables (Stinchcombe, 1968, p. 87). A social system remains in equilibrium so long as the continuing exogenous tensions exerted upon the social system are offset by the behaviors, practices, and social arrangements that fulfill the function. In reality, the function will tend to stay stable, even though there are exogenous tensions that tend to change it. As the tension exerted upon the social system increases, the intensity of the behavior should also be observed to increase due to the compensating feedback loop. Deleterious consequences for the social system and its members occur when the function ceases to be adequately satisfied by the behavior, practice or social arrangement. As long as the behavior fulfills the function, the behavior will be selected and reinforced. The mechanism underlying the selection of the behavior might consist of evolution, competition, satisfaction, reward from others, or planning and wanting (Stinchcombe, 1968, p. 88). This selection process might be of a “satisfying” nature rather than “optimizing” nature, as the “best” and “optimal” alternative might not be the one that will get selected and reinforced: “particularly where there are no objective criteria of functional effectiveness (as in allaying anxiety), any social practice which has few negative consequences will tend to be continued if it serves the function” (Stinchcombe, 1968, p. 104). Over time, the behavior fulfilling the function will persist because it eliminates the potential for any functional substitute to emerge. If the behavior stops fulfilling the function adequately or if the nature of the tension exerted upon the social system changes, then functional substitutes to the behavior might emerge. These dynamics are illustrated in Figure 10.
Third, functional analysis assumes equifinality. In the specific context of functional analysis, equifinality means that there is a range of behaviors that can fulfill a given function. This range of functional alternatives, functional equivalents or functional substitutes, opens up the empirical possibility that there is no “one best way” to fulfill a particular functional requirement\(^{12}\). If the context changes or the selection process changes, the behaviour may also change, but it will change to another behavior with the same consequence. Functional requirements are taken to be “permissive, rather than determinant,” of specific behaviors (Merton, 1968, p. 88). The range of variation in the behavior is only limited by the contextual conditions active in the social system under study. An implication of equifinality is that multiple behaviors can simultaneously satisfy a given function; it is the cumulative and net causal effect of the behaviors in a social system that matters, rather than the effect of any single behavior. In other words, what matters in functional analysis is not the statistical “weight” of a particular

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\(^{12}\) Merton (1968) employed the terms functional alternatives, functional equivalents, and functional substitutes to refer to the diversity of behaviors, social structures, and practices that can be enacted to fulfill functional requirements: “In contrast to this implied concept of indispensable cultural forms (institutions, standardized practices, belief-systems, etc.), there is, then, the concept of functional alternatives, or functional equivalents, or functional substitutes. This concept is widely recognized and used, but it should be noted that it cannot rest comfortably in the same theoretical system which entails the postulate of indispensability of cultural forms” (p.34, emphasis in the original). To reduce vocabulary complexity, the term “functional alternatives” was generally preferred throughout this study.
behavior in the accounting for the overall consequences. Instead, it is the combination of the multiple functional alternatives that produces the consequences. Causality is thus “conjunctural” in functional analysis and relies upon Boolean logic (Becker, 1998, pp. 189-194); it is the pattern of the combined presence or absence of functional alternatives which determines if the function is fulfilled adequately. An additional implication of equifinality is that alternatives might simultaneously be both “functional” and “dysfunctional”. Whether the alternative persists or not depends on who accrues the benefits and the negative consequences, as well as the power they hold in the social system (Stinchcombe, 1968, p. 100). Thus, equifinality opens up the possibility that a behavior might have detrimental consequences as by-products; as long as the positive consequences offset the negative consequences for power-holders in a social system, the behavior should persist.

Fourth, functional analysis also necessarily implies a “historicist” explanation (Stinchcombe, 1968, p. 104). In other words, which of a set of functional alternatives is found in a particular social system is generally determined by historical events (Stinchcombe, 1968, p. 105). Once the historical event that spurred the behavior took place, the event becomes irrelevant to the persistence of the behavior since the self-reinforcing causal loop locks in the behavior and eliminates the opportunity for functional alternatives to emerge (see Figure 11 for an illustration). The behavior that will be initially selected to fulfill the function might have been the result of a deliberate planning, learning, experimenting or other random selecting process. The selection process which will maintain the behavior might be the same as the one that initially spurred the behavior, but that may not necessarily always be the case. A disruption in the environment of the social system which renders the function irrelevant allows the emergence of new functional alternatives, again through a planning, learning, experimenting or random process. Also, a change in the selection process which maintains a behavior might also provide the opportunity for functional alternatives to emerge.
Figure 11. The emergence of functional alternatives (T1: Time period 1, T2: Time period 2) - (Stinchcombe, 1968)

For instance, the function of determining legitimate political leaders can be fulfilled from a variety of social structures. Due to specific historical causes, a parliamentary system was instituted in Canada and Britain, while a presidential-republican system was instituted in the United States of America. Even though the systems fulfill the same function and thus are functional alternatives, a switch of one system to the other is improbable. As long as the behavior satisfies the function, a search for functional alternatives is unlikely. Furthermore, once selected, the behaviour might increase the costs of searching for alternatives simply due to the existence of sunk costs.

4.3 Criticisms

A number of criticisms have been directed at functional analysis in the past. I briefly review only a few of these, as they have been the focus of extensive debates in the anthropology, sociology, and organization studies literatures.
First, there is the difficulty in determining a social system’s functional requirements or needs. Merton (1968) highlighted the problem when he mentioned that functional requirements are “the cloudiest and empirically most debatable concepts in functional theory” (Merton, 1968, p. 106). The extent of the problem resides mostly in how researchers appropriate the notion. When badly articulated by researchers, contentions of functional requirements tend to be tautological, ex post facto, or difficult to ground empirically. One example of the difficulty in empirically grounding functional requirements is found in Parson’s AGIL framework (Scott, 2003, pp. 72-75), which defined four functional requirements for the survival of any social system, at any level of analysis: adaptation, goal attainment, integration, and latency. As a solution to the aforementioned problems, Merton (1968) proposed that functions should be derived from the induction of empirical observations about a specific social context rather than a priori theoretical deduction. An additional solution to this problem is found in the work of the Chicago school in sociology and its significant focus on the notion of roles as the link between the interactional and macro levels of analysis (e.g. Barley, 2008; Hughes, 1971; Simpson, 1972). Everett Hughes, one of the most prominent figures of the Chicago School, considered functions as emerging from the wants and values of the members of a social system. While functions are fulfilled by behaviors that emerge from a technical division of labour, they are also allocated to various roles or “clusters of responsibility” in a moral division of labour following symbolic interactionist processes (Hughes, 1971, pp. 446-447). Simpson (1972) synthesized Hughes’ argument as follows:

“Wants and values are taken as givens; organic systems grow up which coordinate functions performed by institutions to satisfy the wants in exchange for things the people in the institution want. The patterns of behaviour among individuals in an institution are, from the point of view of the organic exchange system, social arrangements through which functions are performed [...] Institutions mediate between wants and the functions that satisfy them. Wants are satisfied through relevant activities within the institutions. How the activity patterns get established, how they persist or fail to persist, and the
transactions that occur in the process are, to Hughes, the significant questions to ask in studying social life. The survival of activity patterns depends upon their dealing with contingencies that bear on them.” (Simpson, 1972, p. 549)

Thus, according to the above argument, the functional requirements of a social system can be partly socially constructed and have their source in the “wants” of its members. This opens up the interesting possibility that functional requirements (or “wants”) can be manipulated either through significant alterations to the technical division of labor within a social system or through discursive practices aiming at legitimizing (or delegitimizing) a particular “want” on ideological grounds. It also opens up the possibility that behaviors fulfilling a function might not be selected on the basis of “efficiency” as a criterion. Such a conceptualization of functional analysis avoids the formulation of functional explanations that assume historical necessity and does not take into account the costly externalities engendered by the fulfillment of the function (Perrow, 1986, p. 278).

Second, functional analysis has been frequently criticized for producing teleological explanations. Explanations in terms of consequences (purpose) are not generally perceived as a problem at the level of the individual (e.g. in information systems research, the oft-cited TAM model and its numerous derivatives rely upon explicit rational choice arguments - Davis et al., 1989); at the level of social systems, however, they can be more problematic. For instance, the fact that the behavior exhibited by organizations sometimes rests upon coalitions of interests and social movements make the explanation of behavior in terms of its purposeful, intended consequences problematic (e.g. Davis & McAdam, 2000). This concern has led Elster (1983), a philosopher of science, to argue that a functional explanation is “truly” functional only when the consequences of a behavior are unintended and unrecognized as functional, otherwise the explanation becomes a rational choice theory. This criticism does not undermine the value of functional analysis as an approach to build empirically valid theories for three reasons. As already mentioned in this chapter, many types of processes other than purposeful planning and
wanting may select a behavior. Also, Merton (1968) had proposed the distinction between manifest and latent functions to deal with this problem; a manifest function consists of the motives and purposes sought by people in accomplishing a behavior, while a latent function consists of the unintended consequences of that behavior. Functional analysis thus accommodates for the possibility of both intended and unintended consequences of behavior and their relative importance in an explanation of a social phenomenon is ultimately an empirical matter. Furthermore, the “strong” form of functional analysis described by Elster (1983) may restrict unnecessarily the applicability of the framework and its value in explaining social phenomena where equifinality is observed, which is the key distinguishing feature of the analytical framework. In his reply to Elster’s (1983) criticism, Stinchcombe (1985) stated that functional analysis still had pragmatic value despite its flaws. Specifically, Stinchcombe argued that Elster “is interested in logical methods of evaluating and criticizing theories, and not much interested in empirical validation of theories”, and that he “is willing to sacrifice theories that have ‘only’ the virtue of explaining some facts, because one cannot give (or he has not yet found) a perfectly adequate logical account of their virtues” (p.164).

A final criticism that has been often directed toward functional analysis is a bias toward the status quo in social systems, i.e., that functional analysis rests upon conservative ideological assumptions (Merton, 1968, pp. 91-100; Stinchcombe, 1968, pp. 90-93). Critics argue that functional analysis considers functional behavior as socially desirable, while the behavior may be unwarranted from an ethical or moral standpoint. In other words, if a behavior is observed to fulfill a function within a social system, this behavior must inherently be “good”. Stinchcombe (1968) recognized that functional explanations provided rhetorical opportunity for those wanting to preserve the status quo or a particular ideological position. He argued, however, that maintenance of a function is due only to the operation of some selection process, which may be unrelated to the social value of the function. He further suggested that “one style of radical debunking of the status quo is pointing out that structures are functional for some ignoble end”
Despite these criticisms, functional analysis remains relevant today in organization studies and information systems, as any explanation grounded in the notions of needs or equilibrium implicitly relies on functional arguments. Furthermore, it provides a template from which equifinality in social phenomena might be explained. As Markus (2004) proposed, functional analysis thus appears to exhibit particular relevance for information systems research. The specific assumptions of functional analysis that have been laid out so far are transposed into an information systems context in the next section.

4.4 Functional analysis and information technology

The assumptions explained above were laid out in general terms and could be applied to a broad range of social phenomena. I will now explain how the assumptions underlying functional analysis were adapted to an information systems context to elaborate a theory from the data gathered. The key notions which are in need of specification are those of behavior, tension, and function. For the purpose of this study, these notions are translated as appropriations of technology, contextual conditions, and transparency function, respectively. Each of these notions is examined in detail below.

4.4.1 Appropriations of technology

The behaviors analyzed in this study are appropriations of information technology. DeSanctis and Poole (1994) introduced the notion of appropriations in their attempt to make sense of the various patterns of technology use that they had observed in their studies of GDSS. They defined appropriations as how “people actively select how technology structures are used [and] actively choose structural features from among a large set of potentials”; appropriations include “the intended purposes or meaning, that groups assign to technology as they use it”
Along with the notion of spirit, the notion of appropriations formed the basis of the adaptive structuration theory (AST) framework that can be employed to explain longitudinal changes in technology use by groups.

The AST framework has been very influential and has informed much empirical work since its publication. It has also been the target of much criticism due to the framework’s own “appropriation” of Giddens’ (1984) structuration theory that students of Giddens deem “unfaithful” (e.g., Jones & Karsten, 2008). Despite these epistemological entanglements, the notions put forward by DeSanctis and Poole (1994) have much value for the empirical investigation of how information technologies are used in general and thereby for this research in particular.

Recently, Markus and Silver (2008) refined the framework by clarifying the relationship between the notions of features, affordances, and appropriations. They argued that features (or what they referred to using the broader term “technical objects”) are the basic components of a technology; the domain of what features can refer to empirically is quite broad and include algorithms, functionalities, interface components, outputs, packaging, external appearance, among other things. Drawing upon the ecological psychology literature, they argued that features become affordances only when put in relationship with specific users. Affordances are then the “possibilities for goal-oriented action afforded to specified user groups by technical objects” (Markus & Silver, 2008, p. 622). While affordances consist of the perceived uses for which the features of a technology can be put, appropriations consist of the actual uses specific users accomplish.

Information systems researchers have usually employed the notion of appropriations to understand why the same technology might lead to different outcomes, i.e., to understand the “social shaping” dynamics of technology. Yet, many phenomena studied by information systems researchers seem to exhibit equifinality in reality. Recently, it was suggested that various combinations of technology appropriations may generate the same consequence (Markus, 2000;
Markus & Silver, 2008). For instance, Markus (2000) observed that the organizations she studied achieved the functional need of “systems integration” through different technologies: some organizations choose to implement enterprise systems while others choose to implement data warehousing systems. Despite the different pathways, she found that the perceived efficacy of the systems was perceived as the same. Thus, in an information systems context, the notion of equifinality means that just as the one appropriation of technology may have multiple functions, so may a function requirement be fulfilled by multiple appropriations of technology or practices that are not necessarily technology-enabled. In a functional analysis of technology appropriations, the consequences of technology appropriations thus refer to how well and how adequately they fulfill their intended (or unintended) functions. There is also the empirical possibility that other functional alternatives may be observed conjointly with one appropriation of technology, because the technology appropriation may satisfy the functional requirement inadequately on its own or because the technology appropriation fulfills another functional requirement as a by-product (Merton, 1968, p. 103). Figure 12 illustrates the assumptions presented so far.
Put together, DeSanctis and Poole’s (1994) and Markus and Silver’s (2008) conceptualization of features, affordances, and appropriations provides a lynchpin between functional analysis and the empirical study of the diversity of information technology uses which can be observed in organizations. The key idea here is that affordances and appropriations are inherently purposeful and thus serve a manifest or latent function in a group or organization. In other words, if appropriations are affordances put into action, and if affordances are possibilities for goal-oriented action offered by technology features, then by transivity, appropriations “do” something, that is, they fulfill a purpose in an organization, i.e., they allow people to deal with a specific contingency or work problem they face. Furthermore, as suggested by Markus (2000), we must heed the possibility that technology appropriations may be functional equivalents. These clarifications might seem only a play on words, but they demonstrate that the notion of appropriation is a coherent and sound basis upon which to elaborate a functional theory of how information technology-enabled practices are enacted to fulfill the functional requirements of transparency in an organization.
4.4.2 Contextual conditions

Contextual conditions act as tensions that provide the range of technology appropriations that are possible and desirable in an organization. Technology appropriations emerge to fulfill functional needs following certain search activities for technology appropriations. As long as the functional needs of an organization aren’t satisfied adequately, increased search activity should thus be observed. This search, as Stinchcombe (1968) observed, may take the form of a deliberate or a random process. In a functional analysis, exogenous and endogenous conditions provide the mechanism through which alternative appropriations of technology are selected and reinforced (Stinchcombe, 1968, p. 86).

George and King (1991) provided a fruitful framework from which to conceptualize the various levels of contextual conditions that filter and select the range of technology affordances that will be considered by an organization and that will ultimately be appropriated (see Figure 13). Following a review of the empirical evidence available at the time on the debate over the centralization/decentralization effect of technology, they concluded that technology generally tend to be appropriated to reinforce the status quo in an organization. They found that conditions at the institutional level, such as the nature of work, competitive pressures, social and legal structures, the availability of technology and expertise, and the network within which the organization is embedded, increase the benefits of certain technology appropriations and increased the costs of other alternatives for an organization. Conditions at the organizational level filter out even more possible appropriations due to the particular founding conditions and path-dependent history of each organization. Conditions at the managerial level provide opportunity for agency and self-determined appropriations. They were careful, however, to point out that the material properties of technology may interact with management and user intentions, which means that technology appropriations are always to some degree emergent, rather than directly determined by the material properties of technology, human agency or exogenous conditions (see also Kling, 2000; Markus & Robey, 1988). Figure 13 illustrates the various levels
of contextual conditions which might shape the appropriation process. Griffith (1999, p. 474) proposed a similar process to describe how users make sense of technology features in the early stages of engagement with a novel information technology. The process I describe is theoretically indebted to her's, but it is amended to reflect the notion that technology features are filtered out not only at the individual level of analysis, but also at higher levels of analysis as argued by George and King (1991). Furthermore, technology features – as designed – are selectively transformed into perceived affordances (or constraints), and into appropriations with the implicit or explicit purpose of fulfilling an organizational functional requirement.

Figure 13. Features, affordances, and appropriations of technology

4.4.3 Transparency functions

It was argued earlier in the literature review chapter that transparency was a “functional” concept, i.e., that it served a purpose. The literature review also showed that the notion of transparency needs to be defined according to certain dimensions in order to be employed in a
theoretical explanation. During the iterative pattern-matching and explanation-building process from the data collected at TradSoft, EdgeSoft, CasualGames, and BigGames, described in section 3.3.2, it became evident that organizations could not be distinguished on the basis of their overall transparency. Instead, three types of transparency enabled by technology appropriations were found to be salient in each organization. More precisely, transparency is defined as a functional affordance provided by information technologies which, once appropriated, ensures that an organization solves three types of organizational “problems”: mobilizing the workforce, pooling artefacts across occupational communities, and reporting accountability (see Table 17). These types are only briefly reviewed as the next chapters will elaborate at great lengths on each of these types of transparency.

<table>
<thead>
<tr>
<th>Types of transparency</th>
<th>Function</th>
<th>Orientation of the flow of information</th>
<th>Conceptual origins</th>
</tr>
</thead>
</table>
| Mobilizing            | - Ensuring cohesion, affiliation and commitment  
                        - Fostering trust and legitimacy  
                        - Evaluating the risk of investing in the organizational relationship | - Social psyc. of justice  
(Greenberg, 1990; Lind, 2001)  
- Sociology of cohesion (Fine & Holyfield, 1996; Kanter, 1968)  
- Organization theory (Adler & Borys, 1996) and the social effects of tech.  
(Sproull & Kiesler, 1991) | |
| Pooling work artefacts | - Reducing dependencies  
                        - Facilitating coordination  
                        - Speeding-up problem solving and skill acquisition | - Knowledge management and boundary objects  
(Kellogg et al., 2006; Markus, 2001)  
- The design of “information spaces” in CSCW (Erickson & Kellogg, 2000; Schmidt & Bannon, 1992) | |
| Reporting accountability | - Proving that tasks were done and why  
                        - Controlling dispersed resources  
                        - Articulating and meshing lines of work | - Symbolic interaction and CSCW (Luff, Hindmarsh, & Heath, 2000; Strauss, 1985; Suchman, 1995)  
- Enterprise systems (Allen, 1994, 2005; Cunha, 2005; Elmes et al., 2005; Zuboff, 1988)  
- Organization theory (Adler & Borys, 1996) | |

Table 17. Types of transparency
Mobilizing transparency serves to facilitate the commitment of workers. Much of the literature on justice, commitment and cohesion in organizational studies and sociology suggests that such transparency is necessary for workers to trust and to consider management’s decisions as legitimate. This function also provides a way for workers to identify with the organization and to evaluate the risk of investing their self in the employment relationship. For instance, it was found that workers from peripheral units identify more strongly with the organization when they are included into communication exchanges with units at the core of the organization (Sproull & Kiesler, 1991, pp. 79-101). Following the ethnography of a group of mushroom pickers based in Minnesota, Fine and Holyfield (1996) argued that the open sharing of tips and guidance from experts to novices facilitated the socialization of new members as well as the cohesion of the group, although this sharing of information was counter-balanced by the need to keep certain secrets due to the competitive nature of mushroom picking as a collective activity. Thus, due to this functional demand on their organizations, managers often choose to deploy information technology to mobilize the workforce and align workers’ interests with their own.

Pooling artefacts transparency arises from the need to open up the boundaries of task jurisdictions by making artefacts of work (documents, files, forms, procedures, drawings, schemas, etc.) and explicit knowledge available to workers from other occupational communities as resources in the accomplishment of work. This transparency reduces dependencies between tasks, whether they are sequential, reciprocal or pooled. Providing access to work artefacts and explicit knowledge may also help to speed up problem solving and skill acquisition by novice members of an occupational community. When fulfilled, this function of transparency supports the accomplishment of cooperative work and facilitates coordination between workers that may not share the same occupational background. This type of transparency is extensively documented in the literature on boundary objects, knowledge management systems and on the design of common information spaces to support computer-supported cooperative work.
Transparency for reporting accountability arises from the need to render accountable workers responsible for accomplishing tasks, and provide ways to assess the accomplishment of these tasks according to certain criteria: when, where, how, how soon, how well? This transparency serves the purpose of knowing how work is accomplished in the organization, attributing blame if necessary, prioritizing the allocation of limited resources, and articulating arrangements to integrate lines of work. This type of transparency has its conceptual origins in the sociological and CSCW literature on the symbolic interactions foundations of coordination as well as in the IS literature on the impacts of enterprise systems.

4.5 Conclusion

This chapter laid out the functionalist assumptions that were employed to explain how technology was employed to fulfill the functional requirements of transparency (or the lack of) in each of the organizations studied. As mentioned early on in this chapter, these assumptions were derived only after fieldwork had begun and after continuous engagement with the data collected. In the early stages of the data analysis process, it became evident that although TradSoft, EdgeSoft, BigGames, and CasualGames had adopted a diversity of information technologies and had pursued distinct technological trajectories through their appropriations, these appropriations were made for a limited set of similar purposes: generating transparency for the purposes of mobilizing the workforce, of pooling work artefacts across occupational communities, and of reporting accountability across lines of authority. The appropriations made were thus functionally equivalent, although with varying levels of adequacy as it will be seen in the next four chapters.
Chapter 5

TradSoft – Findings

In this chapter, I will focus on TradSoft, a Canadian private developer of an enterprise systems software product for large firms (+1000 employees). The chapter begins with a description of contextual conditions at TradSoft. Then, I will explain how people at TradSoft appropriate technologies to generate transparency for mobilizing the workforce, for pooling work artefacts, and for reporting accountability. A conclusion will summarize the main findings presented in this chapter.

5.1 Contextual conditions at TradSoft

The following table summarizes the contextual conditions within which appropriations of technology are accomplished at TradSoft. Before describing of the evidence for each condition, I will briefly illustrate how work is organized at TradSoft.

<table>
<thead>
<tr>
<th>Aspirations</th>
<th>Quality of life</th>
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<tbody>
<tr>
<td></td>
<td>Slow, incremental organic growth</td>
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<tr>
<td></td>
<td>Sustainability and protection of corporate control</td>
</tr>
<tr>
<td>Time pressures</td>
<td>Refusal of contract terms that would impose a sense of urgency</td>
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<tr>
<td>Slack resources</td>
<td>Abundant cash reserves (high discretionary slack)</td>
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<td></td>
<td>No external financial dependencies</td>
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<tr>
<td>Workforce demography</td>
<td>Homogenous, highly skilled workforce</td>
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<tr>
<td></td>
<td>Little turnover and long average organizational tenure (12 year avg.)</td>
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<td></td>
<td>Little status differentiation</td>
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<td>Workforce relations</td>
<td>Hiring based on value fit</td>
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<td></td>
<td>Intense socialization of new workers</td>
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<tr>
<td></td>
<td>Nepotism and dating are encouraged</td>
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<tr>
<td></td>
<td>Emphasis on peer control</td>
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Table 18. Contextual Conditions at TradSoft

5.1.1 The organization of work

TradSoft is structured around a matrix organizational form. The executive group that forms the operations committee that meets weekly includes the Founder-CEO, the two Operations director, the Sales director, and the IT manager. A pool of workers composed of implementation specialists, technical developers, business analysts, and quality assurance specialists is managed
by the Operations directors. The Operations directors allocate resources to customer teams, which are lead by a customer pilot, and to the R&D manager. Although the nature of skills and the size of their team may vary over time, customer pilots are assigned on a permanent basis to one or more customers. Customer pilots are thus responsible for the whole customer life-cycle, from pre-contract negotiations and analysis, development, implementation, maintenance, training, sales, and customized R&D. When I conducted this study, some customer pilots had been responsible for their customers for over 10 years. Workers are assigned to each team depending on the needs of the moment. These assignations to teams are not permanent and may be of relatively short basis, even for the dozen of workers who spend much of their time working on R&D activities under the leadership of the R&D manager or internal IT activities under the leadership of the IT manager. R&D and IT workers are frequently assigned to activities other than R&D and IT. Thus, work organization is much more similar to a pool of internal consultants than a conventional workforce organized in functional departments. A team of administrative assistants help James Lewis\textsuperscript{13}, TradSoft’s Founder-CEO, as well as the other executives to deal with internal affairs (HR and purchasing) and customer-related affairs (training, communication, marketing, among other activities).

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{TradSoft_Organizational_Chart.png}
\caption{TradSoft Organizational Chart}
\end{figure}

\textsuperscript{13} All names are pseudonyms to ensure anonymity.
5.1.2 Aspirations

The aspirations of TradSoft’s top management are characterized by an emphasis on the value of “quality of life” as criteria for organizational choices, an emphasis on slow organic organizational growth, as well as an emphasis on ensuring the sustainability and protection of corporate control.

Since the founding of the organization, TradSoft’s co-founders, James Lewis and Ronald Bray, have always considered “quality of life” has a fundamental value underlying the organization’s operation. By “quality of life”, they meant a consideration of their own wellness, but also of their employees, suppliers, and customers. In concrete terms, the idea of “quality of life” refers to a way of life where work is considered important, but does not become the sole priority:

“We want to stay as small as possible. To be small allows us to do the R&D required to keep us on the cutting edge. And that begins with the philosophy of the organization from which the #1 item is ‘quality of life’ for everyone. Not the quantity or size of any other metric, but quality of life for the people who work here first and foremost.” (James, Founder-CEO, quotation 45:3).

This emphasis on quality of life has its origins in the work experiences of TradSoft’s co-founders in the 60s and 70s when the computer service industry was nascent: “I have experienced the beginnings of the software industry. We worked 18 hours per day, 7 days a week, and sometimes we slept 3 nights in a row in our offices! Hence many divorces, burnouts, and depressions. When we founded TradSoft in 1980 we told ourselves that we would never reproduce these kinds of situations” (James Lewis, Founder-CEO, Newspaper interview, April 1, 2003). The value was explicitly formalized into TradSoft’s value chart and in the model illustrating the logic underlying TradSoft’s strategy. Another influence on this emphasis on quality of life and the accompanying communitarian values and practices (discussed further below) can be detected in the content of the popular business books read by James Lewis, TradSoft’s Founder-CEO. On the day I interviewed him, the books that were prominently
displayed on the corner of his desk and office shelves were mostly of “contrarian” tendency or concerned with cultural aspects of management practice: “In Search of Excellence” by Tom Peters and Robert Waterman, “Maverick!” by Ricardo Semler, “Who Killed Pleasure at Work?” by André Riedl, and “Up the Organization” by Robert Townsend, among others. For instance, one significant trace of influence of these books is found in the fact that TradSoft’s does not have any worker or team with formal HR responsibilities, a practice consistent with Townsend’s advice to “fire the whole personnel department” (p.96).

The second aspect of TradSoft’s aspirations is an emphasis on slow and organic organizational growth. The number of new customers that is sought each year is small (4 to 6) to provide time to socialize and train new workers hired to increase the organization’s capacity. I was told that TradSoft had never lost a customer since 1993, apart from cases of “force majeure” caused by mergers, acquisitions and bankruptcy. Thus, the organization’s management prefers to add a small number of profitable customers to a small (~50) but steadily growing roster, rather than attempting to grow quickly and radically, either organically or through acquisitions. An additional evidence of this focus on incremental growth is the fact that the organization employed only one full-time sales representative (Walter, VP Sales), who is supported by one marketing analyst (Margaret, Marketing analyst) and one technical sales assistant. EdgeSoft, which is focused on quick and radical growth and which will be discussed in the next chapter, employs more than 20 sales representatives in comparison. Figure 15 illustrates TradSoft’s growth in terms of revenues and employees (blanks are missing data points).
The third aspect of TradSoft’s aspirations is the protection of corporate control and a focus on the long term sustainability of the organization. Risk-taking is limited and decisions are made to ensure the organization stays independent and that the control of the organization is kept by insiders. There are two reasons why TradSoft protects carefully the corporate control and the long term prospects of the business: (1) TradSoft is a family business and (2) generous employment benefits are provided to workers, which relevance could be questioned and criticized by external shareholders. In addition to James Lewis, who co-founded the organization, many members of the Lewis family have worked at TradSoft: his daughter and son-in-law, his wife until the early 2000s, and his son until recently. As a family business, its management exhibits a conservative orientation when it comes to strategic decision making. It is conservative in the sense that decisions are taken in a way that avoids putting into question the viability and the profitability of the business if things happened to go wrong. Such limited risk-taking is consistent with findings from the entrepreneurship literature which confirmed that family businesses’ managers have a tendency to limit risk-taking in comparison to other types of
entrepreneurial ventures because they have “socio-emotional” stakes in the business (Gomez-Mejia, Haynes, Nunez-Nickel, Jacobson, & Moyano-Fuentes, 2007, p. 129). Furthermore, the preservation of the latitude to offer generous employee benefits, such as a fitness center staffed with a full-time expert trainer, is an important reason why TradSoft’s top management is careful to avoid quick radical growth and to temper its ambitions.

The nature of TradSoft’s aspirations is summarized in a cause map modeled by James Lewis and Ronald Bray, TradSoft’s co-founders, in the early 1990s. The cause map, which is reproduced below and which illustrates the logic underlying strategic decisions, has never been modified since. While the relationships between the variables in the model may be perceived as lacking rigor from an academic eye, a careful examination nevertheless shows that quality of life, slow organic growth, and protection of corporate control are the key drivers of top management’s aspirations at TradSoft.

Figure 16. “The Virtuous Cycle of TradSoft”, as drafted by TradSoft's founders in the early 1990s
Thus, the evidence clearly shows that James Lewis’ and other top managers’ temporal focus are definitely oriented toward the long term rather than the short term. Choices are made not to maximize profitability, but to ensure the viability and long term sustainability of the organization, first and foremost.

5.1.3 Time pressures

At TradSoft, top management is careful to avoid imposing a sense of urgency to the organization. It refuses contract terms and covenants that would impose stringent time constraints and generate a feeling of having too much to do without enough time to do so. As a result, TradSoft exhibits a very relaxed and calm work atmosphere where time is considered plentiful.

TradSoft’s top management carefully selects the customers it does business with. Before agreeing to conduct a project, top management and customer pilots cautiously vet the customers’ capacity to pay, as well as the resource and time constraints within which the product will be delivered. TradSoft’s top management purposefully seeks out large organizations that have more than 1000 employees as customers, as these organizations have more resources and personnel available to implement its product. Also, top management does not hesitate to impose its own set of requirements to customers, even at the risk of losing contracts and opportunities:

“The importance of quality of life is obvious when we’re in implementation mode and the customer tells us that he wants a product like ours implemented within four months. We don’t hesitate to say ‘No, it won’t happen’.” (Jordan, Operations Director, quotation 46:11)

As a result, TradSoft’s work environment exhibits a relaxed atmosphere. Firefighting behavior is largely absent in comparison to the 3 other organizations of this research, apart for the workers whose role include customer support. However, these periods of intense work are usually quite short in duration and predictable; they usually happen yearly around the month of March where TradSoft’s product needs to be modified to reflect changes in Canadian tax laws. Because
these peak periods of work are recurring at about the same time each year, top management have learnt to allocate buffers and resources to alleviate the impact of the intensified work demands. It is thus highly uncommon for the total hours of work in a given week to exceed 40 hours. People attributed the cause of work weeks exceeding 40 hours to a personal preference rather to a systematic vicious cycle of firefighting and heroic behavior. One customer pilot (a middle manager) explained to me how such peak work demands are dealt with at TradSoft:

“If you work for 70 hours per week for 3 weeks in a row... at one point, you are going to be burnt out. You won’t be happy. You can’t be functional if you do so. So, we really don’t tolerate such behavior. It’s more than simply discouraging such behavior, it’s that we simply do not allow and tolerate situations that necessitate such behavior to take place. If such a situation becomes inevitable, well, we’re going to find resources and move people around to solve the problem, or we are going to adjust the delivery schedules. It is simply not part of our value system to make people work in such a way” (Martin, Customer pilot, quotation 52:27)

Another source of (anecdotal) evidence about the lack of time pressure at TradSoft is provided by my observations of the physical work environment and of the interview process itself. While the other organizations’ offices I visited for this research were akin to beehives with workers constantly buzzing around, TradSoft’s offices were quiet and peaceful. It was common to see people walking around in sports’ gear with rackets in hand in the middle of the morning or the afternoon, after a break from work spent playing badminton at the gym. As a visitor, I was also struck by how much people at TradSoft didn’t show any hurriedness with me. When needed, workers didn’t mind that the interviews took more time than allocated. At EdgeSoft, CasualGames and BigGames’ offices, it was very common for workers to have appointments scheduled right before as well as right after the time they had allocated to their interview or my visit. Office phones or cell phones often rang during the interviews, something that happened only once during my interviews at TradSoft.
Put briefly, while TradSoft’s top management is attentive to schedules and time goals for the delivery of products to customers, it nevertheless carefully avoids creating a sense of urgency and stressing the scarcity of time. As a result, time is generally considered as plentiful.

5.1.4 Slack resources

While TradSoft could be considered as risk averse in terms of its growth aspirations, it is far from being “frugal”. The organization has abundant slack financial resources, which allows leeway to invest in technological infrastructure and employee benefits. For instance, the organization provides benefits such as interior parking lots for all of its employees, a fully equipped bar, one gymnasium and one fitness center staffed with a trainer employed full-time, as well as fruit platters and snacks twice per day, among others. In other words, top management has much discretionnary slack at its disposal to allocate to the exploration of new ways of working and to the experimentation of new tools.

According to the CEO of TradSoft, top management became attentive to the importance of generating financial slack after the organization went through financial distress in 1993. Earlier in 1992, the firm had landed the most important contract in its history with a large Canadian multinational firm. The contract staffed most of TradSoft’s workforce of 47 employees at the time and would generate most of TradSoft’s revenues. Although working on such large contracts was somehow against their managerial preferences, the founders of TradSoft nevertheless seized the opportunity:

“We were in the mode of one customer at a time; a very risky thing to do. But we knew that. We were somehow victims of our own success in the sense that we began with small contracts and then we began to get larger and much larger contracts. We couldn’t grow quickly enough to supply the very large contracts.” (James, Founder-CEO, quotation 45:9).

In April 1993, this large Canadian multinational firm went under corporate restructuring and laid off thousands of employees. About this difficult period, James Lewis declared:
“It was the period when [large Canadian multinational firm] was losing $100 million per month. One day, the board said ‘freeze all projects’ and they hired a new CEO. They gave him a personal bonus of $10 million if he got the company out of the red by the end of 1993. Obviously, he did what any managers do in those circumstances […] there was a bloodbath and he took write-offs on anything he could find, any projects that could generate future amortization […]. He got his bonus and then got out! At that time, we had just moved in our new offices, a brand new building. And we found ourselves with no customers” (Interview with James Lewis, March 18, 2008).

This sudden loss caused a difficult dilemma for the founders. They decided to lay off employees for the first and only time in its history:

“We had to make a decision. We could have closed the business and all go on a fishing trip. We had the financial resources to do so. We decided not to do so. […] We evaluated the group we had to have at a minimum. We cut 14 people in the days that followed.” (Interview with James Lewis, March 18, 2008).

To avoid such dependence in the future, TradSoft changed its business model from a provider of systems development services to a developer and vendor of integrated software package14. In early 1994, TradSoft was saved from bankruptcy when it won a contract to implement its new generic software product in an 8 000 employees multinational. At the time, the amount of cash reserves was getting dangerously close to the point where closing down the business became a serious option. The founders thus learnt a lesson about the importance of generating slack:

“For about a year and a half we were without any customers, coding what became our product. […] It cost a lot more than we thought. It took more time and burnt all our cash reserves. We took mortgages on our houses, sold our toys, there is nothing we didn’t do. […] This episode made us become an extremely prudent firm on financial matters; we could go through the whole adventure again today very easily, we have enough cash reserves to do so” (Interview with James Lewis, March 18, 2008).

14 This change is explained in further detail in the appendix containing the history of each organization studied for this research.
Further evidence of the slack available to TradSoft’s top management is provided by Figure 17 below, which depicts the revenues per employee generated by each organization studied in this research.

![Figure 17. Slack resources: Revenues per employee (2001-2008)](image)

Bourgeois (1981) argued that slack is best assessed through financial ratios. Since only one of the organizations studied in this research is public (EdgeSoft), it was impossible to collect and compute precise cash flow-related ratios. Nevertheless, an organization’s level of slack resources can also be observed by its ability to generate excess revenues from its operations. Despite the private nature of BigGames, CasualGames, and TradSoft, both revenues and employees data were available for these organizations, which makes it possible to compare the organizations on the basis of the average revenues generated per employee. In the business and entertainment software industry, salaries and pay are the main costs driver, the other being technological infrastructure. Average revenues per employee can thus be considered as a valid financial measure to assess the level slack resources in the absence of publicly available financial data on cash flow.
Thus, the evidence reviewed so far suggests that TradSoft’s top management has a large cushion of slack financial resources at its disposal. This cushion is particularly valuable because top management has full discretion about how it may be allocated, since TradSoft does not depend upon any external fund providers, such as angel investors, investment banks or venture capital firms. TradSoft’s top management is thus at ease to allocate the excess financial resources according to its own preferences.

5.1.5 Workforce demography

TradSoft’s workforce is characterized by little diversity in terms of occupations, since most workers are computer scientists or engineers. There is also little turnover among workers and the average organizational tenure is very long. Also, there is little status differentiation among the workforce.

The majority of workers at TradSoft have been trained as computer scientists or software engineers. Most have obtained their undergraduate degrees and for many, their post-graduate degrees in the nearby local universities. When asked about the occupational background of workers at TradSoft, management responded very few had backgrounds “other than computer science or engineering? Few. Very few.” (Robert, R&D Manager, quotation 47:14). Many workers had worked previously for one of TradSoft’s customers and have been hired for the industry experience they brought into the pool of expertise. Hence, the depth of skills exhibited at TradSoft is great: “There is great skill depth. The product has about 20 modules, each different with its own specificities. For each module, we have people that have master degrees and that have spent about 25 years to learn these topics. So people here have highly specialized skills.” (James, Founder-CEO, quotation 45:10).

Furthermore, there is little turnover among workers at TradSoft. When workers leave the organization, it is usually due to personal and family reasons rather than work-related reasons.
The fact that turnover is almost inexistent means that workers have an average organizational

tenure of 12 years at TradSoft.

“Yes, there is a little turnover, but really not that much. This
year, there is one who will celebrate his 10th anniversary with
us. For another one, it’s his 15th anniversary. In my case, it’s
been 20 years I have been working here. So the turnover is not
very significant, not at all. It usually happens because of ‘force
majeure’, like the last one who left because his wife took a job in
the Eastern Townships. He travelled back and forth for about a
year [JGB: ~2 hours drive one way] but it was untenable.”
(Robert, R&D Manager, quotation 47:5).

If the level of turnover and the length of tenure are to be interpreted indicators of
workers’ loyalty and commitment to TradSoft, a supplementary source of evidence about the
strength of such loyalty or commitment can be found in the extent that workers are active on the
job market and open to employment opportunities elsewhere. Such activity can also be assessed
unobtrusively and without much difficulty through the proportion of workers that are registered
on professional social networking applications, such as LinkedIn\(^{15}\). The following figure shows
the proportion of workers that are registered on LinkedIn from each organization studied for this
research.

\(^{15}\) http://www.linkedin.com
As it can be inferred from the figure, TradSoft’s workers are much less active on LinkedIn than workers of the other organizations studied. Such unobtrusive evidence reinforces the qualitative evidence that TradSoft’s workers tend to strongly identify with the organization, have little intention to quit, and tend to have long organizational tenure.

Such little turnover and long organizational tenure is encouraged by the fact that TradSoft’s top management is committed to a philosophy of long-term employment. I was told by 2 workers that one of the questions that James Lewis (TradSoft’s Founder-CEO) asked every job candidate during interviews was ‘Do you realize that this could be the last organization that you may ever work for in your entire life?’.

TradSoft’s workforce is also characterized by little status differentiation. While the extent of expertise and authority vary between workers, the organization does not have a formalized organizational chart and forbids the employment of official organizational titles, apart for a few workers that have to engage into external representation activities. The structure of the organization is relatively flat, being composed of top managers sitting at the Operations Committee (the Founder-CEO, the 2 Directors of Operations, the IT manager, and the Sales
Director), the dozen of customer pilots, and all the other workers. During my attempts to understand the structure of accountability and reporting among TradSoft’s workers, I was often told that the notion of “hierarchy” didn’t “apply” and that the notion of “sphere” was much more appropriate to describe how TradSoft functions:

“We do not have any hierarchy and we do not want any. We have what we call a ‘sphere’ where everyone has his or her own responsibilities. By having a sphere, everyone is on the same footing. There may only be 3 to 4 persons in my team, but in reality the other 90 are also part of my team. There are no status distinctions, even for James [TradSoft’s Founder-CEO]. James may be the owner of the company, but at the same time, he has his own responsibilities and a role to play that is not that much distinct from anyone else here. His role is different, but it’s not that much more important than any other role.” (Martin, Customer pilot, quotation 52:13).

“If you try to look for hierarchy here, you are not going to find it. There is none of it. There’s maybe the guy with the cheque book, and then there is everybody else. Everyone plays his or her role. When I need to fill in surveys I invent myself a title, but it doesn’t mean a thing. I am a consultant... fundamentally.” (Robert, R&D manager, quotation 47:26).

The elimination of status distinctions is most salient when James Lewis (TradSoft’s Founder-CEO) suggests that “employees have the moral ownership of the firm” (James, Founder-CEO, undated TV interview). The rhetoric of the “sphere” to characterize workforce relationships within the workforce is an integral part of his discourse:

“The organization can be described as a sphere where people have relationships with everyone else. The academic debate about whether this model is scalable or not to larger organizations... we don’t really care. It works for us.” (James, Founder-CEO, quotation 45:2).

Thus, the evidence suggests that TradSoft is characterized by a highly skilled, homogeneous workforce, by little turnover, and by long average organizational tenure. Furthermore, formal status distinctions are discouraged and a leveling of moral authority between workers and management is actively pursued.
5.1.6 Workforce relations

Workforce relations at TradSoft are grounded in communitarian values, both in discourse and in practice. In a way similar to the Japanese management philosophy in vogue during the 1980s (Karsh, 1984; Van Maanen, 2006) and to the high-commitment HR practices literature (Pfeffer, 2006), top management have designed policies that put emphasis on long term, if not lifetime, employment, slow career progression, and a concern with non-work aspects of workers’ lives, among other practices. Persistent rituals and traditions have also emerged over time. As a result, workers’ cohesion and identification with the organization, rather than with their occupation, is very significant at TradSoft. A few practices distinguish TradSoft from the other cases researched in this study: hiring based on value fit rather than skills, nepotism and dating among workers, intense socialization of new workers, and an emphasis on peer control rather than hierarchical control.

Selecting workers at TradSoft is done on the basis of value fit and potential rather than credentials or current skills. As such, top management is mainly concerned with how workers will connect with others in the organization rather than how they will fit within the division of labor in the organization. James Lewis, TradSoft’s Founder-CEO, personally interviews all potential candidates is known to scrutinize candidates’ “disposition to happiness”. As a result, high performers and high achievers tend to be avoided in candidate selection:

“In general, for the new hires, we don’t look for the diploma necessarily. We look instead for the attitude and the ability, because you can always buy a book and learn, if you are able to learn. We prefer to hire such people rather than geniuses that would not fit.” (Robert, R&D Manager, quotation 47:28).

Nepotism is also strongly encouraged when recruiting new workers. While kinship ties among workers are expected to be prevalent in a family firm, these ties were quite pervasive among workers that weren’t part of the founding family at TradSoft. It is thus common practice to refer brothers, sisters, cousins or spouses as candidates when positions open up. Furthermore, I was told the prevalence of workers engaged in a dating relationship was higher than what would
be expected in other organizations of comparable size. While such behavior is taboo, or even forbidden, in many organizations nowadays, it is acknowledged and considered normal at TradSoft:

“A lot of people socialize after work. Some are the best friends in the world outside this building. There are many couples, husband and wife, that work here and it is encouraged.” (Robert, R&D Manager, quotation 47:54).

Another practice that strikingly distinguishes TradSoft from the other organizations studied in this research is the intense and planned socialization through which new workers are put through. A mentor is attributed to each new worker with the responsibility to teach the ropes of the organization:

“Every new hire gets a mentor, or what we call a ‘shadow’. That person takes that responsibility for at least 2 years. He or she’s the one who is going to answer all the questions that the new hire can have. It gives the new hire time to take in the culture of the organization.” (Robert, R&D manager, quotation 47:11).

The mentoring activity is oriented toward both the technical aspects of TradSoft’s products and the social rules and norms of the organization. At the core of these rules is a set of ten values, which have been established as TradSoft’s approach to products, but also as a way to conduct work internally.
TradSoft, as a corporation, for its product ABC, and its implementations, aims above anything else to respect these 10 core principles:

**One master: the firm’s mission.**
The implementation of the system needs to respond to the needs of all the firm, not only its HR department.

**Information is a corporate asset.**
Information is not intended for a department but for the firm as a whole. Roles need to be redefined with regard to information and it has to be managed as other corporate asset.

**Simplification is the golden rule.**
HR and pay processes have to be redesigned by focusing on simplification.

**War to paperwork, make room for Management.**
Administrative tasks without value added need to be eliminated; free resources for value-added strategic tasks.

**Competence and honesty are presumed.**
Everybody accepts the principle that others are competent and trustworthy. However, controls are put in place.

**Access is for ALL.**
Every stakeholder, as much the first-line employee as the president, has to have access to the information necessary to the accomplishment of their tasks.

**The input is at the Source.**
The initial input of information is done at the source of that information, whether it be an employee updating its home address or a supervisor that approves time sheets.

**The input is UNIQUE.**
Information is captured only once. Eliminate useless information handling and automate any transfer to other systems.

**Technology is only a tool.**
It should never be the final goal. Only features should influence the purchase decision of a system.

**The paperless office is possible.**
Try it, it works!

<table>
<thead>
<tr>
<th>Table 19. TradSoft’s 10 core principles, as established in the early 1990s</th>
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</thead>
<tbody>
<tr>
<td>In addition, each worker is given a “book” elaborated from newsletters, press releases, and editorials written by James Lewis and Ronald Bray, TradSoft’s founders, which contains the historical record of activities at TradSoft:</td>
</tr>
</tbody>
</table>

“We provide the new hire with a binder containing all the newsletters and journals that have been published since the founding of the firm. [...] The new employee can thus understand
all that has been done here in the past, as well as what the product does and its evolution.” (Margaret, Marketing Specialist, quotation 54:27).

An additional distinguishing feature of working relationships at TradSoft is how much emphasis is put on peer control rather than hierarchical control. This emphasis is instantiated in two ways. First, workers have to submit themselves to quarterly peer evaluations of their performance. This evaluation takes the form of a single sheet of paper on which the names of all 95 workers are written down (with the notable exception of the Founder-CEO’s name). Workers rate every worker’s behavior and contribution about their satisfaction with their work by using a simple score between 1 and 10. An average score is then computed for each worker by one of the assistant working in administrative support group. This average score is then communicated to James Lewis and the Operations Director and employed as a parameter in the financial bonus “formula”, which also relies upon the accomplishment of organization-wide objectives as additional parameters. Individual scores and the bonus “formula” are not publicly communicated and kept private. I was told that it was impossible to “reverse-engineer” the formula to obtain one’s score based on the size of one’s bonus. While this evaluation method may seem to provide opportunities for arbitrary and unfair treatment, I was consistently told that the practice worked well and was perceived as fair, both by workers and managers. One middle manager explained to me how the scores were used to enact managerial interventions:

“The goal of the evaluation, somehow, is to simply get an overall picture of where everyone stands. The group sees everything. Since the evaluation is anonymous, you can easily detect tendencies. If there is one person that really does not like you, you may get a very low score from that person. But averaged over 95, it’s a drop in the ocean. If 10 persons do not like you... then that’s another story.” (Mark, Customer pilot, quotation 48:18).

The second way that peer pressure is instantiated at TradSoft is through implicit control and reminders by the workers themselves. As such, workers and managers consider that the autonomy and benefits provided by the organization are akin to a “commons” or a “social
contract”, which sustainability is fragile and always at the risk of being hurt by shirkers. Hence, the enforcement of norms, rules, and appropriate behaviors is pervasive in workers’ discourse and most consider such enforcement as part of their task responsibilities. Peer control is also found in the reliance on public shaming for workers that do not fulfill their responsibilities and promises. For instance, a “Top Chicken” trophy is awarded each year to the worker who missed the most sports and social events without justification or without informing his or her peers of an absence beforehand. One more “serious” area where such peer control is salient is in the setting and allocation of vacation time, which is delegated and negotiated between workers themselves:

“Each employee manages his or her own vacation time. I will not tell anyone how they should manage their own vacation time. The sole requirement is that you are available for your customers. The rest, ultimately, is managed within the team. The decision to take time off is left to the customer pilot and to his people. If someone comes by today and says ‘I am leaving to play golf this afternoon!’ I will only say ‘OK! Have a good game!’ And I can only encourage that person to get a good score.” (Jordan, Operations director, quotation 46:13)

In the absence of hierarchical control in many working areas of the organization, peer control thus compensates as an important deterrent to shirkers and abusers:

“If someone began abusing the system, there is a colleague who would first say ‘Hey! You’re threatening our great latitude... the freedom that we have to work here on our own terms, at our own rhythm... and the way that the business operates in the end. People auto-protect the culture here. They don’t need us, the managers, to reinforce it systematically, because people that have been here for a long time know very well the benefits and they protect it.” (Scott, Operations Director, quotation 51:30)

To summarize briefly the evidence gathered, workforce relationships at TradSoft are characterized by strong identification to the organization because of hiring based on value fit rather than credentials, by the approval of nepotism and dating within the workforce, by intense acculturation of new workers, and by an emphasis on peer control. Put together, these practices suggest that working relationships at TradSoft are communitarian rather than transactional in nature. James, TradSoft’s CEO, summarized as follows the impact of normative means of control:
“The culture is so strong that there is nowhere to hide. It’s the group that identifies and rejects people that are incompetent or that do not fit here. If I do a hiring mistake, it’s corrected within a couple of weeks. You can charm the president during your interview. But afterwards, when you start working with the team, you can’t charm people forever. It’s impossible. So there is nowhere to hide in an organization as ours.” (James, Founder-CEO, quotation 45:17).

5.1.7 Summary of contextual conditions at TradSoft

TradSoft’s context is characterized by the combination of conservative growth aspirations, a lack of time pressures, and abundant slack resources. Its workforce is homogeneous in skills and occupational background, has long average organizational tenure, and exhibits little status differentiation. Furthermore, relationship between top management and workers is grounded in communitarian ideals, rather than a purely transactional form of exchange where labor is traded for pay.

In the sections that follow, the appropriations of technology enacted to fulfill transparency for mobilizing, for pooling artefacts, and for reporting accountability are described in detail. Table 20 on the following page summarizes the evidence about each type of transparency.
<table>
<thead>
<tr>
<th>Appropriations of technology that fulfill the function</th>
<th>Mobilizing</th>
<th>Pooling Artefacts</th>
<th>Reporting Accountability</th>
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</thead>
<tbody>
<tr>
<td>1. CEO and executives disclose corporate affairs through biweekly emails to the organization-wide mailing list</td>
<td>1. All workers resolve task dependencies through a file server</td>
<td>1. All workers (including the CEO) record time spent over work and customer interactions with a project management system</td>
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<tr>
<td>2. CEO enacts policies and procedures through emails to all workers; workers employ email to deliberate about the policies and procedures</td>
<td>2. IT and R&amp;D workers reuse knowledge for problem-solving through a project management system and a wiki</td>
<td>2. Customer pilots and executives track work and resource consumption with automated reports and graphs from a project management system</td>
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<tr>
<td>3. Executives and customer pilots recognize workers’ contributions through weekly emails to all workers</td>
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<tr>
<th>Key technology features</th>
<th>Outlook</th>
<th>Microsoft file server</th>
<th>Project management system</th>
</tr>
</thead>
<tbody>
<tr>
<td>- <a href="mailto:All@TradSoft.com">All@TradSoft.com</a> mailing list</td>
<td>- No access stratification (only one type of user for all workers)</td>
<td>- Work order input form</td>
<td></td>
</tr>
<tr>
<td>- No access limitation to <a href="mailto:All@TradSoft.com">All@TradSoft.com</a> mailing list and all workers (including peripheral workers) subscribe to the mailing list</td>
<td>- Tree-like directories</td>
<td>- Timesheet input form; exhaustive task labels; text fields</td>
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<td>- Automatic commitment assignment</td>
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<td></td>
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<td>- Querying and OLAP features</td>
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<td><em>Project management system</em></td>
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<td></td>
<td><em>Wiki (MediaWiki)</em></td>
<td><em>Automatic importation of the Project management system data feature</em></td>
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<td></td>
<td><em>- Editing, categorizing in tree-like directories, hyperlinking, search</em></td>
<td><em>- Scheduling features</em></td>
<td></td>
</tr>
</tbody>
</table>

| Functional alternative practices | - None | - None | - Resource capacity planning on a giant whiteboard by the VP Operations |

| Consequences | - No turnover (avg. tenure 12 years) | - Few breakdowns in coordinating dependencies | - Trust, fairness, and no conflicts during coordination negotiations |
| | - Workers identify strongly with management and little with their occupational community | - Ease of transfer of workers from one team to another | - Efficient prioritization of resources and assessment of project status |
| | | - Quick problem resolution | - Delegation of decisions to customer pilots |
| | | | - Just-in-time allocation of workforce |

Table 20. Types of transparency at TradSoft
5.2 Transparency for mobilizing

The technologies appropriated to generate transparency for mobilizing the workforce at TradSoft mainly consists of the “All@TradSoft.com” email list to which all workers subscribe. First, executives and middle managers appropriated email to disclose detailed information about corporate affairs and future plans on a regular basis. Second, email is also employed to exchange about and debate the content of policies and procedures. Third, people at TradSoft employ email to produce accounts of past activities and to show off contributions.

5.2.1 Appropriation #1: Disclosing corporate affairs through emails to the organization-wide mailing list

Management at TradSoft employs email to align workers’ identity and foster their commitment to the goals of the organization. They do so by regularly sending emails that summarize key decisions or actions taken by James Lewis, TradSoft’s Founder-CEO, and the group of key executives that are members of the operations committee (OpsCom), to an organization-wide mailing list. The topics of these messages usually pertain to current and future events pertaining to the customers the organization does business with, as well as about the organization’s financial outcomes. All the people interviewed at TradSoft mentioned that the sensitiveness and the granularity of the information contained in the emails sent by James Lewis and other executives were unusually high in comparison to any other organizations.

James Lewis and the other executives at TradSoft believe that detailed disclosure about corporate affairs help workers in their day-to-day activities and strengthen their identification to the organization’s goals. Executives at TradSoft boldly emphasize that everything there is to know about how the organization is run concerns all workers. James Lewis explained this practice the following way:

James, Founder-CEO: “People here are in the now about everything that goes on in this business. And exactly as if members of a board of directors. And that obviously takes considerable time each day... to continuously interpret what we
are doing, why we are doing it, how it fits in the philosophy and the culture. There are exchanges about that. People will come back with questions – Why did we do this? Why in a proposal to Lottery Corporation are we putting that we’ll do this, but that we’ll refuse to do that other thing?”

JGB: “And the forum usually employed for these exchanges is ...?”

James, Founder-CEO: “People come into my office. But we prefer to do it by email because it is so much easier to include everyone in the conversation. Thus we spend a considerable time over email. Before email existed, THE issue that generated discussions and dissatisfaction was – Well, nobody told me about that! I am always the last one to know! Why did nobody talk to me? I didn’t know! – There is none of that anymore!” (James, Founder-CEO, quotation 45:27).

James Lewis also regularly writes lengthy emails to voice his opinion on current internal debates and matters pertaining to the long-term viability of the organization. This practice consists less of reporting current daily activities, but of editorializing about ongoing concerns.

Two middle managers described to me what such editorials from James Lewis pertained to:

“James sends emails regularly to TradSoft at large... He communicates about marketing, business conditions, or business orientations that he thinks we should follow or that he wants us to follow. It may also be about working conditions and regulations. James will publish all that by email.” (Mark, Customer pilot, quotation 48:33).

Brandon, IT manager: “When there is a lot of marketing going on, when there are a lot of projects that are discussed and negotiated with customers, James is very active on email. Sometimes, it is long emails with all his thinking, his strategy, and he explains his strategy to us for why we’re going to get that customer and how we are going to do so. It’s interesting...”

JGB: “To everyone, including administrative assistants?”

Brandon, IT manager: “Everyone.”

JGB: “How detailed are these emails?”

Brandon, IT manager: “Often, they take 2 to 3 pages.” (Brandon, IT manager, quotation 50:44).

Topics of the editorials may range from HR policies to the management of specific customers. Workers confirmed that James Lewis’ emails are generally quite detailed, not only in terms of facts and figures, but also in terms of explanations. The rationale behind the courses of action chosen by the operations committee, that is the executive board, is explained at great
length each week. When TradSoft submits a proposal to a prospect, the content of the proposal is dissected and made clear to all workers. For instance, when questioned about what his emails contained, James Lewis responded the following:

JGB: “You said that you communicate one hour each day by email... what do you communicate about?”
James Lewis, CEO: “Everything. Everything. For instance, they know that right now we have an offer on the table for Lottery Corporation. People are aware of it, they know the content and the numbers, and they know exactly what these are based upon.”
JGB: “All 90 employees?”
James Lewis, CEO: “Everyone. The janitor included. [...] They know what they have to do, the strategies that we will take, how we positioned ourselves toward SAP, where we are not conform to the RFP. Everything... Not everything in the sense that... the offer is there [note: he points to a full 3”’ binder on a table in the corner of his office]. It must weigh 16 pounds. Obviously, it was in the middle of the main office for a full week. When we got it out, we put it at the disposal of everyone, and people came to browse it.” (James, Founder-CEO, quotation 45:25).

James Lewis also regularly writes opinion pieces about a variety of topics, such as the advantages of custom-tailored ERPs in comparison to vanilla ERPs, the intricacies of selecting an ERP software provider, and the business philosophy underlying TradSoft’s management. In addition to being internally transmitted to the organization-wide mailing list, these editorials are prominently displayed on the organization’s public web site, printed in newsletters sent to all customers, and transmitted to all TradSoft’s workers. These writings generally contain a moral overtone about what good and bad business practices consist of.

Executives provide sensitive details about interactions with customers, such as how the meeting with a new prospect went or as to the activities undertaken to recover payments due by a customer in difficulty. These memos do not only contain the narrative of the activities undertaken, but also the amount and the financial figures involved. Many executives, including James Lewis, do not hesitate to refer to the idea of transparency, without any prompt from my behalf, to qualify the consequences of their practice:
“Transparency. I use that word because all the information circulates here. Highly strategic information circulates, at all levels of the business. There are mails sent by the president, and by us, the directors, to inform people about what is going on in the business. It is information that I believe elsewhere would never get disclosed to anyone. Here, we disclose it, so that everyone knows what is going on at TradSoft. So I would say that concerning transparency, it’s extraordinary what is going here.” (Scott, Operations director, quotation 51:22).

When James Lewis was asked if there was any information that he would prefer not to disclose to his employees, he responded that “There is no information... other than the net profits, and I will explain why, that is not available to people.” (James, Founder-CEO, quotation 45:27). He explained that he prefers to keep the net profits figures private because he fears criticism from workers about some of his decisions. Since workers’ bonuses and compensation are tied to the organization’s overall financial outcomes, he believes that some workers may not agree with expenses such as maintaining a fully equipped gymnasium staffed with a full-time workout coach and a lounge bar. He believes that some workers may prefer to obtain greater pay compensation instead of such benefits.

Executives know that by providing fine-grained, sensitive information, they put the organization and themselves at risk. Many technicians and engineers at TradSoft maintain a network of ties to their occupational communities, whom may work for customers or competitors. They may leak the information intentionally or inadvertently to competitors through their networks of friends and relatives. To prevent the occurrence of such leaks, executives and managers at TradSoft emphasize the sensitive and confidential nature of the information. One metaphor that I often heard from executives and managers was that the emails were so sensitive that it would usually be reserved exclusively to the board of directors if people had worked in any other large organization. They thus do not hesitate to remind workers how fortunate they are to obtain such information and how much they trust them to “do the right thing”.

“There is nothing that we hide. We certainly put in those emails that the information is confidential, that it has to stay here at
TradSoft. We share it, but you shouldn’t talk about it at the restaurant with your spouse or partner. We share it, but it stays between us at TradSoft... that is very clear. Because often, I tell you, it’s really highly strategic information that really shouldn’t get out of the building... things that we are about to do or to announce. It has to stay within these walls. And then you see that in other organizations, people would not take the chance that leaks may occur.” (Scott, Operations director, quotation 51:27).

Workers and middle managers are thus aware that the information they receive from James Lewis and top management is akin to a favour and a sign of trustworthiness. One middle manager described how he felt toward top management’s disclosure of information as follows:

“Because of the way the business is designed and because of James’ approach, we have access to a lot of information that would not necessarily be accessible to all [...]. In comparison to most other organizations, access to this information would be restricted. Thus, this information is somehow optional. But it is nevertheless distributed. It provides clarity, we understand a little better the orientations, or why a sudden squeeze may appear – Look, it comes from this thing – and we are better able to understand why one team may be under fire. There is an explanation.” (Mark, Customer pilot, quotation 48:14).

When I first learned about this extensive disclosure of information through email by TradSoft’s management to its workers, I had doubts about the claims that “everyone” actually received the emails as I was told. Linda, an administrative assistant part of the group of “moms” that provide accounting and clerical services to the rest of the organization, mentioned that her group, as well as other clerks and support personnel, do receive these emails. She explained that while their interest in keeping up-to-date with customer and corporate affairs may be limited due to their positions and task responsibilities, she nevertheless appreciated being included in such exchanges:

Linda, Administrative assistant: “There is a lot of information that is sent by email, even things that wouldn’t be disclosed in other companies... about the strategy of the business, about what is going with customers, and about projects.”

JGB: “Do you take the time to read that information?”

Linda, Administrative assistant: “I get that information. I read... well, surely I feel less concerned than others. But when I say it concerns me less, that’s not true. In the end, everything that
concerns TradSoft, concerns us... personally. But I receive all that information.” (Linda, Administrative assistant, quotation 53:16).

Many workers thus compare their experience of receiving such detailed information to what, sometimes imagined, others may have elsewhere. Workers feel that executives and managers are more forthcoming in their email communications than in any other companies for which they have worked for in the past, or with which they are acquainted.

5.2.2 Appropriation #2: Debating policies and procedures through the organization-wide mailing list

People at TradSoft also employ email to discuss, to debate and to enact workplace policies. While editorializing through email helps people learn about management’s preferences when faced with ambiguous situations, debating and enacting provides a way of putting in place more explicit controls about appropriate behavior at TradSoft. Such controls are usually enacted through email declarations sent to the organization-wide mailing list. Such rules have been accumulated in ‘The Book’, an emergent and evolving HR policy guide, since TradSoft’s founding, for over 20 years. ‘The Book’ is both a material and a symbolic artefact. It is a material artefact in the sense that when rules are enacted, an administrative assistant will print out the email, punch holes in the paper, and add it to a 3” binder containing previous such emails. It is also a symbolic artefact in the sense that the binder is actually never referred to during ongoing activities. Only new recruits are required to read it all as part of their early socialization activities. Usually, the enactment of rules and their inscription in ‘The Book’ may take place through either one of two processes.

First, unforeseen circumstances may arise where someone’s action are felt to transgress some tacit rule of good behavior. In those cases, if the events were not observed by James Lewis himself, people report the perceived transgressions to him. Then, after judging the validity of the complaint, James Lewis will write up the rule that will bind future behavior. This short write-up is then sent through email at all workers through the “All@TradSoft.com” mailing list with the
mention that it is to be inscribed in “The Book”. For instance, some rules that have been enacted this way include the prohibition of white socks in employees’ dress code, the interdiction to put jackets on top of chairs, and the reminder to never let a customer wander around the office alone.

“We have this thing called ‘The Book’. It’s what you could call our HR guidebook and it consists of a collection of emails that were sent to the All@TradSoft.com mailing list over the years. So when James says that something goes in ‘The Book’, the email is added to the collection. He’s the one who dictates what goes into ‘The Book’. For instance, there is a page in there that says that white socks are not tolerated here. It means that an email was sent at one time about that. The mail said that white socks, well... it’s not elegant. Another one pertains to putting jackets on chairs. You don’t do that, you put it in the wardrobe. Or when there is a visitor in the building, you don’t let him wander around alone. That’s the kind of things that have accumulated over the years. It’s only common sense. [...] At first you read the whole binder. Since then, I live it.” (Margaret, Marketing specialist, quotation 54:26).

Alternatively, someone at TradSoft may face a novel situation where norms about appropriate behaviour or preferences about courses of action are unclear. The situation may not necessarily involve a moral transgression of appropriate behavior, but instead pertain to issues where fairness is at stake. That person will send an email to the organization-wide “All@TradSoft.com” mailing list asking for opinion and advice. After some back-and-forth exchanges of preferences and opinions between those that have either a material or an emotional stake in the situation, that person will send out the final course of action preferred. If the situation risks happening again in the future, James Lewis will declare, through email, that the preferred solution is to be inscribed in “The Book”. One such recent debate topic when I visited TradSoft was vacation policies.

“It happens on serious matters, such as vacation policy. Some people would like to have a very formal vacation policy where people have between 2 to 3 weeks off. What I argued on the list – and this was and remains the official policy – was that people can take whatever they want, or whatever they need. If somebody with only 1 year of service wants to take 3 weeks off, fine. If somebody else with 20 years of service wants to take 3 weeks off, fine. If that person wants to take 5 weeks off, that’s
fine too! In all this, we rely on people’s good judgment. If somebody takes 13 weeks off, maybe there’s a problem and people are going to tell him. Anyway, he wouldn’t feel at ease of taking such long time off for no extraordinary reason. So, it’s such topics that are debated on the list.” (Martin, Customer pilot, quotation 52:32).

Debates and discussions about future course of action or policies over the organization-wide mailing list may involve highly sensitive and emotionally-charged topics. For instance, James Lewis recently initiated a discussion about the opportunity to sell the company.

“We discussed the sale offer in an OpsCom meeting for a whole day. The committee issued a comment about the offer. Then James turned around and asked everyone’s opinion through the list.” (Walter, Sales director, quotation 49:27).

Because of the sensitive topics that may be discussed on the list, it would be understandable for some employees holding opinions that differ from the consensus or from authority figures such as James Lewis to fear ostracism or reprisals. Yet, all the middle managers and workers met insisted on how comfortable and safe they felt to voice contrarian views on the list.

“ Those that have dissenting opinions are not afraid to voice these. They know that it will get respected. People can send out their opinion without any fear of the consequences. It doesn’t mean that the consensus or the official policy will change because of dissenting opinions but it may still generate accommodations.” (Martin, Customer pilot, quotation 52:33).

5.2.3 Appropriation #3: Recognizing work and contributions through the organization-wide mailing list

Most executives and middle managers mentioned to me that they regularly employed the list “All@TradSoft.com” to report their teams’ daily activities to the rest of the organization. While most middle managers at TradSoft mentioned that they tended to use the list much less often than James Lewis and the executives do, they still mentioned that they used it once every two or three weeks. Mark, a customer pilot, explained to me why and how he does so in these terms:
“My five customers, there are not many people other than my team that is aware of what is going on with them. Thus, so to get our colleagues to understand what is going on, why you are in a rush, why you are in bad mood, why you are losing sleep... you can be in a crunch for... two months... Well, by exchanging over the list then, everything that is going on about a particular customer, everybody – including Linda [note: a secretary] and John [note: the janitor] – everybody will learn what is going on. It gives a more accurate impression of activities at TradSoft.” (Mark, Customer pilot, quotation 48:15).

Executives and middle managers’ practice of reporting regularly the work of one’s team or of highlighting the accomplishment of a particular person also aims at shaping the basis upon which peer evaluation is conducted. Obviously, the practice provides a medium through which people recognize and celebrate accomplishments or great displays of devotion toward the organization’s goals. Less obviously however, the practice serves to ground people’s assessment of their peers’ worth to TradSoft. Two middle managers described the practice as follows:

“In addition to my role in R&D, I am also a customer pilot. The other customer pilots are people specialized in pay or benefits and I am the only one managing the pension module. Thus, when we’re done with a customer or that we just completed a milestone, we tell the others – Look, we just finished 600 hours of development at this customer’s site and they are now in production. Here is the list of all the people that contributed to this project and the amount of hours they put into the project. – These are reinforcement communications. Again, it’s only an email, but what’s in it is important.” (Robert, R&D manager, quotation 47:37).

“When we get to a milestone, someone will send an email; the customer pilot usually does that. It may say – This customer just finished an implementation, it took 2500 hours of development at TradSoft, here’s what we’ve accomplished, what the customer will do in the future, and who worked on the project – and then there will be a list of all the people that worked on this specific project. We then realize that... a project that seemed driven by 4 people had implications for maybe 60 people in the business. There may be people that worked only half an hour on the project, but they were involved nonetheless, at some time. These emails are sent around all the time.” (Brandon, IT manager, quotation 50:39).
These email communications are thus not only about project activities, but also about the accomplishment of specific individuals. As such, these communications do more than generating a common ground to facilitate coordination between teams. They establish an account of what has been done or said:

“We did it recently for a colleague who had received a letter of congratulations from a customer. We sent it to everyone. And I... also put in a little more in the email than what was in the letter, because I also had a good experience with that person which had help in a tough time. So I put in a little bit more... It was what I really perceived about that person, the way she was dedicated to the business. The bottom line is that we don’t want to miss opportunities to congratulate someone. I believe it’s important to do so. It provides a certain good feeling to that person and we encourage those kinds of things.” (Martin, Customer pilot, quotation 52:5).

The peer evaluation system employed at TradSoft is a strong structural constraint that prompts executives and middle managers to embellish their account of the work accomplished by their team. They talk about these communications in terms of making their audience aware of successes, innovations and learning experiences. But the peer evaluation system provides them with an incentive to do a little more: to make sure that credit is given to people for their contributions to the achievement of collective aims when the time comes to put a score beside each person’s name. What this practice does, implicitly and probably more importantly, is to provide people at TradSoft with cues about each other’s worth to the organization. To make sure that one gets his contribution recognized, one needs to be in the spotlight and publicize the work that may be invisible to others due to organizational and physical structure. Brandon, the IT manager, interpreted the motivations driving this practice as follows:

“I also believe that behind all of this, there is probably the fact that... you probably heard about how people here evaluate everybody else in this business? You probably heard of the PEC? [note: TradSoft’ 360 degrees evaluation policy]. Every 3 months, everyone receives a sheet of paper with the names of all employees on it. And I have to give a score to everyone. I believe that naturally, people began to broadcast themselves when that system got implemented. People probably told
themselves – Well, it would probably be a good thing if people knew what I am working on, so they can evaluate me and be aware of what I’m doing! – In my opinion, it came about naturally. But unfortunately, I wasn’t working here yet at that time... so that’s how I interpret it.” (Brandon, IT manager, quotation 50:41).

5.2.4 Consequences and functional alternatives

At TradSoft, no functional alternatives have emerged to generate transparency for mobilizing the workforce. For instance, while many social events take place between workers to foster cohesion and a sense of community, no specific activities are designed to provide information about corporate affairs to workers:

“We used to do a meeting with everyone at least once a year. But at 94, it’s a logistical problem to get everyone. I imagine that we could do it again. But it has been such a long time that we have done that.” (Walter, Sales director, quotation 49:27).

Hence, the appropriations of email described above are the main practices enacted at TradSoft to generate the type of transparency that is meant to legitimize top management’s decisions and to encourage workers’ commitment to the organization. At this point, it is important to mention that the above appropriations do not mean that all information is made available to workers, as some partitioned information spaces do exist.

“Certainly it is not everyone that knows everything here. ... There are things. And me, I am very at ease with – Tell me what I need to know to do my job, to be happy in my job and that will be enough.” (Robert, R&D manager, quotation 47:47)

Yet, the boundaries appear to be very thin.

5.3 Transparency for pooling artefacts

The technologies appropriated to generate transparency for pooling artefacts at TradSoft mainly consists of a Microsoft file server, a project management system developed in-house, as well as a wiki. First, workers appropriated the file server to resolve task dependencies and store standardized forms that facilitate coordination. Second, workers reuse knowledge to solve
problems by employing the querying features of the project management system as well as a wiki. Because these appropriations appear to fulfill adequately the need for transparency in the pooling of work artefacts, no functional alternative have been observed at TradSoft.

5.3.1 Appropriation #1: Resolving task dependencies through a file server

Collaborative technology in use at TradSoft principally consists of a simple and unsophisticated Microsoft file server. No other collaborative technology package, such as Microsoft Sharepoint or Lotus Notes, has been implemented at TradSoft. All workers at TradSoft have a personal space on the network that is accessible from their personal workstations or laptops. Workers are encouraged to use the network as their main hard drive on which they leave all their documents. While users need to log on with a username and a password to get access to the network, no other access regulation has been put in place. Thus, documents or files employed by the operations committee put on the network drives are accessible by all workers at TradSoft:

“Access for everyone. That is something very special here at TradSoft. There is no access management for documents, or anything else that is on the network for that matter. Elsewhere, everyone has his or her own small drive, with security so you can make sure you have access to your things and people do not have the right to access these. There could be access privileges by groups or by sectors. Here, everything is open. We can access anything. I would say that the only security that we have is on the pay system and a few very specific documents. That’s it. It’s quite unique. All the other companies I worked for were heavy on security. For instance, all of our customers... forget about it. At all places where I regularly land to do some consulting on behalf of TradSoft, the first issue that comes up is always who is going to get access to the data, how security is going to get managed. Here at TradSoft, security is... open. Totally... as if there was an absence of security somehow, even though there is some.” (Brandon, IT manager, 50:17).

While the default arrangement makes all documents and files public, workers may override the setting and put restrictions on documents that they own. However, discussions about whether documents should be made public or kept private almost never occur among executives:
“It’s very uncommon to have those kinds of discussion, I’d say. The last time we had these discussions was... when... we centralized everything some years ago. We used a single Microsoft domain on the network. I had been hired to implement such a configuration because there was a need for it. There were 60 employees and everyone was working on his own island. It made no sense at all. We had difficulty sharing files and it caused big problems. That’s when discussions happened and the solution was to go for a centralized solution, where files are put on a network managed by a single domain on top of it. Then, we had discussions, but it’s really unusual that we have to discuss those kinds of issues. I am counting in years the last time it happened.” (Brandon, IT manager, quotation 50:34).

The lack of access regulation on the file server implies that workers may obtain, modify, and delete all files stored on their peers’ or their superiors’ network drives. Because such practice appears odd at first glance and is so uncommon, I validated such claims during each interviews and with all workers I met during my stay at TradSoft. Access to only a few selected documents pertaining to compensation plans, employee records, and official financial statements is restricted. The only other restriction put in place concerns official marketing material; their accidental deletion is safeguarded, but access is permitted.

“For strategy, R&D and marketing documents, it’s different from elsewhere. Elsewhere, these groups wouldn’t be able to see the documents produced by the others. Here, people from marketing can go to the drives of people in R&D and look up what there is and... It’s as simple as that. We could take people in R&D and put them in the marketing team, because all the files are accessible right away on the network. It’s all the same network and there is no security at all. If you know where to look for, you’ll find it. It’s very open... very open.” (Brandon, IT manager, quotation 50:18).

This purposeful lack of access regulation thus permits teams working with different customers to access each other documents.

This open arrangement also implies that workers engage in boundary-setting behaviour to compensate the lack of technical barriers to access documents. When inquired about the possibility that documents may get accessed due to curiosity instead of work-related motives, executives, managers and workers assured me that such behaviour almost never occurs. When
asked if people snooped and searched through others’ files without their consent, I obtained responses such as these:

“People don’t do it. They just don’t do it. It’s special I am telling you. [...] People take care of their own business. But if the need arises, for any reason, the information is there and available. When I began working here, they presented me this model... I was somehow shocked! But now, I realize that it works. It’s... interesting.” (Brandon, IT manager, quotation 50:61).

People at TradSoft avoid conducting invasive searches through their peers’ files and generally prefer to ask these latter for their permission or help in obtaining the files even though it is technically feasible to obtain the files without their consent. Values such as courtesy and respect for others’ intimacy and responsibilities are considered as essential by workers for such appropriation of collaborative technology to take place.

“It’s some sort of respect. Here, we say we should respect employees, we should respect people. Well... even if it’s available, I am not going to rummage through your office drawers. It’s your workspace. So it’s respect that I owe you. The information is there, if you need it, you get it. But, it’s not hidden. In fact, I believe that the more it’s hidden, the more people try to snoop into it. Elsewhere, that’s what I have noticed. Not here.” (Margaret, Marketing specialist, quotation 54:13).

5.3.2 Appropriation #2: Reusing knowledge for problem solving through a project management system and a wiki

The second appropriation of technology aimed at pooling artefacts concerns how the informational features of a project management system developed in-house and a wiki are employed to reuse knowledge for problem solving. Workers employ the project management system, which is the same technology employed for reporting accountability purposes, to run ad-hoc queries about various aspects of TradSoft’s business. As it will be discussed in the section about transparency for reporting accountability further in this chapter, the high granularity and completeness of the records that have been logged by TradSoft workers since the mid-90s make the system a precise digital history of TradSoft’s activities. Many workers claim that the
Preciseness and reliability of project management system’s data make it unnecessary to devise alternative means to archive information for future reference, whether by storing local files on their own computers in some sort of classification system or by sending emails containing detailed accounts of activities to peers or to oneself:

“Thus, the tool is very much at the core of how we work at TradSoft. It is the history of everything that went on at TradSoft. I can refer to it so many times per day. It is incredible the amount of times that we use it to look up information. It also allows me to eliminate some emails. We do not need to keep emails forever and to have folders everywhere, because we ask people to provide a very detailed description of what they have done, even for as few as 15 minutes.” (Scott, Operations director, quotation 51:41).

Workers find the system especially useful to search through TradSoft’s history to solve bugs in the organization’s products. A developer encountering a bug in the software may consult the project management system to look up who at TradSoft worked on the specific feature causing the bug. Because turnover is very low and workers have been employed for 12 years on average at TradSoft, there is a good chance that the developer may be able to contact directly the person who developed the feature:

“I may want to know: in 2003, who worked on a specific work order for a certain customer? Within 10 seconds, I get the information and I am able to contact that person. ‘Hey! You worked on this particular task... do you still have your notes in your files somewhere?’.” (Scott, Operations director, quotation 51:41).

Another technology that was employed to generate transparency is a wiki, based on MediaWiki, the same software package employed by Wikipedia. The technology was currently being tested by a small number of workers in the R&D and IT groups. The motivation to develop the wiki came from the R&D and IT teams at TradSoft, which felt that there was a need to support product documentation processes. They believed that internal mailing lists, network drives, and the project management system didn’t completely satisfy their needs for storing customer requirements, product specifications, procedures and “how-tos”. At the time of my
study at TradSoft, the wiki was thus employed only by a small number of R&D and IT workers and had not yet been diffused to the rest of the organization. The wiki was planned to fulfill a dual purpose: to facilitate internal technical documentation processes as well as to provide customer support.

5.3.3 Consequences and functional alternatives

The appropriations enacted at TradSoft seemed to adequately fulfill the need for transparency to pool work artefacts. Apart from the project management system and the recently deployed wiki, the evidence suggests that no other systems or practice appeared to have emerged to fulfill this type of transparency.

The relative simplicity of the appropriations made to pool artefacts suggests that TradSoft appears to be quite mindful of the affordances, limitations, and implications of the various technologies at its disposal to support work. As supplementary evidence of this attention to the fit between technologies and TradSoft’s local needs, consider how the use of contemporary mobile technologies like smartphones is discouraged at TradSoft:

“We have the phone and personal mobile numbers of everyone. We don’t abuse such things. And that is fun about this place. There are many companies where the employees all brag about having the latest funky Blackberries and all that. But [expletive]... you also get the chain and the ball that come with it. Your boss may pay for it, but when your boss calls you on Sunday morning, your blackberry better be switched ‘on’. That’s not in our culture, not at all.” (Robert, R&D manager, quotation 47:46).

TradSoft workers who are assigned to customer support work are nevertheless required to have a pager and most have mobile phones. Particularly revealing of how TradSoft engages technologies that support pooling artefacts is the fact that no voice mail system is in function. All incoming calls are routed through a receptionist; if a person is not available, then the receptionist writes down the message and sends it by email to the person.
“Look, there is no voice mail system here. There is always somebody who will answer the phone. Always. And if there is no answer, it’s because there is nobody at the office, it’s as simple as that!” (Brandon, IT manager, quotation 50:36).

“We talked about introducing voice mail, but we decided that it wasn’t what we wanted as a culture. Voice mail is often a way to avoid conversations and that is out of question.” (Robert, R&D manager, quotation 47:15).

As a consequence of these technology appropriations, management and workers indicated there were very few breakdowns in coordinating work and in accessing information from one team to the other. Furthermore, they indicated that transfers of workers between teams were quite easily because of how documents, files, and data were accessible without any organizational “red-tape”. Combined with top management’s appropriations of the project management system for reporting accountability, the transparency for pooling work artefact generated at TradSoft facilitated the “just-in-time” allocation of the workforce. These appropriations will be discussed in the section that follows.

5.4 Transparency for reporting accountability

Two appropriations of technology generate transparency for the purpose of reporting accountability at TradSoft. First, all workers, including the Founder-CEO, record how they spend their time in an integrated project management system developed in-house. Second, executives and middle management employ the querying and analytical features of the system to track work and resource consumption on a weekly basis. This latter appropriation allows TradSoft’s management to allocate workers in a “just-in-time” fashion and to avoid any project cost or time overruns. It also allows TradSoft to impose its own account of the work accomplished on behalf of customers and to provide workers with an empirical basis upon which they can engage into sales activities.
5.4.1 Appropriation #1: Recording time through a project management system

All TradSoft workers, including Founder-CEO James Lewis, record the time they spend on tasks by employing a home-grown project management system. A number of circumstances affect the efficacy of this appropriation: the design choices that were made by the modellers of the system and the organizational practices that were put in place to ensure reliable data input by workers.

After losing a major customer in the mid-90’s, TradSoft’s management changed its business model: instead of designing custom transaction processing systems, it decided to design and sell a generic transaction processing system package. For about a year, TradSoft engineers modelled and coded procedures that would automatically design and generate a database, input and output screens, as well as programs to operate the package. Oracle and Microsoft products were employed to do so. The result was a sophisticated rapid application development toolkit (RAD) that allowed TradSoft workers to develop modules that would respond to specific customers’ needs. James Lewis and his colleagues realized that the toolkit could also be used to develop applications that would fulfill TradSoft’s own management needs. A system was thus developed with these tools to support the customer invoicing process. Over time, the system has evolved from 10 “screens” to 150 “screens” to provide additional features to track time spent over work not billed to customers and to generate sophisticated reports and analyses. The project management system became an essential part of how work gets accomplished at TradSoft:

“The role of this system is... total, because of how we are organized. Everything is organized around a customer and projects. Within projects, there are work orders. Within work orders, there are activities. So, right now as we are talking, I’m in the customer TradSoft, within a project that is called ‘marketing’, the work order #629. And it’s activity #094. We created this whole codification. And I can add to that the amount of hours as well as comments in free text.” (James, Founder-CEO, quotation 45:24).

Developing the system involved classifying all types of work that take place at TradSoft. Broad categories, such as “Analysis”, “Programming”, “Quality Control”, “Maintenance”,

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“Training”, “Marketing”, etc., and hierarchical tree-like structures of increasing precision for each categories were established. This classification of activities is judged as unequivocal and exhaustive enough to cover most types of work and granular enough to capture brief activities, such as phone calls with customers or coffee breaks. Even activities that may not be usually perceived as work-related have been codified. For instance, when workers enter and leave TradSoft’s fitness center, they have to input their employee code number in a terminal located at the entrance of the fitness center. Also, free-text fields attached to the work order entity provides opportunities for contextualising activities and their purpose. Workers can thus provide textual explanations about circumstances, the nature of tasks, the problems they encountered, the solutions they attempted, and the outcomes.

Jordan, the Operations director, explains why the classification of activities was designed in such a precise and exhaustive manner:

“Our approach is to make the best intervention in as little time as possible. There are employees here that have many interventions with many customers, because of the scope of their role. To manage these interventions we need to provide these employees a time management system which will allow them to input their time at a very high precision level, for every 15 minutes.” (Jordan, Operations director, quotation 46:20).

TradSoft workers log their daily activities in 15 minutes intervals by assigning their time to work order instances, which are linked to a project, which in turn are linked to a customer. Every week, the Operations Directors trigger the automatic production of customer invoices from the data of the previous week. The system employs the base rates that were specified in the customer service agreements. The granularity of the information contained in the invoices make it very difficult for customers to challenge any charges:

Scott, Operations director: “We are in position where we do not need to have any debates with our customers. If the person has been careful to input what he or she has done every half-hour, why would the customer contest such an invoice? It does not happen, because we are so precise. Our competitors do not work that way.” (Scott, Operations director, quotation 51:47).
Such a situation did not always prevail however. When the project management system was first deployed, workers logged their activities once per week on average. Because of the delay between the moment when the activities were conducted and the moment of input into the system, the descriptions logged into the system were often vague and some activities were forgotten altogether. Furthermore, it was difficult to recall the category to which activities had to be assigned:

“For a long time, people entered their timesheets once per week. It had to be done on Tuesday at noon, say. So on Tuesday morning, everybody made their timesheets. The problem with such a practice was to distinguish what was done internally for the company, and what was done for the customers. At the end of the week, if you worked in R&D on the product but you also worked for a customer, you tell yourself... what did I do last Wednesday? At one point, you forget, for sure.” (Brandon, IT manager, quotation 50:30).

Following these initial problems, management designed certain practices that ensure that workers log their daily activities in a timely and reliable fashion.

First, management signals the importance of logging daily activities by doing so themselves and reminding workers to do so in their daily interactions. Not believing at first that executives were doing also logging how they spend their time in the system, I was told by all executives that I met and talked to that they actually did log their daily activities in 15 minutes, even for tasks that are not billed to customers. Even James Lewis, TradSoft’s Founder-CEO, does so daily. Jordan, one of the Operations Director, told me that as executives, they had to “lead by example” and provide frequent kind reminders to workers about the importance of logging their activities in the system on a daily, if not hourly, basis:

“We try to encourage people to input their time right after they finish an intervention. The time management system is interactive and available on-line. So when you arrive at the office in the morning, you open a session in the time management system and it stays open for the whole day. You don’t use an agenda or post-its or else. In other words, the activity to input your time in the system is part of your intervention.” (Jordan, Operations director, quotation 46:21).
Second, a weekly bonus pool was created to reward timely logging of activities in the system. Bonus allocations are distributed every week and divided equally among all workers, middle managers and executives. I was told by many workers that the pool did not contain a significant amount of money. However, if anyone at TradSoft did not log its weekly activities before noon on Monday for a given week, the bonus pool is not distributed; the bonus pool money for that week thus becomes “lost”:

“We have a bonus, an incentive for people to input their data. We have daily stats about input frequencies. It’s about 90% on average. We know that there are people that are always late, but usually they have a good reason: they are on the road, or for whatever reason they are not able to input their time. But we tell them that they have to input their time every day. A condition sine qua non is that, at noon on Monday when we produce the invoices for the week, their time has to be in.” (Scott, Operations director, quotation 51:48).

Third, management employs public shaming to signal that deviance is not tolerated. When someone forgets or fails to log his or her activities before Monday at noon, management do not hesitate to publicize his or her name. The person is then identified as the one who has failed to conform to the rule and prevent the group from obtaining its weekly bonus. The person then becomes a target of teasing and joking from the group. This practice of public shaming applies to workers of any authority level at TradSoft, as Margaret, a Marketing specialist, told JGB:

“If you have not released your timesheet by Monday at noon, you stand out and your name is going to get published. That’s what happened to James [TradSoft’s Founder-CEO] once. That’s how it works, for whatever authority level you may have. [...] If there is only one person that does not input a timesheet, the money does not get added to the pot. That’s it. It’s not a great amount of money, but in the end, it’s about the collective spirit. And... Have you ever heard of a workplace where you are obligated to fill in your timesheet and get a little reward for doing so? That person is going to feel bad, because we will not get the bonus money for that week. People will probably poke fun at that person. But next time, he or she will have to complete the timesheet. So the process is auto-managed.” (Margaret, Marketing specialist, quotations 54:16, 54:18).
Finally, every Monday afternoon, middle managers and executives review and examine every work orders produced by TradSoft workers. The Operations directors together review an average of 500 work orders every week, which is about 5 to 6 per TradSoft employee. In particular, they review if activities were assigned to the right categories, if the accounts written in the free-text fields of the work orders are detailed enough and rightly worded. They carefully conduct this inspection process because work orders are directly sent to customers as part of the billing and invoicing process. Work orders that contain activities wrongly categorised or obscure accounts of the work done are more likely to be challenged by customers. After all, customers cannot actually “see” the work done by TradSoft workers. Software development and maintenance is “immaterial” since there is little physical manifestation of its accomplishment. Customers must thus rely upon the accounts that they are provided with to assess if the fees paid are fair for the quality and volume of the work accomplished. Here is what this practice consists of in the words of one executive and one middle manager:

“Each week, the directors and I verify all the time sheets. Of everyone. It is our way to get the exact pulse of what is going on in the organization. Systematically, we verify what our 95 people did. [...] We verify that the wording is correct, that it makes sense, and that activities are assigned to the right projects. For the customer, it must be as clean as possible. We thus have very few debates. We never have accounts receivable that are not ultimately paid, because we are so clear, so transparent in our way of working with our customers. They like that. And, that allows us to get a repository of what’s going on as a by-product. That is very, very, very precious. Imagine: it’s 500 timesheets on average, which means about 4000 entries every week, that describe time here at TradSoft in a highly normalized way.” (Scott, Operations director, quotation 51:40, 51:47).

5.4.2 Appropriation #2: Tracking work and resource consumption through a project management system

Because of the integrity and the reliability of the data collected when workers log their time, TradSoft executives and middle managers are able to employ the querying and analytical (OLAP) features of the project management system to control ongoing projects and to allocate the
workforce to projects. The data from the project management system is also automatically imported through a batch interface into an MS Project application to update project schedules.

During the “OpsCom” (operations committee) meeting, the founder-CEO, the IT manager, the sales director, and both directors of operations, use the data to discuss customer relationships, as well as solutions to any work issues that may have emerged during the week. Reports and graphs generated by the project management system serve as the basis of their discussion. Because the project management system has operated since the mid-1990’s, current data can be compared to historical records and put into a larger context. James Lewis describes how the management team employs the project management to quickly initiate interventions toward customers when data indicates that pre-defined and historic thresholds are exceeded:

“This system allows us to manage all our projects and our customers. It generates our invoices and all the reports to the customer. It provides them with a way to find out and know about the progress of work, and so on. It is used to do all our analysis about the past. If I want to know how much time we did in such and such activities – there are 95 types of activities. If I want to see what we did in ‘training’... about the topic called the payroll, I can go back 14 years. I can output all sorts of graphs... I filter the data by person, by customer. It’s a gigantic Oracle database built around the notion of the ‘work order’. Around this work order, we have a task definition and an estimate of the effort it is going to take for all types of activities whether that is analysis, programming, quality control, documentation or else... For each of these specific activities, we have flags that will warn us in advance if we will not meet our limits. All of this can be sorted by project managers, who can then look at such output and say – This, it’s OK, it’s not a problem... This, I have discussed it with the customer... For this, I will emit a new work order... – The system raises flags.” (James, Founder-CEO, quotation 45:24).

Because the system provides an objective record that stands as the definitive account of what has happened at TradSoft, executives and middle managers spend little time discussing and persuading each other about what actually went on, because digital accounts of TradSoft’s status can be generated ad-hoc when the need arise. Talk during the OpsCom meetings focus much more on interpretation, deliberation and choice among alternative courses of action rather than on
establishing facts and convincing each other about the validity of these facts. Management thus spend little effort on reporting activities and convincing their peers of the importance of problems, and much more efforts on anticipating future needs and devising ways to deal with these problems. Furthermore, because both executives and middle managers have access to the same reports and querying features, delegation is facilitated since the premise upon which decisions will be made is shared between levels of authority:

“By having these tools, we can provide people with considerable latitude. Because we know that in the end, if there is a flag to rise, it is going to get raised... every week. We get these indicators every week. It helps us to avoid surprises that come out of nowhere. We thus have a regular control. Well, I wouldn’t call it ‘control’; it’s more a kind of follow-up... with our people.” (Scott, Operations director, quotation 51:19).

Furthermore, the querying and the analytical features of the project management system become an important resource for TradSoft workers when they interact with customers. Among TradSoft workforce, only Walter, the Sales director, has a role wholly dedicated to sales work. While the Sales director is in charge of recruiting new customers, customer pilots have the responsibility to sell additional services to TradSoft’s current customers. Graphs and tables depicting trends in the volume and the nature of services provided are regularly employed while interacting with customers. Customer pilots and their team are thus able to gain deep knowledge about customer activities and the history of their commercial relationship:

“We are often more informed of what went on at a customer’s site than the customer himself. We can tell him, ‘Look, on that day, we discussed this specific thing’ even if he does not remember so. We have logged that conversation somewhere. All our interventions with our customers, by anyone here, are logged. And customers are always surprised of that. And they also realize that because people have worked here at least 10 years, 12 years on average, that there has been much more turnover in project managers and analysts at their site than at ours. Thus, our customer pilots often have the best knowledge of their business reality. [...] We are able to have very intelligent discussions with our customers because they are based on data. It does not come from out of nothing.” (Scott, Operations director, quotations 51:41, 51:47).
To facilitate such use of data by workers and customer pilots, the querying and analytical features of the project management system at TradSoft have been configured to be accessible by all workers. There is no limit to the kinds of information and to the granularity of information that may be consulted by workers. When asked if this openness generated a tendency to snoop on what others have been doing or to other unproductive use of the system, workers generally responded that such behaviour rarely occurred:

“We don’t have the time to look up other people’s timesheets. But sometimes, you ask yourself, ‘what has this person been doing for the last 6 months?’ You can use it to look it up.” (Brandon, IT manager, quotation 50:39).

The set of graphs and tables employed during the weekly operations committees meetings is also sent to all employees through the “All@TradSoft.com” organization-wide mailing list. The querying and the analytical features that produce these graphs and tables are also directly accessible by any TradSoft worker logged on the system; for instance, administrative assistants and line workers can access such project cost data if they desire to do so. Workers at TradSoft who take the time to read and to familiarize themselves with the graphs and tables may thus know the status of all projects within the organization, not only the ones in which they participate in:

Scott, Operations director: “Everyone has access to this system. Everyone can see what’s in it.”
JGB: “Everyone?”
Scott, Operations director: “Everyone.”
JGB: “Even the secretaries and the administrative assistants?”
Scott, Operations director: “Yes, even the secretaries. Everyone enter their time every day.”
JGB: “People can see the graphs and the stats that you have employed during your executive meeting?”
Scott, Operations director: “Yes. We distribute the graphs after the meeting. Everyone can take a look at these. Everyone can see the level of activity: how much R&D is going on, how work is done at each customer’s site... Everyone can see on what the hours worked are spent on here at TradSoft. We have about 3000 hours worked every week here. We see exactly where these hours are allocated, in what type of activity, for what project, for what customer.” (Scott, Operations director, quotation 51:40).
The project management system is also employed to allocate the workforce to projects in a “just-in-time” basis. This approach is at the core of TradSoft’s competitive strategy and it allows it to compete successfully (according to the evidence of its track record) against software vendors which have much more resources at their disposal, such as SAP and Oracle. In comparison to these software vendors, TradSoft aims to provide customized implementations of its software package for each customer, without imposing any penalty costs for upgrades, warranty or maintenance. The querying and analytical features of the project management system provide affordances to shift workforce from one project to another, as well as from R&D teams to Service Delivery teams or vice-versa, for interventions of very short duration.

Such aggressive just-in-time management practices are enabled by the design of the project management system around the work order entity. Work orders are generally initiated by customer pilots, either when they break down the work to be done during an implementation project into coherent and self-contained activity units or when they receive an ad-hoc request for maintenance from a customer. They employ the work order input screen to assign one or more workers who will be responsible for the accomplishing the specified work and they specify the basic terms and conditions based on the customer’s service agreement. The worker responsible for the work then logs time or progress against the work order through its timesheet input screen. Because TradSoft’s management maintains no official or formal boundaries between product development work and delivery work, workers may be moved from one type of work to the other without any bureaucratic hurdles:

“Here, people have 12 years of work experience on average. We can put a guy on a project for only 15 minutes if we need to. It could be the guy in R&D who wrote 7 seven years ago the routine that needs to be tweaked with now. After that, he disappears and maybe we will never see him again on that specific project, for that customer. This type of micro-management... it’s possible because of these tools. If we didn’t have these tools, we would be doomed, the business model wouldn’t work.” (James, Founder-CEO, quotation 45:33).
5.4.3 Consequences and functional alternatives

The evidence reviewed so far shows that the transparency generated by their appropriations of the project management system allows TradSoft’s management to prioritize resource allocation and to assess project status accurately. The appropriations also appear to generate trust during coordination meetings, as arguments tend to be about the value of alternative courses of action rather than data. The appropriations also allow top management to delegate responsibilities for project management and sales activities to middle managers and workers, since the data upon which such decisions are taken are shared. For instance, TradSoft’s CEO described how comfortable he felt with delegating tasks and even being away from the organization as follows:

“It’s very easy for me to go away for 4 months at a time if needed. It happened once due to illness in the family. I only participated to OpsCom by phone, for two hours each week, and there was no difference. The enterprise was clear sailing without me.” (James, CEO, quotation 45:17).

One functional alternative to generate transparency for reporting accountability was enacted at TradSoft: the use of a large whiteboard by the Director of operations for workforce capacity planning purposes. To compare the number of workers available, as well as the time when they would become available, to the number of workers required by new and current projects, the Director of operations prefer to avoid using technological tools. Instead, a whiteboard with colour “post-its” and stickers is employed to visualize and to generate scenarios of what resources may be needed and when. Despite the high level of technological expertise available in-house to develop systems, they were mindful that such analysis was better achieved “off-line” rather than “on-line”. Furthermore, because the project management system had been designed with the purpose of tracking work accomplishments, the system didn’t provide any affordances to plan and schedule resource commitments in the future.
5.5 Conclusion

This chapter presented the contextual conditions that characterize TradSoft’s activities as well as the appropriations of technologies that have been made to provide transparency for three purposes: mobilizing the workforce, pooling artefacts, and reporting accountability. The evidence suggests that TradSoft’s management entertains slow growth aspirations. In general, people at TradSoft face little time pressures. The organization also benefits from abundant slack resources. The workforce is characterized by workers with relatively long average tenure and its commitment through emotional bonds is strong.

The evidence also shows that three technology appropriations were enacted to fulfill mobilizing transparency. First, top management disclose customers and corporate affairs regularly by sending fine-grained emails to an organization-wide email list. They also debate key policies and procedures, and they recognize work and contribution through the same mailing list. Surprisingly, probably because of TradSoft’s particular and idiosyncratic cultural practices, no apparent functional alternatives to satisfy mobilizing transparency were found.

The evidence further suggests that the simple technologies deployed to pool artefacts appear to satisfy pooling artefacts transparency: a file server for all workers and a wiki for IT workers. Interestingly, workers at TradSoft also employ a custom project management system to retrieve knowledge related to past interventions. No functional alternatives were identified to compete with the use of these technologies. The technologies are used so to create an organizational commons where documents and other files are accessible across team boundaries and with minimal technical security constraints.

Finally, the evidence further suggests that technologies deployed to report accountability succeed in providing reporting accountability transparency. A custom designed project management system is employed to record time and commitments and is enforced by powerful incentives so that workers comply. The system also provides analytic features that are employed by middle managers (customer pilots) and top management alike. Very little technical security
means are configured onto the system; all workers in the organization may access its data. The
data workers and managers extract from the system appears to satisfy the need for reporting
accountability transparency adequately as resources are allocated on a just-in-time basis and very
little coordination friction are found to occur. TradSoft also appears to be quite mindful of the
affordances provided by technologies to satisfy its information needs as a large white board is
employed to complement support resource capacity planning processes despite the sophistication
of the custom designed project management system. Overall, TradSoft followed the advice found
on a Microsoft advertising poster from a wall of the organization and which was reprinted in one
document expliciting the organization’s history and culture, as well as on one wall in the
organization’s offices:

“Grant me the strength to resist fads, the wisdom to recognize
legitimate plans, and the sheer blind luck to know the
difference”.

Chapter 6

EdgeSoft – Findings

In this chapter, I will focus on EdgeSoft, a Canadian vendor of software solutions for large organizations in a specific vertical segment. The chapter begins with an overview of the organization’s current operating and cultural environment. I will then explain how people at EdgeSoft appropriate technologies to generate transparency for mobilizing the workforce, for pooling work artefacts, and for reporting accountability. A conclusion will summarize the main findings presented in this chapter.

6.1 Contextual conditions at EdgeSoft

The following table summarizes the contextual conditions within which appropriations of technology are accomplished at EdgeSoft. Before describing the evidence for each condition, I will briefly illustrate how work is organized at EdgeSoft.

<table>
<thead>
<tr>
<th>Aspirations</th>
<th>- Quick, radical growth (organic and per acquisition)</th>
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<tbody>
<tr>
<td>- Focus on “generating value,” especially financial</td>
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<tr>
<td>Time pressures</td>
<td>- Sense of urgency, crisis mentality and perceived closing window of opportunity</td>
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<td>- Investor fatigue</td>
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<td>- Short-term temporal focus</td>
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<tr>
<td>Slack resources</td>
<td>- High “burn-rate”: about 1 year left before next round of financing</td>
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<td>- Work demands often exceed capacity</td>
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<tr>
<td>Workforce demography</td>
<td>- Highly skilled workforce, composed of engineers and linguists</td>
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<td>- Little turnover, especially among management ranks and older cohorts</td>
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<tr>
<td>- Large cohort of new workers</td>
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<td>- Mix of permanent and temporary workers</td>
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<tr>
<td>- Rivalries and tensions</td>
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<td>Workforce relations</td>
<td>- Ambiguous corporate identity</td>
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<tr>
<td>- Transactional relationship (cash-based) and financial commitments by workers (stocks, warrants, options)</td>
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Table 21. Contextual Conditions at EdgeSoft

6.1.1 The organization of work

EdgeSoft is a public company with shares listed on a Canadian stock exchange. It thus has a Board of Directors on which, at the time that data was collected for this study, sat the CEO, representatives from four venture capital firms, and two independent corporate directors. The
members of the Board of Directors held about 42% of EdgeSoft’s voting shares with the remaining shares held by founders of the company, employees and public investors.

EdgeSoft is organized in functional teams. The executives who participate in weekly top management meetings are the CEO, the VP Organizational Development, the CFO, the VP Service Delivery, the VP IT&QA, the VP HR, the VP Sales, the VP R&D, and the Chief Innovation Officer. Departments with the most workers are R&D (44 workers), Service Delivery (99 workers), and Sales (35 workers).

The R&D team is headed by the founder of ePub, a French company acquired by EdgeSoft in 2006. He is the only former member of ePub who transferred from ePub’s offices in France to EdgeSoft’s office in Eastern Canada. The R&D team is composed of software engineers that specialize in either programming activities, or in product and architecture design activities. A second R&D team also operates under the guidance of Rob White\textsuperscript{16}, the “Chief Innovation Officer”. This team is mainly staffed with software engineers and a few linguists and it is responsible for the text mining modules of EdgeSoft’s products. Based on the qualitative evidence collected for this study, this team is apparently much less integrated into EdgeSoft’s core activities and operates mainly as an idea lab.

The Service Delivery team is responsible for implementing EdgeSoft’s software product with customers. Depending on the complexity and the size of the requirements, an implementation may take anywhere between a few weeks to six months. The team’s workforce is composed of project managers, software engineers, business analysts, and technical contractors employed on a temporary basis. While the team’s American team is based in EdgeSoft’s Eastern Canadian headquarters, the team’s European team is based in France and is composed of 17 former ePub’s workers. Most of the workers who formerly participated in ePub’s R&D activities now report to the VP Service Delivery based in Eastern Canada.

\textsuperscript{16} All names are pseudonyms to ensure anonymity.
The Sales team is headed by Charles Parker, who had been parachuted into his position by one of the venture capital firms that invested in EdgeSoft in 2006. The team is thirty-four sales managers and representatives with field sales representatives, inside sales representatives and sales engineers composing an important part of the team. Inside sales representatives make the preliminary contact with customers and interact with customers over the phone from one of EdgeSoft’s sales office (in Eastern Canada, the US or France). Field sales representatives work “on the road” to present EdgeSoft’s product in conventions and trade shows and to visit customers’ offices; they introduce EdgeSoft’s product and close the sale. Often sales engineers are brought in to explain the product, answer questions or concerns, and identify specific local requirements. There are few employees dedicated full-time to the position of sales engineer at TradeSoft thus, software engineers from the R&D or Service Delivery teams often act as sales engineers.

The team headed by the VP Organizational Development is in charge of special projects aiming to restructure and change EdgeSoft’s work processes. The team is quite small: the VP Organizational Development, a marketing manager, and management consultants contracted on a temporary basis depending on the issues of the moment. Linda Morgan, the current VP Organizational Development, and Sean Davis, the current CEO, had previously worked together in ventures before they were recruited in the spring of 2007, following the departure of EdgeSoft’s Founder-CEO. One of the key projects underway when I visited EdgeSoft aimed to streamline, integrate, and centralize product design leadership. It was judged at the time that product design, customer feedback, and marketing activities were too fragmented in various teams of the organization. Another special project that had been concluded a few months before I conducted the study was the implementation of a Sharepoint system to support project management and Service Delivery activities.
6.1.2 Aspirations

The aspirations of EdgeSoft’s top management are characterized by an emphasis on quick, radical growth, as well as generating financial value for shareholders. Top management’s goals have short-term horizons and are paced by the quarterly milestones of the financial market.

The key aspect of TradSoft’s aspirations is the intent of growing the organization’s size and market share as quickly as feasible. The pathways taken to grow the organization include recruiting employees on a permanent basis, hiring contractors, and acquiring organizations.
Between 2004 and 2008, EdgeSoft acquired 5 organizations. Some were acquired to complement EdgeSoft’s product’s technology, while others were acquired to increase EdgeSoft’s customer base. As a result, the organization of work has been in a constant state of flux in the last few years:

“EdgeSoft is growing very quickly, and within that growth strategy, there is also the idea of acquiring firms that can complement our sales offering, so everything is changing quickly here at EdgeSoft... very quickly” (Steven, VP Service Delivery, quotation 5:2)

This desire to grow the organization’s size is driven by the need to recoup the $56 million investment that four venture funds and a few angel investors have made in EdgeSoft since its founding in 1999. The fourth quarter of 2007 was the first one in EdgeSoft’s history where the organization generated a profit. Also, this desire is further intensified by the public scrutiny to which EdgeSoft is exposed as a public company. Thus, top management’s main preoccupation about growing revenues and profitability pervades all of EdgeSoft’s activities and communications to workers:

“The message of our president is very, very sales-oriented. Thus, it shows in every communication that we see flying around. It shows in the focus of people. He must probably spend 95% of his time with the sales team. So, you asked me what are the firm’s values? They probably consists of having a strong sales team and selling as much as we can, as fast as we can.” (Brian, Product Designer, quotation 6:39)

Figure 20 further illustrates EdgeSoft’s growth in terms of revenues and employees:

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17 The circumstances surrounding these acquisitions are described in Appendix 8.
Due to these pressures, it is not surprising that financial matters are predominant in EdgeSoft CEO’s conception of his role. For instance, the following quote illustrates how he conceives his role in terms of balancing the financial interests of three key stakeholders:

“My job is to find the equilibrium between three groups of individuals, which are the employees, the customers, and the shareholders. Shareholders want as much benefits as possible. Employees want the biggest paycheck they can get. Customers want to pay as little as possible for the product. Thus, I need to balance all this.” (Sean, CEO, quotation 1:1)

In summary, the evidence shows that the temporal focus of EdgeSoft’s top management is definitely oriented toward the short term rather than the long term. Strategic choices are made to generate profitability and grow market share first and foremost. It can be said, however, that without such focus on short-term profitability, EdgeSoft might not have any future at all.
6.1.3 Time pressures

The work environment at EdgeSoft is fast-paced and characterized by a sense of urgency fostered by perceptions of investor fatigue and a closing window of opportunity. Top management and workers are thus mainly preoccupied by short term rather than long term issues.

The work pace at EdgeSoft is fast. A sense of urgency (i.e. that decisions need to be made quickly) pervades the work environment and top management’s ethos. It has its origins in the premium put by EdgeSoft’s CEO on time and speed:

“We are in a business where speed is terrible. Competition is fierce. It’s more a question of time to market than one of process. And what I say often, the ingredient that we can never have enough of, or replace by anything else, is time. I can lack money; banks are going to be there to lend me some and investors will be there to put more money in the pot. If you have a good project but you lack money at some point, you are probably going to find more along the way. […] Often, we have a tendency to push deadlines far away. But above anything else, we need to create a sense of urgency, every single day.” (Sean, CEO, quotation 1:8 & 1:23)

The root cause of this sense of urgency is the investor fatigue that has grown in recent years due to EdgeSoft’s inability to generate sustainable and recurrent profits. As mentioned in the previous section about the aspirations of EdgeSoft’s top management, investors have funded in excess of $56 million since the organization’s founding. Figure 21 illustrates the cycles of investment that have occurred between 2000 and 2008.
The blue line represents the cash equivalents held by EdgeSoft at the end of each quarter. The red bars show that EdgeSoft never generated a quarterly profit, except for the last quarter of 2007. All increase in cash equivalents were only due to financing activities (debt or share issuance). Furthermore, top management believed that there is a window of opportunity to seize significant market share in the niche that EdgeSoft’s product occupies, but that this window could soon close; the niche they target could be occupied by other organizations very soon if they do not grow the organization’s sales force and capacity to deliver quickly enough. In other words, they believed that the combination of market opportunity and of financial latitude provided by the round of financing in 2007 may never present itself again.

It is not surprising that most workers and top management exhibit a short-term temporal focus, time being interpreted through the prism of the quarter:

“I work on a period... my period is the quarter. Everyone knows its objective for the current quarter.” (Steven, VP Service Delivery, quotation 5:2)

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18 The detail of these financing activities are described in Appendix 8.
Furthermore, a feeling of being under siege is quite pervasive in the discourse of EdgeSoft’s workers and top management; they exhibit a feeling of time famine (i.e. that there is not enough time to do all that there is to do). This feeling is exacerbated by the need to grow the organization, to deliver products to a growing customer base, and to deal with the problems created by the process of integrating recently recruited workers or acquired organizations, in addition to the financial dynamics described above:

“I believe that we are so busy, everyone, because we are all under siege... we simply don’t have time” (Charles, VP Sales, quotation 10:12)

“There are always time constraints... the schedule... it’s always due for yesterday... and for dirt cheap.” (Scott, Project Manager, quotation 9:5)

Time is considered scarce at EdgeSoft. Pressures from venture capital firms, as well as a CEO that values quick and bold action, foster an environment where a sense of urgency and a feeling of a closing window of opportunity are pervasive.

6.1.4 Slack resources

EdgeSoft’s top management has, for now, some slack financial resources that it can employ at its own discretion to experiment with new ways of working. These financial resources, however, are being quickly depleted as will be explained below. The organization also constantly faces work demands that exceed its workforce’s capacity.

In terms of financial resources, EdgeSoft has a moderate amount of slack. Since EdgeSoft acquired ePUB in 2006, it has operated much more efficiently than BigGames and CasualGames, the two other organizations from the entertainment software industry studied in this research. In terms of average revenues per employee, EdgeSoft has operated almost as efficiently as TradSoft in 2007 and 2008 (Figure 22).
EdgeSoft also recently obtained the largest financing ever had since its IPO of 2000. At the end of 2007, EdgeSoft had a little less than $12 million of cash equivalents and this large amount of discretionary slack provided some leeway to EdgeSoft’s top management to launch change initiatives while supplying enough resources to fund normal operational needs. When I visited EdgeSoft during the first and second quarter of 2008, this slack had been partially employed to acquire a subsidiary to increase the size of the sales and Service Delivery departments. At the end of the second quarter of 2008, EdgeSoft had a little less than $8 million left in cash equivalents.

Despite this significant amount of financial resources at the disposal of EdgeSoft’s top management and its ability to generate revenues in excess of its operating costs, I qualify EdgeSoft’s financial slack as “moderate” rather than “high”. The reason for such qualification is found in the burn rate of EdgeSoft’s cash equivalents and the numerous rounds of financing that may have generated investor fatigue. If EdgeSoft continues generating expenses at the same rate without any improvement in profitability from its operations, the organization will run out of cash within the next two years at the latest (see Figure 23). EdgeSoft’s top management is under
tremendous pressure to produce a sustainable profit within that time frame. If it does not succeed to do so, it will have to undergo an additional round of financing, putting top management’s control of the organization at risk. It is not surprising that EdgeSoft’s quickly depleting slack financial resources have already been committed to strengthening the organization’s ability to sell licences to new customers and to find ways to sell supplementary services to current customers in order to generate recurring revenues.

![Figure 23. Actual and projected burn rate of cash equivalents, EdgeSoft (2007-2010)](image)

In terms of workforce resources, work demands often exceed the workforce’s capacity to respond. The rapid and radical growth in sales means that there are frequently not enough workers available to carry out projects. Such a problem is a welcomed by many of the workers and managers who endured the years when EdgeSoft had trouble generating sales. Despite the hope and excitement generated by TradSoft’s radical growth, it has nevertheless become a major source of strain on the workforce:

“I have 5 people in my team. The products are complex and they don’t all have the same knowledge of the products. And the projects do not stop coming in and I have to allocate these resources. Even if I believe that 5 projects at a time is the most I can handle, sometimes we get 7, 8, 9, or 10 projects at a time...
it’s quite a headache to manage that” (Scott, Project Manager, quotation 9:5)

Confronted with such strain, the CEO and top management have the difficult task of balancing the tension between the sales team’s desire to increase sales, the Service Delivery team’s capacity to carry out current projects, and the R&D team’s ability to develop new products:

“We operate in a high growth environment and the firm has more than doubled in size since last year. It is thus obvious that there are never enough people to do all the work. The delivery people would like the sales people to stop selling, and the sales people would like the R&D people to finish developing version 5 before version 3 is even completed.” (Sean, CEO, quotation 1:4)

A general preference toward increasing sales is exhibited when resolving such dilemma because the organization is under pressure to increase revenues and profitability as quickly as possible. Workers of the Service Delivery team and the R&D teams then have to find ways to manage customers’ expectations in order to buy time and to successfully fulfill the sales representatives’ promises.

The evidence discussed so far suggests that EdgeSoft has some latitude to experiment and improve its work processes by investing in improvement and technological initiatives. However, the extent of this latitude is quickly narrowing due to the rapid burn rate of EdgeSoft’s financial slack and the need to commit a large amount of this slack to revenue-generating initiatives. This latitude is also further constrained by the capacity of EdgeSoft’s workforce, which is fully utilized and faces exceeding demands.
6.1.5 Workforce demography

EdgeSoft’s workforce is characterized by little diversity in terms of occupation, low turnover, and a large cohort of new workers who have joined EdgeSoft’s in the two years preceding this study. Also, rivalries and tensions between cohorts that came from different organizations appear to be still lingering.

EdgeSoft’s workforce is fairly homogeneous because it is mostly composed of computer scientists, software engineers and linguistics specialists. The underlying product technology is quite sophisticated and relies upon university-based research for further advances so about half of the workers have masters and a few have doctorates in their field of expertise:

“When I look at the people that I have, they are all people with at minimum, a bachelor’s degree, and one half with a master degree. The average is about 10 years of experience each. It’s strong. Very strong. The technical expertise is impressive.” (Steven, VP Service Delivery, quotation 5:5)

“We have people in text mining, and some have Ph.D.’s in linguistics. On the technology side, we have experts in PHP, .Net... at various levels of knowledge. I would say that we have highly specialized and trained resources.” (Linda, VP Organizational Development, quotation 11:22)

Top management does not consider turnover to be a significant problem. Instead, top management’s main worry appears to be the recruitment of workers to increase the organization’s capacity to undertake new contracts. Tenure is lengthy among the management ranks and older cohorts, most of which hold shares and stock options in the company.

“There is not a lot of turnover. And that is from the beginning. I am here from day 1. There are people that are here since day 1, and there are many others that have been here for 7 years, from the first or second year. It’s good for a firm of our size.” (Scott, Project Manager, quotation 9:33)

There is some caveat to be put on such qualitative evidence, however. Historically, the sales team appears to have experienced higher turnover, probably due to the absence of organic revenue growth from 2000 to 2006. Despite the lack of worries about turnover by top
management, it is not clear if turnover is higher and tenure is shorter among lower level workers. Interestingly, about 59.6% and 56.5% of EdgeSoft’s workers were registered on LinkedIn in June 2008 and October 2009 respectively (Figure 24). These proportions are much higher than the ones observed at TradSoft and they compare to the ones observed in the video games industry. If we assume that the 34 workers from the sales team employ LinkedIn solely as a customer rolodex and subtract them from the total of EdgeSoft’s employees, the proportions drop to 34.6% and 39.5%, which is still significantly higher than what is observed at TradSoft. Thus, there seems to be an incentive for EdgeSoft’s workers to keep their vita updated and their options open.

![Figure 24. Proportion of workers registered on LinkedIn](image)

From 2006 to 2008, EdgeSoft also hired and integrated a large contingent of new workers through acquisitions, which doubled the size of the organization from 96 to 200 workers. Most of the recruitment efforts have been concentrated in building the Service Delivery team and growing the sales team. Before the acquisition of ePub, EdgeSoft’s product was a “plug-and-play black box” that took only a few days to implement. The Service Delivery team was composed of less than ten workers, most of which also participated in R&D activities depending on work demands. ePub’s product involved business process reengineering and software configuration, rendering the
sales process more complex and the implementation delay much longer. The result of such recruitment efforts is that workers from the initial EdgeSoft’s and ePub’s teams instantaneously became highly solicited knowledge resources:

“Because EdgeSoft grows so quickly, people here that have less than 3 months of seniority... there are probably 25 or 30, or more. So obviously, seniors like me become knowledge resources.” (Rebecca, Project Manager, quotation 8:21)

Furthermore, to accelerate the set-up of the Service Delivery team, EdgeSoft employed a large contingent of temporary workers. At the time of the study, 35 technical and management contractors accounted for about 18% of the total workforce:

“We worked with consultants because we had to act quickly. We didn’t have the bandwidth to deliver. It was quicker to go for consultants than to spend the time recruiting someone for a permanent position, especially last summer when the market was quite hot. Thus, this year, one of my priorities will be to replace some of these consultants with permanent positions.” (Steven, VP Service Delivery, quotation 5:12)

Not surprisingly, cohesion has been difficult to achieve following such quick and radical organizational growth. Thus, despite the homogeneity of their occupational backgrounds, rivalries and tensions between cohorts from different organizations still exist.

“Slowly but surely, people are learning to work together. There are a lot of egos around here, but they are learning to cool down. It has always been a business of egos; people who are highly intelligent and work hard. But it often ends up in a cockfight.” (Scott, Project Manager, quotation 9:39)

The evidence suggests that despite the fact that EdgeSoft has a workforce characterized by little turnover among managerial ranks, many workers appear to be active on the labor market. Furthermore, EdgeSoft’s workforce is quite homogeneous in terms of occupational background and highly trained, but this homogeneity masks the fact that most workers have begun their tenure elsewhere and that little more than half of workers joined the organization in the two years preceding the study.
6.1.6 Workforce relations

Workforce relations at EdgeSoft are mainly transactional, rather than communitarian or value-based. These relations are transactional because the organization does not have a clear identity so workers’ identification with the organization is weak. In addition, most workers have invested in or receive company shares and stock options as part of their compensation. Thus, workers are mainly attached to the organization because of the prospect of being able to cash out when the organization will have grown enough to provide a satisfactory financial return.

EdgeSoft has an ambiguous corporate identity which leaves workers with little idea about what the organization stands for, apart from generating revenues. Top management has always been more preoccupied by the urgent need to find a profitable market for EdgeSoft’s product than by internal corporate affairs. EdgeSoft has been a technology-driven organization rather than market-driven organization for a long time; put differently, the organization had a solution but was looking for a problem to solve. The niche targeted by EdgeSoft’s top management has varied considerably over the years; industries that have been targeted by EdgeSoft include the publishing and media industry, the biotech industry, the education industry, and governments, among others. Thus, many workers of the older cohorts have lived through the angst of attempting to find an application for EdgeSoft’s technology and have had trouble defining what it is that their employer does. In addition, due to rapid growth through acquisitions, changes in reporting relationships and colleagues often make generating cohesion difficult. For instance, one employee mentioned that, since he was hired in 2005, he feels he has been working for an entirely new organization every three months. The search for a market and the integration of new cohorts of workers have diverted top management’s attention from managerial matters such as formalizing aspects of the organization’s culture, values, and mission:

“We are not there yet. There has never been any discussion, or evangelism. There is no vision, no mission. Nothing has been

\[19\] The events surrounding EdgeSoft’s founders and managers search for a market are documented in Appendix 8.
defined yet. That will come with an organizational chart I imagine.” (Brian, Product Designer, quotation 6:38)

Most workers at EdgeSoft obtain shares, warrants, and stock options as part of their compensation. The middle managers and executives that were part of the initial management team of EdgeSoft or of the companies acquired over the years have also invested funds.

“Most of the employees have stocks, and all have access to a stock purchase plan. It’s a concern for everyone, from the first to last one of us.” (Rebecca, Project Manager, quotation 8:23)

“Everyone wants the business to make it. And... Everyone has personally invested in EdgeSoft. We did a lot of private financing; with each new round of private financing, everyone, me included, we all put our RRSP in. So we really want the company to grow and to succeed.” (Charles, VP Sales, quotation 10:12)

Hence, the culture of the organization is not judged as very strong and cohesion among workers is weak following the numerous acquisitions and hirings. Commitment to the organization rests mainly upon the long-term prospects of cashing out. Many workers, especially executives and middle managers, have faith that the profitability of the organization will grow significantly. While the prospects of again attaining the levels of valuation reached following the organization’s IPO in 2000 are dim, many managers consider the organization undervalued by the financial community. It is not surprising to see that the stock price and the financial health of the organization is a common topic of discussion amongst workers and managers:

[If workers talk about the financial health of the firm at lunch or elsewhere]: “Oh yes. Often, but it depends when. There was a time when people were worried. Not anymore. But for sure, there was also a time when, especially the seniors among us that are shareholders of the business, we told ourselves – Wow, we are really going to make quick money out of this thing!” (Scott, Project Manager, quotation 9:37)

The evidence suggests that EdgeSoft’s workforce is mainly attached to the organization because of long-term financial prospects rather than any expressive or emotional ties.

Additionally, attachment to the organization mainly rests upon sunk costs dynamics, especially
among older worker cohorts and top management who have invested much more personal funds and time than lower level workers. There are certainly some workers who feel an emotional attachment to EdgeSoft, but it is much less prevalent and much less demonstrated than what was observed at TradSoft.

6.1.7 Summary of contextual conditions at EdgeSoft

The evidence suggests that EdgeSoft operates in a context characterized by quick and radical growth aspirations; the organization doubled in size in a short time span and top management still plans further acquisitions and hiring; a sense of urgency spurred by a perceived closing window of opportunity and investor fatigue; little slack in terms of manpower, but some slack in terms of financial resources, albeit they are quickly being depleted and committed to revenue-generating initiatives; a highly skilled workforce of software engineers and computer scientists, few of which leave the organization even though many appear to be active on the job market; and a workforce committed the organization on the basis of sunk costs and financial rewards.

In the sections that follow, the appropriations of technology enacted to fulfill transparency for mobilizing, for pooling artefacts, and for reporting accountability at EdgeSoft are described in detail. Table 22 on the following page summarizes the evidence about each type of transparency.
# EdgeSoft: Types of transparency

<table>
<thead>
<tr>
<th>Appropriations of technology that fulfill the function</th>
<th>Mobilizing</th>
<th>Pooling Artefacts</th>
<th>Reporting Accountability</th>
</tr>
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<tr>
<td>1. CEO and executives announce “news” and enact policies through succinct monthly emails to the organization-wide mailing list</td>
<td>1. Workers resolve task dependencies through a Sharepoint system and a wiki</td>
<td>1. Project managers and executives navigate technology gaps to consolidate data (Outlook, Excel, Trac, Tenrox Timesheet, MS Project, Salesforce)</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Key technology features</th>
<th>Outlook</th>
<th>Sharepoint system</th>
<th>Outlook &amp; Excel</th>
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</thead>
<tbody>
<tr>
<td>- <a href="mailto:All@EdgeSoft.com">All@EdgeSoft.com</a> mailing list</td>
<td>- Federated access stratification (local and global information spaces)</td>
<td>- Local commitment &amp; budget system</td>
<td></td>
</tr>
<tr>
<td>- Access to <a href="mailto:All@EdgeSoft.com">All@EdgeSoft.com</a> mailing list is reserved to executives, marketing and HR workers</td>
<td>- Storing and retrieval features</td>
<td>- Work order input form</td>
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<td></td>
<td>- Tree-like directories</td>
<td>- Trac by Edgewall</td>
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<td></td>
<td>- Wiki features: Editing, hyperlinking, search</td>
<td>- Timesheet input form, reporting features</td>
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<tr>
<td></td>
<td>Wiki (Confluence)</td>
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<tr>
<td></td>
<td>- Editing, categorizing in tree-like directories, hyperlinking</td>
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<tr>
<th>Functional alternative practices</th>
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<tbody>
<tr>
<td>- CEO and executives disclose selective outline of future plans in quarterly reports and in organization-wide meetings every 4 months</td>
<td>- Many workers often transfer files by email and bypass Sharepoint</td>
<td>- Decision making outside executive meetings</td>
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<td>- Friendship ties</td>
<td>- Workers maintain an alternative local, informal document management system</td>
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<table>
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<tr>
<th>Consequences</th>
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<tbody>
<tr>
<td>- Emails perceived as irrelevant (“we already knew”)</td>
<td>- Drifting because multiple versions of official artefacts coexist</td>
<td>- Executives filter the report they consult</td>
<td></td>
</tr>
<tr>
<td>- Continuance and investment in the employment relationship is mostly dependent upon the cash nexus (most middle managers and executives hold shares and stock options); lower level workers invest in the relationship to gain marketable experiences.</td>
<td>- Legitimacy of access rules to the local information spaces is debated</td>
<td>- Executives and managers blame and “challenge” each other about the validity of inferences and data upon which inferences are made</td>
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<tr>
<td></td>
<td>- Service delivery workers face unexpected implementation hurdles because of difficulties in retrieving product documentation</td>
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Table 22. Types of transparency at EdgeSoft
6.2 Transparency for mobilizing

The main technology employed at EdgeSoft to mobilize the workforce is the organization-wide mailing list “All@EdgeSoft.com”. Email is also employed to publicize policies and procedures, as well as to announce corporate news about once per month. The evidence collected suggests that these two appropriations of email are not effective in conveying mobilizing information to the workforce resulting in a situation which spurs the employment of alternative ways, such as meetings and working the grapevine, to do so.

6.2.1 Appropriation #1: Announcing monthly “news” and enacting policies through the organization-wide mailing list

At EdgeSoft, the utilization of an organization-wide mailing list is limited to the announcements of procedural matters, such as changes in policies, or of social events, such as parties and gatherings. Little information that pertains to strategy, customers or current corporate developments is communicated over the list. Instead, such information is usually discussed amongst the top management during their weekly meetings who then share the information with the workers under their responsibility at their convenience, either by email or face-to-face.

The evidence gathered at EdgeSoft suggests a number of motivations that account for why email is appropriated in such a limited fashion. First, EdgeSoft’s top management, and its CEO in particular, do not believe in the effectiveness of email to convey mobilizing information to the workforce and prefer to convey the information through informal interactions with their workers. Sean Davis, EdgeSoft’s CEO, explained his preference for face-to-face interactions over email to communicate information related to ongoing developments about the strategic orientation of the organization as follows:

“Email is not very good to convey emotion, to motivate or to encourage... or to tell people that you’re angry because everyone has been sitting on the sidelines and has missed a great opportunity. Email is not very good for such things; email is factual. We use it to send such things as ‘From now on, the procedure for expense accounts is the following 12 steps’. But
to tell people ‘Hurray! We just won a contract!’, it’s much more effective to take 10 minutes to walk around and tell people ‘Come over, I have something to tell you’. It works better and as humans we’ll still need this for a long time. I encourage my management team to do the same.” (Sean, CEO, quotation 1:34).

EdgeSoft’s top management’s belief in the relative advantage of face-to-face communication over email implies that the news diffused through email is generally perceived as already known or irrelevant. Email is thus mainly employed as a device to officialize and publicize decisions once they have been made rather than to solicit feedback or input from the workforce before making decisions. For instance, a project manager had the following comment about the emails sent by top management to the organization-wide mailing list:

“About once per month, maybe even less frequently than that, we will receive a message from the president that will include a list of the news of the month. Usually, these are about things that are already well known, things that have become common knowledge. We don’t learn much from these emails generally.” (Rebecca, Project Manager, quotation 8:25).

The second motivation for limited emails is that the relevance of the information that top management communicates to the workforce is limited by a concern about out of context judgements and about workers’ misreactions to the information. Top management fears that workers may react inappropriately to the information by exaggerating its significance or by pursuing actions that might be detrimental to the organization as a whole. As an example, EdgeSoft’s CEO mentioned that he would never disclose to the workforce news about an impending merger or sale of the organization:

“It’s important not to be naive when you’re transparent. Yes, you have to be transparent, but you don’t throw things in all directions without any purpose. You can put yourself in big troubles by doing so. You have to employ your judgment to assess whether a piece of information is presentable or not. For instance, if we’re in the process of selling the business, I will probably not tell the rest of the guys because I will surely destabilize them. That’s the kind of things that you learn only once it’s done.” (Sean, CEO, quotation 1:158).
The third motivation is that there is a prevailing belief among executives that the circulation of financial and budgetary information is not a requisite for accomplishing one’s responsibilities. While broad financial information is made available through quarterly reports, granular information about project budgets and financials is not distributed to the workforce. Even within the top management team, such information is not distributed evenly. For instance, the VP R&D told me he cannot compare the budget allocated to his team to the ones allocated to the other teams of the organization. Projections and forecasts, in particular, are closely held and carefully diffused to avoid any scrutiny over what was promised and actually delivered, since EdgeSoft’s quickly changing business environment often make these erroneous:

“What is the use for the developer to know that his team’s budget is $3 million? What will he do with such information? Will he begin saving pens? Also, such strategic information usually takes the form of hypotheses and scenarios about sales and growth. If we say that we will open a position in March, it’s because we will be able to do so given our growth scenarios. If we diffuse that information to the group, people will be waiting for that new person from now on. But if we meet our targets only in July instead of March, than people will ask why the new person hasn’t been hired yet... Too much information kills information. Strategic information always has this little crispy taste, you know, but in the end, it’s not that much a big deal.” (George, VP IT&QA, quotation 2:43).

Fourth, the CEO and top management do not disclose budgetary and financial information to the workforce to avoid grievances and social comparison processes. Only top management and project managers are aware of the hourly rates charged to customers for workers’ services. While some managers and executives cite competitive reasons to justify this practice, it seems that avoiding feelings of unfair treatment is a key concern:

“Information about what we bill customers and what our costs are is always very sensitive. It’s not information that we share with our resources. [...] Doing so secures us against leaks, yes, but it’s mainly to avoid internal problems... we may be billing customers $1200 per day for someone’s services and we pay that person 10 times less... things like that.” (Rebecca, Project Manager, quotation 8:26).
A final reason that explains why little disclosure happens through the organization-wide mailing list at EdgeSoft has its origins in the values of the CEO and top management. They perceive disclosure through the organization-wide mailing as mainly instrumental in achieving the organization’s objectives rather than as an end in itself. In other words, disclosure is not accomplished as a gesture of respect or of status-levelling toward workers as stakeholders of the organization:

“For communication as well as for other practices, it’s not communication for communication’s sake, as a grand universal principle that we have to uphold. I do communication and I am transparent because I believe that it works, because it allows us to achieve our objectives, which are fundamentally financial objectives.” (Sean, CEO, quotation 1:55)

As the evidence shows, a number of motivations underlie top management’s preference for limiting the use of the organization-wide mailing list to the communication of succinct monthly news and of procedures through the organization-wide mailing list. At EdgeSoft, top managers prefer face-to-face communication over email, they fear unintended reactions from the workforce about the significance of some news, they believe that the information is not needed by the workforce, they prefer to avoid providing any basis upon which social comparison and grievances may be made, and they believe that such communication is merely instrumental in achieving the organization’s financial objectives.

6.2.2 Consequences and functional alternatives

At EdgeSoft, two functional alternatives have emerged to compensate for the need of transparency for mobilizing purposes: meetings with top management and friendship ties.

Information that aims to mobilize the workforce is generally communicated through meetings with the workforce because of EdgeSoft’s top management preference for face-to-face communication. Meetings between top management and the workforce can take three forms at EdgeSoft. First, ad-hoc meetings are held when the CEO believes that it is worth doing so. These informal, unplanned meetings are generally held spontaneously in the cafeteria following
the successful bid of a contract or other positive developments about the organization. The CEO employs a large bell to signal the win of a contract and to draw people’s attention. Despite the informal nature of these meetings, however, it appears that such practice does not completely fulfill the need for transparency for mobilizing purposes, according to one middle manager:

“When he has good news to announce, the CEO will come over on a Friday afternoon at 4pm to offer us a beer and talk to us about the status of the business, about what happened in the sales and the Service Delivery teams... He will tell us the good news. He will give us a little information, but we don’t learn much.” (William, Director of Software Engineering, quotation 3:31).

Formally planned meetings with the workforce also occur, on average, every four months. A large conference room is rented in a nearby hotel and top management prepares presentations about the organization’s ongoing concerns, as well as about current and future strategy. These meetings are usually planned well in advance and the audience consists of all workers located at the Eastern Canadian office. The same meeting is usually organized within the same week with the workers located at the French office. A third type of meeting employed to diffuse corporate information to the workforce includes the annual shareholders meeting, which many workers attend due to their share ownerships. Because the presentations made during this meeting are generally targeted to the organization’s financial stakeholders, such as investment banks, venture capital firms, analysts, and the investment community at large, many workers are already aware of the information diffused at this occasion.

Due to the paucity of information provided for mobilizing purposes through either electronic channels or public presentations, friendship ties have come to play a large part in how workers obtain information. Working the grapevine and leveraging one’s ties with top managers are important means through which information about the current status of the organization and impending upheaval is gained. For instance, one middle manager felt that information about events outside her own team was much more difficult to obtain under the current CEO’s tenure in comparison to what was obtainable during the Founder-CEO’s tenure. Her position in the
organization’s communication network allowed her to keep abreast of what is going on outside her team at EdgeSoft:

“I get much less information than under the former regime. Much less. But... I cannot complain. Because of my job, I still have much access to management.” (Rebecca, Project Manager, quotation 8:25)

In summary, no single functional alternative completely fulfills the need for transparency for mobilizing purposes. Top management employs email to diffuse monthly news to the workforce, but these mails are generally perceived as irrelevant. Instead, top management prefers to hold informal and formal meetings to communicate such information. The evidence suggests that these meetings are not much more effective to communicate mobilizing information. Thus, to obtain such information, workers rely on their own network of informers within EdgeSoft’s hierarchy. This seems to be the preferred mean of accessing information due to the paucity of the information provided by the formal organizational channels.

6.3 Transparency for pooling artefacts

People at EdgeSoft employ two applications to pool work artefacts: a Microsoft Sharepoint application and a Confluence Wiki application. As we will see, this appropriation does not entirely fulfill the need for transparency for pooling artefacts purposes; a number of functional alternatives to these appropriations have thus emerged over time. The evidence documenting the appropriation and its consequences is reviewed below.

6.3.1 Appropriation #1: Resolving task dependencies through a Sharepoint system and a Wiki

People at EdgeSoft employ a Sharepoint application and a Confluence Wiki application to resolve task dependencies. The Sharepoint application was purchased and developed following the appointment of Sean Davis as CEO and Linda Morgan as VP Organizational Development in 2007. At the time, they perceived that there was a need for an application that
would provide better affordances than the Confluence Wiki and the file server employed to share artefacts within and across teams. Another explicit aim was to reduce the volume of emails at EdgeSoft by making the Sharepoint application the official and formal channel through which artefacts are shared and communicated.

Access to the Sharepoint application is highly stratified and serves the purpose of pooling artefacts both for local and for global use. The VP IT & QA summarized the principles underlying the design of the Sharepoint application as follows:

“This is not a flat intranet where everyone is beautiful, everyone is nice. No. There are sales sections, marketing sections, project management sections, and IT sections, etc. There is some intradepartmental communication that is done through these sections and there are also interfaces between the teams and their external customers or managers.” (George, VP IT & QA, quotation 2:24).

The Sharepoint application provides a local information space where workers from within the same team share artefacts that are work-in-progress. The artefacts in this space, which might be documents, models, templates, press releases, contracts, and financial reports, among others, are generally drafts intended for local use within the work group only. For instance, analysts in the Service Delivery team usually create, modify, and then publish documents containing customer requirements onto the Service Delivery team section of Sharepoint. They then send an email containing a link to the documents to their project manager to inform him or her that the customer requirements document is ready for comments and approval. Such documents are thus only accessible through the Service Delivery team section of Sharepoint and almost all workers and managers outside the Service Delivery team are not granted access.

All EdgeSoft teams have their own local information space on Sharepoint. However, the extent to which the use of the local information space is assimilated into daily practices varies from one team to the other. According to the evidence gathered, the Service Delivery team is the one displaying the greatest assimilation of the Sharepoint application in comparison to other
teams. The aim of the appropriation is to make the team’s local information space on Sharepoint a central repository of the teams’ work artefacts which include among others, documents pertaining to a customer’s contract, requirements, and project plans:

“The key idea behind the intranet is that all project information is stored there... customer contact information, project schedules, project documents, checklists, progress reports, and so on. If someone gets hit by a bus tomorrow morning, anyone is able to replace that person easily. We're now trying to get all communication centralized on Sharepoint, but for technical reason that’s not easy to do.” (Rebecca, Project Manager, quotation 8:12).

In the R&D team, the Sharepoint application is used in parallel with a Confluence Wiki, which had been designed and implemented years earlier. The applications are employed to create a local information space where product engineers and developers can share templates and best practices. When the Sharepoint application became the technological standard at EdgeSoft in 2007, the R&D workers assessed if it was feasible to transfer the content stored in the Confluence Wiki over to the Sharepoint application. In the end, it was deemed more efficient to operate both applications in parallel, but to stop updating the Confluence Wiki with new content. Scott, a project manager in the R&D team, summarized this situation as follows:

“We use the wiki feature of Sharepoint to share all the templates and documents that describe processes. We use it to exchange and to discuss about these. We use it also to store information such as best practices and things like that. Those features are also currently available on Confluence, but we are currently migrating to Sharepoint. So we will have two tools. Sharepoint will be used from now on and we will update it in the future, while Confluence will be kept as an archive because there's a bunch of stuff that we can't migrate over to Sharepoint. It's just too complicated to do so.” (Scott, Project Manager, quotation 9:21).

The top management team also has its own local information space on the Sharepoint application. This space is employed mainly to distribute artefacts, such as Powerpoint presentations, reports, and marketing materials, among others, that will become the basis of discussion during the weekly executive meetings.
Furthermore, within their teams’ local information space, the managers of each team have their own closed space where artefacts containing financial, budgetary and other information labeled as “sensitive” are put. In general, the Sharepoint application was configured so that much of EdgeSoft’s workers, except highly exceptional cases such as a joint appointment to two teams for instance, do not have access to other teams’ local information space, but that executives have access to all local information spaces of their own team as well as to the top management team’s local space.

The Sharepoint application is also configured to act as a global information space in which work artefacts officially approved by the organization are publicized. Each team has its own space on Sharepoint where other teams can access artefacts that have been tagged as “public”. These artefacts are thus accessible by any workers in the organization. Each team’s manager is responsible for the decision about what artefact to make public in the global information space or to keep into the local information space.

“The person responsible for the business unit typically decides what access to provide. But sometimes they will come to me and ask ‘What do you think?’ But I still prefer to let people make their own decisions. There are only a few people that are ‘admins’, including me. I can go anywhere, the global sections and the sub-sections. Up to this day, it never happened that I said ‘Be careful, we shouldn’t publish this information.’ I think people know what’s best to do. [...] In general, things that are not yet approved or validated, they are not published at large.” (Linda, VP Organizational Development, quotation 11:14).

The design and the implementation of the Sharepoint application as local and global information spaces where work artefacts could be shared and transferred was partly motivated by a desire of the CEO and the VP Organizational Development to reduce the volume of emails exchanged at EdgeSoft. To accompany the implementation of the Sharepoint application, the VP Organizational Development wrote and publicized guidelines about how and why email should be employed at EdgeSoft. The message containing these guidelines is reproduced on the next page with the VP Organizational Development’s permission. While the guidelines do not refer
October 10th, 2007

Effective email messages

In order to become more efficient in our email communications while ensuring recipients do reply to urgent and/or important messages, we would like to encourage everyone to start utilizing effective email messages via “Action Oriented” subject lines.

In this world of voluminous email messages, it is often a challenge for recipients to accurately predict which email he/she has to respond to immediately and which are to be considered Urgent. Very often, an important message will be somewhere in the hundreds of emails received.

Here is a guideline for increasing efficiencies in emails:

- As much as possible, address emails to person or persons that need to take action on an activity; if sent to too many people, everyone will think someone else will handle the task!
- An email can be sent to many people when it is viewed as Informative.
- It is better to send an email to 1 or 2 people and CC (carbon copy) everyone else, which is usually to demonstrate that a task or action has been requested and you wish to inform other colleagues. Please note that Blind CC’s (BCC) are completely discouraged (not to say forbidden)!
- The subject line should start with an Action Oriented message or should reiterate that this is ‘for your information’ only. Additionally, if the message pertains to a client, it is recommended to add the name of the client to the subject line as well. Here are a few examples:
  - URGENT: then subject wordings
  - FOR FINAL APPROVAL: then subject wordings
  - ACTION TO TAKE: then subject wordings
  - FOR VALIDATION: then subject wordings
  - FOR YOUR REVIEW: then subject wordings
  - FYI: then subject wordings
  - FOR DISTRIBUTION: then subject wordings
  - REMINDER: then subject wordings
  - IMPORTANT TO READ: then subject wordings
  - NEW INSTRUCTIONS TO FOLLOW: then subject wordings
  - NEW OFFICIAL DOCUMENTS: then subject wordings
  - COMMUNIQUÉ/PRESS RELEASE: then subject wordings

- Subject wordings should provide a clear indication as to the content of the email. As an example, you may have FOR FINAL APPROVAL: new presentation for xyz prospect or client. Ideally, refer to a project, a client or a particular topic that will draw attention to the recipient while providing insights concerning the content of the email.

We strongly encourage everyone to utilize this communication system. As a sender, you should greatly benefit from this ‘system’ since you will facilitate the recipient in prioritizing his/her responses and will help categorize the urgency of each request.

Thank you for participating in this collaborative effort in communicating amongst ourselves more effectively.

Best regards

Linda Morgan
VP Organizational Development

Table 23. “Effective email messages”: email sent by Linda Morgan, VP Organizational Development at all@EdgeSoft.com mailing list in October 2007.

explicitly to the use of the Sharepoint application as an alternative to email, such a guideline was specified during the introductory training to the application.
Finally, it is worthy to note that the features of the Sharepoint application that have been appropriated at EdgeSoft are limited to the search, the storage of work artefacts, and the wiki. These features rely upon the design of an information architecture which was designed by each team with the help of an external consultant and ultimately approved by the VP Organizational Development. According to the technical documentation made publicly available by Microsoft, the Sharepoint application package offers many more features, such as the publication of blogs, the customization of user profiles, the elaboration of social networks, and the linkage to back-end analytical and transactional systems (Microsoft, 2007). While the potential applications of such features were judged as “interesting” by the workers and managers I interviewed, no immediate need for their use was perceived at the time of study.

6.3.2 Consequences and functional alternatives

All workers and managers that I have met assessed that the adoption of the Sharepoint application was successful overall. Yet, the evidence gathered shows that the appropriation of the Sharepoint application and the Confluence Wiki does not entirely fulfill the need for pooled artefacts transparency. In subtle ways, the spirit of the Sharepoint application which is to enable open and friction-less collaboration or, as the Microsoft marketing material puts it, “to extinguish information and capability silos” (Microsoft, 2007, p.1), is not realized in practice at EdgeSoft. More specifically, four difficulties have been observed with the use of the Sharepoint application: the bypassing of the Sharepoint application to share artefacts; the drifting of artefacts from one official version to multiple local versions; the legitimacy of access rules to certain artefacts, such as product documentation; and the insufficient quality of some artefacts contained in the Sharepoint application.

The first difficulty encountered concerns the bypassing of the Sharepoint application, generally through email. There are two reasons why such bypassing practices may occur: because of expediency and the fear of judgment. Employing email is generally more efficient to share
artefacts than employing Sharepoint, because the latter requires an extra step of work by the
sender who has to upload the artefact into the right directory of the Sharepoint application. The
implementation of “plugins” that allow to save files automatically onto Sharepoint facilitated this
process, but this improvement is limited to documents produced with the Microsoft Office family
of products. Furthermore, a tendency for workers to send the early versions of an artefact through
email rather than to upload to the Sharepoint application has been observed by EdgeSoft’s
managers. Managers and executives have attributed this tendency to the fear of judgment that
some workers might have. The VP IT & QA considered that workers that do publish the early
versions of their documents show courage and character in comparison to their peers who don’t.
He commented upon the common practice of bypassing the Sharepoint application the following
way:

“This happens especially in the relationship between the sales and the legal teams. Because the sales
team is in contact with customers, versions of proposals tend to become personal
versions and exit the system. This process has a tendency to exit the intranet quite quickly even though it’s one of the goals to
maintain a record of these versions, and of the relationship between customers and us as legal entities. I believe it’s somewhat childish... and a lack of maturity, which causes the first version to disappear into limbo” (George, VP IT&QA, quotation 2:45).

By preferring email to the Sharepoint application to share artefacts, workers and
managers go against the guidelines for email usage that had been proclaimed by the VP
Organizational Development. Many workers mentioned to me that the guidelines had been
helpful in formatting their emails and filtering out those that referred to important and urgent
matters from those that did not. However, they also mentioned that they did not perceive a
decrease or a change in the volume of emails that they process every day, and that people
continued to send emails containing attachments rather than employ the Sharepoint application to
share artefacts.
The second difficulty encountered in the appropriation of the Sharepoint application is the drifting of artefacts from one official version to multiple local versions. This difficulty has its source in workers’ and managers’ practice of downloading artefacts from the Sharepoint application, modifying the artefacts’ content, and then storing the artefacts on their local hard drive. The artefacts found on the Sharepoint application then become outdated and obsolete; generating the potential for lapses and coordination failures where work is accomplished on the basis of multiple versions of an artefact at once. The risk of such drifting is particularly salient in the case of the templates employed to collect customer requirements and to document implementation processes:

“What Sharepoint allowed us to do is to centralize all our business processes templates to support the Service Delivery team. When a new customer comes in and we need to do an analysis, then here’s the template you have to employ. If we need to do a change request, then here’s the template. It’s there on Sharepoint. We created a whole bunch of standards. The big problem today is that people will download the last version of the document, modify it, and work from that new version. That’s very dangerous because we need to have a common basis over time.” (Linda, VP Organizational Development, quotation 11:8).

The third difficulty encountered in the appropriation of the Sharepoint application for pooling artefacts concerns the legitimacy of access rules to certain artefacts. As mentioned previously, the rules governing access to the various sections of the Sharepoint application as well as to the transfer of artefacts from local to global information spaces are delegated to each team’s managers. They assess the sensitiveness of the information, sometimes after having consulted other team’s managers to obtain a feel for their information needs, and then allocate the information to one of the information space. One area at EdgeSoft where the legitimacy of what access rules to enact is hotly debated concerns the product roadmap documentation. While the sales team would like to gain knowledge of what features will be available in future releases of EdgeSoft’s products, some executives and the R&D’s group management believe that such information should not be disclosed too hastily to the sales team:
“Take the product roadmap for instance. If the roadmap is confirmed, validated, and that management approved the developments of specific modules or features, then it’s OK for sales reps to access it. However, I always let a couple of months to pass because we all know the game… the sales reps sell too quickly and the R&D people are always late. We need to be careful.” (Linda, VP Organizational Development, quotation 11:14).

Based on these comments, it is thus not surprising to observe that the sales team’s managers and sales representatives feel that they should have greater access to information about upcoming features. They believe that their request for such information is legitimate, because it would enable them to do their work better, a belief that is not shared by all members of the top management team:

“I don’t have much visibility on the new features that will be developed. It’s always a fait accompli. […] I can’t tell a customer if a requested feature will be available in six months, one year or never! The roadmap is too vague and unpredictable since nobody really owns it.” (Charles, VP Sales and Development, quotation 10:37).

Fourth, despite the affordances provided by the Sharepoint application for creators of artefacts to make these available to all EdgeSoft’s teams through the global information space, it happens that the information contained in the artefacts is insufficient for the needs of the intended users. This void is particularly salient for the documentation of current releases of EdgeSoft’s products, which is deemed unsatisfactory by many workers of the Service Delivery team:

“There is probably a little frustration toward the R&D team from my people, especially about the communication of new features. That’s deficient. But in general, it’s not access that is deficient, but the quality of the information… the level of detail. So it’s not only about what’s coming in future releases, but about what’s contained in the current releases; what has changed, what hasn’t changed, how it works…” (Steven, VP Service Delivery, quotation 5:40).

When confronted with such an assessment of the information they produce, the R&D people argue that product documentation has to undergo a lengthy approval and validation process, as the information is often employed both for internal and external customer use. The
evidence suggests that the dual purpose of product documentation leads the R&D & marketing workers and managers to format and to undercut its content so that the documentation responds to customers’ needs without revealing too much of the inner workings of EdgeSoft’s products. The downfall of such an approach is that the information sometimes becomes too broad and too vague for the need of the Service Delivery workers:

“It’s a complex process. The product documentation has to be approved by about 18 people, and they all have to be in agreement with what’s written. There is an informal process, which is mainly email-based with ‘Action: To Review’ in the message headers. That’s how it goes. If a document will get presented to a customer, it also needs to get an approval from the marketing people. After all that, it will probably find its way in some section of Sharepoint, in another team.” (Brian, Product Designer, quotation 6:35).

Furthermore, given the limited pool of R&D workers available, the significant growth experienced by EdgeSoft in recent years generated pressures for managers to allocate efforts toward the development of new features rather than to the documentation of current features.

In sum, the evidence suggests that pooling artefacts transparency is not entirely fulfilled by the appropriation of the Sharepoint application and the Confluence Wiki applications at EdgeSoft. A number of difficulties hamper the use of the Sharepoint application in particular. In some areas, the rules governing who has access to the content of the various information spaces on the Sharepoint application are sometimes perceived as too restrictive and in a few other areas, the artefacts contained in the Sharepoint application are judged as of poor quality. Thus, the transfer of artefacts through email and their storage on local hard drives remain key functional alternatives to the Sharepoint application, mainly because of the sense that they are more efficient and that they protect from premature disclosure of information. As a result, artefacts may drift into multiple versions that are maintained throughout EdgeSoft, undercutting the purpose of the Sharepoint application.
6.4 Transparency for reporting accountability

Three key appropriations of technology have been made at EdgeSoft for the purpose of reporting accountability. First, workers, managers, and executives have to navigate a bundle of technologies to consolidate the data necessary to produce the reports accounting for the status of work processes. Second, in producing these reports, they also have to intuitively assess key aspects of the work processes that are not (and cannot be) monitored by the currently deployed technologies at EdgeSoft. Third, depending on the intended audience, they will shape their reports to preserve a certain degree of autonomy on the orientations of their team and to avoid judgments that could be made out-of-contexts. These appropriations do not completely fulfill the need for reporting accountability and thus have a number of deleterious consequences, such as conflicts, that are compensated by politics and decision making outside formal organizational forums.

6.4.1 Appropriation #1: Navigating technology gaps to consolidate data

The first appropriation consists of the practice of navigating technology gaps to consolidate the data necessary to track and to report the status of the work accomplished. By navigating technology gaps, I mean that workers have to transfer the output of a first technology to the input of a second technology, in a way similar to how the engineers studied by Bailey, Leonardi, & Chong (2010) did. This practice has its origins in the multiple technologies that have been deployed over time to automate various EdgeSoft’s business processes. Some of these technologies are transaction-based processing systems: Trac by Edgewall, to facilitate the input and flow of customers work orders; Timesheet by Tenrox, to record the time spent by workers on their assigned tasks; and Salesforce.com, to monitor customer leads. Other technologies that are not transaction-based have also been deployed to support the automation of business processes: Microsoft Project, to assist project scheduling; and Microsoft Sharepoint, to support informal processes of pooling artefacts (how this particular technology was appropriated was discussed in
the previous section). Also, Microsoft Outlook and Excel, which are personal productivity tools a priori, are employed as local commitment and budget monitoring systems. Put together, the evolution of these technologies means that EdgeSoft has no integrated database from which reports about the tracking and monitoring work can be produced. This integration has to be done by EdgeSoft’s workers, managers and executives:

“The perfect tool doesn’t exist. I would say that for now, we are not highly integrated. For instance, there is the timesheet system. We generate reports and we export them to Excel. And then, we do the same thing with the MS Project plan. We do the same thing with Sharepoint too. So there is always painful integration work to do, like copying and pasting data. In my opinion, that’s the main and most important problem.” (Rebecca, Project Manager, quotation 8:14).

As the above quote illustrates, there are few technologies that have been deployed to automatically bridge the gaps between the applications employed to monitor various work processes at EdgeSoft. Each work process has its own underlying set of technologies and many of these depend on the recurrent inputs of workers in addition to their core tasks. To fill the gaps, managers and executives have to create informal systems in which they manipulate data from one system to another. Because of the data provided by the current applications do not completely fulfill reporting needs, it is also necessary for managers to fill the gap by estimating, grading and scoring key metrics about the status of work. This appropriation is explored in the next section.

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20 In the context of project management, the notion of a “commitment” refers to the promise of doing something, of accomplishing a particular task or action. An agenda is a commitment management system, even though the commitments are only to one self. Microsoft Project, one of the most popular project management technologies on the market and which has been deployed in all of the organizations investigated for this research, is fundamentally an analysis technology which encapsulates algorithms making it possible to compute critical paths, optimize the distribution of tasks through time, as well as the allocation of resources to those tasks (Microsoft, 2007). An analytical technology like Microsoft Project is not designed to monitor promises and the success or failure to meet them. Commitment tracking technologies, however, allow doing so (Vandersluis, 2002).
6.4.2 Appropriation #2: Estimating, grading and scoring work in spreadsheets and Salesforce

While many of the reporting tools employed by EdgeSoft’s middle managers rely upon the manual integration of fragmented data sources, they also rely upon informal assessments and inferences about the status of work. In the R&D and Service Delivery team, the status of ongoing projects is reviewed once per week and reported through a bundle of spreadsheets. Because only parts of the work of these departments are supported by transaction processing systems, much of the tracking of work is done through the assignment of status indicators (e.g. green, yellow, red) and the estimation of the proportion of work completed and resources consumed. For instance, because the timesheet system’s main purpose is to feed data to payroll applications, it does not keep track of commitments or work orders assigned to workers. Some managers extract the data from the timesheet system and reconciles it with project plans to compute how much time was spent on commitments and work orders, based on the descriptions of the task workers wrote into their timesheet input forms. Other managers prefer to hold a team meeting to review ongoing project status and to score project status from the information discussed. Such practice is recounted by Scott and William, both middle managers in the Service Delivery and R&D teams respectively:

“We have lots of dashboards that tell us what are the projects, what is their status, the satisfaction of customers, and if we exceed costs and deadlines. They are all built in Excel spreadsheets. It does not take too much time to fill those dashboards, about one to two hours max per week. I have a meeting with my boss at noon on Mondays, so I do a meeting with my team on Monday mornings where we go through all the projects. I thus obtain a clear status on everything and adjust the weekly plans. [...] I rarely get any surprises on Monday mornings.” (Scott, Project Manager, quotation 9:12).

“It’s mostly informal. Roy comes to see me and I will tell him the status. If he wants to know about something, he’ll come to see me or somebody else. But it’s really an overview and then he writes up the report according to his own experience.” (William, Director of Software Engineering, quotation 3:19).
The same kind of informal assessments are made by workers in the sales team. Sales representatives first employ the lead capture features of Salesforce.com to input contact information concerning potential customers, documentation, such as proposals, analyses, specifications, product architecture, pricing, and contractual documents. The status of the sales process (e.g. contact made, qualification of needs, presentation scheduled, budget approved, proposal made, etc.) is also recorded and regularly updated. Each week, they employ the scoring features of Salesforce.com to estimate the potential of a customer to turn into a real customer within the next week. The monitoring and the reporting of work are thus highly dependent upon the input into Salesforce.com accomplished by the sales representatives. The exhaustiveness of the documentation provided thus varies from one sales representative to the other, since some are more thorough while others are more expedient. The score of the potential to “close a sale” with a customer also varies from one sales representative to the other, since their confidence about the potential of a customer may vary depending upon their idiosyncratic experience with the sales situations at hand. Dustin, a middle manager within the sales team, commented on these differences as follow:

“There is an artistic part to reporting. Ideally, we would have a coordinator dedicated to help us out. We would send information to that person and she would put it in Salesforce. Between what the company wants and what employees can do... there is always a gap, I’d say. There is probably about 30 to 40% of the information that is dropped, but the most critical information is captured. [...] I tried to formalize the sales process this year. We should have a better scoring grid, but for now, we don’t have it. The 20% chance of closing the sale that one may put down is not the same 20% that someone else may put down, so it’s subjective in the end.” (Dustin, Director of Business Development, quotations 12:20 & 12:21).

How the sales team managers employ the data available from Salesforce.com to review the progress of work differs significantly from how the Service Delivery and the R&D teams use the data from their own systems. The VP Sales and Development instituted a practice where the scores and the status of the sales pipelines of all sales representatives are made available to the
other sales representatives; Excel spreadsheets are generated from Salesforce.com by an administrative assistant and stored in a directory on Sharepoint where they can be accessed on demand. Each week, the discussion of ongoing sales opportunities provides an opportunity for social comparison among the sales representatives team. The VP Sales and Development explained to me the rationale behind this practice:

“On this screen [JGB: an Excel spreadsheet], I see that Jason hasn’t found any leads during the first week but that he found five at the end of the second week. I see that this guy’s good. What’s interesting is that all the sales reps see that screen. Everyone. For instance, I have Mark here [JGB: he points at the screen]. He knows that the star performer is Monica for his type of sales. I don’t even have to tell him anything, because he’ll be the one telling me ‘Don’t worry, I’ll generate more leads than Monica this week’. I think such exposure is a good thing, because it’s completely transparent and it’s not personal. If it doesn’t work out, it simply doesn’t work out. I know that those getting behind their peers will not be proud of themselves and that they will be pushing hard.” (Charles, VP Sales and Development, quotation 10:30).

While the sales representatives are the highest paid occupational group within EdgeSoft, they are also the ones that are the most likely to leave the organization due to the labour management practices that the appropriation of Salesforce.com allows the VP Business and Development to enact.

“If you’re in sales, you have to sell. It’s the GE method. Every year, I will replace the bottom 10%. And that’s clearly stated; everybody knows it. It’s the only way to progress. This method eliminates subjectivity.” (Charles, VP Sales and Development, quotation 10:201)

In the VP Sales and Development’s opinion, the appropriation of the scoring and tracking features of Salesforce.com enables him to motivate sales representatives solely through peer pressure, without any hierarchical intervention. He elevated the data provided by Salesforce.com to an objective and arbitrary record of performance that stand above any conflicts or personal influence. As a result, it is not surprising that relationships between sales representatives have became characterized by a certain degree of rivalry and competition. For instance, the peer
pressure generated by these labor management practices prompts some sales representatives to complain about how their peers employ the Salesforce.com scoring and tracking features to shape how their work might be perceived and assessed:

“One of the inside sales came to me two weeks ago to tell me that his US colleague is doing bad work. He showed me how his colleague documented his opportunities... I think it’s only fair competition between peers. [...] It was a case of two completely different approaches; one is analytical and the other one is more creative, so his way of taking notes is... different.” (Dustin, Director of Business Development, quotation 12:31).

Put briefly, the appropriations of the reporting features of the technologies available to each team are highly similar, in that they heavily rely upon informal assessments about the status of work and input from workers, rather than transaction-processing systems which track work automatically. However, the way that the information from these reporting features is used by the sales team differs significantly from how the same information is used by the Service Delivery and the R&D teams. The sales team managers employ the information to evaluate individual performance of workers in addition to monitoring ongoing sales work, while the Service Delivery and the R&D teams employ the information mainly to monitor the overall status of projects. Despite these differences, the managers from all three teams act in similar ways when it comes to reporting this information to people from other teams as we will see in the next section.

6.4.3 Appropriation #3: Shaping reporting information for external stakeholder’s usage

As mentioned in the section about transparency for the purpose of pooling artefacts, the leaders of each work group upload every week onto Sharepoint the reports that have been produced by middle managers through the navigation of the team’s applications and the scoring and marking the status of work. The informal reporting practices described in the previous sections provide some leeway to middle managers and team leaders to shape the information that will be provided to other teams and to top management. They make a clear distinction between the information that is relevant for the local needs of the team and the one that should be reported.
to people outside the team. The information made available to people outside the team will generally be diluted or less granular than the information that is employed to manage work within the team. While such difference in the level of detail is usually expected in any non-entrepreneurial organizations that have grown above a certain size threshold where it becomes pragmatically impossible to keep track of all work that goes on at a local level, it appears that managers and executives actively attempt to shape the perceptions of people outside the team, or at the least, to shield the team from unfair judgments about how work is accomplished and managed. Two teams where the evidence suggests that such attempts occur on a regular basis are the R&D and sales teams.

In the R&D team, the evidence suggests the team’s workers and managers relish their autonomy and prefer to provide only broad information about the status of work to other teams. One R&D middle manager explained the practice as follow:

“It’s certain that the status of my work is not necessarily something that I would like to see on the intranet because I don’t want people to micro-manage my tasks. We set some objectives and how we achieve them is our responsibility. We do have objectives that are quantified. But when we give out a certain summary of the internal situation of the team, that’s only what we give; the rest, it’s our responsibility to manage it. Hence, we don’t have some unbounded transparency toward the other teams. We offer some informal transparency, but without too much details so that people cannot judge or determine our orientations. It’s especially to avoid judgments from people that do not know all the details in the end. Sometimes, having too much information, it’s not a good thing.” (William, Director of Software Engineering, quotation 3:32).

In the sales team, a similar phenomenon was observed. The “artistic” component of sales representatives’ reporting that was depicted in the previous section provides them discretion about what information to disclose and to whom. To expedite the closure of deals, some sales representatives sometimes choose to selectively expose the people involved in the deal to the details of the contract and the customer requirements.
“For instance, documents may not be entirely uploaded to Salesforce. Sales rep may upload sections of a document rather than the whole document. That’s a classic move. The sales rep is aware of the things that aren’t kosher, so he may extract sections for specific audiences. He may present part of the document to the Service Delivery team, then another one to the R&D team, while being fully aware that each team will obtain a different view. He does so because he knows that he may get challenged on some of the things that are written... it’s as simple as that. [...] By being sneaky, sales reps can get the CEO’s approval without his awareness of all the risks. After all, the CEO’s interest is to sell as quickly as possible.” (Brian, Product Designer, quotations 6:23 & 6:26).

The sales representatives’ practice allows to close deals quickly and to increase the organization’s revenues and thus appears to be implicitly tolerated by top management even though it sometimes engenders problems in later stages of the customer lifecycle for the Service Delivery team when it becomes clear that project costs will be greater than expected and deadlines may be missed. Because the focus of the CEO is on quickly increasing revenues in the short term to demonstrate growth and viability to financial resources providers, no correctives to this practice had been proposed yet at the time of the study.

There is an irony to the practices depicted in these quotes: the managers from both the sales and the R&D teams complain about the granularity or the quality of the reporting information provided by the others, even though they implicitly acknowledge that the information that they themselves provide to the other is far from being complete. Put together, the appropriations of navigating of technologies, of informally assessing the status of work, and of shaping the information exchanged between teams and to top management engender a number of consequences, some of which I already have scratched the surface in this section.

6.4.4 Consequences and functional alternatives

The evidence collected at EdgeSoft suggests that the appropriations aimed at generating transparency for reporting accountability purposes engender three distinct consequences. First, time constraints cause executives to filter the reports that they will consult, which means that they
may miss out on information items relevant to their needs. Second, decision processes often occur outside formal forums to compensate for the lack of relevant information provided by the reports and dashboards produced by each work group. Third, the poor granularity and quality of the information contained in the reports and presented during the top management meetings often spur conflicts that have repercussions for the whole organization.

First, despite the availability of the reporting information through Sharepoint, time constraints induce executives to filter the reports that they will consult on a regular basis. The CEO commented that if he wants to know more about an issue, he simply goes onto Sharepoint and download the report from the team that he is interested in. He didn’t show any unsatisfaction with the information contained in the reports. However, that is not the case of all the executives that participate to the top management meeting. For instance, the VP Sales and Development explained that he has to filter the weekly reports available upon Sharepoint. As a result, they may miss on some information that one of their peers wanted to bring to their attention.

“There is so much content in Sharepoint that it becomes difficult to sort it out. It takes me 2-3 hours each Tuesday night to go through the reports. I don’t have time to go through all of them so I priorities.” (Charles, VP Sales and Development, quotation 10:25).

Second, managers and executives are generally aware that the reports and the dashboards that they employ to monitor work are incomplete. The fragmentation of databases and the informal scoring needed to monitor work at EdgeSoft’s make middle managers and executives feel that they miss on what’s actually going on. The reports and dashboards are incomplete not only because the applications currently deployed at EdgeSoft do not provide the required information, but also because much of the information relies upon assessments, estimations, and inferences, which the heuristics from which they are drawn are inscrutable. In other words, they feel that the reports and the dashboards produced by the formal and informal systems do not provide transparency into work processes. This sentiment was expressed by the managers and
executives of all teams that I have met with at EdgeSoft. For instance, Rebecca, a project manager from the Service Delivery team, Charles, the VP Sales and Development, and Roy, the VP R&D, expressed this sentiment of not being able to see what was actually going on in their own or in other teams as follow:

“One thing that bothers me, on which I have to work, is that we only get a photograph of the projects’ status. We do not have a chronological vision [...] or the evolution of costs through time. Why did we incur more costs in December than in January? We don’t have those kinds of metrics.” (Rebecca, Project Manager, quotation 8:19).

“I know from Sean [EdgeSoft’s CEO] that about 30% of his staff is not utilized right now. But I don’t know who they are or what the competencies are. If I knew, I could probably find them things to do with the current customers.” (Charles, VP Sales and Development, quotation 10:36).

“We usually allocate resources based on ratios. [...] But today, do I have a visibility on the budgets of each team? The answer is no. Would I like to have such visibility? The answer is yes.” (Roy, VP R&D, quotation 4:8).

According to many interviewees, conflicts at the top management level occur regularly, as evidenced by the following comments of two project managers:

“I know that there is a conflict at the top management level among some executives but they are professional enough not to let it transpire.” (Rebecca, Project Manager, quotation 8:28).

“Sometimes, there are conflicts at higher levels, within top management, that impact all the underlying levels… and we can’t do anything about it.” (Scott, Project Manager, quotation 9:41).

Even though the conflicts do not explode into shouting matches and that those involved keep a professional demean or the tensions often have consequences for the whole organization. While some interviewees didn’t want to discuss the exact nature of the conflicts, they acknowledged that they were often about what they called “communication breakdowns” or about who should be responsible for a cost overrun or missed deadlines.
Some of these conflicts have their origins in the appropriations of technology that were described in the previous sections. Because intuitive assessments, estimations, and inferences, rather than factual data, are such a large component of the information that is communicated in the reports and during meetings, executives have no way to validate the basis upon which they are made. Executives have to trust that their peers communicated the truth and the accurate picture of the work accomplished in their team:

“In some top management meetings, we go through the dashboards, but what we get to see is highly aggregated. The R&D team tells us that they’re good to go for such customer. OK, but what are the particular issues that remain to be solved? What difficulties are they having? I can’t evaluate the risk around the estimate that they’re giving us. I have to rely on Roy [the VP R&D] who says ‘No problem!’” (Steven, VP Service Delivery, quotation 5:45).

Thus, when breakdowns in coordination occur, finger-pointing and blame appear to be common. Managers from the sales, R&D and Service Delivery are calling for greater disclosure of the work accomplished by each team, so that they can assess where the source of failure may reside. For instance, one R&D manager suggested that:

“I believe that sometimes, it would be a good thing to have greater transparency into some teams, and I include ours, that have a certain easiness to provide excuses for missed objectives, missed deadlines or cost overruns. [...] I feel that there are abuses sometimes.” (William, Director of Software Engineering, quotation 3:34).

As a functional alternative, many decisions are thus made outside formal forums, such as the weekly top management meeting, that have been instituted to deliberate and to discuss alternative courses of action. Managers and executives will rely upon informal ties to assess the credibility of the information provided and to assess whether they can trust the information before making decisions that may impact their own work. By discussing outside formal forums in dyads or triads, one is less prone to put himself at risk and reciprocal adjustments are easier to make.
“My impression is that people present their KPI and then do little meetings where the real messages are communicated. And that means that politics are coming back.” (Charles, VP Sales and Development, quotation 10:23).

Put together, the evidence presented above suggests that the appropriations of technology enacted at EdgeSoft do not completely fulfill the need for reporting accountability. As a result, blame, finger-pointing and conflicts are common occurrence, while decisions are made before or after formal organizational forums. These latter thus become occasions for legitimizing the decisions rather than deliberating on the best course of action to take.

6.5 Conclusion

This chapter presented the contextual conditions within which EdgeSoft operates as well as the appropriations of technologies that have been made to provide transparency for three purposes: mobilizing the workforce, pooling artefacts, and reporting accountability. The evidence suggests that the conditions prevailing at EdgeSoft, that is, the aspiration to radical growth from top management, a feeling of time famine, quickly depleting financial resources, a workforce characterized by a large contingent of recent recruits and its commitment through financial rather than emotional bonds, combine to create a stressful organizational environment.

The evidence suggests that the CEO and top management do not believe that technologies can be useful to communicate information that would mobilize the workforce. They prefer a combination of occasional formal presentations and the instantaneity of frequent informal face-to-face interactions, which are practices that fit with their emphasis on speed and urgency. However, despite the apparent greater richness of informal interactions over technology, it seems workers still believe that top management is not always transparent about its orientations or decisions.

The evidence further suggests that the technologies deployed to pool artefacts do not achieve full transparency. Despite its overall success and the apparent greater access to information provided by the Sharepoint application, a number of alternative functional practices
to pool artefacts are taking place at EdgeSoft, suggesting that this type of transparency is not entirely fulfilled: the bypass of the Sharepoint application to share artefacts; the drift of artefacts from one official version to multiple local versions; the contest of the legitimacy of access rules to certain artefacts; and the insufficient quality of some artefacts contained in the Sharepoint application. Expediency and urgency again seem to be key factors driving the persistence of such practices.

Workers, managers and executives have little time and resource slack available to reflect about the technologies that they employ to report work and thus must make do with what’s at hand by navigating technology gaps and filling the remaining gaps with informal assessments. Furthermore, it appears that the radical growth of the workforce through hiring or acquisitions in recent years have taken a toll on the relationships between teams. In a sense, it is not surprising to see that the managers of each team attempt to shape the information they present to their peers from other teams.
In this chapter, I will focus on BigGames, a Canadian developer of entertainment software (video games) for home consoles. I will first describe the contextual conditions within which BigGames operates. I will then provide an account of how people at BigGames appropriate technologies to generate transparency for mobilizing the workforce, for pooling work artefacts, and for reporting accountability. A conclusion will review the evidence presented in this chapter.

7.1 Contextual conditions at BigGames

The table below provides an overview of the contextual conditions within which appropriations of technology are accomplished at BigGames. Before I describe the evidence for its context, I will briefly illustrate how work is organized at BigGames.

| Aspirations | - Quick, radical growth (organic)  
| - Profitability and viability over aesthetics in the choice of projects |
| Time pressures | - Sense of urgency and crisis mentality  
| - Ambiguous and changing requirements from customers (publishers) interrupt plans  
| - Firefighting and heroic behaviors |
| Slack resources | - Dependence on publishers sometimes lead to “bad” contracts  
| - Frugality and bricolage |
| Workforce demography | - Predominantly young and male workforce  
| - Diverse occupational backgrounds  
| - Large cohort of new workers, many of which are often juniors and inexperienced  
| - High turnover, especially among senior and experienced workers  
| - Domain experts are thrown into management roles without training or experience  
| - Mistrust and tensions between cohorts, as well as between occupational communities |
| Workforce relations | - Ambiguous corporate identity  
| - Strong project and occupational identification  
| - Extensive investments in training and conference travel  
| - “All work no play” environment and policies |

Table 24. Contextual Conditions at BigGames
7.1.1 The organization of work

BigGames is a private company located in Eastern Canada and its majority shareholder is Kevin Brown\(^{21}\), the CEO. The company also has a Board of Directors composed of a few local venture funds and institutional investment firms that have provided debt and shared capital over the years. The executives who sit on weekly top management meetings include the CEO, the VP Finance, the VP Operations, the VP HR, and the Game Executives (5). These meetings are mainly held to review broad ongoing concerns within each project, to review relationships with the partnering publishers of each project, and to review process improvement initiatives that affect how projects operate. A clique formed by the CEO, the VP Finance, and the VP Operations also meets occasionally to discuss the long term orientations of the organization, such as product lines, potential acquisitions, potential hires at the executive level, and market segments to develop. However, although it employs about 430 workers, the evidence collected suggests that BigGames still operates much as an entrepreneurial organization, since the CEO is still very much in control of many decisions that have both short-term and long-term horizons.

BigGames is organized around the concept of project teams (Figure 25 on the next page illustrates BigGames organizational structure). The size of project teams varies from 15 to 90 workers, with an average of 30 workers. Project teams are headed by a Game Executive, who is generally responsible for an entire line of products. Game Executives supervise between 1 to 5 projects which are regrouped according to development platforms (Next-Gen, Portable, Wii, etc.) and physically collocated. They set product scopes and they negotiate development contracts and license agreements with publishers and legal advisers. Game Executives report to the VP Operations whose main responsibility is to monitor workforce capacity, to allocate workers to projects depending on needs and demands, and to deal with the VP HR in assessing recruitment needs and potential candidates.

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\(^{21}\) All names are pseudonyms to ensure anonymity.
Figure 25. BigGames Organizational Chart (* indicates members of the top management team)
Each project team is headed by a game director assisted by a production manager. A creative director and a technical director also complete the management team of each project, although they may be staffed to multiple projects at once, depending on the complexity and the scope of the products to develop. The game director is responsible for getting the product completed on budget and on time and she oversees the production process from pre-production to final testing. She works with the leads of the occupational communities (the audio lead, the lead designer, the lead programmer, and the lead artist) to estimate resource needs and to resolve any conflicts. The game director usually has the last word regarding creative tradeoffs involving features and project scope, but these decisions will generally be taken only after consultation with the creative director or the technical director. The game director is responsible for making sure that key milestones, such as the “first-playable”, the “alpha” version, and the “beta” version meet the requirements established in the contract with the publisher and/or licensor. Along with the game executive, the game director is thus in frequent contact with the publisher or the licensor to negotiate and to ask approval for any change requests that may arise during the production process. A production manager or “assistant producer”, assists the game director by monitoring the completion of tasks, deliverables, milestones, and by taking care of much grunt work of a clerical nature.

The work within each project is divided among four occupational communities: designers, visual and audio artists (the “creatives”), and the programmers (the “techies”). Each occupational community is responsible for the creation and the assembly of the 3 broad classes of components of video games: design assets, art assets, and technological assets, respectively. Occupational communities are stratified through the concept of career ladders, where workers have the official titles of “junior”, “senior” or “lead”, depending on their level of expertise and experience.

Game designers are responsible for defining the system of rules that govern a game and to describe the elements that composes it. In other words, they design the functional system
behind a video game. More specifically, game designers establish feature specifications, employ world-building technologies, and conceive use cases, story, script, and core gameplay. Such information is usually contained in the game design reference document. Along with creative directors, game designers occupy the most glorious and coveted positions in the industry (and thus, at BigGames too), as the few who have worked on best-selling franchises have become celebrities and targets of idolatry within the wider consumer and developer communities. Many programmers enter the video game industry with the implicit intent and desire to move into game design work, although they quickly discover that game design positions are commonly fulfilled by holders of artistic, humanities or liberal arts degrees.

Visual and audio artists are responsible for producing art assets, which consists of the models, textures, interface elements, menu screens, cinematic sequences, special renders, music, voiceover recordings, and sound effects that compose the interactive experience and overall identity of a video game. At BigGames, artists usually compose about half of the product development teams and possess a variety of skills needed in the steps of the art creation process: concept artists, modelers, animators, texture artists, animators, and technical artists. Concept artists create storyboards, drawings and sketches of the game environment and characters; their work is especially critical in the pre-production phases of a project. When a product has a 3D interactive interface, modelers create 3D assets from 2D sketches and drawings using wire meshes from concept art. At BigGames, modelers most commonly employ the software package

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22 For an illustration of the stardom status achieved by a few game designers, please refer to the profile of Will Wright and Cliff Bleszinski published in The New Yorker (Bissell, 2008; Seabrook, 2006) or to the journalistic account of the culture of the video game industry by Heather Chaplin and Aaron Ruby (Chaplin & Ruby, 2005).

23 I was surprised to learn through my interviews at BigGames and CasualGames, as well as through readings the main industry outlets (e.g., Game Developer Magazine) that it is uncommon for game designers to have formal training in economics, a discipline which seems a natural fit since most video games are nothing more than cybernetic simulations based upon the axioms of classical game theory, or in psychology or pedagogy, since many video games are targeted at children and teenagers. In recent years, a growing community of specialists from industry and academia is documenting and researching a game design body of knowledge in order to professionalize the discipline (e.g. Garris, Ahlers, & Driskell, 2002; Salen & Zimmerman, 2003; Wolf, 2006).
Maya from Autodesk to accomplish their task although some other technologies are sometimes employed as well. Texture artists complete the work of the modelers by “skinning” the 3D meshes. Technologies such as Adobe Photoshop are usually employed to produce the textures and images of the 3D meshes’ surfaces. Animators apply movement to the art assets produced through two broad set of techniques: keyframing, where a sequence that specifies all of the attributes of an animated art asset is specified and then “tweened” by automatically creating a series of transition frames between the keyframes; and motion capture, where the motions of real people are captured through the use of sensors. Audio artists are usually responsible for recording, mixing, and editing the sound effects, music and dialog that compose the video games environment. To do so, they employ technologies such as waveform editors and sequencers.

While some of this work is sometimes outsourced, BigGames does have a little internal studio where such audio editing work takes place. The work of all these artists is linked through the art asset production “pipeline”, which is the process through which art assets go through each step and undergo multiple digital manipulations and transformations.

Another key artistic occupation are the technical artists, which are generally responsible for developing add-on tools, plug-ins and features that are implemented into the technologies employed by the other artists to accelerate and to facilitate their work. Technical artists also help in the management of the art asset production pipeline by establishing art asset creation guidelines and by keeping track of art assets, which are the main tasks of the lead artist. The role of technical artists has emerged and taken larger importance with the advent of the next generation of consoles (Wii, Xbox360, PlayStation 3) as the complexity of creating and managing art assets increased significantly. In comparison to the other artists, technical artists generally have a more ambivalent identity for two reasons: first, their skills include both artistic and programming skills which puts their role in a constant state of flux, and second, they are as likely to be staffed on project teams or in the IT team (as “tool programmers”) in order to support artists
The third largest occupational community at work on BigGames projects are programmers. They are generally responsible for developing the code for various components of video games, such as the game engine (the code that regulates graphics rendering and collision detection between objects and that ties together the digital assets of the game), the environment rules, artificial intelligence, the physics systems, network control, and the games’ interface. The main programming sub-specialties at BigGames include physics programmers, graphics programmers, interface programmers, artificial intelligence programmers, and network programmers. Physics programmers develop collision detection systems (to simulate rigid body dynamics), particle systems (to simulate certain fuzzy phenomena, such as fog, smoke and fire), and fluid dynamics systems (to simulate the flow of water for instance). Graphics programmers occupy a role highly similar to the technical artists which was discussed previously. Interface programmers develop the graphical menus and dialog boxes that are employed by users to interact with the game. Artificial intelligence programmers design and configure the behaviors of the games’ object through logical responses, machine learning and fuzzy logic computations. Finally, network programmers are primarily responsible for developing the infrastructure that supports multiplayer environments. These occupational sub-specialties are headed by a programming lead, which is responsible for a number of technical management tasks, such as tracking and monitoring the resolution of bugs and source code versions.

Last but not least, projects are supported by three teams at BigGames: IT, HR, and Finance. The IT team is headed by the VP Technology and has two roles. First, the groups

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24 This identity “angst” appears to be pervasive among technical artists not only at BigGames, but throughout the video games industry as it struggles with the definition and position of this new occupational role in its division of labour (e.g. Hayes, 2007; Theodore, 2007). Forum postings in online communities of technical artists also provide anecdotal evidence that this feeling is widely shared (e.g. http://tech-artists.org/forum/showthread.php?t=41).
headed by configuration managers provide support for the various technological platforms employed by projects to produce video games assets (the game engines and other development technologies, such as Maya), and ensure that the rendering farms and servers are functional and properly maintained. They also help the programmers within the project teams in “porting” digital assets from one platform to another. Second, the group headed by the IT manager has the more conventional role of supporting the organization’s transaction processing and collaborative systems underlying management processes in addition to manage technological procurement.

The HR team is headed by the VP HR and is staffed by a small group of 3 analysts. In recent years, the responsibility has evolved from a simple instrumental staffing and recruitment function to a career management function under the impulse of the current VP HR. The Finance team is headed by the VP Finance, a lawyer by training, who is also responsible for negotiating contracts with publishers in addition to his accounting tasks.

Put together, the evidence about BigGames organizational structure suggests a paradox: despite the fact that video games organizations are being hailed as prototypical project organizations of the “creative” and the “new” economy in the popular and management press, BigGames’ structure displays a division of labour with multiple management levels (7 levels, if the junior, senior, and lead levels in each occupational community are counted) and clearly defined boundaries and workers responsibilities. The tensions created by such a paradox will be further elaborated in the sections that follow.

7.1.2 Aspirations

The aspirations of BigGames’ top management are characterized by a focus on quick and radical organic growth. These growth aspirations are fuelled by the motivations to create an organization that will be independent from publishers for its survival, that will be financially solid enough to survive through technological advances and industry consolidation, and that will be able to attract senior and experienced workers. Paradoxically, top management has had to rely
upon licenses rather than intellectual properties to finance much of its growth to date, which has had the effect of increasing its dependence on publishers.

The intention of the CEO and the top management team is to make BigGames one of the ten largest video games producers in the world in the short term. The organization has already grown significantly from 35 workers in 1999 to 425 workers in 2007\textsuperscript{25}. The top management team intends to pursue this growth spurt much further:

“The vision is to become a business of 800 to 1000 employees within a few years.” (Dorothy, VP HR, quotation 29:3).

Figure 26 further illustrates BigGames’s growth in terms of revenues and employees.

The first motivation of BigGames’ top management justifying this growing impulse is to reduce BigGames dependency on large publishers for its long term survival. Put differently, the objective is to be able to produce and to develop original intellectual properties and have enough leverage to persuade publishers to take the risk of investing in the distribution and marketing of its products: “Right now, it is the content of others that control our business. We need to reverse

\textsuperscript{25} The historical circumstances surrounding this growth are depicted in greater details in Appendix 8.
this situation. I would like that, one day, BigGames becomes the owner of 50% of the games it produces” (Kevin, CEO, Newspaper interview, October 4, 2003). In 2003, BigGames was the owner of no intellectual property among the projects it worked on. By 2004, BigGames had become the owner of 25% to 35% of the intellectual properties of the projects it worked on. In his interview with me, BigGames’ CEO mentioned that it was often difficult to convince publishers to trust a smaller organization like his for the development of a product, even though the project might be well justified by market studies and profitability analyses. For instance, it took about 5 years to convince a large American publisher to co-publish a project which was ultimately one of the most profitable products the publisher had ever distributed. Most small video games developing organizations might not be financially solid enough to wait through such a long period of time. One of the major hurdles that BigGames face in developing and benefitting from its own intellectual properties is that the costs of establishing a novel intellectual property onto the console market and the risk of failure in such a hit driven market are much higher than those of iterations or sequels based on already established intellectual properties.

Source: Newspaper and magazine articles; Annual reports; Consulting firm report, Les Affaires 500

Figure 26. BigGames revenues and employees growth
Top management’s objective of quickly growing the organization is also meant to prepare the organization to compete in an environment that they perceive becoming increasingly harsher over time\textsuperscript{26} due to consolidation and technological advances. BigGames must compete and negotiate with a narrowing pool of producers and publishers which have grown larger in size as the industry underwent an important wave of mergers and acquisitions\textsuperscript{27}:

“[Our goal is] to be more often co-publisher of the projects we work on. Right now, that proportion is about 15%. We are ready to take greater financial risks because we think we are known well enough. And we should not put our head in the sand; the industry is consolidating and we need to be prepared.” (Kevin, CEO, Newspaper interview, June 22, 2004).

Furthermore, project costs have inflated exponentially due to technological advances since 2000. Developing and managing art assets rather than programming code are thus becoming the major cost drivers of game development since hardware breakthroughs make it possible to render better-detailed graphics based on ever higher polygon counts. Polygons are the digital objects that are used to compose images that are 3D in appearance; their display and rendering are mainly constrained by computer memory and processing power. Each new generation of consoles and platforms increases polygon count, which means that the work needed by artists to generate and animate 3D models increase in tandem. While project costs in the early 1990’s were about $200 000 and had increased to about $5 million to $10 million by 2005 (Costikyan, 2005), it was recently reported that Midway, an American publisher, had spent as much as $40 to $50 million to develop one product in 2009 (Van Zelfden, 2009).

The third motivation underlying the impulse for growth is to increase BigGames’ position on the labour market. Growing the organization and creating the latitude for the production of original intellectual property makes BigGames more attractive for highly experienced designers,

\textsuperscript{26} For further information about the dynamics of the entertainment software industry and the environment within which BigGames operate, please refer to Appendix 7.

\textsuperscript{27} As further reference, Johns (2006b) documented the wave of mergers and acquisitions that took place in the early 2000’s.
developers and artists, who generally prefer to work on original and prestigious intellectual properties in organizations that have a track record for success.

Paradoxically, to finance this growth, BigGames’ top management has had to rely upon licensing work based on publishers’ intellectual properties. Despite top management’s desire for increased independence toward publishers and the fact that such work is less profitable than work on original intellectual properties, licensing work provided a secure stream of revenues based on brands that already had recognition required little investment in marketing efforts:

“We certainly do not balk on licensing work. More than 2.3 million copies of the XYZ game were sold; that’s a lot of volume that provides royalties.” (Kevin, CEO, Newspaper interview, June 22, 2004).

In the early 2000’s, following the launch of a new generation of consoles on the market (PlayStation 2 and XBox), BigGames’ CEO proposed to publishers to take responsibility for developing products for all consoles at once. It was uncommon for a developer to do so at the time. BigGames thus became one of the first independent developers to work on multiple projects and platforms simultaneously, which allowed the organization to benefit from economies of scale. By developing a product for multiple platforms at once, top management became able to modulate resource capacity utilization according to cross-projects demands:

“I told my investors and my employees-associates that we were on a losing path by working on one project at a time. To amortize the production costs on many projects and many teams at a time is the solution. Even if that vision was risky, the results proved that I was right” (Kevin, CEO, Newspaper interview, October 4, 2003).

The desire of growing BigGames into a major, independent industry actor was still a key objective of the top management team at the time of the study in early 2008. However, the majority of the fifteen products the organization was developing were still based on publishers’ licences. The consequences of such dependence are examined further in the next sections about the time pressures and the amount of slack resources BigGames operates under.
7.1.3 Time pressures

At BigGames, the pace of work is hurried and hasty. Both endogenous and exogenous factors explain why work is performed under intense time pressures at BigGames. First, top management has induced a sense of urgency throughout the workforce by putting emphasis on the temporal aspects of work. Second, the nature of video games development work involves ambiguous and frequently changing requirements, which means that plans are often interrupted and a crisis mentality emerge. As a consequence, it is thus not surprising to observe firefighting and heroic behaviours at BigGames.

The work environment at BigGames is characterized by intense time pressures, much of which originate from the values of the CEO and the top management team. Kurt, the VP Operations, explained the meaning of time and the importance of getting thing done at BigGames:

“This is a production minded company. You come in here and you feel the pace. You feel there is the sense of urgency in anything you do, the sense you need to get stuff done; that hasn’t changed since the beginning. It is a company about doing things, getting things done first and foremost.” (Kurt, VP Operations, quotation 30:11)

This sense of urgency at the top management level was also fuelled by the recognition of all the work that had to be done to appropriately manage a quickly growing organization. The tension between allocating attention to solve current problems versus the prevention of future problems is strong. For instance, Clayton, the VP Finance, explained that many organizational improvement initiatives had to be delayed or held back due to an overload of demands that necessitated his attention.

“What keeps me awake at night, my biggest constraint, is the lack of time. I lack time to do everything that needs to be done. It’s tough, it’s tough.” (Clayton, VP Finance, quotation 33:10)

The feeling of time scarcity is felt not only at the top management level, but also throughout the organization. Workers mentioned that the strong emphasis on time and execution becomes
exhausting at times. One example is provided by Aaron, a Lead Designer, who commented on the pressure of getting things done quickly and not having enough time to reflect on how work was accomplished in the projects he was involved in:

“It’s crazy how intense things can become, dam it! We are only making games! When people say ‘it must be fun working there’ – sometimes it’s not fun anymore. We’re not doing rocket science, we’re doing leisure, which is at the top end of the needs pyramid. If there is a war tomorrow, the skills won’t be of much use...” (Aaron, Lead Designer, quotation 44:65)

Secondly, intense time pressures are intrinsic to the nature of video games development work, especially for projects based on licenses, which consist of the bulk of work at BigGames. Requirements are usually highly ambiguous at the onset and they change frequently as the production process unfolds. One assistant project manager commented on how difficult it was to plan ahead:

“If you want a project that goes perfectly as planned, you better change jobs. I must have redone my planning more than 10 or 15 times, because things change all the time. You only need the customer to say ‘I don’t need this anymore; I don’t want that other thing’. We are highly dependent on the customer.” (Nicole, Assistant Project Manager, quotation 34:8)

The video games development process is often compared to the business software/systems development process. While there are some similarities between the two processes, such as the analysis (concept), the design (pre-production), the realization (production), and the testing of the software, there are also significant differences between the two processes which are not only due to superficial differences in vocabulary. Video games are experiential interactive products developed for a target user which preferences can never be truly known and can only be guessed rather than discovered. Intuitive judgments about aesthetics and tastes predominate over reliance on verifiable facts when making choices about what features to develop and what aspects of the identity of the game to put the emphasis on. Hence, even when approved and set after the concept and pre-production stages, requirements are always at risk of being reversed in later stages of the
project, either by publishers or BigGames own personnel. The VP Operations commented on the unpredictability of requirements when working on licensed intellectual properties:

“This industry hasn’t really matured yet. You’d be surprised how last minute some decisions are made. We are on the receiving end. We see the publisher and we go... my God! Couldn’t they have made this decision six months ago? [...] So there is this ‘hurry up and wait’ type of culture in this industry.” (Kurt, VP Operations, quotation 30:16)

Such changes would be highly disruptive for any video games development organizations. They are even more so at BigGames because many of the intellectual properties it works on are tied to larger promotion campaigns by licensors and/or publishers (for a Hollywood blockbuster film, for instance). Thus, in addition to the constraints imposed by the cycle of video games releases (in which most sales occur in the last two calendar months of the year), BigGames’ top management must also ensure that it follows the temporal constraints of the movie industry (see Figure 27).

Figure 27. Cycles of the video games industry (Consoles segment)
Most projects at BigGames have thus firm deadlines; if it fails to meet these, the organization would incur important financial penalties, in addition to a hit to its reputation in the marketplace.

The evidence gathered suggest that this mix of self- and other-imposed sense of urgency has a number of consequences on how work unfolds at BigGames. Firefighting behaviours appear to be common at all authority levels. The problem with firefighting is that efforts are allocated to solving current problems that only superficially address fundamental causes of recurrent problems. For instance, the VP HR mentioned to me, in terms similar to ones the VP Finance employed above, that she has never been able to initiate organizational improvements initiatives aimed at solving longstanding problems since she had been hired, over than a year before:

“Now, we are in a firefighting mode. Since I arrived, I am only managing fires, not even my priorities. That gives you an idea of how we work here.” (Dorothy, VP HR, quotation 29:5)

All members of the key clique within the top management team (the CEO, the VP Operations, and the VP Finance) took pride in mentioning that BigGames never missed a deadline on licensing work. However, because deadlines are firm and unmoving, it is logical to observe heroic behaviours to make sure that these deadlines get met. In projects plagued by perpetual “crunch time”, workers have the incentive for doing whatever it takes to solve crises28. For instance, one IT manager described a recent project where workers slept in their office to make sure that the milestone got met:

“I am happy not to be part of the production teams. You can see the crazy hours that they are doing. One morning they had a milestone due for a game. When I arrived I heard that one guy slept in! Some other guys spent about two insane weeks, and

28 “Crunch time” is a common expression among the video games workforce referring to periods of overwork when meeting a project milestone is at risk. A controversy erupted in late 2004 after a blog post signed by “EA Spouse” about how recurrent seven-day, 85-hour work weeks where overtime went uncompensated at Electronic Arts attracted the attention of national and international news media (the original post and subsequent media coverage can be found at http://ea-spouse.livejournal.com/). The controversy sprung the launch of a grassroots social movement aiming to better “quality of life” in the industry (Dyer-Witheford & De Peuter, 2006).
some others also did 24 hours straight at some point. I know that it’s not all of our games that are shipped within such madness, but you have to ask yourself ‘how did we get there?’” (Eloise, IT Manager, quotation 43:12)

The evidence suggests that such time pressures have a toll on workers. Susan, a Game Director, explained to me how her work felt meaningless during one particular period of “crunch time” on a project tied to a movie release.

“For Project XYZ, I felt a lot of stress. I had so much difficulty getting through that one that I got sick. I really wanted to finish it; that was really important. [...] Now it’s going better, but that was a really bad time, at a point that you ask yourself what’s the meaning of your work” (Susan, Game Director, quotation 35:13)

Even though I was told that such “crunch time” isn’t as substantial and regular problem as what other organizations may experience, the evidence suggests that it was nevertheless experienced to some degree at BigGames. Furthermore, Figure 27 presented previously shows that BigGames is submitted to the constraint of at least 4 key dates that are spread out throughout the year (the Game Developers Conference, Memorial Day, the Fourth of July, and the American Thanksgiving), which means that it may have projects nearing completion (and under “crunch time”) at any given moment of the year.

Put together, the evidence gathered shows that management and workers at BigGames operates within a stressful environment driven by a sense of urgency and the feeling of time scarcity. Both endogenous and exogenous factors contribute to these time pressures and they have concrete consequences for workers and for how work gets accomplished. In the next section, I will describe how the lack of financial and human resources contribute to the amplification of such time pressures’ effects.

7.1.4 Slack resources

Even though it is profitable, BigGames operates within an environment characterized by very little slack financial resources. Both exogenous and endogenous factors explain this situation. First, the organization is in a weak position within the dependency network of
publishers, licensors and developers of the video games industry, which means that it must often
deal with stringent contract covenants and undertake projects under severe resource constraints.
Second, the clique of the CEO, the VP Finance, and the VP Operations, which controls all of the
organization’s major capital expenditure decisions, exhibit strong preferences toward frugality
and prudence in their decision making.

The tightness experienced at BigGames is due in large part to its position in the video
games industry’s structure. Despite being one of the largest independent video games
development firm in the world both in terms of employee number and revenues and having a
perfect record of no deadline slippage, BigGames remains relatively small compared to the
publishers of the industry, such as Nintendo, Electronic Arts, Sony, Vivendi/Activision Blizzard,
and Microsoft among others, who rely upon an internal network video games development
studios and distribution channels. The top management team has thus little leverage when
negotiating contracts with publishers:

“On the one hand, if we don’t sign anything, we won’t be in
business for very long. On the other hand, we must be careful not
to get eaten alive, because we are in a weak position among the
giants of the industry. The publishers treat us as if we were 15 in
a garage...” (Clayton, VP Finance, quotation 33:6)

BigGames is often entrusted with publishers’ work because it is the low cost alternative. In
negotiating with publishers for the most promising licenses, top management has to balance
delicate trade-offs between costs, time, and features in order to win contracts. But since
BigGames often competes for projects that have fixed deadlines against firms operating in other
international low-cost locations, the balance often tips toward a preference for lower costs over
sophisticated features. These trade-offs are necessary despite the fact that BigGames benefit from
certain structural advantages due to its location in Eastern Canada when negotiating with
publishers, such as one of the most aggressive labour costs subsidy and R&D tax incentive

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29 A comparison of the size of publishers and developers in terms of employee number and revenues is
provided in Appendix 7.
systems in the world\textsuperscript{30}. As a consequence, warnings from BigGames technical staff about the technical feasibility of certain features promised to publishers may go unheeded:

“Before accepting a project, execs take a look at the technology and ask ‘Can we do that?’ We say ‘impossible, it will take 3 years of development work.’ OK, we’ll ask the president. We hear back ‘we’ll do the game, and we have 1 year to do it!’ ‘But we told you about the technology!’ ‘Bahhh. We’ll find a way... GO! ’” (Eloise, IT Manager, quotation 43:17)

This situation puts a premium on the need for BigGames to be efficient in how it organizes work and manages projects in order to generate slack resources. Figure 28 on the next page clearly shows that the organization generates comparatively less revenues per employees than TradSoft and EdgeSoft at the time of the study in 2008. It is nevertheless apparently slightly more efficient than CasualGames, the fourth organization of this case study.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{Slack_resources_Revenues_per_employee_2001-2008.png}
\caption{Slack resources: Revenues per employee (2001-2008)}
\end{figure}

\textsuperscript{30} A report comparing operating costs and tax systems among the world major cities mentioned that Canadian cities the lowest R&D costs among 35 large international cities (Wiebe, 2008, p. 18). Firms from the multimedia and IT industry also benefit from tax credits for up to 37.5\% of labour costs (Gagné, Godbout, & Lacroix, 2008). Finally, Eastern Canada is often perceived by insiders of the video games industry as a city where it is profitable to outsource development work. For instance, speaking during an investor conference in September 2008, Electronic Arts’ CFO categorized Eastern Canada as one of the “low cost locations” where EA operates, on a par with Shanghai, India, Romania, and Spain (Brown, 2008).
In addition to be caused by the exogenous factors just described, the little slack in financial resources enjoyed by BigGames also originates from top management’s preference for frugality and financial prudence. The top management team attribute the survival and the growth of their organization, in a hostile environment of fly-by-nights and fallen stars, to their financial prudence and keen sense of finding value in projects where others see none. One Game Executive summarized this philosophy as follow:

“Frugality, that is, not wasting money, and extreme prudence allowed us to survive up till now. There are so many businesses in our industry that never got where we are now because they were not careful about their cash flow and badly managed their finances. They made bad bets and we simply don’t do bets.”

(Owen, Game Executive, quotation 39:15)

Top management, especially the clique of the CEO, the VP Finance, and the VP Operations, believe that constraints foster creativity. They try to convey an attitude of “making do” with whatever resources are at hand to solve problems and to improve processes. The VP Operations expressed to me how he often has to rebuke demands from Game Executives and Game Directors and convince them to reflect and find ways to do more with the resources they already have:

“We believe that money is not the answer. We believe that money is the lazy way of doing things. Because the staff, and even the executives, they come and say ‘You have got to give us more people! You have got to give us more software! You have got to give us better machines, so that we stay competitive!’ I don’t necessarily disagree with the CEO on the fact that money might be the lazy way of dealing with the problem. It’s so easy to think ‘Okay, in order for me to be more effective and accomplish more, I need more means’. I don't know... I don't know. I think we have to challenge the organization to sit down, re-think what it does, how it does it, to do it more effectively.”

(Kurt, VP Operations, quotation 30:15)

In other words, they believe that most problems can be solved through bricolage, that is, by leveraging existing resources already at-hand and improvising so as to free up slack to spend on the growth of the organization:
“The most expensive solution is rarely the best one for us. We won’t try to avoid investments all the time, but we will definitely try to make do before committing ourselves. […] We prefer to be prudent than to spend carelessly. Resourcefulness and making do are very important. Before buying the widget we will seriously ask ourselves if it’s really necessary and if there is a way to tinker with a homemade solution. If no, then OK, we’ll buy it. But we’ll ask the questions, because we have this philosophy of monitoring cash very closely.” (Clayton, VP Finance, quotation 33:14 & 33:29)

Two examples of such frugality and enforcement of constraints are the procurement and yearly pay bonus policies; any expense over $2000 needs to be approved by the CEO and until very recently, all bonuses paid to employees were also individually reviewed by the CEO. Such policies may appear excessive for an organization of over 400 employees and $30 million in revenues, but they show the extent to which the CEO and top management carefully hoards any available financial resources. However, such a preference toward frugality and avoiding risks is better understood if we consider that Kevin Brown, the CEO, is the majority shareholder of the organization since 1999, when he bought out BigGames former parent company with the help of a few angel and institutional investors for $2.3 million; he thus has a financial and a socio-emotional stake in the long-term survival of BigGames. At the time he bought the firm, BigGames, which was operating under a different name, had only about 35 employees.

Put together, the evidence collected shows that BigGames’ CEO and his top management team have little financial slack at their disposal. Such a situation is due to both exogenous factors, such as the position of BigGames in the network of dependences in the industry, and to endogenous factors, such as the preference toward making do and leveraging existing resources rather than investing into new resources. Such an approach appeared to have enabled the organization to thrive and to grow in an unforgiving hit-driven industry. In the next section, we will see that this exceptional growth has affected the organization’s workforce demography significantly.

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31 The historical circumstances leading to this buy-out are detailed in Appendix 8.
7.1.5 Workforce demography

BigGames’ workforce is composed of a large cohort of new workers, many of which are often junior and inexperienced. There is also a high turnover, especially among senior and experienced workers. Because of this turnover at senior levels and the dramatic growth experienced by the organization, domain experts with little managerial training or experience are often thrown into supervisory roles. Furthermore, this dramatic growth also means that the organization has had little opportunity to create cohesion between the older and the younger cohorts, and between the occupational communities.

In the spring of 2008, BigGames had a total workforce of 425 from which about 87% were male and on average 31 years old. About 35% of the workforce were software engineers (programmers) and about less than 10% occupy positions at the Game Director level or above. The rest of the workforce is composed of artists, which regroup the categories presented previously in the section on the organization of work.

In recent years, the composition of BigGames’ workforce changed dramatically due to the significant growth it went through. Hence, the organization has seen a major influx of new workers which saw the total of employees go from 165 in 2004 to 425 in early 2008. The organization had plans to add even more workers before the end of the year:

“We had more than 400 people last year. The last two years, we had growth of 37-38% per year in workforce. We plan to end the year at about 500 people.” (Dorothy, VP HR, quotation 29:3)

Such pressures on recruitment in a tight local labour market means many of these new workers were juniors and had relatively few years of work experience in the industry. One Game Director had the following comment about the nature of the most recent cohort of new workers:

“We hire about anybody. That’s an industry-wide phenomenon, but it happened to BigGames this year. We hired something like 80 people in 3 months this year. On a total of 400, that’s huge!” (Susan, Game Director, quotation 35:16)
In parallel to this influx of these new, young, and inexperienced workers, the organization is challenged by the retention of its most experienced and senior workers. While nobody that I met at BigGames was able to provide me with an exact figure about the extent to which turnover plagued the organization, many workers and managers told me that the organization sensed that the organization did have a turnover problem, especially among its most skilled workers, in all occupational communities (programmers, artists, and management). As additional evidence of this problem, Figure 29 below shows that over 65% of BigGames’ workers are registered on LinkedIn, which is the highest total among the four organizations participating in this case study. What is particularly staggering about this figure is that BigGames does not have any team involved in sales or marketing, which means that, in comparison to EdgeSoft for instance, there are no workers who employ the LinkedIn platform to engage in customer prospection and sales activity. Thus, when the logic is pushed to its extreme, the registration figure means that over 65% workers use LinkedIn as a cover and “keep their options open” on the labour market.

Figure 29. Proportion of workers registered on LinkedIn
The VP HR actively tried to raise the criticalness of the turnover issue to the attention of the rest of the top management team:

“The labor market is highly competitive; we have a turnover rate that is too high for our tastes” (Dorothy, VP HR, quotation 29:1)

However, others among the top management team seem to minimize the gravity of the problem by indicating that it had positive consequences.

“Do we only keep the bests? No. I believe we lose some very, very good employees now and then. But it’s OK somehow that people look elsewhere, it helps everyone.” (Owen, Game Executive, quotation 39:19)

One key positive consequence noted by this Game Executive is the transfer of knowledge from competitors (direct or indirect). The management team thus extensively relies upon workers who had experienced in the genres and types of intellectual properties that BigGames attempts to produce for the first time. This knowledge may take the form of techniques for producing digital art assets to “best practices” from managing the production process. Despite these benefits of turnover, the evidence collected from the interviews clearly suggests that turnover is taking a toll on production processes. For instance, one specific large project had gone through 5 Game Directors and 4 Creative Directors over a 3 years period. Such turnover among the management roles of projects was deemed as quite disruptive, as handovers and transitions didn’t necessarily go smoothly. In some cases, these difficulties were due to differences in documentation practices which made it difficult to trace previous decisions; in others, the newcomers simply had different preferences about the direction of the project and reversed decisions of his or her predecessor.

Put together, turnover among senior ranks and the constant influx of new, young and inexperienced workers means that middle management roles are sometimes filled with domain experts with little experience or training in managerial work. Susan, a Game Director, told me that such a situation put pressure on her to micro-manage the leads under her supervision in order to make sure that deadlines are met and that no breakdowns in coordination occurred:
“Some have been put in the wrong positions. They were domain experts: an expert programmer, not an expert manager; an expert artist, not an expert manager. Thus, I often have to manage for them so things don’t get too much out of hands. And then you end up managing 60 people at a time!” (Susan, Game Director, quotation 35:13)

In some cases, these domain experts have exceeded expectations and adapted to their new roles quite successfully. However, for many, the transition involved a steep learning curve and a certain disenchantment, as managerial tasks kept them from fully exploiting their talents in their respective occupation. In some cases, conflicts erupted after a number of complaints and grievances were made by workers who felt that the lead or director wasn’t appropriate for supervision. To address this problem, the VP HR recently initiated a comprehensive training program for all workers engaged into supervisory tasks. However, because of the technical complexity of video games as products, it is rare for BigGames, and very much as for any video games development firm, to hire middle managers or executives that have had experience in industries unrelated to entertainment software. Many commented that because of the need to acquire “hands-on” experience and its accompanying bottom-up process of promotion that the video games industry suffered from insularity in the transfer of managerial best practices. On this matter, Dorothy, the VP HR, provided the following comment:

“You get into this industry and you see its people... they are all like kids in a way. And I think that it comes from, not a lack of maturity, but from the lack of experience of its managers. They are people with only one kind of experience, and it’s in video games. Very few have known other industries or large organizations.” (Dorothy, VP HR, quotation 29:18)

Furthermore, the adaptation to novel roles and changed responsibilities following the intense growth BigGames just went through is felt not only at the middle management level, but also felt at the executive level. For instance, one Game Executive explained to me how his role had changed in the last few years:

“There is something that we are living through, from the team leads to the directors and to us. Being an executive of a company
of 150 employees is not the same thing as being an executive of a company of 450 employees. It’s not the same job at all. I think we are learning that with some humility. There is not one of us who has done that before. So we’re all learning. It’s a big shift.”
(Owen, Game Executive, quotation 39:37)

Finally, there is also mistrust and latent conflicts between the newer and the older cohorts, as well as between the various occupational communities at BigGames.

To staff the positions opened by the rapidly growing number of concurrent projects BigGames ran in the last few years, many workers have been hired from other video games development firms located in Eastern Canada and other North American locations. The cumulative hiring of workers that had worked at particularly large firms created a situation where cliques began to assemble. On some projects, tensions and rivalries about the best method or course of action to follow emerged. One IT manager commented about the working climate that permeated one particular project as follows:

“At one time, a lot of people got hired from that other video games company. We couldn’t get enough of them because we we had to grow quickly and it created pressures. For one project in particular, there were lots of people from that other company that didn’t really want to listen to the BigGames people that were already staffed on the project. It was really ‘we know how to do games and we’ll show you how to do it’. A lot of aggressivity. They are not all like that... but... that’s my perception. Ask around, you’ll see.” (Eloise, IT Manager, quotation 44:29)

In addition to such tensions between cohorts originating from different former employers, each occupational community has its own ethos about what “good” work consists of. Such ideological differences lead to much recurring conflicts and tensions and the constant search of a common ground. The key ideological fault line at the crux of these tensions concerns the importance of the aesthetics aspects versus the importance of the pragmatic, business aspects of video game development practice. Both artists and programmers tend to emphasize the aesthetics aspects of video game development practice, while managers (Directors and Executives) tend to emphasize the necessity of producing financially viable products. The trade-offs between these
contradictory values pervade almost every decision made during the video game development process.

Artists consider the practice of video game development as a form of art work, on a par with films and other visual arts. Their aim is to push forward the current aesthetic standards and obtain critical recognition in the video games industry specialised press, rather than making a product that will sell to a mass audience. Many consider the idea of working on licensed intellectual properties as eliminating the key component of their identity as artist, which is the ability to create something unique and beautiful. By replicating publishers’ or licensors’ work, they often feel that they have to reduce their role to the one of a skilled technician or a craftsman rather than an artist. Such a feeling of being repressed in their creativity lead many artistic workers to entertain sideline projects outside BigGames as a conduit to express their selves in an unconstrained way. Many artists resent the use of business vocabulary in their work ("game" vs. "product"; "creation" vs. "production", for instance) and consider the influence of management (the “suits”) over their work as illegitimate. Even when they get promoted into supervisory roles and are confronted more directly with dilemmas confronting aesthetics and commercialism interests, they still tend to side with their occupational community’s interests, as the following comment from a lead artist suggests:

“I see myself more as the artistic lead of a team of artists, than as a member of the BigGames team. I prefer to be closer to my people than to be... let’s say a ‘corporate’ person.” (Oliver, Lead Artist, quotation 36:34)

It is important to note that there are exceptions to such a conception of the artist’ role; in fact, a few artists enjoy working with popular and famous intellectual properties despite the lack of freedom to create and to influence artistic orientations. They consider their ability to adapt themselves seamlessly to the varying demands of publishers and licensers as a demonstration of
their virtuosity and of a “professional attitude”32. Furthermore, the most experienced artists, especially the very few in their 30’s and over, have a better understanding of their role at BigGames and in the industry as a whole. For instance, one Senior 3D artist commented that he was glad of working for an organization that was in good financial health (or, at least, confident that it was):

“I have heard horror stories about the local new media industry… like companies where you suddenly don’t get a paycheck anymore: paychecks get retained at the bank because of the company doesn’t have enough cash or you arrive on Monday morning and doors are locked. Such situations are just inconceivable here. I simply can’t imagine BigGames closing or going bankrupt just because of the way Kevin [the CEO] manages the company. There will always be licensing work and these are quite profitable.” (Luke, Senior 3D Artist, quotation 41:20)

These artists have learnt that leverage is ultimately in the hands of managers and they have lost the illusion that their work will be fully original and flawless. They have also learnt to distance themselves from their work through the use of irony or humor to alleviate the feeling of alienation caused by the constraints of commercialism, in a way similar to the cooks portrayed by Fine (1992). Yet, these experienced artists are the minority at BigGames.

Like artists, programmers also care about the aesthetics aspects of video game development practices, but they do so for different reasons. While they enjoy working on original and “beautiful” looking games, what they enjoy the most is being able to write “beautiful” code; that is, code that is re-usable, optimized, well-structured, and well-documented. They also aim to design and to code innovative game play features that will enable them to get recognition in the larger programmer community of the video games industry. It is important to note that the programmers that chose to orient their careers toward the video games industry

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32 As a social world, video game artists exhibit most of the attributes and dynamics typical of artistic occupations at large that were identified by Becker (1982), such as the legitimization of art as a collective activity, the distinction between art- and craft-work, the role of critics and the establishment of aesthetics standards, for instance. Furthermore, the “professional attitude” demonstrated by the artists embracing licensing work is highly reminiscent of the same attitude expressed by the successful Hollywood film score composers portrayed by Faulkner (1983, pp. 89-100, 120-167).
exhibit a particular ethos, distinct from their peers that work in other industries, such as banking, business software development, or high-technology R&D. Most programmers at BigGames have university or polytechnic training in software engineering or computer science that could have led them to work in more “conventional” industries where such education is also valued. Yet, many exhibit an ethos that resembles the “hacker ethic” described by Levy (1984, pp. 39-49), such as the belief that action trumps planning, that information should be free, that you can create art and beauty with technology, and a mistrust for authority, bureaucracies, and corporations in general.

Affirming that all programmers at BigGames hold such beliefs firmly would be a gross mischaracterization, however. In a way similar to artists, many of the older and most experienced programmers have learnt the “professional attitude” lacking in their younger peers over time. But the programmers that have done so are the minority at BigGames.

In contrast, workers occupying “pure” managerial roles, such as the CEO, the top management team, and the Game Directors, tend to emphasize the pragmatic and profitability aspects of video game development practice when resolving dilemmas. Being aware of the hostile hit-driven environment in which BigGames operates and the weak position it occupies within the industry network overall, they are concerned by the viability of the organization first and foremost. Like many cultural industries, very few products succeed and many products fail in the video games industry since customer preferences are largely unpredictable. To hedge against this risk of failure, video games producers and publishers attempt to rely upon intellectual properties that already have obtained recognition in the general public at large or a specific customer segment. At BigGames, top management is well aware of these risks and prefers to develop products that do not upset customers’ expectations, by relying upon well-known intellectual properties, by reusing digital assets over multiple projects and by attempting to optimize the production “pipeline” through automation. Thus, when the time to prioritize project

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33 The dynamics of the video games industry are further described in Appendix 7.
objectives comes, time and costs considerations almost always take precedence over aesthetics, as explained vividly by the VP Finance:

“For some businesses in our industry, time doesn’t matter. ‘It’s Michelangelo! You don’t rush Michelangelo’. If he decides that the ceiling is not done, then it’s not done. In our case, the ceiling is due for ‘that day’, so you better ‘push the button’. You’re not done yet? Too bad.” (Clayton, VP Finance, quotation 33:13)

However, as one Game Executive mentioned in his interview, the imposition of stringent constraints upon the video game development process not only ensures that deadlines and budgets are met, but they also push project teams to search for innovative means to develop products of high quality that respect the constraints. Kevin Brown, BigGames’ CEO, is well aware of the tensions and the frustrations that such a philosophy can create within its workforce:

“We are passionate about the business. We sometimes have a little clash with the ‘creatives’, because we are not necessarily passionate about the product itself. We are passionate about making this business work and become viable. So we want our products to be super good, but within a budget that is reasonable. We have some competitors for which time is not a factor; it’s only about quality. The other executives and me, we are not artists, we are business men. [...] This is why it’s important to avoid dispraising the less ‘wow’ projects, because they pay the bonuses.” (Kevin, CEO, quotation 38:19)

In sum, the evidence suggests that the workforce at BigGames is quite heterogeneous and fraught with latent tensions and conflicts due to the large influx of young and junior workers. The combination of this influx and the significant turnover among older and senior workers creates the need to expediently promote into leadership positions technical experts who may be ill-prepared. Workers at all levels are thus undergoing a steep learning curve all the while being under the pressure to deliver products on tight schedules and budgets for which they often feel they do not have as much discretion and influence about aesthetics orientations than desired.
7.1.6 Workforce relations

Workforce relationships at BigGames are characterized by an ambiguous corporate identity which reinforces the tendency of workers to identify with their projects rather than with the overall organization. Furthermore, despite investing much in the employment relationship through financial compensation, flexible HR practices, training and travel benefits, top management does not feel that such investment is reciprocated by workers who prefer to consider themselves as “free agents”. One aspect of this lack of reciprocation that is probably overlooked by top management originates from its overall approach to work philosophy which is somehow at odds with what is practiced elsewhere in the industry and that has come to be expected by workers.

First, most of the workers I met with believed that BigGames exhibited an ambiguous corporate identity at best or even no corporate identity at all. When asked what the mission of the organization was, or what they believed it was or should be, I was often responded with sights and rolling eyes before getting answers such as “I don’t know” or “to build games”. For instance, one Lead Designer responded the following:

“BigGames, I believe it’s a mix of a lot of stuff. There is no strong identity.” (Aaron, Lead Designer, quotation 44:56)

Dorothy, the VP HR, was quite aware about the lack of a clear identity at BigGames and the need for defining a set of official organizational values that will serve as a basis for the socialization of new hires:

“What do we stand for... if you ask all the execs, you may get different answers. We are asking ourselves the question. What have we become, who are we. But that’s an exercise that we’ll have to do soon.” (Dorothy, VP HR, quotation 32:9)

As predicted by the VP HR, workers at all levels even had difficulty to define BigGames culture in a few words or sentences. I asked each participant what three words best describe the organization they work and distinguish it from other organizations (Table 25 below) as a way to
gain anecdotal qualitative evidence about the nature of each organization’s identity. Despite the very small sample size (9 to 15 participants per organization), the results seem to reinforce the statements made during the interviews. BigGames’ participants had much less consensus about what words to employ to describe their organization since their answers were much more varied than those of the other organizations studied for this research; only 7% of all words employed were repeated by one or more participant (2, to be precise). There was also much less convergence in the overall themes and meanings of the words as an overview of the top 5 words employed shows.

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<th>TradSoft</th>
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Table 25. Most common answers to the question "Name the 3 words that best describe the organization you work for"

In recent years, the attention of the CEO and the top management team has been mostly allocated to managing the hurdles of a quickly growing organization: seeking new contract opportunities, negotiating contracts with publishers, purchasing space and equipment, hiring, staffing, delivering products on schedule and on budget, and securing financing, among the key concerns. Managing the culture of the organization was thus not perceived as a priority even though many among the top management team appear to acknowledge the growing importance of such “softer” matters now that the organization employs more than 400 workers. Clayton, the VP Finance, even commented as follow this issue:

“We have sketched the mission superficially, on a napkin. But Kevin [the CEO] doesn’t really believe in such things. I think
he’s scared of committing himself, that it may become definitive.” (Clayton, VP Finance, quotation 33:40)

This belief may not be entirely accurate as the CEO acknowledged to me that he was indeed concerned by the cultural aspects of the organization. His lack of action on the matter may be more due to his preferences about a grass-root process for managing the culture of the organization rather than a rejection of the management aspects all together. Such preferences may be perceived as indecisiveness by many workers, however:

“I would like the mission and the values to be written by a group of directors; not necessarily the execs, but the directors. And I would take that first draft as an inspiration. And if there are things that I don’t like, I’ll explain it to them. But if I like it, it comes from them, then everything’s perfect.” (Kevin, CEO, quotation 38:16)

A second related attribute of the employment relationship at BigGames is that workers have a tendency to identify with their projects and their occupation, rather than to BigGames. Despite BigGames financial stability and spectacular growth, many workers resent the idea of committing their selves in the employment relationship beyond the project they are currently working on. A Lead Artist affirmed that he prefers a “wait-and-see” approach and keeping his options open for the future:

“I feel that BigGames is a really good and nice company. But in the past, I have learned that you better consider yourself a lead artist than to be attached to one company. For many reasons.” (Oliver, Lead Artist, quotation 36:34)

Such a tendency could be seen as a consequence of the lack of a strong and clear corporate identity; however, it seems that such project-based and occupation-based affiliations are attributes of how the video games workforce approaches the labour market in general, a finding that had been observed previously by other researchers (e.g., Batt, Christopherson, Rightor, & Van Jaarsveld, 2000; Deuze, Bowen Martin, & Allen, 2007; Neff, Wissinger, & Zukin, 2005). The lack of a strong corporate identity only reinforces such “institutionalized” tendency. Clayton, the
VP Finance, confirmed to me the tendency of workers to identify with the project they work on and the team they work with:

“There is not much loyalty in this industry. That’s really because of the nature of the entertainment industry; people work on a project first and foremost. It’s the same thing in TV and the movies, but it’s probably worse over there, because they don’t even have an employment relationship. So it’s a battle every day, each time that a project ends, if they don’t like the boss’ face, then it’s bye bye! Two days later, they have a job elsewhere.”
(Clayton, VP Finance, quotation 33:18)

Many among the most recent cohorts of young workers hired in recent years have yet to learn what makes BigGames different from other organizations in the industry. Many of these young workers are quite aware about the marketability of their skills in a tight local and North American labour market. Many workers, among artists, programmers, and managers, tend to perceive themselves as “free agents” and are quite ready to assume the risks tied to a career that spans multiple organizations rather than trust a single organization for their long-term career advancement. In other words, many workers at BigGames prefer and desire, to some extent, flexibility; they consider taking entrepreneurial risks as an integral part of building a career in the industry. Many have developed blogs and websites to showcase their skills and their portfolio of achievements and keep themselves updated about opportunities in other firms through online forums and their network of former colleagues. Such a preference of career mobility is generally perceived as a “lack of loyalty” by top management. One particularly emotional Game Executive mentioned the following about this situation:

“Some studies have shown that 30 years ago, it took 6 months for somebody to become loyal. Today, it takes 3 years and we’re living it, it’s crazy. The old timers that have been around for 3-4-5 years, you hear in their discourse... ‘BigGames, wow!’ But the new ones, after a year, it’s ‘Hey! BigGames, I can find a job on the other side of the street anytime, but I will stay on the project for now because I will gain experience and get credit” (Owen, Game Executive, quotation 39:26)
Conventional indicators of career advancement such as promotion and increases in responsibility or salary do not apply very well to BigGames’ workforce. More than anything, workers seek to ensure continuity in their line of work by moving from one “interesting” project to another even more “interesting” project. Hence, there is an implicit hierarchy in the kind of work one engages in and must progress through, whether that person is an artist, a programmer, or a manager. This hierarchy is tightly related to the status of the product (the first iteration of a “AAA bestseller” vs. a “port”, for instance) and the publisher one works for (while development firms may sometimes get recognition, it is usually the publishers who get most of the credits for bringing a product to the market). In order to preserve the mobility necessary for advancing their careers by moving on to more “interesting” and “glamorous” projects, workers at BigGames are crucially aware of the need to avoid being type-casted in a specific genre or skill, which would limit the opportunities available to them. For instance, one Senior 3D Artist underlined the chance of participating to the production of a product that has the potential to gain critical recognition as a reason for his employment relationship with BigGames:

“I am pretty sure that from a financial, business point of view, things are going really well. You saw the trophies at the reception? I believe Kevin [the CEO] is doing a good job to keep the firm out of trouble. But... here on the production floor, there is a feeling that it’s time to get some quality games out of the door. It’s great to have a sense of job security, but in the day-to-day, you also need to feel that you’re working on something good. [...] But one of the reasons why I like BigGames is that we still haven’t produced our first AAA. You can be part of that special team...” (Luke, Senior 3D Artist, quotation 41:17&24)

This lack of commitment by the workforce, especially among the most recent cohorts, means that top management will wait for workers to demonstrate their commitment to BigGames before investing extensively in the work relationship. Kevin Brown, the CEO, told me that while he is somehow wary about the commitment of newcomers, he tries to support those that have demonstrated such commitment, even when those workers may be perceived inadequate or ineffective by their peers:
“I am very loyal toward the gang here. Sometimes people here have fast triggers: ‘that guy doesn’t have it anymore, he’s lost it, let’s get rid of him’. When that person has been around for a long time, I call her a ‘tattooed’ person. When somebody loves BigGames, it’s obvious. In general, I will always be against firing that person. ‘Find her something else! Staff her elsewhere!’ The execs don’t like it when I do that, but in general, we find a way to save the person. So I try to be very loyal. But people need to make the first move. When a new person arrives, I don’t give her my blessing right away. Slowly, but surely, it’ll happen. If she’es loyal, I’ll support that person all the way.”

(Kevin, CEO, quotation 38:12)

This support and investment takes many forms. Workers enjoy a number of benefits and liberties that are generally found in new media industries, such as flex-time, paid maternity/paternity leaves, and extensive training. In addition to being practiced for obvious instrumental reasons, training is also the main practice employed to demonstrate organizational commitment to the workforce:

“The job market is super hot, so you need to make sure that you treat people well. You need to be careful about your staff and to invest in training to show them that they are important. And it’s not only about making them feel important. They really are.”

(Owen, Game Executive, quotation 39:6)

Most of these training investments are made to improve the managerial skills of middle managers (leads and directors), but they also target the programmer and artistic occupational communities as well. Furthermore, about a third of the workers will get the opportunity to attend one of the various industry conferences held during the year, such as the Game Developers Conference or the E3 where they can network with peers and attend training sessions:

“We focus a lot on management skills, since our managers are very, very young and junior, as much in terms of age as in expertise. They are most often promoted from the inside. So we invest much in soft skills training and leadership, from the team lead all the way to the execs. [...] We also have a budget for technical training and artistic training, as well as for conferences.” (Dorothy, VP HR, quotation 32:11&12)

A final key attribute of the employment relationship at BigGames is the fact that top management values a climate of “all work and no play”, which is at odds with the type of climate
fostered in rest of the industry and that has come to be expected by the workforce. Kurt, the VP Operations, explained to me the type of work environment that is put forward at BigGames and its rationale:

“We try to make BigGames really a place of work. Let me explain this. It isn’t necessarily negative. We think it’s positive. There was a trend back in late 90s where the high tech companies created all kinds of rooms for people to relax, play and chill. [...] We are the anti-Google model. Other companies in our industry are more of the Google model. Why? Because there is a price that comes with the Google model. Unavoidably, unavoidably, unavoidably, you will end up spending 80 hours a week at the office. And we take the position that of those 80 hours, there is maybe 50 at your desk that are actually spent at work, doing what you have to do. The rest is about God knows what else.” (Kurt, VP Operations, quotation 30:12)

This climate is most saliently expressed through the way physical environment is set up at BigGames. There are no babyfoot tables, bean bags, or lounges where employees can wind up and relax, perks that have been regularly reported as part of the physical environment in other video games firms (e.g., Dyer-Witheford & De Peuter, 2006). To enter BigGames’ offices, workers even go through a side door leading to a locker room where they leave their extra personal belongings, such as lunchboxes, coats, boots, etc., before exiting through another door into one of the main corridors, exactly as if they were entering an industrial-era factory less the punch-clock. At two occasions, while I was waiting for an appointment with a participant, I observed that the CEO and other members of the top management team do not go through the locker when they enter BigGames’ offices. This configuration of the physical environment appeared to be deeply at odds with the perceived “coolness” and “glamour” of the video games industry and what has come to be expected by its workers, which are often considered as trendsetters for new styles of fashion, music and cultural taste by the popular media. While some BigGames workers appeared to appreciate such physical set up (the most senior and experienced ones, in general), others appeared to envy the physical set up that was found in other local firms.
The evidence presented so far about the nature of the employment relationship at BigGames shows that BigGames has an ambiguous corporate identity at best and that many workers have an arms-length attachment to the organization in general, but that some gradually learn the value of being employed at BigGames through the increased confidence and investment demonstrated by top management over time. There is a paradox, however, in that many BigGames workers conceive the notion of career of advancement as the accumulation of ever more prestigious credits and of having the chance to work on “interesting” projects. Thus, workers may thus never achieve the level of “loyalty” desired by top management, as they may interpret as signals of mistrust a lack of support during their early experience with the organization and a work climate at odds with their expectations.

7.1.7 Summary of contextual conditions at BigGames

In conclusion, it could be said that BigGames operates in a stressful and hostile environment that provides little room for its managers to reflect and invest in improving its organizational practices. First, the CEO and the top management team desire to grow the organization large enough so that it becomes independent from publishers for its survival and gain leverage in negotiating contract covenants. The organization has already grown dramatically in recent years and top management intends to pursue this growth impulse much further. Second, top management have fostered a sense of urgency throughout the organization; while this sense of urgency is in large part self-imposed, it is also due to the tight constraints with which it must run its projects and the intrinsic nature of video games development work. Such time pressures often lead to firefighting and heroic behaviours, which may allow the organization to thrive in the short term, but makes it difficult to solve the fundamental causes of recurring problems. Third, due to the preference for frugality and a lack of leverage over publishers, there are little slack resources available at BigGames. Executives, directors, and leads thus engage into bricolage by leveraging existing resources when confronted with operational hurdles; such improvised problem solving
frees up funds to finance initiatives that will help growing the organization in the short term.

Fourth, BigGames is characterized by a workforce that is divided among occupational lines, former employers, and time of entry. The combination of the large in-flow of new workers to fulfill incoming contracts and the significant turnover among the most senior and experienced workers means that middle managers are sometimes inexperienced and ill-prepared to assume leadership roles. Furthermore, occupational differences about the conception of what “good work” consists of means that there are latent tensions among the workforce which may sometimes get out of hand. Finally, a majority of workers tend to identify to their project first and foremost despite attempts by top management to demonstrate long-term commitment to the employment relationship.

As we will see in the sections that follow, the contextual conditions described above will have a significant influence on the appropriations that are enacted at BigGames to fulfill transparency for mobilizing, for pooling artefacts, and for reporting accountability. The table on the following page summarizes the evidence about each type of transparency.
### Appropriations of technology that fulfill the function

1. Making a wiki available for the publication of corporate and project information
2. Promoting local, project-based initiatives (on some projects, artists announce news and milestones to the project team through project blogs, while for other projects, a newsletter sent by email to the project team is put together by project managers)

### Key technology features

<table>
<thead>
<tr>
<th>Function</th>
<th>Lotus Notes</th>
<th>Wordpress</th>
<th>Wiki (MediaWiki)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- <a href="mailto:All@BigGames.com">All@BigGames.com</a> mailing list</td>
<td>- Publishing independent posts in chronological order</td>
<td>- Editing, categorizing, hyperlinking features</td>
</tr>
<tr>
<td></td>
<td>- Mailboxes size limited to 100Mb</td>
<td>- Publishing independent posts in chronological order, tagging features</td>
<td>- No access stratification</td>
</tr>
<tr>
<td></td>
<td>- Local commitment management system</td>
<td>- Work order input form</td>
<td>- Storing and retrieval features (executives only)</td>
</tr>
</tbody>
</table>

### Functional alternative practices

- CEO and executives disclose outline of financial outcomes and projects in organization-wide assemblies 3 times per year
- Friendship networks are employed to learn about the status of other projects
- Alternatives to the wiki are sought by the IT team
- Executives often transfer files by email and bypass Lotus Quickr
- On some projects, project managers employ story cards instead of MS Project and Trac to manage commitments and scheduling
- A search for alternatives is underway

### Consequences

- Workers are little aware of events and developments in other projects than their own
- Workers question the purpose of projects
- Ambivalence of the top management team toward Lotus Quickr
- Few breakdowns in coordinating dependencies within projects but little cross-projects learning
- Executives track project costs and schedule status, but do not know how time is spent
- Unreliable estimates of worker availability
- Executives & managers “challenge” each other about the validity of inferences and data upon which inferences are made

### Table 26. Types of transparency at BigGames
7.2 Transparency for mobilizing

A number of technology appropriations have evolved at BigGames over the years to generate transparency for mobilizing purposes. A wiki containing global corporate information as well as project information is available to workers and executives. However, because the procedure to update the wiki is considered as costly in terms of time and effort, the information it contains is considered as irrelevant and outdated and it is not consulted much by the workforce. A variety of local, project-based initiatives has emerged to keep peers updated about project affairs and status, such local initiatives being explicit approved by the CEO and the top management team. As we will see, the perceived absence of official channels for the communication of global corporate information has lead workers to rely upon friendship ties to keep updated about matters outside their project.

7.2.1 Appropriation #1: Making a wiki available for the storage and diffusion of corporate and project information

The first technology put in place at BigGames to provide mobilizing information to the workforce is a central wiki running upon the open source MediaWiki platform. While the IT team ensures technical support for the wiki, any worker at BigGames may modify the content of the wiki, provided that they log on into their user account to do so. As it will be seen in the section about the technologies that have been appropriated for the purpose of pooling artefacts, the wiki also serves as a central repository of IT and technical training material, and a few other uses by certain occupational communities. One of the main objectives intended for the wiki when it got installed in the early 2000’s was to serve as the official channel of communication to diffuse news about global corporate and project affairs, which is why it was named “BigGamesCore”. By default, workers have the wiki set as their internet browser home page, but they may personalize this setting.

Despite the wiki’s role as BigGames official channel of communication, it doesn’t appear to succeed in fulfilling the objective of diffusing global corporate affairs information and project-
related information. All workers and managers I have met, with the exception of the VP Technology, have told me that they rarely, if ever, consult the wiki for the purpose of learning news about corporate and project affairs. Among the rare managers who consult the wiki, very few take the time to update the wiki with information about their project:

“We have a wiki but it’s not updated. It’s not a good source of information. We call each other instead. I call another game director and we talk. But usually it’s quite difficult to know what’s going on in other projects.” (Susan, Game Director, quotation 35:38)

Furthermore, members of the top management team appear to have little commitment to the wiki and even resent its use and consultation. Owen, a Game Executive, told me about his exasperation with the inadequacy of the wiki as a communication tool:

“I believe that nobody from our gang looks at it. Seriously, I am curious to know how many from our executive team that consult the wiki. [JGB: So if you don’t consult the wiki, I guess you don’t update either?] I won’t talk on behalf of my colleagues, but I can tell you that I don’t. I prefer to get and send the information by email; it’s quicker. It may be horrible to say so, but I’m really not a fan of the wiki. I think it’s too ‘free form’.” (Owen, Game Executive, quotation 39:35)

The comments above are highly representative of those that I heard about the wiki both at the executive and lower levels of authority. Many workers told that they had “heard” about a wiki that could be reached “somewhere” on BigGames internal network, but that they had never done so or that it had been so long that they had done so that they had forgot about how to. When questioned about the extent to which the workforce employed the wiki, the VP Technology mentioned he believed that it was consulted but that he didn’t monitor its usage statistics.

### 7.2.2 Appropriation #2: Promoting local, project-based technology initiatives

One reason why the wiki has not been successful in providing transparency for mobilization purposes is that top management, mainly under the impulse of the CEO, prefers to let workers come up with local communication practices. Hence, this appropriation of technology
aimed at generated transparency for mobilizing purposes does not concern a single technology per se even though the CEO recently contracted a Lotus Quickr licence from IBM to provide a common platform to be used by projects. Instead, each project team appropriate their preferred technology to share and to diffuse information that serves to build cohesion and to keep workers informed of current events. Kevin, the CEO, explains his preference for letting workers take charge of communicating events and informating their peers about current developments:

“Right now, it’s all open and that’s fine. But it’s done a little bit randomly. People push things with what’s at hand. Some people do pages in the wiki. Others do blogs. What I prefer is to read the person’s home page and to subscribe for the updates. That way, she can broadcast the news as she likes. If there is something that doesn’t interest you, you just skip it.” (Kevin, CEO, quotation 38:29)

Each project thus designed its own communication practices. In some projects, Game Executives, Game Directors and their assistants have taken charge of putting in place a communication system. In other projects, the responsibility was taken up by the various occupational community leads. Owen, a Game Executive, explained how he is fine with letting the occupational communities of the project he is overseeing coming up with communication practices and appropriating their preferred technological platform, as long as it involved little unplanned costs. His comments on the matter expressed a certain kind of “laissez-faire”, as long as the practices didn’t impose him additional hurdles:

“Some teams have begun to fill the void. Two teams have built their own mini intranets. Another team uses a wiki. There are things that emerge because they believed they were important for them. It’s OK. I respect that. My only constraint is that I don’t want the tool’s use to be overly complex. I don’t want to learn, to ‘bush clear’ the thing. I don’t have time to sit down and reflect on what the directory structure should be like… [expletive] no. Should I write a blog? I don’t think so. But others should for sure.” (Owen, Game Executive, quotation 39:30)
These local appropriations of technology to diffuse project-based information take many forms. I will briefly present evidence illustrating two of these initiatives. In one project, a monthly newsletter was set up by the Game Director and her assistant:

“We created this newsletter for the same reason, to show what’s now under development. We put on videos, images, etc. so people get a feel that the project is progressing and that people do not only live in their own bubble. It’s sent by email every 3 to 4 weeks.” (Nicole, Assistant Project Manager, quotation 34:44)

Successful practices tend to be replicated from one project to another. On another project, the Lead Artist after he was made aware by a peer that another project employed a blog, within BigGames’ firewall, using an open source publishing platform to communicate project status and publicize work in progress. He asked workers from the IT team to configure an instance of the publishing platform for his project in order to set up his project’s own blog where announcements would be made, project progress shown, and the last artistic assets and screen captures uploaded. The Lead Artist who set up this blog told me that the artistic community consisting of 17 artists developed the habit of consulting the blog quite instantaneously, as it created a project identity and a mean to facilitate cohesion in a team that included many recent hires. The programmer community can consult the blog, but the artist community ultimately controls the blog’s content. The blog was so successful that many project workers replaced their Internet browser home page with the blog’s URL address.

“On another project, a blog was set up where information about people’s good shots was diffused throughout the team. There is also information such as the Director’s update, where he writes about we turned in such and such milestones to the publisher and he’s very happy, etc. When I saw what they were doing, I said that we needed to do something similar on our project. People on the team were often telling me that they were not in the know about such and such things. When you’re 17 artists working on a project, you can’t necessarily be aware of what everyone’s doing. With the blog, we can put up images and videos of their work in progress. […] It helps to make people feel involved by showcasing and recognizing their work.” (Oliver, Lead Artist, quotation 36:17 & 36:19)
In addition to letting project teams select the technological platform they prefer, Game Directors and executives let project teams organize how it should be managed: who should be responsible for updates, what content should be put on the blog, how frequently the updates should take place, etc. For instance, the Lead Artist who initiated a blog for his project assigned the responsibility for curating the blog to one technical artist on his team who wanted to enlarge his scope of responsibilities. He explained as follow how updates are made and how he feels a responsibility for keeping the content of the blog “professional”.

“The way we’re set up is that you have to send the info to a specific person who will then update the blog. We want to keep it as clean as possible. All comments or stuff we want to put on the blog have to go through him and me.” (Oliver, Lead Artist, quotation 36:18)

Put briefly, the evidence shows that many different types of technology appropriation have been enacted at BigGames to keep workers updated about the projects they work on. The inadequacy of the global wiki as an official communication channel as well as top management’s approval of grass-roots initiatives led project teams to experiment with their preferred technological tools and features and establish local communication practices.

7.2.3 Consequences and functional alternatives

Despite these local undertakings to generate transparency for mobilization purposes at BigGames, workers still believe that they are little aware of what goes on in other projects and in the rest of the organization in general. Two alternative practices have thus emerged over time to supplement project-based information-sharing practices that were described in the previous section. The first consists of an organization-wide assembly that is held three times per year and where current developments are presented by members of the top management team and all employees are expected to attend. The second consists of working the grapevine through friendship ties to keep one-self informed of events in distant projects.
Every four months, the CEO discloses a selective outline of BigGames’ financial outcomes during organization-wide assemblies, called “all-hands meetings”. In the early 2000’s, these meetings were held in BigGames’ cafeteria. As the organization grew in size, the assemblies were moved to nearby concert halls and theatres that are rented for the occasion. The meetings are an occasion for building cohesion and showcasing project achievements, whether they consists of a demo, a prototype or a final product. Kevin Brown, the CEO, will also generally provide an overview of the financial health of the organization where he will disclose the revenues and sales quantities generated by the products in BigGames’ portfolio. It is highly anticipated moment by workers as it will provide them an idea of the bonuses that will be paid during the year. As it is common in the video games industry, as much as 25% to 33% of yearly compensation depends on bonuses tied to the sales performance of the products one has worked on. However, no benefits or profitability figures are revealed during those presentations. The CEO acknowledged that he tended to restrict the level of details disclosed during the presentation:

“We don’t give them much details. I will provide the sales figures, the individual bonus levels, and how much they will get. They get the ranges, but they don’t get how much profit we make.” (Kevin, CEO, quotation 38:15)

He further explained that he used to be asked about profitability figures in the early years of the organization during the Q&A sessions that followed the presentations, but that it had been many years since he had been asked the question. Some workers lamented about the lack of details during these presentations and that while overviews of the financial health of the organization were fine to reassure them that their employment wasn’t at risk, what most interested them were insights about future products and projects:

“At the ‘All Hands’ the president will talk about the organization’s finances for the most part of his presentation. We’ll see graph and figures fly by on the screen. We’ll learn, for instance, that game X sold very well during the first half of the year, and that game Y did too. We’ll get a little feel for the pulse of the company… finance-wise.” (Luke, Senior 3D Artist, quotation 41:18)
It may appear intuitive to blame the particular occupational cultures of the artists and the programmers for this lack of interest toward financial matters and corporate affairs at BigGames. Yet, two additional reasons may explain the little inclination toward disclosing corporate information that top management exhibits. First, it appears that top management may entertain a number of preconceptions about its workforce. For instance, the CEO lamented about the lack of understanding that workers had about the business model of BigGames and of developing video games for console platforms:

“"The economic model, there are many that just don’t understand it. 90% of the staff doesn’t understand it. [JGB: Have you tried to explain it?] Yes, but it’s tough, they just don’t understand.”''

(Kevin, CEO, quotation 38:13)

Whether holding such belief about the workforce is justified or not, such comments offer a glimpse of how top management perceives its workforce. Second, the time pressures that were described in the previous sections also appear to divert top management’s attention toward other issues. Owen, a Game Executive, explained the workforce’s perception of top management being out of reach is partly explained by an inclination toward action and that communication was time consuming:

“I believe we face quite a challenge. It’s not really about transparency per se, but more about communication in the sense that… it’s not because we don’t want to talk. It’s just that we don’t do it. As a group, I believe we [the executive team] do a mediocre communication job. We know that and we tell ourselves about it. The most of us are highly action-oriented people. So we’ll often make a decision and put ourselves in motion; we’ll just forget about communicating what we’re doing, why we’re doing it, and where we’re going. When the staff sees us go and learn about it, they may perceive it as a lack of transparency.” (Owen, Game Executive, quotation 39:36)

Faced with a void of information about the status of other projects, workers tend to work the grapevine and rely upon their friendship networks to inform themselves. This process is facilitated by the fact that project teams are sometimes dismantled once a project ends and that many workers have been moved from one project to another at one point during their tenure at
BigGames, which allowed them to create a network of acquaintances. One Lead Designer talked vividly about how he had to rely upon his network of “spies” in other projects in order to keep informed of what was going on in other projects:

“I would like to get greater transparency into what’s going on. It’s understandable that people shouldn’t know everything. But there is a complete absence of a communication channel from management, of something acting as a force to federate people around a vision, of a place where we could be told ‘Look, it’s a difficult period, but it’s only temporary; we’re using the following means to improve the situation’. They have to be more transparent because it happened that the rumor mill took over. To learn about what was going on in those times, I had to rely on my network of spies in each team.” (Aaron, Lead Designer, quotation 44:19)

This reliance upon a network of informant also holds for middle managers, who in principle would have better access to top management due to the nature of their responsibilities:

“There is no official voice telling us ‘this is how it’s going on project X’. I have to know someone on the project. It never comes from an email or else. For sure, people’s interest in those things varies, but if I want to know something I know where to look for generally. My leads and the developers know how to do so too.” (Nicole Rogers, Assistant Project Manager, quotation 34:38)

It is apparent that seniority and closeness to top management appear to be the determining factor about how much “inside” information one will be able to get. Such insider access may even be employed by top management to provide favours and reward employees that have shown “loyalty” and commitment to the organization:

“I feel that it’s becoming easier to get information over time. At some point, you gain management’s trust and you probably have a better idea to whom to ask. When you’ve been around for seven years and people know you, some locks just disappear. You may even start getting some favours, but for someone who just got hired it’s impossible for them to obtain such things.” (Luke, Senior 3D Artist, quotation 42:31)

Not surprisingly, the reliability of the information obtained through the grapevine is quite variable. While lying and misrepresentation are rare, the information communicated may simply
be inaccurate. One Lead Artist explained in the following terms how it happened that some projects were declared as “death march” even though they were reaching their milestones and were performing well:

“It’s clear that there are rumors. If someone from another project tells someone that it’s not going well because they’re having such and such problems, then it’s clear that the rumor that this project is in trouble will spread. But it’s only a rumor… It’s a pity, because in the end, the project was doing well.” (Oliver, Lead Artist, quotation 36:15)

To summarize the evidence reviewed so far, people at BigGames have appropriated a number of technologies for the mobilization and cohesion-building purposes. Each project has developed its own customized communication practices and technological tools under the explicit endorsement of top management. While the employment of these tools succeeded in providing transparency at the project level, the tools and practices that were deployed to diffuse global corporate information and build a unified sense of identity to BigGames have been much less successful. The organization-wide wiki that was deployed is rarely updated with information by the top management team, if at all. Furthermore, despite top management’s nice intentions, the presentations and Q&A sessions taking place during the regular organization-wide assemblies do not appear to satiate workers’ hunger for information about the status of current and future projects and products. As a consequence, workers rely on their network of peers dispersed throughout the organization in order to keep informed, a practice that sometimes leads invalid information to circulate much more than it should have.

7.3 Transparency for pooling artefacts

Various technologies have been deployed at BigGames to pool and share work artefacts. Many technologies that are employed for the purpose of mobilizing the workforce are also employed to pool artefacts. Hence, the patterns of appropriations for the two transparency purposes are very similar. First, the organization-wide wiki that was described in the previous
section is also employed by the IT team to store tutorials, references, and training material about the production technologies (Maya, the “game engine”, etc.) used by artists and programmers to produce digital assets. Second, on each project, occupational communities have developed their own preferred technological platforms to exchange work artefacts. While these local, project-based pooling platforms appear to be effective to generate the desired level of transparency within each project team, the transparency generated for pooling of artefacts between project teams and from older projects to newer projects is deficient. This situation has led the top management team to seek alternative technological means to pool and to share artefacts between projects.

7.3.1 Appropriation #1: Letting occupational communities employ different technologies to pool artefacts in each project

The computing environment at BigGames is highly heterogeneous. The management team of each project, consisting of the Game Executive, the Game Director, the Technical Director, and the Creative Director are relatively free to implement the technologies they prefer to pool artefacts. Hence, the most common pattern found across projects was that each occupational community employ a specific technology: tool programmers and technical artists working in the IT team employ sub-directories on the organization-wide wiki to publish tutorials and technical procedures, executives exchange documents through a Lotus Quickr instance, artists staffed on projects employ blogs to share tutorials and visual references, game designers employ sub-directories on the organization-wide wiki. I will briefly describe the appropriations enacted by each occupational community.

First, the top management team at BigGames exchange documents through a Lotus Quickr instance. Until the fall of 2007, the top management team had been pooling and exchanging work documents through email and a file server. Because such practices were deemed as inefficient, the CEO asked consultants from a large software vendor to gather “high-level requirements and identify opportunities for collaboration technologies” (Consulting report to BigGames, September 2007, p.4). Workshops were conducted with the top management team.
and the potential to implement features such as team directories, social bookmarking, blogging, social networking, instant messaging, wiki, and “activity-based computing”, was explored. The consultants recommended the implementation of a common repository, of “centralized to-do’s”, of plugins in office technologies that would automate uploading processes to the repository, of “After Action Learning” blogs to share lessons learned across projects, of social networking features to facilitate expertise location. According to the consultants, all these solutions require the implementation of Lotus software products: Lotus Quickr, Lotus Connections, and Lotus SameTime to be precise. At the time of study, a Lotus Quickr instance had been implemented with the default features for the top management team’s use but not for the rest the organization. Only a few of the features had been implemented: team directories and spaces, instant messaging, and the plugins into office technologies. Despite their availability, no other feature had been deployed or actively adopted by members of the top management team.

The second technology appropriated at BigGames for the purposes of pooling artefacts is the use of a sub-directory of a wiki by the IT team to store reference and training material. The wiki is the same that failed to be appropriated for the diffusion of mobilizing information. The main subject matters documented by the IT teams’ engine and tool programmers are features of BigGames in-house game engine and of the production tools employed by project teams. The wiki thus plays the role of a help desk for the new releases of BigGames game engine, which is the code that regulates graphics rendering and collision detection between objects and that ties together the digital assets of the game. It also provides procedures and references to help new hires to learn about the plugins and add-ons that were developed by the tool programmers to supplement production technologies such as Maya (a 3D modeling and texture software development kit), Kynapse (an artificial intelligence software development kit), and other internally developed technologies such as animation editors, shader editors, character rig editors, motion builders, and particle editors.
Hence, the wiki is very useful for training the cohorts of workers who have joined the organization in recent years with the production environment at BigGames. It also provides a mean for experienced workers to free themselves from spending excessive time on training junior workers rather than contributing to the project’s actual production. One Senior Artist commented on such use as follows:

“I don’t often use the wiki. The last time was about a month ago when I landed on this project. I had to reset default paths for an application. On the wiki, you find a lot of procedures that with experience you don’t feel the need to consult anymore. Sometimes however, when people ask me questions and that I don’t have time to sit down and to explain for two hours how to do something, I’ll just copy and send a link to the wiki.” (Luke, Senior 3D Artist, quotation 41:43)

In the artistic community of certain projects, blogs built upon open-source content management software are maintained to share tutorials and visual references. As already discussed in previous sections, the artistic community used blogs to forge a project identity by sharing project status and recognizing individual accomplishments; in other words, the blogs are used to generate transparency for mobilizing purposes. But the same blogs also generate transparency for pooling artefacts purposes. These blogs are used in two distinct ways: by technical artists to share tutorials and by creative directors to share visual references.

Each project is staffed with technical artists who are responsible for developing add-ons and plugins to the production technologies (game engine, Maya, shader editors, motion builder editors, etc.) used to develop digital art assets. These production technologies vary from one project to another depending on the console for which the product is developed for ("portable", "current-gen", "next-gen", etc.). While a wiki is employed by the central IT team to share tutorials and training material for production technologies that are common to all of BigGames’ projects, technical artists staffed in project teams prefer to use local blogs to publish tutorials about plugins, add-ons, and technical procedures. This preference for a blog over a wiki for sharing tutorials and technical know-how was explained as follow by one Artistic Lead:
“Before the advent of the blog, the wiki was not much used by the artists. It mainly contained technical information and it was difficult to update. It wasn’t fun to work with it. The blog is much more visual, it’s much easier.” (Oliver, Lead Artist, quotation 36:24)

On this particular project, a technical artist was made responsible for updating the blog and to document the plugins, add-ons and features of the new releases of the production technologies employed by the project team. This part-time task reduced the ability of this technical artist to participate in production activities, but the Lead Artist felt that the part-time allocation was a profitable investment:

“It’s someone who wanted to separate himself from production work. He wanted to write technical documentation and do training sessions on Maya and the game engine for the new recruits. So we lose a modeler/texture on the project, but we gain something of value for the team in the end. Because of this role, he will be proactive in making sure new 3D features are documented. When we upgraded from Maya 7 to 8.5 he was also the one who set up the training sessions…” (Oliver, Lead Artist, quotation 36:33)

Project blogs are also employed by Creative Directors to share visual references. During the pre-production stages of a project, the Creative Director and the conceptual artists he or she supervises determine the identity, style and visual signature of the project’s final product, in concert with publishers and the Game Executive. Many visual references are created at this stage of the project; they usually consist of the drawings, sketches, video clips, images, and pictures that orient modelers, texturers and animators in their work. They are either collected from the internet through stock photography websites, such as Flickr or Getty Images or drawn by the conceptual artists themselves. At the onset of a project, the visual references will concern the overall “look and feel” of a product; over time, the visual references will become ever more precise.

For instance, a product whose action takes place in a real-world place like New York City may include pictures of the city’s skyline and landmarks, of the interior of certain subway
stations, and of things as specific as light posts and street signs as visual references. To be even more precise, visual references may direct artists toward certain aesthetic orientations, such as depicting the French Connection’ New York of the 60’s-70’s or the King Kong’s New York of the 30’s. Project blogs thus help to reduce the ambiguity inherent to collectively creating digital art assets by publishing and transmitting the visual conventions which they will be derived from. Establishing such a system permits to resolve time-consuming matters of interpretation, that is, situations where there is more than one way to perform and to produce a given digital art assets. A Senior 3D Artist explained the usefulness of the blog in orienting the aesthetic orientation of his work performance as follows:

“On our project blog, there will be a section where Steve [one of the conceptual artist] will put all the images that he will have found on the Internet. These images could be about lighting, textures, etc. We use these references to get an idea of where we’re going and orient ourselves. […] It is so useful. It is very uncommon that we will model an object out of the blue from our memory. Visual references are an integral part of our work. When the Creative Director has laid down the visual references, well there simply can’t be any confusion. Situations where ‘It’s not really what I wanted’, ‘I was thinking about it this way, not this way’ don’t happen anymore. When the Creative Director puts the picture of a specific model of telephone on the blog, that’s what the telephone you’re modeling must look like. Before the blog, everyone was doing his own research and when they had the opportunity to get the Creative Director’s attention, they would ask ‘I was thinking of going in that direction, is that OK?’ The blog has solved that problem.” (Luke, Senior 3D Artist, quotation 41:48 & 41:49)

In contrasts to other artistic workers, game designers prefer to employ wikis to store their work artefacts, such as the game design reference document. The game design reference document describes the product in sufficient details that there is no matter of interpretation (but is ambiguous enough so that there is any difference) as to why the product is “fun” and for whom. The game design reference document acts as a blueprint for the rest of the project team while in production stages; it lays out the game rules and parameters, user interface, gameplay mechanics, control layout, story narrative, level design, among other things. At BigGames, game designers
employ a variety of tools depending on their personal preferences; some will prefer to use MS Word and Excel that they share with other team members through email or a file server, while others employ subdirectories of the central wiki (“BigGamesCore”) that has been alluded to in previous sections. One game designer explained how the constraints imposed on BigGames’ Lotus Notes instance incited his group of designers to employ the wiki to store meeting minutes and to game design reference documents:

“We have a guy for technology who makes sure that everything is in the right format, but we share the load among the members of our group. When we do meetings, we assign someone to be the secretary who will then file the meeting notes and minutes on the wiki. The wiki is useful for two reasons. As a database, it’s easier to navigate than the file server. The second reason stems from Lotus Notes. It’s really crappy. I hate Lotus Notes with a vengeance. Because I’m not a Game Director or a Creative Director, my inbox is limited to 100Mb I believe. Thus, as soon as I receive one or two attachments by email, I have to click on warnings all day. The wiki has thus become essential to keep some sort of historical trace.” (Aaron, Lead Designer, quotation 44:38)

As for the programmers not involved in the development of add-ons and plugins to projects’ production technologies, the evidence shows that they mostly use Perforce, a software configuration management system (or “source control” system) to document the product’s code. Because their use of the system mostly concerns the monitoring and the tracking of changes in the product’s source code, the programmers’ appropriation of Perforce will be reviewed in the next section about transparency for reporting accountability.

7.3.2 Consequences and functional alternatives

A few consequences prohibit full transparency for pooling artefacts purposes in spite of the apparent effectiveness of the decentralized approach adopted at BigGames. As I explained in the previous section, project teams are free to experiment with technology and design local systems to pool artefacts. While occupational communities appear to be greatly satisfied by this approach, the evidence suggests that pooling artefacts between projects and among the top
management team is much more difficult. The first dysfunctional consequence observed is the apparent dissatisfaction and cynicism of the top management toward the use of the Lotus Quickr software package. The second dysfunctional consequence observed is the dissatisfaction of the IT team toward the wiki as a publishing platform for technical know-how and training material. In each case, functional alternatives were actively sought.

First, a number of executives were sceptical about the wiseness and the usefulness of the implementation of the Lotus Quickr technology, which was initiated by the CEO and the VP Technology. For instance, the VP HR felt that the consultant’s report recommending the implementation of Lotus Quickr was boilerplate with little relevance to BigGames’ context. Owen, a Game Executive, found that the fundamental process management issues went unaddressed:

“Who does what, when, in what sequence, who approves what… it’s unclear. And it has never been clear. We used a file server and Windows directories, and it wasn’t clear. Changing Windows directories for Lotus directories, it’s still not clear. You know, there is this old saying that technology only accelerates human stupidity. It does nothing else.” (Owen, Game Executive, quotation 39:31)

He also lamented that the implementation of the Lotus Quickr technology was a distraction over other more urgent technological problems, such as reengineering and upgrading BigGames accounting systems:

“I believe that we should ask ourselves whether we are allocating our energy to the right places right now. While we’re doing this Quickr thing, we are still not able to produce financial reports on the projects; that is the most important issue…” (Owen, Game Executive, quotation 39:32)

Clayton, the VP Finance, also felt that the Lotus Quickr technology was overkill and that the solution to the top management’s team coordination problems could be much simpler. For instance, he advocated the use of simple technologies and the establishment of conventions among the top management team:
“My fear is that 43 people on 430 will play with the stuff. It will last six months. It will then die a natural death. […] Working with documents in wrong directories, with the wrong names; that’s not a ‘tool’ problem. I have a law background. Lawyers have long learned that we have one folder per client, one sub-folder per record, and you have a code for your document’s name. Law firms do it. We should do the same; it’s only a matter of discipline. It’s not a tool that will help us do so.” (Clayton, VP Finance, quotation 33:32 & 33:35)

Despite these complaints and doubts, the experimentation with the Lotus Quickr software package to pool artefacts within the top management team was poised to become permanent. The CEO strongly believed in the initiative and even felt that the implementation wasn’t going as quickly as he wished it could be at the time.

The second source of difficulty for pooling artefacts stemmed from the use of the organization-wide wiki. The VP Technology deemed the publication and the curation of technical know-how and training material through the wiki too cumbersome. Despite the fact that the wiki had been adopted by certain occupational communities (game designers, for instance), the VP Technology was planning to replace the wiki with an instance of the Lotus Quickr software package. He commented about the wiki’s shortcomings for pooling artefacts as follows:

“The big problem with the wiki is that it’s not dynamic enough. It’s difficult to see what changes were made. And at some point, it’s difficult to judge whether the information is obsolete or not. You need to have people full-time that are constantly monitoring the wiki’s content to clean it up. After six to eight months without any updates, we usually start to ask ourselves questions about a section’s relevance.” (Matthew, VP Technology, quotation 31:8)

It is important to note that, except for the executives whom I met for this study, no other workers were aware of the coming replacement of the wiki by a Lotus Quickr instance. It was unclear how the announcement of the replacement of the wiki and of the various platforms for pooling artefacts that had already developed by project teams would be received. While the new instance could simplify BigGames’ computing environment, it could also complexify it by adding yet
another potential platform from which project teams and occupational communities could store
and publish their work artefacts. As one Senior 3D Artist mentionned, many technologies have
been implemented over the years with the intention to simplify the process of sharing and
exchanging work artefacts, but with the paradoxical result of complexifying BigGames
computing environment.

“There is a problem with our ‘stuff’. Despite all these good
intentions, I have the impression that there is a lot of information
duplication. There’s an intranet, a wiki, the BigGames web page
…and now, for each project, there are more and more blogs
emerging. That’s a lot of tools… And often, the information will
not only be copied from one place to another, but it may not be
the same. And it’s not always up to date…” (Luke Jarvis, Senior
3D Artist, quotation 41:42)

7.4 Transparency for reporting accountability

At BigGames, the pattern of appropriations for generating transparency for reporting
accountability purposes is similar to the ones observed for the other types of transparency. Game
Directors and their assistants tailor methods and technologies to their own local needs. The top
management team manually integrates various local, informal systems in order to generate
meaningful comparative information upon which to make decisions. These appropriations have
the consequence of making it difficult for the top management to manage resource capacity as
well as to compare performance of the various activities performed during projects. Furthermore,
conflicts regularly emerge among Game Executives concerning the allocation of workers. A
search for alternative technologies and solutions is underway, but it is hindered by a lack of time
and financial resources.

7.4.1 Appropriation #1: Letting Game Directors employ their preferred scheduling
technology and methods

At BigGames, Game Directors employ their preferred scheduling technologies and
methods to monitor project progress. The origin of such diversity comes both from the trial-and-
error approach preferred by BigGames’ top management and IT team and the varying preferences of Game Directors and Game Executives.

The technologies employed at BigGames to monitor and to report on work vary extensively; on any given project, MS Project, Excel, TracTimesheets, BugTrack, Perforce, and non-digital technologies such as Story Cards may be deployed. Because of top management preference for frugality and speed, technologies are often deployed in a hurried fashion, without much planning and analysis. One IT manager had the following comments about how decisions to adopt and to deploy new applications are made within the IT team:

“It happens that he [the VP Technology] hears about something and then says ‘We’re going to do it this way’. Bang! The next day, we were deployed a new application because he had heard about it. For two months we would try it out. And then… it’s not good anymore. We’ll try something else.” (Eloise, IT Manager, quotation 43:49)

Project management technologies are thus regularly launched in parallel with new projects. The VP Technology described his preference for experimentation in order to find out what technology gets appropriated and how as follows:

“We are a relatively organic organization. We explore a lot of things on the various projects. We try to find a standard, but the standard is always moving. ‘Look, that guy tried it this way and it worked well’. We make it the new standard and we deploy it to the other projects. […] It is usually because of the personal preferences of the project management or explorations that we launched to find ways to improve our own methodologies. So it’s never the same from one project to another. We decided to take such approach because it allows us to evolve.” (Matthew, VP Technology, quotation 31:18)

In addition to such diversity in the types of technologies and reporting tools deployed across projects, Game Directors deploy a tailored blend of scrum, agile, and waterfall models of project management for their projects. The VP HR explained what such autonomy implies at BigGames:
There is much autonomy given to the Game Directors and their team to manage projects. In a sense, power is very much decentralized. But he or she is right in the middle of production. He must make sure that milestones are met and he must motivate his team to do so. He’s the one running the show, but there is also a lot of reporting and accountability.” (Dorothy, VP HR, quotation 32:10)

For instance, one Game Director working on portable consoles products adopted a scrum methodology where tasks are managed by moving physical story cards on a wall. In a nutshell, video games features to be developed are listed, prioritized, estimated, and put into a product “backlog”, which is reviewed on a regular basis following the licensor’s, the publisher’s or the project team’s own change requests. Features are, ideally, high level requirements about desired aspects or behaviours of the product, such as “The main character is able to jump”, “The player is able to choose a level of difficulty”, etc. Every 2 weeks or so, the features with the top priority are bundled together into a “sprint”. The features are written onto “story cards”, which are 3”x5” paper cut-outs on which a template has been printed on. The story card indicates, among other things, the content and desired parameters of the feature, which occupational community is involved in the development of the feature, as well as the estimated time it will take to develop the feature. At the beginning of each sprint, story cards are put on the “To Do” section of “the Wall”, which is reviewed every day by the project team. Workers from each occupational community will take responsibility for the accomplishment of a specific task by moving a story cards to their respective section of the wall. Once the task is completed, the story card is moved to the “Waiting testing” section, and then to the “Done” section. The story cards may be sequentially dependent or not; when there is a dependency, workers are usually able to spend the idle time by selecting out an alternative task from the board.

The method adopted on this particular project “black boxes” the process of managing the dependencies between tasks for the Game Director and leaves the occupational communities with the responsibility for organizing their work. Except from a high level perspective, the Game Director has no bearing on the sequence and the daily allocations of tasks among workers, even
though these allocations are instantaneously visible by a glance at “the Wall” in the center of the large room the project team occupies. The Game Director mentioned that he had been able to take vacations in the middle of his previous project without causing any disruption among the team, since workers had learned to self-manage. He emphasized how the method pushes workers to think about the interdependencies between tasks and how it fostered their sense of self-efficacy:

“The important thing is to become aware of efficiency and to look for ways to optimize work. If they find ways to do so themselves, who am I to tell them to do otherwise? They are the ones who know what there is to do, they know much more than the Game Director.” (Tyler, Game Director, quotation 37:24)

Such a bottom-up project management approach is far from common practice at BigGames however. For instance, a Game Director responsible for a large project to develop a “current-gen” console product employed a waterfall methodology where features are broken down into sub-tasks. The Game Director relied upon an assistant production manager who was responsible for updating an Excel spreadsheet containing the project’ workers availabilities and assignations, the list and priority of tasks, as well as their correspondence to a MS Project schedule which calculated and mapped out the critical path (“production pipeline”) of the project. To keep track of their work and changes to the product’s code and pool of digital assets, workers employ Perforce, a software configuration management application, to create “change lists” and then “check out” and “check in” the particular digital assets they worked on. The “change lists” are meant to be mapped to the specific tasks that are listed in the Excel planning spreadsheet, but there is no automated link between the two applications (and thus, not necessarily a consistent one-to-one correspondence in tasks listed). The methodology employed on this particular project is thus much more “top-down” than the aforementioned project; assignment and completion of tasks are monitored by the leads of each occupational community who are themselves surveyed regularly by the assistant production manager to ensure accountability. The assistant production
manager plays an important role in maintaining key reporting tools updated, which allows the

Game Director to focus on tasks related to managing and orienting product content:

“I share one assistant with another Game Director. Usually, they are shared between two or more projects. Their task responsibilities are quite superficial… almost mundane. They are not much involved in strategic planning; they take care of the boring daily tasks so we can spend more time on matters that have a longer time horizon and prevent problems from happening” (Tyler, Game Director, quotation 37:3)

The features of MS Project and Excel provide much leeway about how they can be appropriated and employed by their users, hence each project has different ways to track tasks and project progress depending on the assistant production manager’s preferences:

“We all use Excel and Microsoft Project, but there are no unique ways to use these apps. We’re trying to define a standard, a best practice that would be common across the organization. But it always varies depending upon each person’s personality, even within the team. My director may not like things to be presented this way, while the leads prefer it to be presented that other way. We don’t all have the same vision. In my case, I take a lot of time to sit down with people and ask them what their preferences are, in what color or format they want things. Usually, a simple Excel sheet with red, orange, yellow, and green color codes works just fine…” (Nicole, Assistant Project Manager, quotation 34:14)

As we will see further below, such differences in how reporting tools are employed at the local, project levels have great consequences for the reliability of information that top management can employ to assess project status and performance.

7.4.2 Appropriation #2: Navigating technology gaps to consolidate data across projects

The second appropriation of technology that was observed for reporting accountability is that Game Directors and Game Executives navigate technology gaps to consolidate data about workers’ availability and needs, about resource consumption, and about schedule status at the upper echelon of the organization. Much “manual” integration is required on the behalf of Game Directors and their Assistants to populate cross-projects spreadsheets and tools with project-
specific data. The navigation required to bridge these automation gaps is mainly due to the autonomy provided to Game Directors to select and adopt their preferred project management methods and thus, the diversity of technologies deployed across projects at BigGames.

One particular area where navigation across technologies is particularly intensive concerns the consolidation of information about workers’ availabilities and needs across projects, i.e., resource capacity. Resource capacity is information of great importance for the VP Operations, the VP HR, the VP Finance, and the Game Executives’ work and they have to integrate manually various technologies to generate it. For instance, when a worker is allocated to a project, an HR analyst enters the allocation in the employee’s record residing on a Microsoft Great Plains database. The VP Operations then updates an Excel spreadsheet which connects to the Microsoft Great Plains database and provides a list of all BigGames’ workers. The VP Operations updates the weekly availability of each worker from the standardized spreadsheets that are produced by the dozen of Game Directors. Furthermore, the employee records from the Microsoft Great Plains database must be reconciled with the timesheet information that is stored into a Lotus Notes database, from which workers access a timesheet form. One Game Executive summarized the integration work required to generate meaningful management information as follows:

“Right now, we’re using Great Plains with a bundle of Excel files, which are monstrous and impossible to maintain. And the timesheet management system is now hosted on Lotus Notes... these are all odd and differentiated systems... it’s all wrong.”
(Owen, Game Executive, quotation 39:33)

It is thus not surprising that the information contained in the spreadsheet is often felt to be unreliable by the VP Operations and that many back and forth with Game Directors is required to ensure its validity. Several consequences that derived from the practices of providing autonomy to Game Directors and of navigating heterogeneous technologies were identified. They will be discussed in the next section.
7.4.3 Consequences and functional alternatives

Despite the advantages of providing autonomy to Games Directors and their assistants to adapt their reporting practices to the local needs and particularities of projects, three key detrimental consequences emerge from such practice: the difficulty of integrating comparing information across projects due to different reporting methods, the impossibility of evaluating how time is spent in each project and identifying targets of process improvement, and resource allocation conflicts. While top management is aware of these issues, the time pressures and the little slack resources available at BigGames make it difficult to search for functional alternatives.

First, even if most projects employ MS Project and Excel to monitor and to track tasks, it is difficult for the BigGames’ upper echelons to use the local data generated for comparative purposes without major manipulations and transformations. Top management has to rely on information that they sometimes feel as unreliable and must spend much time to reconcile discrepancies between local, informal databases across projects. The following comments vividly illustrate the exasperation of the top management team with the integration work required to generate reports:

“In terms of computerized systems, we have all kinds of budgeting systems and workforce monitoring systems. We built these systems to monitor headcount so that we have a better idea of who is where and who is idle, but... can we know if we are using the maximum of resources at any given time? We can’t answer that. It all holds together with duck tape. We lose so much time with these systems; it’s crazy.” (Clayton, VP Finance, quotation 39:13)

“We have some... arcane tools I would say. The tools were created to provide us with information that is found in different systems. In the HR system, an employee is assigned to one project. Well, we simply can’t generate stats about who is currently assigned and to which projects they are assigned. We have some awkward calendars that allow us to determine at what moment staff will become available to begin a new project... It’s all very complex to work with these tools. It was fine when we only had 2 projects, but now we have 15 and it’s much more complicated.” (Dorothy, VP HR, quotation 31:19)
Second, while the top management team is able to monitor resource consumption and progress toward deadlines and milestones, once the work required for the integration of the various systems containing relevant data is done, it is not able to evaluate how time is spent within each project at a low level of granularity. In other words, top management is able to classify work according to the type of workers that logged hours on a certain project (modeling, texturing, programming, etc.), but it has no way to generate activity-based costs, such as how much the development of a certain type of feature costs. The VP Operations had the following comment about this inability to identify areas of “waste”:

“We don’t know how effective we are… And the time that is wasted could be time that is invested in doing better quality games. So on time line, we are okay. On budget, we are okay. On quality, no, we are not. We have got to do better games. And this is again… we have the challenge of throwing money and people at this… to try to fix quality and fix other aspects.”

(Kurt, VP Operations, quotation 30:20)

The third consequence resulting from the appropriations of reporting technologies made at BigGames concerns the tendency for conflicts to emerge within the top management team regarding the allocation of workers. Because they compete to attract skilled workers onto their projects, Games Executives “challenge” each other about the validity of inferences and data upon which resource allocations are made. Such conflicts were described as follows by one artist:

“It happened between project X and project Y. When I landed on project X after leaving project Y, the creative director of project X targeted some artists on project Y. He got some people before being warned to stop and told ‘Stop doing your little detours to recruit people; these people are needed on that project too’. There was some kind of conflict. It wasn’t a big thing, but still…”

(Luke, Senior 3D Artist, quotation 42:34)

At the time of study, the acuteness of these consequences had increased significantly in recent years; following the decision from a publisher to cancel a project, BigGames had found itself with idle workers, i.e., excess capacity. Because BigGames has, for the most part, a fixed cost structure, profitability is gained by reducing idle time of workers. Top management was thus
confronted with the problem of allocating idle workers for the first time since its radical growth period began in the early 2000’s. In addition to relying on information deemed unreliable, no formal process had yet been designed to manage such cross-project allocation. According to BigGames’ CEO, such a lack of formalization creates a context that facilitates the emergence of conflicts about the allocation of workers:

“For 3 years we haven’t had to manage the bench. We know we have 10 people idle right now and that there will be 10 more next week. But… we don’t have any process. We don’t have any leader, there is no task list. Each Game Directors knows who’s available in their projects, but there is no one responsible for putting it together… and the task list is not necessarily owned by these people’s bosses” (Kevin, CEO, quotation 38:9)

While the top management team is quite aware of these consequences, the search for functional alternatives has been limited due to the little financial slack available and the time pressures under which BigGames operates. For example, one Game Director once tried to set up a task force to share best practices as well as to establish reporting standards and templates across projects. Even though she had been labelled as a “change agent” by top management and thus had full support to establish the task force, the initiative fell through because of a lack of participation and interest from other Game Directors. She explained the failure of her initiative as follows:

“I tried to set up a weekly meeting with all Game Directors last year to talk about these issues. It didn’t work out. Participation was poor. People are too busy delivering their games.” (Susan, Game Director, quotation 35:43)

It was thus generally found difficult to take the time to reflect upon current organizational practices, including the technologies employed at BigGames. Such initiatives were often perceived as taking time away from higher priority matters such as delivering products and meeting milestones, raising additional financing, identifying and crafting new product opportunities. Professionalizing organizational practices and technology improvement initiatives are thus often put on the back burner or left to bricolage and improvisation when the need for
change becomes critical. Clayton, the VP Finance, had the following comments about how difficult it was to attract people’s attention, including his own, to such matters:

“We do not necessarily have the time to step back and plan. There is this… culture of milestones and deadlines… it’s terrible here. We’re proud of it, but… sitting down, closing the door, and writing down policy changes takes so much time… and consensus-building efforts… and thus a lot of meetings too. That’s for a policy, but it’s like that for everything! How we manage projects, technology, HR, finance, legal... everything. It’s a constant challenge.” (Clayton, VP Finance, quotation 33:11)

Furthermore, he added how, because of the particular ethos of the workforce at BigGames, initiatives aiming at refining organizational processes were often resisted and perceived as illegitimate intrusions into work jurisdictions.

“We have to improve our reporting systems, our monitoring systems. It’s difficult in this industry because for a lot of people everything that recalls a factory or the notion of manufacturing a product… Oh boy! You better be careful to the vocabulary you choose to use!” (Clayton, VP Finance, quotation 33:20)

Put briefly, the evidence shows that the appropriations enacted at BigGames for reporting accountability have a number of deleterious consequences. First, top management has to rely upon information that is often perceived as unreliable and much effort is spent on reconciling discrepancies. Second, the information available to top management is not detailed enough to facilitate the identification of areas in need of improvement and to compare the relative efficiency of management methods across projects. Third, conflicts about workers allocation Game Executives sometimes occur among Game Executives. The search for functional alternatives, while desired by the top management, has been limited due to the more urgent matters that originate from quickly growing an organization and due to the lack of time and resources.

7.5 Conclusion

This chapter presented the contextual conditions within which BigGames operates as well as the appropriations of technologies that have been made to generate transparency for three
purposes: mobilizing the workforce, pooling artefacts, and reporting accountability. The evidence reviewed showed that BigGames operates in a stressful organizational environment. The organization has grown tremendously in recent years and top management intends to pursue this growth much further in order to reduce its dependence upon publishers. Time pressures are very intense at BigGames, both because of the nature of the video games production process and because of top management’s preference for quick action. Slack financial resources are limited, due to the stringent contract covenants of the projects undertaken at BigGames and to the strong preferences toward frugality and prudence by top management. The workforce is composed of a very large contingent of workers that was hired in the last one or two years. Because of turnover among senior workers, junior and domain experts are often promoted to managerial roles without being well prepared for such roles. Furthermore, relations between the management, artistic and programmer communities are often tense due to different perceptions about what “good” work consists of and because of different perceptions about career advancement.

It was found that two key appropriations were made at BigGames to generate transparency for mobilizing purposes. First, an organization-wide wiki was made available to top management and game directors to store and to publish corporate information. However, while the wiki has been appropriated for other purposes (pooling artefacts), the wiki is not much employed to communicate mobilizing information to the workforce. Instead, various grass-roots initiatives have emerged within each project to supply workers with project information and to create a sense of identity. To supplement these local technology appropriations, two functional alternatives have emerged over time: top management presentations at the all-hands meeting and relying upon friendship ties.

With regards to transparency for pooling artefacts, the evidence shows that appropriations varied between projects and that each occupational community appropriated their own preferred technologies within each project. In general, artists employed blogs to share tutorials and visual references; game designers employed project sub-sections of the wiki to store meeting minutes
and product requirements; tool programmers employed the wiki to publish tutorial and technical know-how; and executives employed Lotus Quickr directories to exchange documents and files. The project-based appropriations were generally perceived as successful. At the top management level however, some members of top management team were sceptical about the usefulness of the Lotus Quickr application. Alternatives to the central wiki were also sought at the time of the study.

Finally, Game Directors employ their own preferred technologies and methods to manage projects; thus, a variety of technologies and tools are currently deployed at BigGames to report accountability. Furthermore, no common reporting standard exists at BigGames. To integrate information across project, much integration work is required from middle managers and the top management team. The evidence shows that top management has difficulty in identifying targets of organizational improvement and to compare the relative performance of projects. Game Executives also often compete for the best resources to staff their projects because they have to rely upon each other’s inferences and projections about workers’ availabilities and needs. Despite top management’s awareness of the problems associated with the current technology appropriations for reporting accountability, time pressures and the lack of financial slack have made it difficult to search for functional alternatives.
Chapter 8

CasualGames – Findings

This chapter focuses on CasualGames, a Canadian developer of entertainment software played on a PC or mobile devices. The chapter begins with a description of the context within which CasualGames operates. In the second half of the chapter, I will explain how technologies are appropriated to generate transparency for mobilizing the workforce, for pooling work artefacts, and for reporting accountability. A conclusion will summarize and highlight the key insights presented in this chapter.

8.1 Contextual conditions at CasualGames

The following table summarizes the contextual conditions within which appropriations of technology are accomplished at CasualGames. Before presenting the evidence for each condition, I will describe the organization of work at CasualGames.

| Aspirations | - Quick, radical organic growth  
| - Aesthetics over profitability in the choice of projects  
| - Exit and cash out  
| - Risk-taking and fleeting targets |
| Time pressures | - Firefighting and heroic behaviors |
| Slack resources | - Little recurring revenue streams  
| - Expected increased dependence on external funding  
| - Dependence on publishers sometimes lead to “bad” contracts  
| - Frugality and bricolage |
| Workforce demography | - Young, male, and diverse workforce  
| - Large cohort of new workers, many of which are juniors  
| - Mix of temporary and permanent workers  
| - Moderate turnover, especially among senior and experienced artists  
| - Domain experts are thrown into management roles  
| - Mistrust and tensions within cohorts and occupational communities |
| Workforce relations | - Strong corporate identity, but conflicts with reality  
| - Strong project and occupational identification  
| - Emphasis on playful environment  
| - Shorter work week, flex time, and paid overtime |

Table 27. Contextual Conditions at CasualGames

8.1.1 The organization of work

Located in a mid-sized Eastern Canada city, CasualGames is a private firm which develops original intellectual properties but also provides “work-for-hire” for large media
conglomerates and publishers. The firm was founded in 1998 by Daniel Taylor and Jeffrey Ross, who are CEO and Creative VP respectively and the main shareholders. The firm once had a Board of Directors where institutional shareholders had representatives, but Daniel Taylor and Jeffrey Ross bought back their shares in the mid-2000’s. The top management team consists of the founders, the VP Finance, and the VP Sales. A clear division of labour appears to have developed within the top management team. The founders lead product and intellectual properties development; the VP Sales and his team is responsible for prospecting servicing opportunities, negotiating contracts with publishers, and promoting CasualGames’ original intellectual properties; and the VP Finance takes care of all internal logistic and project management matters. The organization chart (Figure 30) provided on the next page is an approximation of CasualGames’ authority structure, as no formal organizational chart had been made yet at the time of the study. At the time I conducted interviews at CasualGames, the firm had 114 employees. Apart from the sales representatives who are located in Eastern Canada, New York, and California, all workers are located in the firm’s 10 000 sq.ft. office in a mid-sized Eastern Canadian city.

CasualGames is organized in five project teams (“cells”) that staff between 10 to 30 workers and are designed to be autonomous “mini CasualGames” (Daniel, Founder-CEO, quotation 13:12). Because casual games have a much shorter and simpler development life-cycle than console games, teams are responsible for the development of multiple products at a time. Each team is headed by a Game Producer who acts as liaison with customers and is also responsible for the delivery of projects on time, on budget, and according to customers’

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34 All names are pseudonyms to ensure anonymity.
35 In the spring of 2008 and a few months after I had conducted interviews at CasualGames, Jeffrey Ross quit to launch an agency specialized in digital art and animation. It is unknown whether he remained a shareholder of CasualGames after his departure. The analysis conducted in this chapter does not take into account this event as it is not consequential for answering the research questions. Also, as further reference, the history of CasualGames is summarized in Appendix 8.
36 The dynamics of the casual games segment of the entertainment software industry is described in Appendix 7.
requirements. The Game producer is assisted by an Associate Producer who takes care of daily clerical tasks. The Operations Manager is responsible, among other tasks, for balancing the teams work load by routing new projects and by managing resource capacity.

Each team is staffed with workers from 2 occupational communities: programmers and artists. These communities are very similar to the ones that were found at BigGames (and thus described in the previous chapter). It will suffice here to highlight only a few key particularities of the occupational communities found at CasualGames. First, most of the artists at CasualGames are specialized in the art of classical, hand-drawn, 2D animation transposed into a digital context with technologies such as Adobe Flash. Their specialties include concept art (backgrounds and environments) and character animation. One team which develops products based on 3D technologies also employs a few modelers and texture artists. Second, in
comparison to narrow specialties found at BigGames, programmers act as generalists at CasualGames; on any given day, they may be required to code a user interface, game mechanics, artificial intelligence, tools or network interfaces. Furthermore, because four teams develop products that are distributed via the web on portals and promotional web sites; programmers on these teams hence master various web programming skills. Third, only one game designer is assigned to each team because products developed for the web or mobile devices are much less complex than those developed for consoles. The game designer, a lead programmer, and an art director complete the management team of each team.

The support groups at CasualGames are headed by the VP Finance, the HR Director, and the IT Manager. A team of administrative and accounting assistants support the work of each executive. Because of their location at the entrance of the office, these assistants also act as receptionists for visitors.

8.1.2 Aspirations

The aspirations of the top management team at CasualGames are characterized by a focus on quick organic growth; a desire to exit and cash out eventually; risk-taking and an attention to the aesthetics of the products developed. Furthermore, aspirations of the top management are quite unstable and appear to have changed extensively over time.

First, CasualGames has experienced significant growth in revenues and employees over the last few years. From 2003 to early 2008, the organization has almost tripled in size, going from 42 employees to 114 employees (Figure 31). At the time of the study, the top management team desired to pursue this growth spurt even further; they had the intention to grow the organization to between 160 to 200 employees within the next two following years (CasualGames, Press release, November 12, 2007). This growth is motivated for two reasons. On the one hand, it increases CasualGames capacity to undertake large “servicing” contracts, in which it develops a product for a publisher or a licensor. On the other hand, it provides some
leeway to undertake projects on original intellectual properties, which are riskier than servicing contracts, but much more profitable if they succeed.

Source: Newspaper and magazine articles; Annual reports; Consulting firm report, Les Affaires 500

Figure 31. CasualGames revenues and employees growth

Second, CasualGames’ top management aims to grow the organization’s revenues and portfolio of original intellectual properties to make it an interesting target for an eventual buy-out. For instance, Daniel, one of the Founder-CEOs, had the following response when asked about what would be the “good” news he would like to hear for the next year:

“It would be ‘You fit with our plans. We value your company in a way much more important than you think and we buy you out’. I believe that would be interesting to consider, certainly.”

(Daniel, Founder-CEO, quotation 13:21)

The VP Sales confirmed the objective of positioning the organization for an eventual buy-out.

“To get a buy-out offer from a big player, that would be a good thing. Let’s say the company is worth $4 million, but the work needed to build a company like CasualGames would cost $10 million. Let’s make a deal for $8 million” (William, VP Sales, quotation 77:15)
The motivations underlying this exit strategy are, obviously, to provide liquidity for the investment of CasualGames’ founders, but also to ensure the sustainability of the organization. As part of a larger publisher’s or a developer’s internal network of studios, CasualGames would be in a better position to fund and to work on “interesting” products.

Third, in order to make CasualGames an interesting target however, the firm has to develop original intellectual properties from which a stream of profitable sequels can be derived. One “hit” may provide enough leverage to increase the organization’s valuation and interestingness for large video games publishers. The VP Sales explained as follows the impact of the success of a single original intellectual property may have on the interestingness of the organization for potential acquirers:

“The only thing that we need is one hit on a major distributor network and we multiply by 10 the value of the company.”
(William, VP Sales, quotation 77:14)

As mentioned previously, the development of original intellectual properties is a much riskier strategy than engaging in work-for-hire projects. The promotion of a novel intellectual property is more expansive than promoting sequels of an existing franchise, and the failure rate is much higher; thus, it is difficult to convince a publisher and a distributor to share the risks of launching a novel intellectual property. Despite these risks, CasualGames has had a long tradition of developing original properties, some of which have been very financially successful, while others have failed to generate significant revenues.

A fourth attribute of CasualGames’ aspirations is a tendency to emphasize the aesthetical aspects of products over their profitability. The background of CasualGames’ founders in classical animation pervades significantly the choice and the design of products to develop. Daniel Taylor was trained as a graphic designer and always had a passion for comics and cartoons, while Jeffrey Ross was trained in movie direction and animation and taught these topics
as a lecturer in a local college. Among the goals motivating the founding of CasualGames in 1998 was a desire to create a vehicle through which they would be free to express their creativity:

“It’s because we wanted to create our own characters and stories that we started this business” (Jeffrey Ross, Newspaper interview, December 15, 2003).

Daniel Taylor, the Founder-CEO, emphasized how he and his co-founder, Jeffrey Ross, identify themselves as artists rather than business people, first and foremost:

“Because of our backgrounds, me and the co-founder, we are artists before anything else. We always have privileged the artistic aspect of work that is done here. We have a certain sensibility in that sense.” (Daniel, Founder-CEO, quotation 13:3)

This attention to the aesthetical aspects of products have led the development of many products that have gathered favourable and rave reviews by critics of the video games trade press.

CasualGames’ ability to frequently win servicing contracts over the years is in large part due to the polished and innovative quality of its early original intellectual properties that it developed during its first few years of operation. However, in recent years, a few products have failed to generate a significant financial return and some have been cancelled even though much work had already been undertaken. The VP Sales had the following comment about how the organization was managed before his arrival at CasualGames in 2006:

“The risks of falling into financial black holes are great in this industry. They had some bad experiences in the past. It wasn’t because the products were poor… it was more because the products probably weren’t well-thought out at the onset. You don’t put hundreds of thousands of dollars of your own money into a project without any external input and then try to sell it to publishers… you have to do some commercialization/feasibility/possibilities study beforehand. That wasn’t done. The business was run by artists.” (William, VP Sales, quotation 77:18)

A final attribute of top management’s aspirations is that they have been quite unstable since the organization’s founding in 1998. Despite a few resounding short-term successes, top management has searched for a business model for video games for the web and then for mobile
devices that would be viable in the long term. Chloe, the Operations Manager who has worked at CasualGames for over 8 years, had the following comments about the objectives pursued by the organization:

“The firm’s orientation is highly dependent upon the opportunities encountered. Even I, sometimes, have trouble to know if the objective that we established at the beginning of the year is still valid. We do meetings where we learn ‘We’ll drop this project, we realized that it took too much investment or whatever, and we’ll focus on this other one, even though we said the converse two months ago. So... the objectives really are moving targets’” (Chloe, Operations Director, quotation 15:21)

At its founding in 1998, CasualGames innovated by being one of the first video games firm in North America to produce “episodic games” for the web, where a product was released in small increments over time. While some of the products were original intellectual properties, others were developed to supplement the content of broadcasters and media producers. Developing episodic games led top management to entertain the goal to adapt their original intellectual properties for cable television, but this experiment didn’t succeed in the long term. Top management then shifted the organization toward “advergames”, which are products developed to support promotion campaigns of “conventional” advertisers (e.g. companies selling consumer products, such as cars, cereals, etc.). The organization has also relied upon the development and commercialization of downloadable content through portals operated by game publishers. In this business model, products are made available on trial basis and consumers have the opportunity to buy the “full” version if they wish so. Various industry studies have estimated that 1% to 2% of consumers who download a product from such portals actually “convert”, i.e., actually buy the product. However, a glut of products due to low entry barriers and to the advent of pervasive and powerful mobile platforms, such as the iPhone and Android operating systems, as well as alternative distribution channels, such as the Apple Store, have exerted downward pressures on

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37 Please refer to Appendix 7 for further details about business models the casual games segment of the entertainment software market.
prices of such downloadable products, which have fell from $20 in the early 2000’s to about 7$ in 2009. These shifts in aspirations follow the disruptive innovations that have occurred in web technologies and that have made it difficult for CasualGames’ top management to establish a stable, viable business model.

The evidence presented so far suggests that top management at CasualGames have aspirations characterized by a desire to quickly grow the revenues and the size of the organization so that it becomes an interesting acquisition target. To do so, however, top management must also ensures that the organization has a valuable catalogue of original intellectual properties with broad “brand awareness”, an approach that involves significant financial risk-taking. Despite being cognizant of these financial considerations, the founders also give considerable emphasis to aesthetical considerations during the design and creation of products.

8.1.3 Time pressures

At CasualGames, people operate under moderate time pressures. Temporal cycles are mainly driven by the rhythms of projects, with bursts of activity as deadlines approach. However, since projects are relatively small in scope (from a few thousands or half a million $ in value) and project teams are responsible for many projects with varying deadlines at a time, project teams are able to balance the load of work and avoid feelings of permanent crisis (or “perma-crunch” as the workers said). On certain occasions however, unforeseen events and the need to meet tight deadlines under limited budgets leads workers to engage in firefighting and heroic behaviours.

Work is often perceived to be constrained by time at CasualGames, since some projects operate under tight deadlines due to stringent customer requirements. Product design is usually calibrated to take into account such constraints but the dependence on heuristics and rules of thumbs for planning the efforts required to produce digital assets renders time estimates often unreliable. Furthermore, turnover and unforeseen circumstances are often disruptive given the little buffers in critical paths some projects have to operate with. In order to meet milestones and
customer requirements, project teams sometimes have to engage into excessive overtime. Kyle, a Game Producer, explained that such pressures happen regularly.

“Even if we promote reduced work hours, there are some intense periods when we say to people ‘Look, do some overtime. And some more. And more. And more. I guess I did my job wrong if I ask people to do a lot of overtime because I badly planned what I would need, but sometimes it’s simply because someone got sick or left the company. We’re so tight that we can’t allow any downtime, we have to utilize our staff at 110%.” (Kyle, Game Producer, quotation 21:18)

This emphasis on employing the organization’s capacity to its maximum to deliver products makes it difficult to free up workers to spend time on refining internal processes. As a consequence, a concept artist had the impression that business processes and methods were often designed on the basis of intuition, without much reflection:

“The work or management methods, the project structures, these are things that are often done rapidly in the midst of it all within constraints. It’s irritating, because in the end, what you want to do is a great product, but you’re always limited” (Laurencio, Concept Artist, quotation 25:53)

A taskforce of senior and experienced workers has been set up to design and to suggest improvement pathways, but other urgent considerations often take precedence and hinder their ability to do so. Chloe, the Operations Director, mentioned that such internal improvement initiatives often take the form of firefighting:

“We are always firefighting, especially when it’s about internal affairs.” (Chloe, Operations Director, quotation 15:18)

Despite these hurdles, the evidence shows nevertheless that the taskforce has been able to implement many process improvements over the years. At the time of the study, the taskforce was working on mapping the core business processes of the organization in an attempt to formalize workflows and customer interactions from one project to another. The objective of this initiative was to accelerate the pace of product development cycles by compressing the time it
takes to complete each step of the process and by standardizing the key artefacts (documents) employed in the process.

Overall, the evidence suggests that CasualGames operates in an environment characterized by moderate time pressures. Firefighting and the primacy of delivering products on time generate bursts of activity. However, because projects are generally small in scope and in size, it is possible for project teams to balance the load and avoid lasting crises.

### 8.1.4 Slack resources

Little slack financial resources are available at CasualGames. The organization has few recurring revenue streams from original intellectual properties. Furthermore, on a comparative basis, its ability to generate slack organically is similar to BigGames’, but it is much poorer than TradSoft’s. CasualGames is thus in a position where it is highly dependent upon large publishers and licensors to survive. Top management must often accept stringent covenants in order to win servicing contracts and generate revenues. As a consequence, top management and workers engage in much bricolage and improvisation in order to leverage its existing resources. This tension may ease in the near future however, as top management plans to engage into a round of venture financing in order to fund projects on original intellectual properties.

The first evidence of the little slack available at Casual Games is that it generates little recurring revenue streams despite many strong transaction ties to large publishers. The majority of CasualGames’ revenues are derived from “servicing” or “work-for-hire”, in which CasualGames develops a product for a publisher or a licensor. CasualGames derives a fixed amount of revenue for the delivery of the product, but little subsequent royalties. The organization has been able to survive for a long time with such a business model because it has developed a strong reputation for quality among publishers and licensors. As explained by Daniel, the Founder-CEO, the organization is able to leverage its “rolodex” of customers year after year to win contracts:
“We have developed a customer portfolio, some of them being ‘majors’ in the entertainment industry, with which we have annual agreements for the development of a specific number of products. I’m sure it’s the kind of agreement that many of our competitors would like to have. These are not true recurring revenue streams, but in some ways, it allows us to plan ahead in the long term more than other firms would.” (Daniel, Founder-CEO, quotation 13:7)

Top management recognized that such a business model was risky in the long term, as there is no guarantee that publishers will continue providing CasualGames with servicing contracts, especially with the prevailing low barriers to entry in the casual games segment and the rise of developers in Asia and Eastern European countries where production costs are much lower than in North America. William, the VP Sales, remarked that despite its close relationship with major publishers and licensors, top management was actively trying to reduce the proportion of servicing work in its revenues:

“Until now, we have done a lot of work-for-hire and servicing. [...] So you live on your order book. You may repeat your sales, but these are not recurring revenues. The repetitions may happen, but they may not. Now, we’re trying to generate wealth and value through royalties. This year, I may have $7 or 8 millions in sales order. But next year, I have no guarantee about how much I will get. So on what basis may I sell you the company?” (William, VP Sales, quotation 77:13)

Further evidence of the small amount of slack available to CasualGames’ top management is provided by Figure 32, which depicts the revenues per employee generated by each organization studied in this research. According to the data made public by the firm, CasualGames generates much less revenues per employee than TradSoft, albeit it appears to be on a par with BigGames. Because CasualGames is a private organization, the most recent data available dates back to 2006, which means that CasualGames’ ability to generate slack organically might have changed since 2006.
Finally, the combination of its dependence upon publishers for revenues and its inability to generate slack organically sometimes leads CasualGames’ top management to take on contracts with tight deadlines and limited budgets given the extent of customers’ requirements. Chloe, the Operations Director, confirmed such tendency:

“Sometimes, the customers’ demands are too much versus what the time constraints they are asking for. We simply don’t have the resources to deliver within the time frame.” (Chloe, Operations Director, quotation 15:6)

Contracts are sometimes won even though the organization may not have all the resources required for completing the project a priori. Such promises to carry through generate much stress for middle managers, who must find ways to improvise and to leverage the existing pool of resources in imaginative ways:

“Recently, I got a contract for a HUGE project. The biggest project ever obtained by CasualGames. It was a monumental stress because it was evident that, upfront, we didn’t have all the tools and the resources to accomplish it.” (Kyle, Game Producer, quotation 21:9)
The pressure to conduct projects with limited resources is often felt among members of the project teams, which have access to a partial view of the projects’ budgets. It sometimes leads members of project teams to question the wisdom behind some strategic decisions. A Game Designer commented as follows on this situation:

“It happens that sometimes we get projects or contracts where we tell ourselves ‘This makes no sense! We’re giving them too much! We don’t have enough time! Not sure it’s such a great idea... We shouldn’t have said yes for that feature...’ Even if we don’t have all the details of the budgets, we ask ourselves how the firm is going to make money out of this.” (Nellie, Game Designer, quotation 26:44)

The little slack available to CasualGames’ top management has many consequences. First, to operate effectively in such resource-constrained environment, managers and workers regularly engage in bricolage by improvising with the resources at hand. Making do alleviates the tight constraints workers operate under. “Patching” and “hacking” are thus common practices in order to find solutions to problems, despite that the solutions may require rework in the future.

“We have very limited available time. In general, we just patch things up to make sure we meet the objectives. We could do beautiful, reusable code so that another programmer could come in and find his way around easily. But patching is quicker. Later on we will not be able to reuse that code because it was badly done... but it got the job done. On many projects, we patch because we don’t have the time and the money.” (Vincent, 3D Programmer, quotation 27:9)

The constraints at CasualGames come from not only a lack of financial resources, but also a lack of human resources. The most skilled workers are often the targets of competing demands from different projects. Game Producers may try to attract workers on their projects or even hoard them to avoid losing their skills on their team:

“Sometimes, we lack qualified resources. It happens that teams share resources... or battle for the services of one resource in particular. ‘Hey, this project would be a perfect fit for that guy, we need him; No, look, he’s booked for the next 2 months, I can’t share him with you...’ We battle for the AA grade people,
At the time of study, the top management team was planning a financing round to provide funds to allow for the development of new original intellectual properties.

“One major objective is that we are planning to develop new products in the next five years. So we expect to undergo a financing round later this year to support our ambitions.”

(Daniel, Founder-CEO, quotation 13:16)

Such an injection of additional capital may provide leeway from the tight constraints CasualGames currently operates under, but it may also generate additional external pressures from external stakeholders to increase the efficiency of the organization without investing in costly organizational improvement initiatives. In other words, the new resources obtained may already be committed to production processes and to growing the organization. Thus, the impact of such additional capital on the discretionary slack available to CasualGames’ top management is uncertain.

To sum up, the evidence gathered suggests that CasualGames is a cash-starved organization where top management has little freedom to spend discretionary funds on organizational improvement initiatives. People carry on their work by making do and patching to solve urgent problems without necessarily addressing fundamental problems that might reoccur in the future. Projects compete for the most skilled workers, which also means that it is very difficult to free them to work on organizational improvement initiatives.

8.1.5 Workforce demography

CasualGames’ workforce is young and diverse. A large cohort of workers has recently joined the organization, many of which are juniors and inexperienced. To quickly increase the organization’s capacity and to provide flexibility, a growing number of contractors are employed at CasualGames. A dynamic similar to the one observed at BigGames has emerged. Because of the turnover about senior and experienced artists, many domain experts are promoted to
leadership positions even though they have little experience in organizing and managing a team.

Furthermore, there seems to be some degree of mistrust and tensions between cohorts and occupational communities, especially between the top management team and workers.

First, CasualGames’ workforce is young, predominantly male, and diverse in educational backgrounds. Official company data states that the average age is 26 years old. One animation artist commented as follow on the age distribution at CasualGames:

“People in their 40s are rare. The average age here must be about 25 years old” (Jayden, Animation Artist, quotation 19:12)

Workers have very diverse backgrounds, ranging from college degrees in management, liberal arts to professional/technical degrees in arts, animation and software engineering. Middle managers acknowledged that such diversity required them to adapt their approach and practices to each occupational community:

“Everybody has different backgrounds. An artist and a programmer, they are not the same, they are completely different species.” (Megan, Game Producer, quotation 16:1)

Second, a large cohort of new workers, many of whom were new entrants on the job market, joined the organization to increase its capacity in recent years. As mentioned in the previous section about top management’s aspirations, the organization has almost tripled in size, going from 42 employees in 2003 to 114 employees in early 2008. Due to the numerous local openings of studios and publishers in recent years, the labor market has become quite tight. The competition for skilled, experienced workers is fierce, where workers are often attracted by firms with greater resources or high status product portfolios. CasualGames thus hired a significant proportion of this cohort of new workers directly from local post-secondary schools and college.

“There is a shortage of skilled, experienced, and specialized people. People get out of school and we hire them right away. After 2 years here you become a veteran, a senior. It’s quite special.” (Daniel, Founder-CEO, quotation 13:17)
This recruitment wave has not taken place without strain however. Many junior workers that have been recruited create a burden upon senior workers for engaging into mentoring and training, which takes time away from their other task commitments. Jayden, a senior animation artist, had the following comment about this burden:

“There has been a massive entry of new employees, of new talents. I use the word talents, because these new employees had talents that weren’t ripe yet. They were people right out of community college that had no experience with the software or that lacked artistic maturity... or any experience on the labor market at all.” (Jayden, Animation Artist, quotation 19:12)

The organization also relies upon a growing number of temporary workers. Contractors and freelancers are often employed to staff urgent needs when the work does not requires a full-time position, such as the provision of specialized audio and art services.

“We’re increasing the number of freelances we’re working with now... but they can work for us for a long time” (Mark, VP Finance, quotation 14:35)

Third, the organization has experienced significant turnover over the years, especially among its senior workers and artists. While top management ensured me that turnover was not a significant problem at CasualGames, workers comments seem to confirm otherwise. Top management appeared to downplay the significance of turnover, as comments by the Operations Director and the VP Finance show:

“Well, there are not too many departures.” (Chloe, Operations Director, quotation 15:42)

“I don’t know what the exact figure [turnover] is but it’s going well.” (Mark, VP Finance and Operations, quotation 14:48)

However, the majority of lower level workers that were interviewed appeared to converge and confirm the existence of a turnover problem. The problem seems to be quite significant among senior artists in their opinion, who tend to leave CasualGames to seek more “interesting” projects where their creativity can be expressed. Both artists and programmers agreed on the existence of the problem although they disagreed about its magnitude:
“One of the major problems right now is turnover. A lot of young artists get out of school, work here for 2 to 5 years, then desire new challenges and leave. So we end up short...” (Jayden, Animation Artist, quotation 19:15)

“There is a problem right now and it’s all the old-timers who are leaving or left, for whatever reason. And we hire a lot of new people. So the old guys who are staying ask themselves ‘why didn’t I leave also?’ So we hear them talking and we have doubts that one day it will be their turn. [...] As a programmer, because my skill is rare, I may be getting better conditions... maybe. But there is definitely a problem with the artists.” (Samuel, Programming Lead, quotation 23:41)

“The firm has grown incredibly fast in the last year and a half. It has doubled in size. Some have left. I wouldn’t say that there is a huge turnover, but we may be getting into a period where it will need to be more attentive to the needs of its most experienced resources so they don’t leave. You feel that there is some fatigue by the artists about the type of contracts that come in. Many have left these days.” (Laurencio, Concept Artist, quotation 25:56)

As further evidence of high turnover at CasualGames, it is worth noting that among the 31 people employed by the firm at one time in 2001, only 7 were still employed by CasualGames in 2008 when this study was conducted. Also, the LinkedIn data suggests that a significant proportion of CasualGames employees keeps their options open and is active on the labour market (Figure 33).

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38 The list of employees in 2001 was obtained from CasualGames’ website that is archived at [http://www.archive.org](http://www.archive.org). The record of each employee was then retrieved on LinkedIn.com in June 2008 to assess whether they were still employed by CasualGames.
The LinkedIn data suggests however that while a turnover problem appears to be existent at CasualGames, it does not appear to be as severe as the ones plaguing EdgeSoft or BigGames.

The combination of the rise in junior workers and of turnover among experienced workers places great pressure to promote domain experts into middle management roles. The artist and programming group managers that I met noted that it took them much time to adapt to their new roles. They also had the feeling that the quality of their own creative or programming work decreased significantly as they had to spend time on supervising, monitoring, and training new recruits. The manager of a group of programmers expressed how the period following his promotion was one of the most difficult he had to live through so far during his tenure at CasualGames:

“When I became lead programmer was a period where my games started taking more times to get done. I had new tasks, such as following through task lists. So I really felt bad because I felt that the quality of my work was diminishing. I was finding bugs that I wasn’t finding before... it took time to adapt.” (Samuel, Programming Lead, quotation 23:9)
A senior animation artist who had been promoted to artistic lead even asked top management to remove him from his managerial role, so he could focus on the creative work he was passionate about:

“CasualGames chose its best elements, so I was one of the best elements for visual skills; my work was appreciated. So I was asked to be team lead. Over time, I was getting more and more into managerial work. So I ended up having not enough time for drawing beautiful art, which is what I am good at. And I was managing people who were doing it much poorly than I would have done.” (Jayden, Animation Artist, quotation 19:12)

As explained in the previous chapter about BigGames (see Section 1), managerial work is often resented by the artistic and technical communities within CasualGames, not only because it takes time away from creative and production tasks, but also for ideological reasons. Engaging in managerial tasks often signals an association of oneself with the “suits” and the “corporate people”. Some workers from the artistic and programming communities perceive videogames not as products, but as forms of “art” that should break conventional genre boundaries and be devoid of any commercial influences. Thus, by being involved in managerial tasks, they may feel that they compromise their authenticity as an artist or a “hacker”. Such ambivalence creates tensions during interactions with top management, since they sometimes feel that occupational community leads take the defence of their occupational community and may not assume their managerial duties as well as they could:

“I would say that the majority doesn’t care about project management. For some, they have to do managerial work, and they hate it. If they could only draw, animate, they would do only that. But the job comes with some responsibilities and they have to be done because the producer cannot do everything” (Chloe, Operations Director, quotation 15:57)

Despite these criticisms, it is worth noting that a few lead artists and lead programmers have welcomed the opportunity to enlarge their role and their influence upon project orientations. They find that managerial responsibilities provide them with the opportunity to shape the creative vision of products by shaping customers’ decisions. In other words, they exhibit the
“professional attitude” described by Faulkner (1983, pp. 89-100, 120-167). Joe, an Artistic Lead, commented as follows on how we seized on this opportunity:

“When you’re lead, creation is only a fraction of the job. You also have to manage and control the project and asset lists. There is tons of stuff done by the artistic lead when planning the project. But in the end, it’s probably the work that is less appreciated by some of the artists that have moved into leadership positions. For some however, such work doesn’t bother them and they embrace it as I do.” (Joe, Artistic Lead, quotation 18:6)

Finally, there are tensions between occupational communities at CasualGames. Each occupation tends to defend their own perspective when dealing with organizational improvements. For instance, the taskforce set up to standardize business processes debated extensively on the content of the game design document that is employed to specify customer requirements; each occupational community, from game designers, artists, programmers, and management had distinct and sometimes conflicting preferences about what the standardized document should contain. One Game Designer had the following comment about such implicit tensions at CasualGames:

“I believe that each occupation, whether artists, programmers, designers, or producers, all want their own share of the pie. It’s not necessarily a bad situation, but it can create problems, some conflicts...” (Nellie, Game Designer, quotation 26:47)

Top managers expressed in vivid terms their frustration with members of certain occupational communities:

“There seems to be a tendency to say that everything is [expletive]. [Expletive], why don’t you go work elsewhere? You’ll see how it is. Some kids here have worked 7 years for us, and never elsewhere in their life.” (Mark, VP Finance and Operations, quotation 14:48)

“It’s difficult to work with artists... they are spoiled kids.” (Chloe, Operations Director, quotation 15:54)

While most interviewees acknowledged these tensions and conflicts, none mentioned that they were grave enough to generate dysfunctional relationships.
In summary, the evidence presented in this section suggests that CasualGames’ workforce is characterized by a young and diverse workforce. A large proportion of young and junior workers have joined CasualGames in the last few years, while a significant number of skilled and experienced workers have left the organization. Workers have often been promoted to middle management positions because of their technical competence even though they may be ill-prepared or resent to assume leadership tasks. Furthermore, antagonistic relationships sometimes escalate into conflicts between occupational communities.

8.1.6 Workforce relations

Workforce relationships at CasualGames are characterized by a strong corporate identity that conflicts with the reality experienced by some workers; by a strong project and occupational identification among workers; by an emphasis on a playful work environment; and by a shorter work week for providing time for artists to work on personal projects and for workers to attend personal matters.

First, top management has established a strong corporate identity for CasualGames over the years. The founders of CasualGames, Daniel Taylor and Jeffrey Ross, always had a strong inclination toward putting aesthetical concerns above commercial concerns, especially due to their artistic experience and training. They expressed those concerns consistently in interviews with the media since CasualGames’ founding and even earlier when they worked at SuperComics which Daniel Taylor had founded in 1992. The firm initially labelled itself as an “idea shop” rather than as a “video games company” and put forward its creativity and expertise in animation technologies:

“Boldy creative and technologically knowledgeable, CasualGames has for main ambition to define today tomorrow’s new online entertainment standards. Thanks to our World-Class production studio, we are capable of extending the limits of the web, namely by developing streaming animation contents that are visually stunning, faster, richer and even more interactive!” (CasualGames web site, 1999, retrieved from Archive.org on March 2, 2008).
Early products of CasualGames were praised by reviewers and critics of the industry and established its reputation for producing creative and high quality casual games with polished animated cartoon content. As already mentioned in the previous section about CasualGames’ aspirations (Section 1.1 above), CasualGames made its initial foray into the industry by producing original intellectual properties and tried to avoid engaging into servicing work for publishers and licensors:

“I believe it is sad that the majority of local firms satisfy themselves with the adaptation of European or popular American cartoons. Furthermore, our local multimedia industry seems inclined to position itself on the international market as discount work-for-hire. We have the talent and the potential necessary to create original histories and characters for cartoons, and that is precisely what CasualGames attempts to do through the new media” (Daniel, Founder-CEO, Newspaper interview, May 6, 1999).

Such an approach toward the product market allowed CasualGames to distinguish itself on the local labour market, where the majority of local entertainment software firms instead choose to focus on 3D technologies and console platforms.

“Our local competitors began having a very aggressive approach to the labor market. It forced us to define ourselves distinctively, to become a happy alternative in the landscape. Thus, the values of the firm are creativity and quality without compromise.” (Daniel, Founder-CEO, quotation 13:3)

The promise of putting creativity above commercialism and its early reputation for producing high quality products allowed the firm to attract highly skilled and experienced workers from the local art world.

In recent years, however, CasualGames’ projected identity has become more loosely coupled from the reality experienced by a large proportion of its workers. Many artists had been attracted by the promise of working on original intellectual properties, but found themselves working on licensed intellectual properties instead. One programmer summarized in very stark terms how many artists felt their work had become reduced from art to craft at CasualGames:
“Artists are more like technicians here. Well... Mickey Mouse already exists. It has already been drawn and you have to draw it exactly the same. And you animate it as it should be animated. There is no real creation.” (Vincent, 3D Programmer, quotation 27:23)

Hence, artists at CasualGames have a strong inclination to identify first with their occupation rather than their projects or CasualGames:

“I see myself more as a graphic artist, but I could shift career paths. I do feel part of the CasualGames team, but... I am not committed to life.” (Laurencio, Graphic Artist, quotation 25:47)

Many artists entertain sideline projects through which they can funnel their creativity and build a portfolio of art work and credits:

“As artists, we always like to have some sort of personal artwork, cartoons or whatever as a sideline to CasualGames to help us define our identity. Because here, we keep our identity, but we have to mold ourselves to our customers' intellectual properties, it’s not of our creation.” (Jayden, Animation Artist, quotation 19:46)

While artists identify weakly with CasualGames, programmers appeared instead to identify more strongly to the firm. They believe that CasualGames has the potential to create and market products that will gain broad recognition, and thus they will be able to bask into the reflected glory eventually:

“I see myself more loyal toward CasualGames than my role as lead programmer per se. I could change role around here, no problem.” (Samuel, Programming Lead, quotation 23:39)

“I am not here to simply be a programmer. I want CasualGames to grow and that we do great projects to get recognition. It would be fun to say ‘Look, I was part of the firm that did this marvelous game.” (Vincent, 3D Programmer, quotation 27:27)

CasualGames’ founders and top management are quite sensitive to the artists’ sensibilities toward the opportunity to freely express their creativity. They have instituted shorter work weeks, flex time and paid overtime policies, which are outside the norm on the local labour
market. At the time of study, no other video games company in Eastern Canada offered shorter work weeks (32 hours) as an official policy:

“Creatives and artists are people that do not want to be owned by anyone. We provide a lot of freedom to do something else so they can express themselves differently. There is a life outside work. […] We offer shorter work weeks, only 4 days per week so people with families can manage.” (Daniel, Founder-CEO, quotation 13:3 & 13:5)

Top management has also been careful to establish a playful working and physical environment where creativity is fostered. Members of both the programming and artistic communities agreed that CasualGames provide an environment with a high quality of life despite the bursts of intense activity that accompany projects with tight deadlines and limited budgets:

“An important value here is the happiness of everyone here, first and foremost. Even before money. We still have to get money in so we do servicing and get projects with short timeframes which are not very interesting. But it's really wellness that dominates here.” (Ethan, 2D Programmer, quotation 20:44)

“It is certainly fun to work here, it’s really enjoyable.”
(Laurencio, Graphic Artist, quotation 20:53)

Top management confirmed that creating opportunities for fun and playful interactions within the workforce were encouraged. Social and community events are numerous and many teams members tend to form close friendships that carry over outside the immediate working environment. The VP Finance attributed this emphasis on ensuring a cozy and laid-back work climate on the fact that CasualGames wasn’t accountable to any external stakeholders:

“The company is not owned by external shareholders, foreigners or large venture capital firms. Thus, it’s only two shareholders [Daniel Taylor and Jeffrey Ross] who have their own priorities which are of course financial, but also in terms of pleasure at work. It definitely creates a certain context.” (Mark, VP Finance, quotation 14:5)

On the whole, workforce relationships at CasualGames tend be uneasy despite the efforts and policies put forward by the top management team. CasualGames has a strong and clear projected identity as a creator of high-quality games with clever design and polished animated
content. However, this identity conflicts with the reality experienced by many workers, especially those that are assigned to servicing projects. Furthermore, artists tend to have little commitment toward the organization and perceive their career advancement as a string of credits toward ever more interesting projects on which they increase their influence on the creative process. The founders and the top management team have recognized this issue and attempted to create a playful working climate and accommodating policies.

8.1.7 Summary of contextual conditions at CasualGames

The evidence presented in this section shows that CasualGames operates in a moderately stressful environment which provides little time and resources for top management and workers to improve its existing organizational practices. First, the founders and the top management team intend to grow the organization large quickly within the next few years and to build a catalogue of profitable original intellectual properties which will make CasualGames an interesting acquisition target. Doing so involves significant risk taking, since developing original intellectual properties can be much less profitable than providing servicing work to publishers and licensors, which account for the major part of CasualGames revenues. Second, CasualGames operate in an environment characterized by moderate time pressures. Projects, while being small in scope, often operate under stringent contractual covenants leading teams to often experience intense bursts of activity and overtime work. Workers and top management are occupied full-time on creating and delivering products and little time is left to spend on organizational improvements initiatives. These initiatives often take the form of firefighting and fundamental causes of problems may linger on. Third, top management has little financial slack available. Despite strong transaction ties with publishers and licensors, CasualGames does not have source of recurring revenues. Excess funds are thus allocated in priority to the funding of original intellectual properties rather than to organizational improvement initiatives, which are accomplished through bricolage and making do with the existing pool of resources at hand.
Fourth, a large proportion of CasualGames’ workforce has only recently joined the organization. This cohort of new hires is mostly composed of young and inexperienced workers. Furthermore, it appears that CasualGames has suffered from a turnover problem among its most experienced and skilled workers. As a consequence, technical experts are often thrown into leadership roles despite being ill-prepared to do so. Opposed ideologies about the nature of work frequently leads to stereotyping and tensions between occupational communities, and most especially between top management and artists. Finally, the workforce is not much committed to the organization despite top management’s policies and intentions. This is due to workers’ conception of ideal career advancement in the video games industry, but also to the conflicting organizational identity experienced by workers.

In the next sections, the appropriations of technology enacted to fulfill transparency for mobilizing, for pooling artefacts, and for reporting accountability are described in detail. The contextual conditions that I have presented in this section will have much influence upon shaping the kind of appropriations that have emerged at CasualGames. The table on the following page summarizes the evidence about each type of transparency.
### Appropriations of technology that fulfill the function

1. Executives use a virtual Q&A application to stimulate questions from workers
2. Executives and occupational community leads announce social events through blogs

### Key technology features

<table>
<thead>
<tr>
<th>Sharepoint system</th>
<th>Microsoft file server</th>
<th>Outlook &amp; Excel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blog features</td>
<td>- Tree-like directories</td>
<td>- Local commitment, budget, and workforce capacity planning system</td>
</tr>
<tr>
<td>Access stratification: blog posting features reserved to middle managers and executives. All workers can read the blogs.</td>
<td>- No access stratification for product-related artefacts (only one type of user for all workers)</td>
<td>- Time assigned to tasks; labels are ambiguous</td>
</tr>
<tr>
<td></td>
<td>- Access stratification for budgets and financial documents (project managers and executives)</td>
<td>- Scheduling &amp; task assignment features</td>
</tr>
<tr>
<td></td>
<td><em>Sharepoint system</em></td>
<td><em>Salesforce</em></td>
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<tr>
<td></td>
<td>- Web page building and maintenance features</td>
<td>- Lead capture, scoring &amp; tracking features</td>
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<tr>
<td></td>
<td>- Wiki features: editing, hyperlinking, categorizing in tree-like directories, search</td>
<td>- Exportation to <em>Excel</em> features</td>
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### Functional alternative practices

- Team meetings every 3 months with VP Finance
- Friendship ties
- Employing Google to seek procedural knowledge (by programmers) and creative references (by artists)
- Expertise requests through email
- Frequent meetings and reciprocal interactions between executives and project managers take place to assess and conduct workers capacity planning
- A search for alternatives is underway

### Consequences

- Workers have little knowledge of projects going on in other teams
- Workers question the purpose and viability of projects, leading many experienced workers to leave the organization (mostly artistic workers)
- Few breakdowns in coordinating dependencies
- Workers consult web gallery of final products during initial game design tasks, but do not play and score products
- Programmers seek solutions to common problems even if they were once solved in the past in other teams
- Unreliable estimates of worker availability and needs
- Workers allocations are made out of project managers’ awareness
- Inability to compare project performance at a low level of granularity

### Table 28. Types of transparency at CasualGames

<table>
<thead>
<tr>
<th>Mobilizing</th>
<th>Pooling Artefacts</th>
<th>Reporting Accountability</th>
</tr>
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<tbody>
<tr>
<td>1. Executives use a virtual Q&amp;A application to stimulate questions from workers</td>
<td>1. Artists, programmers and project managers store documents and digital assets in a file server</td>
<td>1. Project managers and executives navigate technology gaps to consolidate data (<em>Outlook, Excel, MS Project, Gestio, Salesforce</em>)</td>
</tr>
<tr>
<td>2. Executives and occupational community leads announce social events through blogs</td>
<td>2. Final products are made available to all workers for playing and scoring through a web gallery</td>
<td><em>Artists, programmers and project managers record prescribed commitments with a local personal commitment system (Outlook, Excel) and with a formal commitment system (MS Project)</em></td>
</tr>
<tr>
<td></td>
<td>3. Programmers store knowledge for re-use for other programmers through a wiki-like knowledge repository hosted on <em>Sharepoint</em></td>
<td><em>All workers except executives record time spent on tasks with Gestio</em></td>
</tr>
</tbody>
</table>

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1. Executives use a virtual Q&A application to stimulate questions from workers.
2. Executives and occupational community leads announce social events through blogs.
3. Programmers store knowledge for re-use for other programmers through a wiki-like knowledge repository hosted on *Sharepoint*.
8.2 Transparency for mobilizing

The main technologies employed at CasualGames to mobilize the workforce are a virtual Q&A application and a set of occupational community-centered blogs. As I will explain in the next sections, these two appropriations are not much effective to fulfill the need for mobilizing transparency. In fact, the virtual Q&A had recently been abandoned and the content of the blogs was deemed trivial at best by the workers. Alternative practices that do not rely upon technology, such as working the grapevine and formal meetings with top management instead fulfill the need to convey information to mobilize the workforce.

8.2.1 Appropriation #1: Using a virtual Q&A application to stimulate questions from workers

A recent appropriation of technology that was enacted but failed to become institutionalized is a simple virtual Q&A application named “Questions for the President”. The application consisted of a web form hosted on the organization’s intranet from which workers could send an anonymous message to Daniel Taylor, the Founder-CEO. Every month or so, Daniel Taylor compiled the messages and wrote an email containing his responses to the questions he deemed relevant to answer. When he believed he was not the most appropriate person to answer a question, he asked another member of the top management team to answer. The email containing the responses was sent to the organization-wide mailing list, but it was not archived on the organization’s intranet.

The virtual Q&A application was designed following a consulting mandate conducted by a team of MBA students at the end of 2006. The students’ report proposed, among other things, to design a communication channel to bring top management closer to workers. Its purpose was explained in the following terms by Daniel, the Founder-CEO:

“We tried to find a way to provide bidirectional communication, of the sort ‘here are the news, do you have comments? Do you have questions? Are there things you would like more information about? Would like to discuss of something? Do you
see improvements to be made? Etc. And I told myself if it’s anonymous, people will be able to speak their minds more easily.” (Daniel, Founder-CEO, quotation 13:32)

Mark, the VP Finance, was less convinced about the purpose of the virtual Q&A application but nevertheless found that it could provide a mean to reassure workers about the viability of the organization and of the industry:

“The objective? I am not sure of it. It was simply to ask do you have any fears about what’s going on in the industry? About anything? Anything else that Daniel, I or the others could respond to?” (Mark, VP Finance, quotation 14:36)

Despite these intentions, the virtual Q&A application was in operation only for a few months. According to top management, the early questions received were very relevant and the Founder-CEO provided detailed answers. Questions pertained to the strategic orientations of CasualGames, the status of past and future projects, the personal histories of the top managers (such as Daniel Taylor and Jeffrey Ross’ involvement in SuperComics), the nature of HR policies or the reasons for certain organizational changes, for instance.

Workers’ feelings toward the virtual Q&A application were generally positive and they bemoaned its abandon by top management. Only a few of the workers I interviewed actually submitted questions to the application, but the majority found that the questions answered by the Founder-CEO were interesting and relevant. They appreciated the authenticity with which many of the questions were answered. Furthermore, they found that it was an effective mean to introduce new hires to the organization’s practices, to its past, and to its culture. They suggested however that some questions had become repetitive and that an archive of the questions should have been designed so that new hires may consult past questions. A few illustrative comments from workers about the virtual Q&A are provided below:

“It was fantastic. And it’s funny… No question ever came to me, but the questions that were asked were super relevant. In the end, once I read the questions, I really wanted to know what the answers were…” (Joe, Artistic Lead, quotation 18:66)
“I thought it was a really good thing. I actually used it to ask questions. For instance, there were original products that we had done in the past and sold to an American major. We had no idea what was going on with those franchises anymore. So the ‘Questions for the President’ was really an occasion to ask such questions.” (Jayden, Animation Artist, quotation 19:35 & 19:36)

“I found it super even though I never used it. When he [the Founder-CEO] sent his response, it was a huge email with all the questions and the answers. It was very fun to read. Not all questions were interesting, but it was in general very interesting.” (Samuel, Programming Lead, quotation 23:63)

“That was a good initiative. There are many who used it. And it was confidential. So if you had sensitive questions like ‘why the firm is going in this direction? Because I don’t think it’s a good idea.’, he [the Founder-CEO] could respond, he did to everyone. And often, it was questions that everyone had on their mind, but never dared to ask. Also, when you get in here, you don’t necessarily know what CasualGames wants, where it’s going… you don’t really know those things.” (Vincent, 3D Programmer, quotation 27:25)

Despite the early success of the initiative, the number of questions perceived as relevant by top management reduced significantly and the number of complaints and grievances increased significantly after a few months.

“It was an error. Over time, there were less and less questions. And then, woooops! It transformed into a kind of complaint box; it completely went off the rails. I tried to put it back together, but the questions kind of stopped coming in. So it just kinda died…” (Daniel, Founder-CEO, quotation 13:32)

At one point, top management received a vehement complaint through the virtual Q&A about recently put up posters showing off CasualGames’ original intellectual properties throughout CasualGames’ office. The VP Finance recounted the incident as follows:

“It became a space for whining and complaining. It didn’t accomplish our objectives anymore so we cut it. We received a message about the posters we had put up: ‘You have polluted my work environment!’ The message was nearly vicious. ‘The posters are awful’ … and he wrote in faultless language. Kids with a perfect language, there aren’t many at CasualGames; there is one! We caught him. We told him ‘[Expletive], why did you send this? What was your objective?’ I think that people heard
about it… afterwards, we received trivial questions and it stopped.” (Mark, VP Finance, quotation 14:36)

Despite the chilling effects such an intervention may have on workers’ intention to use the virtual Q&A, top management attributed the “failure” of the virtual Q&A to a number of other reasons. The VP Finance attributed the lack of “interesting” questions to the lack of interests that CasualGames’ workers had in the workings of the organization and of the industry in general.

“People didn’t have any questions. There were some interesting questions at the beginning. The response was super and it was transparent. But in the end, it seemed that people didn’t care about the sector in which they work” (Mark, VP Finance, quotation 14:47)

The VP Sales thought that the process was badly designed given the nature of CasualGames’ workforce and that the Founder-CEO probably wasn’t the most appropriate person within the top management team to answer the questions:

“There were stupid questions. ‘I need a nanny tonight, Mr. the president, could you help me?’, ‘I have a broken heart, Mr. the president, could you help me?’. The kids here are jokers; they are not corporate. In any other company usually, ‘the president’… you know…? Look, I am not a good ‘administrator’. But I know how to generate enthusiasm. It’s not because you plug in some technology that it will work. You need to have some gravitas and personality too. If you are already inaccessible and that you decide to put out some tool where people can send you mails, it’s not going to change. Daniel is not the most extraverted guy I know, but he is super good in the other stuff he does. It’s not because you are the president or the vice-president that you’re the one who should do [the virtual Q&A]. It’s not because you have the title that you’re the best person to seek out people’s questions and insecurities… so it was a total flop.” (William, VP Sales, quotation 77:12)

Some workers appeared to be unaware of the reasons why the virtual Q&A was abandoned. Others were still waiting for the next round of questions and deplored the inactivity of the virtual Q&A.
“I believe there were some situations where people used the opportunity provided by the anonymity to let it all out. There have been little incidents that were probably amplified. I don’t know if that was the reason for the abandon.” (Jayden, Animation Artist, quotation 19:35)

At the time of the study, the virtual Q&A was not in operation anymore and had been replaced in the middle of 2007 by a set of internal, occupational community-oriented blogs. Yet, workers thought that the blogs didn’t fulfill the function served by the virtual Q&A as well. The appropriation of the blogs is discussed in the next section.

8.2.2 Appropriation #2: Publishing news, procedures and social events through blogs

The second appropriation of technology aimed at generating transparency for mobilizing purposes consists of the concurrent use of a blog and the organization-wide mailing list by top management, game producers and occupational community leads. The blog was set up as an alternative to the organization-wide mailing list, but as it will be explained further below, the adoption of the blog has not been as successful as hoped for by top management.

A set of community blogs was set up by the IT managers in the fall of 2007. The blogs are generated through a Sharepoint application and are accessible through the organization’s intranet portal. A central blog was set up to provide a communication channel where top management could publish information about corporate affairs or address issues of interests to workers. A blog for each occupational community (artists, programmers, managers) was also set up to provide communication channels across projects. The explicit purpose underlying the implementation of these blogs at CasualGames was to provide a space where occupational could exchange “content” and reduce the volume of emails exchanged at CasualGames. Authorization rights to post information on the blogs were provided to the leads of each occupational community, but all blogs were accessible and could be read by all workers. Clarence, the IT Manager, explained that such an authorization rights structure was established to keep the blogs “clean”. He further described the vision behind the blog as follows:
“It was a demand from production and top management. They wanted a space where they could communicate a little more; to learn what’s going on in each occupational community, to exchange… that was the primary goal.” (Clarence, IT Manager, quotation 28:14)

At the time of the study in early 2008, the adoption of the blogs appeared to be fairly limited. Only the blog of the artistic community appeared to be regularly active according to the accounts of management and workers. Not all top managers perceive the usefulness of publishing information through the blog. Sending an email to the organization-wide mailing list is often a simpler and more efficient practice than updating the central blog.

“I would say that it is not employed to its full capacity. A lot of stuff is exchanged through email that could be put on the intranet instead. It’s not a reflex to go on the intranet to put news or to do updates. People will go there to put up an ad. Even us [top management], when we have news about a customer, we tend to send it to all@CasualGames.com instead of putting it on the intranet.” (Chloe, Operations Director, quotation 15:34)

The VP Sales, despite having the authorizations to update the central blog and who could, in principle, update the blog with information about incoming contracts for instance, told that he never consulted or updated the central blog. He even discovered certain sections of CasualGames’ intranet during our interview:

“I never use it. [He logs into and browses the intranet in front of me]. Look, ‘Washing machine that overdosed on bleach is searching for a replacement’; ‘Prepare for your holidays parties’; ‘Toyota Echo for sale’; ‘Nissan Santra for sale’; ‘In need of a nursery’; ‘Lucy at the boudoir’. [Expletive]!?... Okay, so let’s look into ‘Projects’ now. [He clicks on the ‘Projects’ tab and then scrolls]. … Huh. That’s good. I just discovered this. That’s really good.” (William, VP Sales, quotation 77:11)

The IT Manager suggested that top managers resisted employing the central blog to diffuse corporate affairs information not only for expediency reasons, but also because of the fear of losing control over the information published on the blog. Because of the ties entertained by CasualGames workers with the local occupational communities, they fear that disclosing information through the blog (or by email, for that matter) could have detrimental competitive
consequences. When the central blog is employed by top management to publish corporate news, information is often already known by all the concerned people and even all workers through the grapevine.

“The problem now is that some people within top management don’t want to disclose information because they fear that it will be transmitted to the outside. And I understand that concern. But at one point, it becomes too watertight and the blogs lose their value. Before putting any information, they want it to be confirmed and done. When that happens, everyone already knows about it. That’s why the ‘informal’ channels are more used than the blogs.” (Clarence, IT Manager, quotation 28:14)

The purpose of the blogs and how they should be employed were unclear for many workers, even for those that had the responsibility to write and maintain the blogs. They wondered if it should serve as a space where best practices should be exchanged, where social life at CasualGames should be documented, where ongoing project developments should be announced, where individual accomplishments should be publicized or where workers could vent and write whatever is on their mind. As a result, posts to the blogs pertained to a disparate mix of topics. For instance, on any given day, subsequent posts could pertain to corporate matters such as pictures of the last social event, contract news, procedures for how to employ the MS Project, personal ads, and an announcement about the renewal of computer screens. The VP Finance acknowledged that the central blog had drifted to a “bulletin board” from its initial purpose of a “true bidirectional communication medium” (Mark, VP Finance, quotation 14:44). He further added:

“Certain people within the organization have the authorization to ‘plug in’ content… of any sort. [He turns his computer screen toward me]. Look, here is Ted talking about the social event on Friday. Then there’s Clarence who’s talking about what’s coming up with MS Project. We use it a lot. We try to avoid mails to all@CasualGames. For instance, we were asked why some people have bigger screens than others, so there is Clarence explaining the reasons. There are posts by the organizational improvement taskforce. I post sometimes too.” (Mark, VP Finance, quotation 14:44)
As a consequence, workers’ feelings toward the blogs are mixed. Some believe that they are not employed to their full potential while others see no value at all in consulting them. A few even didn’t know where to locate the blog when asked how often they consult it. For instance, the comments by an Artistic Lead and two Game Producers, who all have responsibility for updating their own respective community blog, are representative of those expressed toward the blogs:

“For now, it’s a tool about which I am… ambivalent.” (Joe, Artistic Lead, quotation 18:70)

“[JGB: ‘You told me that the blogs were a loss of time, why?] I don’t know. Not everyone has access or can participate. I don’t exactly know who can post, but everyone can read. It’s bizarre. And it’s hidden somewhere on the intranet. It may well be a neat tool, but people prefer to just send an email to all@CasualGames.” (Kyle, Game Producer, quotation 21:47)

“I believe I can post, but… I don’t have anything to announce anyway, so… [laughs]” (Megan, Game Producer, quotation 16:35)

Thus, the appropriation of blogs to provide a communication channel across projects at CasualGames has been fairly limited despite the initial enthusiasm by certain members of the top management team. The organization-wide mailing list is often preferred to the blogs due to its expediency. Top management share only little corporate information through these channels due to the fear of leaks to local competitors. Furthermore, the purpose of the blogs is ambiguous, as many workers who have responsibility for updating the blogs have little guidelines or interest for doing so. The blogs thus mainly serve as notice boards.

8.2.3 Consequences and functional alternatives

At CasualGames, two functional alternatives have emerged to fulfill the need for mobilizing transparency: meetings with top management and friendship ties.

Because of the failure of the virtual Q&A, the VP Finance now convenes each development team to a meeting where the performance and strategic orientations of the team are discussed. Current and future projects for the team are discussed and questions are answered by
the VP Finance. According to the Founder-CEO and the VP Finance’s own accounts, the information provided during the meeting involves the disclosure of pricing and cost information; a practice which the top management team believes is unseen elsewhere in the video games industry. This practice was confirmed by all lower level workers that I interviewed. Yet, the VP Finance feel that such financial information is sometimes not well received by workers and middle managers, which led him to reduce the granularity of information that he communicates in these meetings; he attributed such uneasiness to a lack of accounting and financial knowledge:

“Even within the top management team, I stopped sending them all the financial statements. I realized that there were some people that didn’t feel right when they say deficits. … They felt insecure. [Expletive]! A business cannot always have good months. There are some bad months and there are good ones. What you need to look at is the entire work and your capacity to paliate to these holes.” (Mark, VP Finance, quotation 14:54)

Chloe, the Operations Director, also found that the disclosure of financial and budget information created a certain anxiety within the workforce:

“There is some information that it’s not even worth to transmit. Anything about numbers, money... they don’t understand it here. At one point, we told ourselves – ‘Let’s be more transparent’ and let’s given them little cues on how we’re doing financially. We realized that it confuses and stresses them more than anything else. They are artists... They don’t know enough, they stress. They know too much, they stress too.” (Chloe, Operations Director, quotation 15:50)

A second reason why the VP Finance has reduced the details disclosed to the teams is that he is wary of the workforce’s loyalty to the organization and the risk of leaks to local competitors.

One particular incident illustrates how quickly information diffuses within the local community of video games worker. During the recent rapid growth of the organization, top management introduced confidentiality and non-compete agreements in employment contracts due to the significant turnover experienced within experienced and skilled positions. While never enforced yet by CasualGames, the agreements were established to protect the organization from a sudden, massive departure of workers. On the first day that the new agreements were introduced, the
Operations Director received a phone call from a top manager at a local competitor complaining about the new practice. CasualGames’ top management has thus been wary of providing too much information to the workforce:

“In this city there are 500 video games workers. All firms compete in the labor market. On the other side of the street, I have one direct product market competitor. Everyone knows each other because the artistic and cultural community is so tight-knit, so things get known very quickly. You have to be careful.” (Mark, VP Finance, quotation 14:49)

The comments of a few workers justified the wariness experienced by CasualGames’ top management, by acknowledging that he maintains close ties with former colleagues working for local competitors:

“I’m an attractive worker for all the firms around here. We don’t have a tendency to hide things from each other… especially the former employees of CasualGames, those that left for elsewhere. I don’t really hide any information from them.” (Vincent, 3D Programmer, quotation 27:34)

To complement the information provided by top management through the blogs and the team meetings, the practice of relying upon friendship ties to secure information has emerged. Workers rely upon their network of past colleagues within the other teams to get a glimpse of the status of projects in other teams. Those who have a long tenure at the organization might even benefit from a close tie with one member of the top management team and get some privileged information about projects and the organization in general. The majority of CasualGames’ workforce, however, only recently joined the organization and given their age and experience, might not feel at ease to approach management regarding those issues.

Put together, the appropriations of technology and the functional alternatives just described appeared to fulfill inadequately the need for mobilizing information among the workforce. Workers felt that they were well aware of the decisions and the information that concerned their own team, but they complained that they had little knowledge of the events that transpired outside their team and of the long-term aspirations of the organization. They are often
surprised to learn about the products that are developed in other teams, and when they do, they sometimes react with dismay and cynicism by criticizing the wisdom of their undertaking. One obvious cause of such difficulty in getting a clear vision of top management’s aspirations is that they are constantly shifting, as it was shown in a previous section. One artist summarized how he felt about the lack of guidance on the long term orientations of CasualGames:

“Often, we ask ourselves… ‘Why was this decision taken? Why are we producing this game? Why are we doing it this way?’ And we have to ask ourselves those questions. It preoccupies us. For the good of my career as an artist, I need challenges by participating in large, interesting and visible projects for which I will be able to say ‘Hey, I worked on that project… I was on that team…’. Such things are important for a creative” (Laurencio, Graphic Artist, quotation 25:49)

A Game Producer acknowledged that his assessment of certain business decisions made by top management was made upon incomplete information and that he had to trust top management’s wisdom:

“There is a lot of waste in this firm. We had one team which had 15 to 20 people at one point. We had no idea what work to give them. And it went on, not for two weeks, but for months. And we’re still trying to do something with that team. I am surely not aware of all the facts and it’s probably one of the long term strategies of the business…but we have no idea where we’re going. I look at it from the exterior and I tell myself: ‘My God! Shut down that team! And move on’…” (Kyle, Game Producer, quotation 21:61)

In summary, no single functional alternative completely fulfills the need for transparency for mobilizing purposes. Top management have put forward well-intended efforts to mobilize the workforce through behind technology appropriations such as a virtual Q&A and blogs. As an alternative to these technological means, the practices of regular meetings with development teams and of working the grapevine have recently taken precedence over these technological appropriations. Yet, at the time of study, the evidence suggests that the workforce did not feel well informed of top management’s decisions and of events happening outside their team despite the extensive financial information disclosed by top management.
8.3 Transparency for pooling artefacts

At CasualGames, three appropriations have been enacted to pool work artefacts. First, a file server is employed to store project documents and digital assets. Second, a web product gallery provides for workers to experiment with and to learn about the products that have been developed by their peers. Third, a knowledge repository has been deployed to serve as a code library and as a database of procedural knowledge for programmers. While the appropriation of the file server appears to be fully institutionalized, the appropriation of the web product gallery and the knowledge repository are still fairly nascent. These latter appropriations thus compete with alternative technology appropriations, such as email and the Internet to fulfill the need to access knowledge and artefacts necessary for the accomplishment of work.

8.3.1 Appropriation #1: Storing and exchanging documents and digital assets through a file server

The first appropriation that aims to generate transparency for pooling artefacts is the employment of a simple and unsophisticated file server. The file server, who is based upon Microsoft technology, serves as the central repository for the work artefacts produced by development teams. All occupational communities employ the file server: artists store creative references and digital art assets; programmers store software code and product builds; designers store customer assets and the game design document that contains product requirements; and managers store task lists, schedules and budget spreadsheets. Each project has its own set of directories; thus, a development team might work with as many directories as it has projects in production at once. When a project is completed, the content of the directories are archived in a specific directory of the file server.

The stratification of authorization rights to access the content of the file server is fairly limited. The only explicit restriction pertains to the directories containing the budget and financial documents, which are accessible by top management and by the Game Producers and their assistants. Workers may access documents and digital assets from any current or former
projects at CasualGames. The few restrictions on access are explained by the IT manager as the legacy of the times when CasualGames was a young start-up with very few employees:

“Still today, I’d say that the wide open access is a legacy of CasualGames’ past culture. When we upgraded the servers a little while ago, there was some restructuring and a few limitations put in to make sure that things at least remain orderly. But there are other portions that are really wide open. People have access to everything that has been done at CasualGames. Everything.” (Clarence, IT Manager, quotation 28:19)

He further added that the narrowing of authorization rights was a key concern, due to the significant growth the organization just went through:

“We hire someone and we don’t know what the relationship will be like. I always find it a little surprising that we provide full access to the person... to all the archives and to the past of CasualGames instantaneously. If someone gets angry, he or she could almost erase about half of the server’s content.” (Clarence, IT Manager, quotation 28:20)

Despite these concerns, he recognized that the current stratification of authorization rights facilitated expediency; he was thus cautious about finding a compromise between preserving openness and preventing the risks of intellectual property loss or leakage.

Usage conventions are a critical aspect of the appropriation of the file server. An organization-wide file naming and classification scheme has been established to facilitate the storage and retrieval of artefacts within the file server. Without the continual enactment and enforcement of these conventions, the file server would fail to generate transparency for pooling artefacts purposes. Such conventions were established by the organizational improvement taskforce a few years before the study took place. Before the establishment of these conventions, workers had much trouble searching and retrieving documents and digital assets from the file server.

“We know where things should go. It’s useful because you know where your stuff is. That’s something that was improved in the last few years. When you look up past projects’ archives, you see
that there was no structure and you have no idea where to look.”
(Emma, Associate Producer, quotation 24:41)

These difficulties persist today when lapses in the enforcement of the conventions occur, but to a much less critical degree than in the past:

“The nomenclature of our files is super important because it’s so easy to lose ourselves. Take a character for instance. It will be cut in pieces and each piece, or symbol, in Flash has its own name. If someone calls one symbol an ‘arm’ while another calls it a ‘sleeve’ lets say, it’s a problem. These names are often given hastily without any logic and it becomes difficult to retrieve and sort the files.” (Jayden, Animation Artist, quotation 19:24)

In summary, the appropriation of the file server appeared to successfully fulfills the need for transparency that allow the pooling of artefacts at CasualGames. The ability of the appropriation to do so is nevertheless dependent upon the establishement and enforcement of a usage convention.

8.3.2 Appropriation #2: Reusing knowledge through a web product gallery

The second appropriation aimed at generating transparency for pooling artefacts consist of rating and commenting CasualGames’ products on display within an internal web gallery. The product gallery contains all products ever developed at CasualGames. The products are fully “playable” and contain information about the customer and project from which it was produced. However, the product gallery does not provide any gateway to the source code and digital assets that were employed to develop the products, which are found on the file server.

The primary purpose of the product gallery is to stimulate emulation among development teams through quality feedback. Rating and commenting features were implemented on the product gallery. Workers were officially allowed 15 minutes per week to play, comment, and rate products from the gallery. Chloe, the Operations Director, explained the purpose of the product gallery as follows:

“Development teams don’t necessarily have a vision on what is done in the other teams. We told ourselves ‘Let’s put the games
on the intranet and let people play them’... say 15 minutes per week. People will comment and rate the games. [...] It was also to avoid repeating the types of product we propose to customers. There are lots of benefits to be structured as independent development teams, but there are costs” (Chloe, Operations Director, quotation 15:35)

Although workers are allowed to spend 15 minutes per week to consult the product gallery, few workers actually do so according to the IT manager and the other interviews I conducted. Only 5% of workers at CasualGames actually do spend time playing and rating the products on the gallery. Workers explained to me that the pressure to develop and deliver products on time trumps any intention they might have to play or to rate products. Furthermore, they added that even when they have free time to spend, they prefer to spend it on other activities than playing CasualGames’ products.

“It was a demand we constantly had from production. There are only four or five people that input their comments on the games. We are over 100. That’s less than 5%. There is a problem... they ask for it but then the response is ‘they’re not giving us enough time’. There is a lot of pressure to deliver products. People have fully loaded schedules and when they have 5 or 10 idle minutes to relax, they are more tempted to go on Facebook than to play one of CasualGames’ games.” (Clarence, IT Manager, quotation 28:29)

A second purpose underlying the product gallery is to facilitate the reuse of knowledge and digital assets from one development team to another, which, as it was seen in a previous section, have little knowledge of the work accomplished by each other. The product gallery thus allows workers to look up past designs and features during the early, creative stages of a project. A Game Designer explained how she employs the product gallery:

“A Game Designer explained how she employs the product gallery:

“I go there often, especially when there are new game concepts to do or that a customer refered to one of the past games that we did. I check what we did and what concepts we could reinvent or change. When the group of designers meet, we sometimes say to each other ‘I just finished a game; it’s on the intranet, go take a look’. It’s also useful for avoiding repetition in the games that we do for a customer.” (Nellie, Game Designer, quotation 26:30)
Thus, while the objective of providing quality feedback to development teams does not appear to be successfully fulfilled, the product gallery appears to play an important function for the community of game designers at CasualGames.

### 8.3.3 Appropriation #3: Storing procedural knowledge on a Sharepoint application

The second appropriation aimed at generating transparency for pooling artefacts is enacted by programmers who employ an open source extension\(^{39}\) to the Microsoft Sharepoint application to store code and procedural knowledge in a repository. The knowledge repository is structured around the entity of “entries” that can be categorized and searched, and to which code, documents, and comments can be attached. The knowledge repository serves as a space where the new cohort of workers might consult to learn about the production environment at CasualGames. At CasualGames, programmers who work on different development teams have very few opportunities for interactions, despite the fact that they employ the same technologies to design and code products. The knowledge repository thus also serves as a central code library to accelerate product development, as well as a space to store explicit knowledge about common technological procedures and problems.

The Microsoft Sharepoint extension was implemented in the fall of 2007 by the IT team after having experimented with the wiki features of Sharepoints to support the knowledge repository. The wiki implementation of repository was resisted by programmers, who found it difficult to use. The complaints of workers included the fact that edits to pages took too long to do, that documents couldn’t be attached to the pages, that navigation was complex, and that the search feature wasn’t useful to retrieve information. The Microsoft Sharepoint extension solved these complaints by shifting the key entity of the knowledge repository database from a “page” to an “entry” and by providing users with many information retrieval features that weren’t available on the wiki:

\(^{39}\) The “knowledge base” extension, which is found at [http://spkb.codeplex.com/](http://spkb.codeplex.com/)
“Everything that was on the wiki, we move it there. Now it’s easy to use. It’s a tab and the search engine is very powerful. The visual is clearer. I don’t use it that much yet because it’s still being deployed but I am really eager to see what it will become.” (Samuel, Programming Lead, quotation 23:17)

Despite its greater usefulness and ease of use, the knowledge repository competes with other practices to pool code and procedural knowledge, such as sending an email to peers and searching publicly accessible knowledge repositories through search engines. The following comments illustrate how programmers employed alternative technological means to circumvent the knowledge repository:

“Now, we guess who might know a solution. I need to do a certain task. I send an email to specific people or to all programmers asking ‘Is there a programmer that has already done code that does X and Y things?’.” (Ethan, 2D Programmer, quotation 20:28)

“Internet... we use it all the time. All the programmers use it. It’s the best resource. If we have problem, we go on the Net because there are so much resources and it’s so easy to find solutions, formulas, whatever. I use it all the time.” (Vincent, 3D Programmer, quotation 27:17)

Furthermore, programmers complained that they had little time available to maintain and to update the knowledge repository. The tasks of coding and developing products generally took priority over documentation. Such preference was amplified by the fact that such documentation was not done for their personal use and that they had little knowledge of the needs of their peers in other teams:

“It’s part of our tasks, but often it’s included in the billable time. That is, we’re paid to do it but if we have two weeks to meet a milestone, we might estimate that we won’t have time to code everything as it should be. So all the problems and the bugs that I will encounter, I will probably forget about them and skip documentation. It unfortunately becomes secondary even if it should not be. The priority is to deliver products to the customer, the rest is secondary. If we have time, fine, if not, that’s too bad.” (Vincent, 3D Programmer, quotation 27:20)
At the time of study, the knowledge repository had been deployed only fairly recently. Hence, this appropriation was not yet institutionalized. As the evidence shows, functional alternatives such as email and the web also fulfilled the need to access artefacts and knowledge.

### 8.3.4 Consequences and functional alternatives

The three appropriations enacted at CasualGames seemed to adequately fulfill the need for transparency to pool work artefacts. The evidence suggests that the appropriations of the file server fulfill the most important needs for this type of transparency. All occupational communities employ the file server and consistently enforce usage conventions that facilitate the retrieval of artefacts. The product gallery, despite not being employed as much as top management wished workers did, does fulfill an important function for a particular occupation within CasualGames, the game designers. The recently deployed knowledge repository is not yet institutionalized, but early perceptions indicated that it could be useful to pool code and procedural knowledge. Functional alternatives that were observed to compete with the knowledge repository were all technology-based (email and the web). As a result, workers indicated there were few breakdowns in coordinating dependencies within projects.

### 8.4 Transparency for reporting accountability

While many technologies have been deployed at CasualGames to report accountability, the key appropriation that stands out is the one of navigating gaps to consolidate data across development teams and projects. Each technology makes visible a specific aspect of work at CasualGames, but the work of integrating and manipulating the technology by middle managers and top managers is what generates the information that is ultimately useful to plan resource capacity and control projects. As it will be seen, these practices have a number of deleterious consequences. A search for an alternative technological solution has been undertaken by top managers and the IT manager.
### 8.4.1 Appropriation #1: Navigating technology gaps to consolidate data across development teams and projects

The key appropriation enacted at CasualGames consists of navigating technology gaps to consolidate data across development teams and projects to report and to monitor work processes. A variety of technologies are employed at CasualGames to report accountability: Outlook, Excel, Gestio, MS Project, BugTracker, and Salesforce are the main ones. These technologies are employed by all development teams at CasualGames, but each technology support distinct aspects of work processes. Only Gestio and Salesforce are transaction-processing technologies and combined with the other technologies aforementioned they form a local, informal reporting information system. Much manual interventions and transfers are required by middle managers and top managers to generate meaningful information since there is no integrated database from which reports can be produced.

Each week, workers take note of the tasks they worked on. The medium that they employ to do so varies depending on the worker’s preferences; some use a blank sheet of paper, others use word editing technologies, while others use a spreadsheet. On Fridays, they input their time using the timesheet feature of Gestio, an accounting software package. The timesheet form provides an exhaustive nomenclature to label and to categorize tasks accomplished but workers have been provided little guidance about how to use it. The granularity of the information collected mostly limits itself to the name of the project and the broad category of task which is derived from the worker’s occupation. Furthermore, workers do not provide much detail about the work done despite the availability of a comment field on the timesheet form. One worker commented on how he employs the timesheet form:

“A real problem with Gestio is that we don’t always know under which category to file our tasks. Let’s say we do a meeting... I can put into ‘meeting’. Or I can put in another broad ‘general accounts’. And then, there is another step, called ‘general accounts’ which provide all the tasks included in that category... holidays, leaves, meetings, organizational improvement, etc. In
Workers print out a hardcopy of the timesheet and give it to the associate producer of their team which audits its content. The associate producer also updates the budget spreadsheet with the timesheet data in order to account for the work accomplished to date. Once the timesheets are audited and the budget spreadsheets updated, the timesheets are compiled and given to the accounting assistants who input the data of each timesheet anew into Gestio to produce workers’ pay. The Gestio timesheets allow Game Producers and their associate to get a picture of the financial status of each project undertaken by their team.

Game Producers and their associate also define tasks lists and schedules with MS Project. Some lead artists and lead programmers employ MS Project to keep track of the tasks accomplished and planned, but others convert the task lists to other technologies. For instance, one team converted the task lists to an open source issue management system package. The associate producer regularly polls workers about the progress and the status of the tasks under their responsibility and updates the MS Project schedules. Most of this information consists of inferences and completion estimates. No historical data based on the information collected into Gestio is used to monitor schedule progress and to plan resource capacity.

Game Producers and their associate also maintain calendars in Excel spreadsheets that depict the allocation of tasks to each worker within their team. Load and availability are color coded for each project. These calendars are updated by the Game Producers and their associates and then transmitted to the Operations Director. The Operations Director employs these calendars to allocate workers among projects and to approve requests from Game Producers for workers. An associate producer explained that while Excel may be a fairly unsophisticated and informal technology to manage resource capacity, it fulfilled the need for transparency at the local team level:

general we don’t know under what category to use.” (Samuel, Programming Lead, quotation 23:23)
“I manage many projects at a time. I need to see how my team is dispatched on all the projects, that is who is going to be available and when. So what we have is a little Excel table where I wrote names and week days. I put a different color for each project. It’s really silly and really basic, but when I open my Excel spreadsheet I know instantly who’s free. And when Chloe, the Operation Director, gets a request for a new project or a new proposal, she just has to look up through Excel to find a free designer for instance.” (Emma, Associate Producer, quotation 24:29)

Top management also found the Excel spreadsheets useful despite the heavy manipulations that had to be made to keep their content accurate and updated. The VP Finance nevertheless thought that the reliability of the information collected varied from one development team to another, as much of the data relied upon subjective assessments of workers availability and time use rather than actual tracking of commitments:

“Each week, producers update a grid that shows resource utilization. They plug in their calendar and use color codes which are sometimes… debatable. You’re then able to see… that development team A is full until May. You’re able to see the holes and see how each individual can be moved from one team to the other to use 100% of your capacity. You’re able to anticipate the holes.” (Mark, VP Finance, quotation 14:31)

As it will be seen in the next section, the lack of automation within the patchwork of technologies employed at CasualGames creates much resentment among top management about the reliability of the data it works with. Hence, a search for alternative technological solutions was under way at the time of the study.

8.4.2 Consequences and functional alternatives

The practice of navigating technology gaps to consolidate data in order to report accountability has a number of deleterious consequences at CasualGames. Top managers often doubt the validity and the reliability of the data produced. Even if most projects employ MS Project and Excel to monitor and to track tasks, it is difficult for CasualGames’ top management to interpret and to compare local data, since the methods and the labels employed by Game Producers vary from one team to another. Furthermore, top managers and middle managers have
no view on how time is spent within each team; the technologies employed and their accompanying practices cannot be used to compare the relative performance of projects apart from global assessments of deadlines and budgets. For example, Game Producers, the Operations Director or the VP Finance cannot assess whether animations for a specific project are taking more or less time to complete than those of comparable projects. While top management is able to monitor resource consumption and progress toward key milestones once the work required for the integration the relevant data is done, it is still not able to evaluate how time spent within each project at a low level of granularity.

Second, the allocation of workers between projects is often a source of tensions and conflicts between Game Producers, as allocations are sometimes made without their awareness. Allocations are not always documented and updated in the Excel spreadsheets. Such implicit allocation creates much frustration and upsets plans:

“It happens that I had made plans long ago and that resources got changed. I hate it when it happens. I don’t like it when someone interferes with my team. It happened that even top management came in to ask services to specific resources – ‘Could you do this task for me?’ ‘Could you work on this project?’. After that, you go see the resource and you ask ‘Why are you late on your schedule?’ – Oh well, God asked me to do this. – Well, I don’t care if God asked you, he’s not your boss! You tell him to come and see me. There are some other things like that which anger me.” (Kyle, Game Producer, quotation 21:51)

At the time of the study, a search for an alternative to the spreadsheets was underway. The organizational improvement taskforce led by the IT manager and the VP Finance was experimenting with the features of MS Project to generate reports about resource availability and loadings. After months of experimentation and a failed implementation in one development team, they still hadn’t succeeded in generating a view within MS Project which would provide the information they desired. They found that the little slack in resources at their disposal and the lack of time available to reflect and to learn about the features of MS Project were major
hindrances in their search for a solution. Mark, the VP Finance, explained as follow their search for a better technology to generate transparency into the resource capacity planning process:

“Right now, we’re facing implementation hurdles. MS Project is good to manage projects, not people. Our grids and spreadsheets are used to manage people and see where the holes are. I need to use 100% of my staff all the time. […] With MS Project, it is excessively difficult to see these holes. We’re thus searching for a way to manage this process in the software.” (Mark, VP Finance, quotation 14:27)

Realizing the internal lack of knowledge about the features of MS Project and their use, consultants have been hired to help find a solution. Despite this additional help, no solution had yet been found to the ability to generate the requested views:

“What we’re trying to do is to ‘globalize’ the Excel spreadsheets for the whole company. The view we’re looking for, we still haven’t been able to program it, even with MS Project technicians and specialists.” (Emma, Associate Producer, quotation 24:29)

In summary, the evidence presented above suggests that the appropriations of technology enacted at EdgeSoft do not completely fulfill the need for reporting accountability. As a consequence, debates and complaints are common among middle managers and top managers with regards to worker allocations. Much back-and-forth interactions are often necessary to resolve ambiguities and conflicts within the data contained in the spreadsheets. The organization has undertaken a search for alternative technologies to support the worker allocation process, but without much success at the time of the study.

8.5 Conclusion

This chapter presented the contextual conditions within which CasualGames operates as well as the appropriations of technology that have been made to produce transparency for three purposes: mobilizing the workforce, pooling artefacts, and reporting accountability. The evidence shows that top managers have the aspirations of growing the organization quickly and radically in order to position it as an acquisition target and eventually cash-out their shares. Furthermore, top
managers frequently update their objectives because of their search for a sustainable business model. The organization also operates within an environment characterized by moderate time pressures and little slack resources as the organization has few recurrent revenue streams and often works with customers which have the leverage to impose strict contract covenants. Sporadic bursts of intense activity coupled with a tendency to experiment and make do with the resources at hand makes it difficult to search and to implement solutions to long-standing operational problems, including technological ones. CasualGames’ workforce is mostly composed of young and inexperienced workers that have been hired in the last few years. Many senior and skilled workers have left the organization in recent years, which means that technical experts are sometimes thrown into middle management roles without much preparation. Furthermore, despite top managers’ efforts to foster commitment to the organization, workers do not tend to reciprocate as they conceive career advancement as a succession of credits and interesting projects rather than progression within one organization.

Two appropriations have been attempted to generate mobilizing transparency at CasualGames in recent years. A virtual Q&A has been set up to solicit questions and input by workers. While workers perceived the practice favourably, the initiative was abandoned after a few months. A set of blogs serving as public forums for each organization community and as a communication channel for top managers was then set up. At the time of the study, the evidence shows that the blogs have yet to fulfill the objective of informing workers of the news and events happening outside of their team. Hence, two complementary alternative practices have emerged to fulfill the need for mobilizing transparency meetings with top management for updates about organizational strategy and projects and working the grapevine. Due to the perceived lack of commitment of the workforce, top managers have a tendency to limit the information provided to workers.

Three appropriations have been enacted to pool work artefacts at CasualGames. First, a simple and unsophisticated file server is employed by all occupational communities to store and
to exchange project document and digital assets that make up final products. Apart from budget documents, there is little stratification of access on the file server. The appropriation of the file server fulfills the transparency function appropriately because of conventions that have been routinized and enforced by workers. A second appropriation consists of reusing knowledge through a web product gallery. While the gallery is not used to the extent that was expected by top managers, it was still found useful for a specific occupational community: game designers. Third, a knowledge repository based on an open source extension to Microsoft Sharepoint was being deployed at the time of the study. The appropriation of the knowledge repository by programmers was still in its early stage, but initial perceptions of its ability to fulfill the function of pooling programming knowledge and reusable code were favourable. The alternative practices that were observed to compete with these appropriations were all technology-based (email and the web). As a consequence, workers indicated there were few breakdowns in coordinating dependencies within projects, even though experiences between projects are not necessarily shared as efficiently as they could be.

Finally, the evidence suggests that middle managers and top managers rely extensively upon local and information systems to track and to monitor work processes. Excel spreadsheets are employed to monitor budgets and to plan resource capacity while MS Project schedules are used to track the accomplishment of tasks. Much manipulation and handling work is required from middle managers and top managers before the information produced by these technologies becomes useful. Game producers find the technologies useful to support monitoring and tracking of work at project level; at an organizational level however, top managers find that the data used to plan resource capacity is often unreliable. Tensions about resource allocation thus tend to occur frequently, as worker allocation and task assignment are often made outside of Game producers’ awareness. At the time of the study, a search for an alternative technological solution was underway.
Chapter 9

Discussion & Conclusion

In this chapter, I review the key findings of the case study in light of the research questions and I propose an explanation for the differences in the nature of technology appropriations that were observed to satisfy transparency functions. Implications and limitations are also outlined.

9.1 Summary of findings – Technology appropriations and transparency functions

A number of findings about the relationship between technology appropriations and the functions of transparency can be derived from the data I collected at TradSoft, EdgeSoft, BigGames, and CasualGames (Table 29).

<table>
<thead>
<tr>
<th>Research Questions</th>
<th>Summary of key findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>RQ1: What is IT-enabled transparency?</td>
<td>Organizations fulfill transparency to solve three functional requirements: mobilizing, pooling artefacts, and reporting accountability</td>
</tr>
<tr>
<td>RQ2: How do technology appropriations relate to transparency?</td>
<td>Transparency functions are equifinal in terms of technology appropriations. The level of routinization and institutionalization of technology appropriations enacted by each organization varies</td>
</tr>
<tr>
<td>RQ3: What contextual conditions account for the appropriations that emerge to generate transparency?</td>
<td>The emergence of technology appropriations to satisfy transparency functional requirements are conditioned by the combination of the locus of corporate control, top manager’s aspirations, the presence of slack resources, the presence of time pressures, and properties of the workforce.</td>
</tr>
<tr>
<td>RQ4: What are the consequences of IT-enabled transparency?</td>
<td>Failure to satisfy a specific transparency function lead organizations to experience deleterious consequences associated to that function</td>
</tr>
</tbody>
</table>

Table 29. Summary of key findings about technology appropriations and transparency functions

First, the data validate the idea that organizations vary in the extent to which they exhibit transparency. While people in the organizations studied engaged in the similar activities of producing business and entertainment software, people occupying equivalent roles had different
kinds of knowledge about the activities and decisions of their peers or other role occupants. Also, it was impossible to identify an integrated set of criteria to assess the overall degree of transparency prevailing in an organization. Instead, I observed that the path-dependent conditions particular to each organization facilitated the emergence of appropriations that generate certain types of transparency: mobilizing transparency, transparency for pooling artefacts, and transparency for reporting accountability. Each of these types of transparency consists of a distinct functional requirement that tended to offset particular tensions on the continuance and work of the organization. Mobilizing transparency is needed to foster commitment and cohesion in the workforce; transparency for pooling artefacts is needed to open up work jurisdictions and to facilitate coordination; transparency for reporting accountability is needed to keep track of what tasks were done, what resources were consumed, and with what degree of efficiency.

Second, the evidence collected also showed that the organizations vary extensively on the extent to which they succeeded in satisfying each type of transparency through technology appropriations. Failure to satisfy a specific type of transparency function led the organization to experience deleterious consequences related to that function. When management and workers recognized and deemed the consequences as important, they actively searched for alternatives. These consequences ranged from difficulty in coordinating activities efficiently to cohesion problems. For instance, both EdgeSoft and BigGames experienced conflicts and strain among its top management team over the data generated by the systems implemented to generate reporting accountability transparency. CasualGames also experienced tensions due to the fact that worker allocations were often made without middle managers’ knowledge and not recorded into the reporting systems. In contrast, TradSoft experienced no apparent conflict as information was kept up to date in single custom project management system and was generally perceived as reliable. A similar pattern was exhibited for the appropriations aimed at generating mobilizing transparency, but the outcomes were related to attitudes and feeling of commitment. At EdgeSoft, BigGames and CasualGames, workers felt that top management was distant and that
they had little knowledge of the events taking place in remote parts of the organization. These feelings even bordered on cynicism at BigGames and CasualGames, although it is difficult to assess if these feelings were due to the practices enacted by top management or by the particular ethos displayed by workers from the video games industry in general. While such feelings are not the sole determining factor, they certainly contributed to the significant turnover and commitment problem that BigGames and CasualGames experienced. Thus, the data showed that when the combination of technology appropriations and non-technological practices didn’t adequately satisfy a particular transparency function, deleterious consequences were observed which created pressure on the organization to search for functional alternatives (technological or not) that could better satisfy the transparency function.

Third, the data showed that transparency functions are equifinal; that multiple and different technology appropriations can satisfy the same transparency functions, albeit with varying degree of adequacy. A comparison of the various technology appropriations enacted is shown in Table 30, Table 31, and Table 32 on the next pages. For instance, Table 30 shows that TradSoft enacted three distinct technology appropriations to fulfill mobilizing transparency (disclosing corporate affairs through email, enacting policies and procedures through email, and recognizing contributions through email). Similarly, three distinct appropriations were made at CasualGames to satisfy pooling artefacts transparency (using a file server to store digital art assets and code, making products available on a web gallery, and using a knowledge repository on Sharepoint). Often, the technology appropriations were supplemented by non-technological functional alternatives, especially when they failed to adequately satisfy the transparency functions. For example, even though news and policies were enacted through email at EdgeSoft to fulfill mobilizing transparency, this appropriation was supplemented by organization-wide meetings every four months and by working the grapevine through network ties. At TradSoft, a custom project management system was employed to record and to analyze the status of work,
## Mobilizing Transparency Appropriations

<table>
<thead>
<tr>
<th>Appropriations of technology that fulfill the function</th>
<th>TradSoft</th>
<th>EdgeSoft</th>
<th>BigGames</th>
<th>CasualGames</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. CEO and executives disclose corporate affairs through biweekly emails to the organization-wide mailing list</td>
<td>1. CEO and executives announce “news” and enact policies through succinct monthly emails to the organization-wide mailing list</td>
<td>1. Making a wiki available for the publication of corporate and project information</td>
<td>1. Executives use a virtual Q&amp;A application to stimulation questions from workers</td>
<td></td>
</tr>
<tr>
<td>2. CEO enacts policies and procedures through emails to all workers; workers employ email to deliberate about the policies and procedures</td>
<td>2. Promoting local, project-based initiatives (on some projects, artists announce news and milestones to the project team through project blogs, while for other projects, a newsletter sent by email to the project team is put together by project managers)</td>
<td></td>
<td>2. Executives and occupational community leads announce social events through blogs</td>
<td></td>
</tr>
<tr>
<td>3. Executives and customer pilots recognize workers’ contributions through emails to all workers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Key technologies

<table>
<thead>
<tr>
<th>TradSoft</th>
<th>EdgeSoft</th>
<th>BigGames</th>
<th>CasualGames</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Outlook (mailing list)</td>
<td>- Outlook (mailing list)</td>
<td>- Lotus Notes</td>
<td>- MS Sharepoint (form and blog features)</td>
</tr>
<tr>
<td>- Wordpress</td>
<td>- Wiki (MediaWiki)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Functional alternatives

<table>
<thead>
<tr>
<th>TradSoft</th>
<th>EdgeSoft</th>
<th>BigGames</th>
<th>CasualGames</th>
</tr>
</thead>
<tbody>
<tr>
<td>- None</td>
<td>- CEO and executives disclose selective outline of future plans in quarterly reports and in organization-wide meetings every 4 months</td>
<td>- CEO and executives disclose outline of financial outcomes and projects in organization-wide assemblies 3 times per year</td>
<td>- Team meetings every 3 months with VP Finance</td>
</tr>
<tr>
<td></td>
<td>- Friendship ties</td>
<td>- Friendship networks are employed to learn about the status of projects</td>
<td>- Friendship ties</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Consequences

<table>
<thead>
<tr>
<th>TradSoft</th>
<th>EdgeSoft</th>
<th>BigGames</th>
<th>CasualGames</th>
</tr>
</thead>
<tbody>
<tr>
<td>- No turnover (avg. tenure 12 years)</td>
<td>- Emails perceived as irrelevant (&quot;we already knew&quot;)</td>
<td>- Workers are little aware of events and developments in other projects than their own</td>
<td>- Workers have little knowledge of projects going on in other teams</td>
</tr>
<tr>
<td>- Workers identify strongly with management and little with their occupational community</td>
<td>- Transactional employment relationship.</td>
<td>- Workers question the purpose of projects</td>
<td>- Workers question the purpose and viability of projects, leading many experienced workers to leave the organization (mostly artistic workers)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Adequacy of appropriations

<table>
<thead>
<tr>
<th>TradSoft</th>
<th>EdgeSoft</th>
<th>BigGames</th>
<th>CasualGames</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Adequate</td>
<td>- Inadequate</td>
<td>- Inadequate</td>
<td>- Inadequate</td>
</tr>
</tbody>
</table>

### Table 30. Appropriations for mobilizing transparency: Cross-case Comparison
### Pooling Artefacts Transparency Appropriations

<table>
<thead>
<tr>
<th>Appropriations of technology that fulfill the function</th>
<th>TradSoft</th>
<th>EdgeSoft</th>
<th>BigGames</th>
<th>CasualGames</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. All workers resolve task dependencies through a file server</td>
<td>1. Workers resolve task dependencies through a Sharepoint system and a wiki</td>
<td>1. Letting occupational communities employ different technologies to pool artefacts in each project</td>
<td>1. Artists, programmers and project managers store documents and digital assets in a file server</td>
<td></td>
</tr>
<tr>
<td>2. IT and R&amp;D workers reuse knowledge for problem-solving through a project management system and a wiki</td>
<td></td>
<td></td>
<td>2. Final products are made available to all workers for playing and scoring through a web gallery</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. Programmers store knowledge for re-use for other programmers through a wiki-like knowledge repository hosted on Sharepoint</td>
<td></td>
</tr>
</tbody>
</table>

### Key technologies

<table>
<thead>
<tr>
<th>TradSoft</th>
<th>EdgeSoft</th>
<th>BigGames</th>
<th>CasualGames</th>
</tr>
</thead>
<tbody>
<tr>
<td>- MS file server</td>
<td>- MS Sharepoint</td>
<td>- Lotus Notes</td>
<td>- Microsoft file server</td>
</tr>
<tr>
<td>- Project management system (custom developed)</td>
<td>- Wiki (Confluence)</td>
<td>- Lotus Quickr</td>
<td>- MS file server</td>
</tr>
<tr>
<td>- Wiki (MediaWiki)</td>
<td></td>
<td>- Wordpress</td>
<td>- MS Sharepoint</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Wiki (MediaWiki)</td>
<td>- Knowledge base for Sharepoint</td>
</tr>
</tbody>
</table>

### Functional alternatives

<table>
<thead>
<tr>
<th>TradSoft</th>
<th>EdgeSoft</th>
<th>BigGames</th>
<th>CasualGames</th>
</tr>
</thead>
<tbody>
<tr>
<td>- None</td>
<td>- Many workers often transfer files by email and bypass Sharepoint</td>
<td>- Alternatives to the wiki are sought by the IT team</td>
<td>- Employing Google to seek procedural knowledge (by programmers) and creative references (by artists)</td>
</tr>
<tr>
<td></td>
<td>- Workers maintain an alternative local, informal document management system</td>
<td>- Executives often transfer files by email and bypass Lotus Quickr</td>
<td>- Expertise requests through email</td>
</tr>
</tbody>
</table>

### Consequences

<table>
<thead>
<tr>
<th>TradSoft</th>
<th>EdgeSoft</th>
<th>BigGames</th>
<th>CasualGames</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Few breakdowns in coordinating dependencies</td>
<td>- Drifting because multiple versions of official artefacts coexist</td>
<td>- Ambivalence of the top management team toward Lotus Quickr</td>
<td>- Few breakdowns in coordinating dependencies</td>
</tr>
<tr>
<td>- Ease of transfer of workers from one team to another</td>
<td>- Legitimacy of access rules to the local information spaces is debated</td>
<td>- Few breakdowns in coordinating dependencies within projects but little cross-projects learning</td>
<td>- Workers consult web gallery of final products during initial game design tasks, but do not play and score products</td>
</tr>
<tr>
<td>- Quick problem resolution</td>
<td>- Service delivery workers face unexpected implementation hurdles because of difficulties in retrieving product documentation</td>
<td></td>
<td>- Programmers seek solutions to common problems even if they were once solved in the past in other teams</td>
</tr>
</tbody>
</table>

### Adequacy of appropriations

<table>
<thead>
<tr>
<th>TradSoft</th>
<th>EdgeSoft</th>
<th>BigGames</th>
<th>CasualGames</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Adequate</td>
<td>- Inadequate</td>
<td>- Moderately adequate</td>
<td>- Moderately adequate</td>
</tr>
</tbody>
</table>

Table 31. Appropriations for pooling artefacts transparency: Cross-case Comparison
## Reporting Accountability Transparency Appropriations

<table>
<thead>
<tr>
<th>Appropriations of technology that fulfill the function</th>
<th>TradSoft</th>
<th>EdgeSoft</th>
<th>BigGames</th>
<th>CasualGames</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. All workers (including the CEO) record time spent over work and customer interactions with a project management system</td>
<td>1. Project managers and executives navigate technology gaps to consolidate data (<em>Outlook, Excel, Trac, Tenrox Timesheet, MS Project, Salesforce</em>)</td>
<td>1. Letting Game Directors employ their preferred scheduling technology and methods (<em>Excel, MS Project</em>)</td>
<td>1. Project managers and executives navigate technology gaps to consolidate data (<em>Outlook, Excel, MS Project, Gestio, Salesforce</em>)</td>
<td></td>
</tr>
<tr>
<td>2. Customer pilots and executives track work and resource consumption with automated reports and graphs from a project management system</td>
<td>2. Workers estimate, grade, and score work with <em>Excel</em> and <em>Salesforce</em></td>
<td>2. Game directors and executives navigate technology gaps to consolidate data (<em>Lotus Notes, Excel, Trac, MS Project, Great Plains</em>)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Workers and managers shape the information destined for external usage to avoid being “challenged”</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Key technologies

- Project management system (custom developed)
- MS Project
- Outlook, Excel, MS Project
- Trac by Edgewall
- Tenrox Timesheet
- Salesforce
- MS Sharepoint
- Lotus Notes
- Excel
- Trac by Edgewall
- MS Project
- MS Great Plains (HR & Finance)
- Outlook
- Excel
- Gestio
- MS Project
- Salesforce
- Frequent meetings and reciprocal interactions take place to assess and conduct workers capacity planning
- A search for alternatives is underway

### Functional alternatives

- Resource capacity planning on a giant whiteboard by the VPs Operations
- Decision making outside executive meetings
- On some projects, project managers employ story cards to manage commitments and scheduling
- A search for alternatives is underway
- Frequent meetings and reciprocal interactions take place to assess and conduct workers capacity planning
- A search for alternatives is underway

### Consequences

- Trust, fairness, and no conflicts during coordination negotiations
- Efficient prioritization of resources and assessment of project status
- Delegation of decisions to customer pilots
- Just-in-time allocation of workforce
- Executives filter the report they consult
- Executives and managers blame and “challenge” each other about the validity of inferences and data upon which inferences are made
- Executives track project costs and schedule status, but do not know how time is spent
- Executives & managers “challenge” each other about the validity of inferences and data upon which inferences are made
- Unreliable estimates of worker availability and needs
- Workers allocations are made out of project managers’ awareness
- Inability to compare project performance at a low level of granularity

### Adequacy of appropriations

- Adequate
- Inadequate
- Inadequate
- Inadequate

Table 32. Appropriations for reporting accountability transparency: Cross-case Comparison
but the task of resource capacity planning was supported by the use of a large whiteboard. On other occasions, neither the technology appropriations nor the “offline” alternatives were enough to satisfy a particular transparency function. In those occasions, searches for a novel alternative were usually observed underway as the lack of fulfillment of the transparency was recognized by workers or management. Within and across the cases, specific technologies were also found to satisfy more than one type of transparency function. For instance, Microsoft Sharepoint was used to satisfy all three types of transparency: mobilizing transparency (the blog feature at CasualGames), pooling artefacts and reporting accountability transparency (“team spaces” feature at EdgeSoft). Even the custom project management system employed at TradSoft was employed for more than one transparency function (pooling artefacts and reporting accountability). This is despite the fact that it is essentially a transaction-processing system and such systems are usually considered fairly “rigid” and dedicated to the automation of business processes.

While multiple technology appropriations were found to fulfill the same transparency function across the organization, such a finding does not imply that any technology appropriations can fulfill any transparency function. Put differently, equifinality was not found to imply unbounded social shaping of technology. Despite the multiple technological trajectories that were employed to fulfill transparency functions, managers and workers constantly struggled to make sense of the material limitations and features provided by the technologies they used (or tried to use). The most vivid example of such struggling is the attempt by CasualGames’ managers and workers to configure the Microsoft Project software to support resource capacity planning. As already mentioned earlier in EdgeSoft’s chapter, Microsoft Project is fundamentally an analytical technology which encapsulates algorithms making it possible to compute critical paths, optimize the distribution of tasks through time, as well as the allocation of resources to those tasks. An analytical technology like Microsoft Project is not designed to record the status of “promises” and the success or failure to meet them. Commitment tracking technologies, however, do support such processes (see Vandersluis (2002) for a technical
comparison of the two technologies). Put differently, Microsoft Project is a decision support system, not a transaction processing system; its material properties do not allow the recording of transactions of commitments and promises to accomplish tasks and the resources that are allocated to those tasks. The combination of the ill-structured nature of resource capacity planning and of the ambiguity of the technical documentation accompanying the Microsoft Project software thus may have led CasualGames’ managers and technicians to believe that the technology provides affordances to support one of the most difficult processes to accomplish in project-based organizations. Thus, in some occasions, features of technology did pose material constraints on the nature of appropriations which people could enact. Such limits to the material properties of technology were sometimes not yet perceived as obdurate and insurmountable, as people were blaming their own lack of knowledge of about the technology’s features for the constraints they experienced (e.g. such disappointment being often expressed as “We’re still looking for ways to make it work”, Mark, VP Finance, CasualGames, quotation 14:27).

Fourth, the technology appropriations enacted by each organization were at different stages of routinization and institutionalization. In some cases the appropriations had been enacted and put in practice a long time before, while in others, the appropriations were very recent and still nascent. Changes in technology tend to make past technology appropriations obsolete while organizational growth tends to make ways of fulfilling the transparency functions obsolete and ineffective. Thus, organizations were found to be at different stages of learning to employ technologies to satisfy transparency functions. For instance, at BigGames, the executive team was in the midst of learning to use Lotus Quickr to fulfill pooling artefacts transparency. At CasualGames, executives, the IT manager and production managers were trying to figure out how to configure MS Project and other technologies to support resource capacity planning. The appropriation which had been employed for the longest time among all the organizations was found at TradSoft; its custom project management system had been in use for over 10 years to satisfy reporting accountability transparency while its organization-wide email list had been used
since the early 90’s to communicate mobilizing information. To fulfill these same types of transparency, BigGames, CasualGames, and EdgeSoft were more or less struggling to learn and to experiment with technologies at the time of study. The explanation for these differences in observed routinization and institutionalization stage is more complex than it seems and will be explored in the next section of this chapter.

Put together, the above findings provide answers to three research questions of this study: What is IT-enabled transparency? What are its consequences for organizations? And how do technology appropriations relate to transparency in organizations? The findings thus validate the idea that organizations need to deal with the need to fulfill mobilizing, pooling artefacts, and reporting accountability transparencies, and that multiple technological trajectories have been found to do so (albeit with varying degree of adequacy). Yet, one key empirical fact related to the final research question of this study remains to be explained: What explains the diversity of technology appropriations and non-technological practices that was enacted at TradSoft, EdgeSoft, CasualGames, and BigGames to satisfy transparency functions?

9.2 Contextual conditions and the emergence of technology appropriations

A set of coherent contextual conditions were found to influence the emergence and the selection of technology appropriations in a given organization: the locus of corporate control, growth aspirations, time pressure, slack resources, workforce demography, and workforce relations practices. During the cross-case analysis stage of the data collected, these contextual conditions emerged as the ones that were most contrasting of organizations and that shed light on why the technology appropriations observed differed from one organization to another. In particular, they explain why TradSoft is the only case where all three transparency functions were fulfilled adequately and where few deleterious consequences were observed. While TradSoft’s ability to satisfy the transparency functions could be attributed to superior management and technological skills, salient differences in context seem to provide a much more fruitful
These differences in contextual conditions appeared to determine the attention that each transparency function received as well as the effort that was spent learning and appropriating technology to fulfill the function. Table 33 summarizes the specific contextual conditions that were found at each case as well as how adequately the technology appropriations enacted at each organization were found to satisfy the transparency functions.

<table>
<thead>
<tr>
<th>Contextual conditions</th>
<th>TradSoft</th>
<th>EdgeSoft</th>
<th>BigGames</th>
<th>CasualGames</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locus of corporate control</td>
<td>Founder-CEO</td>
<td>Board of directors and venture capital firms</td>
<td>Owner-CEO</td>
<td>Founder-CEO</td>
</tr>
<tr>
<td>Aspirations</td>
<td>Conservative growth</td>
<td>Radical growth</td>
<td>Radical growth</td>
<td>Radical growth</td>
</tr>
<tr>
<td>Time pressures</td>
<td>None</td>
<td>Time famine</td>
<td>Time famine</td>
<td>Moderate time famine</td>
</tr>
<tr>
<td>Slack resources</td>
<td>Abundant</td>
<td>Moderate</td>
<td>Scarce</td>
<td>Scarce</td>
</tr>
<tr>
<td>Workforce demography</td>
<td>Long tenure</td>
<td>Short tenure</td>
<td>Very short tenure</td>
<td>Very short tenure</td>
</tr>
<tr>
<td></td>
<td>- Career at TradSoft</td>
<td>- Mobile careers</td>
<td>- Mobile careers</td>
<td>- Mobile careers</td>
</tr>
<tr>
<td></td>
<td>- Emotional Commitment</td>
<td>- Commitment through deferred compensation</td>
<td>- Not committed</td>
<td>- Not committed</td>
</tr>
<tr>
<td>Workforce relations</td>
<td>Relational</td>
<td>Transactional</td>
<td>Transactional</td>
<td>Relational</td>
</tr>
</tbody>
</table>

Table 33. Summary of Contextual Conditions across Cases

The data showed that the functions of mobilizing transparency, pooling artefacts, and reporting accountability are not all sensitive to the same contextual conditions. Some contextual conditions appeared to have a more significant influence than others on certain types of transparency functions. Technology appropriations that pooled artefacts and that supported the reporting of accountability required extensive efforts of reflection and learning to be successful and to adequately fulfill their function. These appropriations were thus particularly sensitive to growth aspirations, time pressures and the availability of slack resources, as the combination of these contextual conditions were shown to generate stressful and frenzied work environments at
EdgeSoft, BigGames, and CasualGames. Technology appropriations deployed to fulfill mobilizing transparency and pooling artefacts transparency were sensitive to workforce demography and to workforce relations, as the distribution of the length of tenure and the meaning of a career influenced workers’ motivation to demand mobilizing transparency and top management’s motivation to provide mobilizing transparency. Technology appropriations aimed at providing mobilizing information and pooling artefacts were also found to be particularly sensitive to the beliefs and preferences of top management, and the CEO in particular. The influence of these attributes of transparency functions are summarized in Table 34 that follows.

<table>
<thead>
<tr>
<th>Attributes</th>
<th>IT-enabled Transparency Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Importance of searching, reflection and learning required to appropriate technology</td>
<td>Mobilizing</td>
</tr>
<tr>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>Sensitivity to workforce demography and workforce relations</td>
<td>High</td>
</tr>
<tr>
<td>Sensitivity to top management values and preferences</td>
<td>High</td>
</tr>
</tbody>
</table>

Table 34. Attributes of transparency functions

9.2.1 The combined effect of aspirations, time, and slack on searching and learning

Contextual conditions provide a filter through which technology features are chosen, selected, and enacted as appropriations; furthermore, deploying and appropriating technologies are endeavours requiring much learning from their users and implementers (Edmondson, Bohmer, & Pisano, 2001; Robey, Ross, & Boudreau, 2002). The evidence showed that technology appropriations aimed at satisfying reporting accountability transparency and pooling artefacts transparency required much reflection and learning on behalf of workers and managers in order to fulfill their intended purpose adequately. Appropriations aimed at reporting accountability and pooling artefacts transparencies were thus found to be highly sensitive to any contextual conditions that created stressful work environments, as predicted by the threat-rigidity hypothesis (Staw, Sandelands, & Dutton, 1981). The only organization able to adequately satisfy reporting
accountability transparency and pooling artefacts transparency was TradSoft; it was the only one operating in a “relaxed” environment where time and resources were plentiful and could be allocated to searching, experimenting, and learning activities in order to find out the best way to design technological solutions for its own local needs. Furthermore, TradSoft’s management voluntarily slowed growth speed by turning down contract opportunities, which is an approach somehow at odds with the time pressures that are usually found elsewhere in the business software development industry (Sawyer, 2000). EdgeSoft, CasualGames and BigGames, on the other hand, had little time and resources available to spend on searching and learning activities, as they faced rather threatening environments produced by the combination of radical growth aspirations, a feeling of time famine, and few slack resources. It is thus not surprising to find that these organizations had little attention available for searching, experimenting, and learning activities; instead they were found to regularly engage in bricolage and “low-cost” improvisation (Baker & Nelson, 2005) to design technological solutions that, in the end, only awkwardly fulfilled their intended transparency functions but allowed them to focus their attention onto other functional requirements (e.g. developing new products, expanding the customer base, securing financing, etc.). This combined effect of aspirations, time pressures, and slack on searching and learning activities is explained in further details in the next paragraphs.

It is important to understand how growth aspirations, time pressures and a lack of slack resources can combine to form a threatening environment for ventures such as the ones that were studied in this case study. Despite the glamour and prestige that is associated with the kind of growth experienced and sought by EdgeSoft, BigGames, and CasualGames\(^40\), growth remains a dangerous and stressful endeavour for any venture, especially when the objective is to double or triple the organization’s size and revenues; it was once even said that “to grow you must survive” (Welsh & White, 1981, p. 29). Instead of having plentiful resources generated by their growth,  

\(^{40}\) EdgeSoft, BigGames and CasualGames have experienced extensive media coverage of their growth since their founding (see Appendices 5 & 8).
EdgeSoft, CasualGames and BigGames became cash-starved trying to fund their growth. They experienced overload, internal turmoil and an atmosphere of frenzy and perpetual crisis akin to the dynamics described by Hambrick and Crozier (1985); they found themselves much bigger in a very short period of time, but without being necessarily well-prepared for being large. These organizations where mainly preoccupied with making a sale and producing the required product or service, as well as ensuring a positive cash flow. As their main focus of attention was generating sales and making sure that products are delivered on time and on budget, overload led EdgeSoft, BigGames, and CasualGames to regularly overlook accumulating operational problems related to inadequate fulfillment of the transparency functions; they thus got caught up into vicious cycles of firefighting behaviours where the fundamental causes of problems are never solved and where the feeling of time famine is reinforced, a dynamic that has been documented among rapidly growing ventures (Perlow, Okhuysen, & Repenning, 2002) and among projects-based organizations (Repenning, Goncalves, & Black, 2001) similar to EdgeSoft, BigGames, and CasualGames.

In addition to the time pressures and little slack generated by the dynamics of growth, the threat to survival was further exacerbated by the necessity to establish a sustainable business model at EdgeSoft, BigGames, and CasualGames. In the case of EdgeSoft, the pressure to grow revenues was driven by investor fatigue, as more than $50 million had been ploughed into the organization by venture capital firms and institutional investors without much return on investment. While ventures like EdgeSoft can survive a long time without experiencing positive cash flow, they can do so as long as they are able to persuade and attract external investors to fund their activities. After 8 years of searching for a profitable business model, EdgeSoft seemed to have finally found a profitable market segment for its products; however, its cash burn rate showed that it had only one to two years left before the next financing round. While BigGames and CasualGames weren’t accountable to external investors, they nevertheless experienced the threat of failing to find ways to generate a sustainable stream of recurring revenues. In both
cases, they were dependent on large publishers for revenues and were still trying to develop original intellectual properties that could ensure their long term survival. They also operate in a cultural industry characterized by pervasive uncertainty (Tschang, 2007): demand is volatile and fleeting while the creative process is fraught with setbacks, delays and technological disruptions. A statement from one of the film producers interviewed by Faulkner and Anderson (1987) summarizes very well the context experienced by CasualGames and BigGames members, which is similar to the movie industry and probably even more ruthless due to the risk of technological disruption: “I don’t know a more cutthroat business than this one [...] we’re playing in an enormously high-rolling crap game” (p.885). In comparison, TradSoft experienced a significantly less threatening environment, as it had abundant slack resources available to fund organizational improvement initiatives and experienced little time pressures. While TradSoft seemed insulated from external demands that could generate increased time pressures and reduce slack, this non-threatening environment was not solely due to exogenous features of its environment; TradSoft’s co-Founders have been very clear about their preference for conservative growth aspirations since the organization’s founding.

If organizational growth implies a threat, then the implication derived from the threat-rigidity hypothesis (Staw et al., 1981) is that rapidly growing organizations like EdgeSoft, BigGames and CasualGames have little attention and resources free for searching, learning, and appropriating novel technology features to fulfill transparency needs while slower growing organizations like TradSoft can afford to be “mindful” in their search and design of technological solutions to organizational problems (Swanson & Ramiller, 2004). This pattern fits the evidence that was collected in the case study and sheds light on why workers at TradSoft were able to design a sophisticated technological solution that demonstrated careful attention to the local properties of TradSoft activities and which adequately satisfied the need for reporting accountability transparency. In contrast, members at EdgeSoft, CasualGames, and BigGames made improvised explorations of technology features and regularly engaged into bricolage; the
result was that they had to navigate through bundles of heterogeneous technologies in order to generate reporting accountability transparency. It is important, however, to remind that this bricolage was functional in that it allowed the organizational members to focus their attention on other critical functional requirements that needed to be satisfied to ensure the organization’s continuing growth and survival. This bricolage produced by the tendency to avoid waste and to design quick and dirty solutions allowed EdgeSoft, CasualGames, and BigGames to focus their attention and their resource base on dealing with the threat to survival implied by growth, a dynamic similar to the one observed by Baker and Nelson (2005).

9.2.2 The combined effect of workforce demography and workforce relationship

The selection of technology appropriations for mobilizing transparency and pooling artefacts transparency was also found to be sensitive to an organization’s relationship with its workforce and the demography of the workforce. The data collected at EdgeSoft, BigGames, and CasualGames showed that while top management at these organizations conveyed some mobilizing information through technological solutions like email and blogs, the information was coarse and lacked timeliness. Significant influence on the nature of technology appropriations for mobilizing transparency and pooling artefacts transparency was found in the variations in the meaning of a career, career stage, organizational tenure, and expressed commitment to the organization among occupational communities.

At BigGames and CasualGames, artists and programmers preferred mobility rather than long-term commitment, they were in the early stages of their career, they had been members of the organizations for only a short while on average, and they felt emotionally attached to their current projects rather than to the organization as a whole. At EdgeSoft, the observed pattern was only slightly different with engineers and linguists having slightly longer tenure due to deferred compensation in the form of stock options. The data showed that EdgeSoft’s workers didn’t feel emotionally attached to the organization and many kept their options open, especially among
newcomers and junior workers. In contrast, workers at TradSoft had very long average tenure (about 12 years) and they expressed strong emotional commitment to the organization. Despite being software engineers and computer scientists with skills in relatively high demand in the labor market and thus highly mobile, many appeared to consider that they would probably end their career at TradSoft and didn’t even bother to keep their vita updated anymore, as the LinkedIn data showed.

The dominant meaning of a career among the workforce was found to vary from one organization to another. At EdgeSoft, BigGames, and CasualGames, many workers did not consider vertical movement through a hierarchy critical for fulfilling their aspirations; instead many among them appeared to consider that a meaningful career may exist through movement between projects or work settings and through the demonstration of masterful work performance. Many were found to envision their career as a sequence of projects that increase in challenge and status. Some, especially at CasualGames and BigGames, even entertained the dream of launching their own game design venture where they will be able to freely exploit their expressive skills. For these workers, “the identity of the organization in which the project is located is generally secondary to personal and professional considerations, ranging from hourly rates to opportunities for learning new skills to the intrinsic challenges of the work itself” (Barley & Kunda, 2001, p. 79). The attributes of the project they worked on were thus much more salient that the particular policies and culture of the organization. The ensembles that are EdgeSoft, BigGames, and CasualGames thus were the background contexts of the projects their workers participate in and projects were the primary locus of affiliation. Workers at these organizations exhibited “liminal identities” (Zabusky & Barley, 1997) by valuing the idea of their self as free agents and itinerant professionals. In a way very similar to the new media workers from New York City studied by Neff et al. (2005), many at CasualGames and BigGames acted in an entrepreneurial fashion, by investing in their own training, attending local occupational association meetings (such as the International Game Developers Association – the “IGDA”), and by developing web presences.
where their portfolio, accomplishments and under-utilized skills are exhibited. Some even strongly resented the influence of “the suits” who they felt had no legitimacy to influence the expressive content of their work. Even though some of the most experienced and senior workers from the artistic communities at CasualGames and BigGames demonstrated a “professional attitude” (Becker, 1982; Faulkner, 1983) by being less idealistic about aesthetical concerns and less cynical about customer and management demands than their younger and junior counterparts, they still tended to prefer to attach themselves only to their projects and to keep their options open as demonstrated by the significant turnover among these workers. Gaining insight into matters pertaining to the jurisdictional sphere of top management through mobilizing transparency initiatives thus does not seem to hold much importance in comparison to gaining insight into the orientations and decisions that could impact the project with which these workers identify.

From the perspective of management at CasualGames and BigGames, the motivation to provide these workers with mobilizing information was significantly reduced by what management perceived as disloyalty and fleeting commitment. Furthermore, top management at these organizations was quite aware of how workers preferred to attach themselves to projects and to keep their distance from the organization as a whole in order to be able to “move on”. To paraphrase Zuboff (1988), this awareness led these managers to consider that workers with selves so loosely attached to their organization could not be trusted and “so must be excluded from access to knowledge that might give them an opportunity to undermine the well-being of the firm” (p.237). Instead, in environments like EdgeSoft, CasualGames and BigGames with little slack and intense time pressures, top management’s main concern about mobilizing transparency became reduced “to have workers accept management’s vision of managerial constraints as a given, and to work within those constraints” (Fine, 1992, p. 1292). Even in those cases where top management values and preferences tend to favour some kind of disclosure and openness, if those values are confronted with a workforce whose motivation to keep informed is low,
disappointments and frustrations tend to follow as the failure of the virtual Q&A deployed at CasualGames demonstrated.

The distribution of the organizational tenure of the workforce (Pfeffer, 1982, pp. 277-293) was also found to influence significantly the technology appropriations that emerge to fulfill mobilizing transparency. The fact that EdgeSoft, CasualGames, and BigGames’ workforce were characterized by short organizational tenure and a large influx of newcomers limited the extent of mobilizing transparency for three reasons. First, newcomers and junior workers at CasualGames and BigGames in particular appeared to care much more about working on interesting projects than about the specific strategies or orientations of the organization. Second, management and even some senior workers in these two organizations felt that they could not trust newcomers, who they accept but do not yet consider as permanent members of the organization. Third, management were found to have the conviction that newcomers’ inexperience with the organization may hinder their ability to understand and put into context the kind of information that management administers. In comparison, at TradSoft where the length of tenure was fairly long, workers were much more sensitive to obtaining insight into the organization’s orientations, policies, and current issues, as they had invested considerably more time and effort in the employment relationship. In addition to having greater motivation to get such information, workers at TradSoft also add much more tacit knowledge about the context into which such information is to be interpreted. Top management was also much more inclined to trust that workers would not disclose any sensitive information that they were confided in a way that could harm the organization:

“I believe that people have the necessary judgment skills to avoid using the information in a way that could be harmful to the organization. We have people here that are married to people working at [large competitor] and [large competitor]. I am not worried. It’s airtight. It doesn’t end up on the pillow talk.”

(James, TradSoft CEO, quotation 45:35)
Workers at EdgeSoft were also fairly interested in the broad orientations of the organization, as they were attached through deferred compensation and retirement benefits as is commonly the case in publicly-traded business software development organizations (Sawyer, 2000); however, as it will be seen in the next section, top management preferences and values at EdgeSoft hindered the establishment of technology appropriations that conveyed fine-grained mobilizing transparency.

To sum up, a comparison of the data across the cases showed that workforce demography and relations influence the extent to which technology appropriations aimed at mobilizing transparency provided fine-grained information about top management and corporate issues. This effect is felt both in a “pull” and a “push” manner. The career ethos, career stage and length of tenure affect the motivation of workers to demand a functional alternative (technologically-supported or not) that provide mobilizing transparency, while they simultaneously affect the motivation of management to conceive and enact such a functional alternative to disclose information pertaining to their work jurisdiction.

9.2.3 The effect of top management values and preferences

Top management values and preferences were also found to have significant influence on the design and enactment of technology appropriations that aimed to satisfy mobilizing transparency and pooling artefacts transparency. In small ventures such as the ones studied, the founder/entrepreneur/CEO has significant influence upon the internal workings of their organization. The influence of their preferences and values are specifically significant for mobilizing transparency and pooling artefacts transparency because these types of transparency are imbued with moral overtones about the legitimacy of top management’s prerogative to keep information secret or to limit its distribution. Weber (1948, p. 233) pointed out that bureaucratic administration always tends to be an administration of secret sessions, where it hides its knowledge and action from criticism. Over the last century, various justifications have been
called upon to legitimize and to reinforce the distinction between those who are let in these secret sessions and those who are excluded from these: a divine mandate to lead, natural selection, merit from hard work, specialized education, and learnt professional knowledge relying upon scientific truths (Zuboff, 1988). The data collected at TradSoft, EdgeSoft, BigGames, and CasualGames shows that the line that demarcates what is to be kept secret and what is to be disclosed through technology varies extensively depending on the values of who draws the line, as well as if there is a line drawn in the first place.

To illustrate how this “line drawing activity” is influenced by top management values, consider the following revealing example from the data. The CEO of both TradSoft and EdgeSoft employed emails to diffuse information about corporate affairs and strategy to workers. Yet, their use of email differed in important ways related to what information they choose to diffuse. Only TradSoft’s CEO was able to foster a feeling of inclusion, of being an “insider” to what was going on at “the top”. On the one hand, TradSoft CEO’s disclosed highly sensitive information about customers and the organization’s finance to workers through frequent emails. For instance, he mentioned that: “People here are in the know about everything that goes on in this business, exactly as if they were members of a board of directors” (James, TradSoft’s Founder CEO, quotation 45:27) and this statement was confirmed by the nine other TradSoft employees interviewed for this study. Even the potential sale of the organization was widely publicized and employees got to veto the sale even if they owned only a small amount of equity. While TradSoft’s CEO considered that profits and compensation figures were “out of bounds” when it comes to disclosure, the amount and granularity of information he choose to disclose was still quite extensive. On the other hand, while EdgeSoft’s CEO gave lip service about how transparency was important – he used the word significantly more often than TradSoft’s CEO in his interview without any prompt on my behalf – EdgeSoft’s CEO preferred to limit the amount of information he provided through email: “You shouldn’t be innocent in your transparency. You need to be transparent, but you don’t throw anything because you can put yourself into trouble.
[...] In general, what I wouldn’t want [to tell] is like... like... if we are trying to sell the company. I wouldn’t probably tell the guys, because I would completely destabilise the company” (Sean, EdgeSoft’s CEO, quotation 1:54). The official “offline” alternative (organization-wide meetings) that was set up appeared to follow the same values set by EdgeSoft’s CEO.

The following extended quote further demonstrates the extent to which the values and preferences of TradSoft’s CEO are idiosyncratic and uncommon:

“We always hear about the importance of creating value for shareholders. But that gives a license to do foolish moves, such as buying up enterprises at sky-high prices, growing an enterprise from 30 000 employees to 90 000 employees just like Nortel did, and getting into business segments that makes no sense. And then, afterwards, it justifies coming back and dismissing 65 000 employees. It destroys lives and families all in the name of creating value for shareholders. [...] We, anyway, decided to turn upside down this ladder of values. We want to create value for our employees. [...] Shareholder value, instead of being the ultimate objective, is simply a consequence. And that is a major difference. Because if I give you the mandate to create shareholder value, there is only one way to do so, and it’s through growth, growth, and more growth. If I combine the business plan of [multinational company] and [multinational company] with yours, it doesn’t compute. We would need 3 planets to satisfy the requirements of each business plan, but that’s how the industry works. And there have been horror stories... downsizing, rightsizing, whatever sizing. All kinds of words have been used to hide those orgies. A couple of months ago, I gave a conference to an association of CEO’s. There was more than 75 CEOs of the largest local companies. I told them exactly what I am telling you. Obviously, some of them were looking at me with big eyes and frowns.” (James Lewis, CEO, quotation 45:3).

The fine-grained, sensitive information that TradSoft’s CEO and top management disclosed to workers is thus fairly coherent with the values expressed above. Providing this information delegitimized any boundary between managers and workers drawn upon the basis of who has the right to know what. Workers at TradSoft were aware that such practice contradicts prevailing conceptions of what it means to manage and to be managed. The boundary still exists, but it is mainly drawn based on task responsibilities, rather than by ascribing any sort of
differential status or informational privileges to the roles. This practice generated cohesion by creating the *impression* of an egalitarian culture; one where everyone, *despite* differential pay and compensation levels, is on the same footing. Workers also felt that if they had worked elsewhere, they would have received much less fine-grained information, if any at all, about customer and corporate affairs. They qualified the practice as an altruistic gesture akin to a gift and a favour, which in turn they understood as an assessment of their trustworthiness. They thus felt privileged to be “in the know”, especially since the organization remained legally private and was still mostly owned by one of its founder. Furthermore, because TradSoft’s top management chose to disclose information through the organization-wide e-mail list, it highlights the idea that there are no lower class workers because all workers, even administrative assistants and janitors (which are called ‘building engineers’ at TradSoft) are in the know despite their lack of knowledge to interpret the emails, a finding that echoes an early one by Sproull and Kiesler (1991, pp. 79-101). It bolsters the idea that every worker, even the most peripheral, is a full member of the organization.

It is important to mention that the effect of top management’s belief about disclosure and openness is not limited solely to technology appropriations aimed at generating mobilizing transparency; the effect also applies to the technological appropriations supporting pooling artefacts transparency. For instance, no access restrictions were configured on the file server at TradSoft and at CasualGames, because top management preferred to foster an open information environment without silos between teams or positions. At EdgeSoft the main Sharepoint systems employed for the same purpose was found to be highly segmented. At BigGames, interestingly, the CEO and its top management showed little care or concern about how closed or open the technologies employed to fulfill pooling artefacts transparency were, apart from the ones they used *for themselves*, such as Lotus Quickr. The consequence was a proliferation technology appropriations based on blogs, wikis, and file servers, where “line drawing” activity took place by middle managers and workers at a local level rather than a global level.
The evidence collected also showed that the extent to which top management benefits from the discretion to impose their own values and preferences depends on the extent to which they are insulated and protected from external demands. In small ventures like the ones in this case study, these values and preferences are quite susceptible to external demands such as those from venture capital firms and institutional investors. A critical challenge for entrepreneurial organizations is the raising of capital to support its growth. In private ventures relying upon bootstrapping to fuel growth, the organization is less susceptible to the demands of external investors. In those situations, the entrepreneur/Founder-CEO generally has ultimate control over the organization’s objectives. In ventures relying on external funds to fuel their growth, venture capitalists, angel investors and institutional investors often sit on the board of directors and have significant power over decisions pertaining to the internal workings of the organization. At EdgeSoft, the original Founder-CEO was replaced by a board of directors at the onset of its latest financing round, as the venture capital firms were willing to provide funds only once specific changes were made at the time of the financing or shortly thereafter to address perceived weaknesses. The dynamic found at EdgeSoft is the same as the one documented by Wasserman (2003) who found that when “the list of weaknesses includes the Founder-CEO himself or herself, … the investors may choose to push for a change in CEO” (Wasserman, 2003, p. 154).

The ability of top management to guide what specific technology appropriations emerge in an organization to satisfy mobilizing transparency and pooling artefacts transparency is influenced by their ability to buffer themselves from external demands and by where the control of the organization’s objectives and issues ultimately resides from a resource-dependency perspective (Pfeffer & Salancik, 1978).

The description of each case has shown that the locus of corporate control varied from one organization to another; TradSoft and CasualGames were managed by one of the original founders and were mostly free from pressures of external investors, BigGames was managed by an entrepreneur who was an early employee and who bought back the majority of the shares of
the organization from its parent company with the help of an institutional investor; and EdgeSoft was managed by a CEO and a top management team who had succeeded its founder and who had been appointed by the venture capital firms that sat on the board of directors. Such differences, combined with the others mentioned in the previous sections, provide a tentative answer as to why TradSoft’s CEO has been able to impose his particular values and preferences for an open information environment to satisfy the need for mobilizing transparency in specific. As mentioned earlier in the literature review, mobilizing transparency is often advocated as a component of “high-involvement practices”, whose adoption has been hypothesized and found to be particularly susceptible to the demands of external investors whose beliefs and values may be inconsistent with a view of organizations as “communities of mutual responsibility and shared obligation” (Pfeffer, 2006, p. 9). While commenting the case of SAS, a business intelligence and statistical software vendor, Cappelli (1999) mentioned that “it is interesting, by the way, how often the companies that still offer job security are privately held – not subject to the financial pressures of the investment community – and making products with some protection from fast-changing competition” (p.161). Pfeffer (2006) later mentioned that SAS’s Founder-CEO flirted with the idea of opening up its capital to external investors in the early 2000’s but decided not to do so to preserve and protect the organization’s idiosyncratic practices. The same voluntary insularity and avoidance of external dependencies was also observed at Wachtell, Lipton, Rosen, & Katz, a New York law firm studied by Starbuck (1993), and at W.L. Gore, the Gore-Tex fabric manufacturer studied by Pacanowsky (1988), two other companies having fairly idiosyncratic employment and cultural practices for their industry. Thus, the higher the percentage of an organization’s capital owned by external investors, the less leeway a Founder-CEO with idiosyncratic values such as James Lewis at TradSoft has to impose them to orient the choice of technology appropriations that fulfill mobilizing transparency. As soon, as the organization’s capital opens up to external investors past a certain tipping point (it may not necessarily be 51%, as EdgeSoft’s case showed), it may become difficult to preserve the values and preferences that
foster an extensive and broad mobilizing transparency as these may be quite at odds with dominant marketplace and business ideologies (Pfeffer, 2006).

9.2.4 Summary of the explanation

The explanation that accounts for the observed differences in the nature of technology appropriations that were enacted by each organization to satisfy the transparency functions can be summarized as follow. IT-enabled transparency functions vary in the extent to which they are sensitive to specific contextual conditions. The combination of conservative growth aspirations, little time pressure and abundant slack resources, facilitates the emergence of appropriations that will fulfill the need for transparency to pool artefacts and to report accountability. As growth aspirations, time pressures and the lack of slack resources increase, a stressful environment is generated which means that the capacity to learn and to reflect about local needs and technology is hampered while a concern for waste avoidance becomes predominant and diverts attention away from mindful technology appropriations toward improvised technological bricolage. In addition, the combination of top management values and preferences, as well as certain attributes of workforce demography and workforce relations practices facilitates the emergence of appropriations that will successfully fulfill the need for mobilizing transparency. An organization whose workforce assumes career mobility and an organization that reduces the employment relationship to a transactional exchange hinder the emergence of technology appropriations aiming to generate transparency that fosters commitment and establishes the legitimacy of top management.

Elaborating this explanation and identifying the salient contextual conditions was not done in a theoretical vacuum as a few established theories were used to provide the groundwork to explain some, but not all, of the differences observed in the organizations: the threat-rigidity hypothesis (Staw et al., 1981), the dynamics of organizational growth (Baker & Nelson, 2005; Hambrick & Crozier, 1985; Perlow et al., 2002; Welsh & White, 1981), resource dependence
theory (Pfeffer & Salancik, 1978; Wasserman, 2003) organizational demography (Pfeffer, 1982, pp. 277-293), occupations and careers (Zabusky & Barley, 1997), and organizational learning about technology (Edmondson et al., 2001; Robey et al., 2002). These theoretical sources were acknowledged and interwoven with the data of the case study throughout the discussion in the preceding pages. I believe that this explanation, as a whole, combine the data of this study with validated theories to form novel propositions to explain the differences in technology appropriations in order to satisfy transparency functions (research question #3). I will next elaborate on some of the key implications of this explanation and the findings that were reported at the onset of this chapter.

9.3 Contributions and implications

This research makes a number of general and specific contributions to the information systems and social informatics literatures. On a general level, it clarifies the notion of transparency which has become quite pervasive in explanations of information systems-related phenomena. In specific, this research makes contributions to the research on the role of the material properties for organizational change, to the research on the design and adoption of information systems security, and to the research on the adoption of information technology by high-growth ventures in the creative and new media industries.

9.3.1 The notion of IT-enabled transparency in the information systems and social informatics literatures

This research contributes to theory by synthesizing and extending previously disparate findings and concepts to develop a coherent model, albeit in textual form and somewhat loosely coupled, of how technology appropriations fulfill transparency functions within an organization. A key implication suggested by this model is that employing the notion of universal transparency (Zuboff, 1988) or overall transparency (Merton, 1968) in an organization to explain IT-related phenomena may be misguided. The literature review first established the importance of
clarifying the orientation, the meaning, the mechanism, and the function of transparency. The findings of the case study further suggest that researchers should identify the particular type of transparency to which they refer. They should do so by establishing the function that the transparency performs within the organization. The findings suggest that there are three types of transparency afforded by technology in an organization: mobilizing transparency, pooling artefacts transparency, and reporting accountability transparency. Although only these three types were identified in the particular settings investigated for this research, other types of transparency functions could be identified in different organizational contexts. One such additional type of transparency function is the one allowing an organization’s to become accountable toward external stakeholders. In the context of the four high-growth ventures studied, this type of transparency didn’t appear to pose significant pressures (yet). The need to satisfy such transparency function could grow more significant however as the organizations pursue their growth and develop external dependencies. Furthermore, identifying the types of transparency that researchers investigate or employ in their explanations IT-related phenomena could facilitate the resolution of contradictory findings. On a related note, the findings also showed the theoretical usefulness of employing a functional analysis lens supplemented with a rich understanding of the socio-technical context in order to elaborate theories of technology use. The findings showed that researchers should heed functional equivalents that are enacted to complement or compete with actual technology appropriations. The enactment of these functional equivalents, whether they are technology-based or not, may be canary in the coal mine that the intended functions of the technology appropriations under focus, such as providing transparency, may not be satisfied adequately.

This study extends our understanding of how information technologies are appropriated to generate transparency in organizations in two additional ways. Many influential social theories of visibility (Merton, 1968), privacy (Altman, 1976; Westin, 1967), and secrecy (Fine & Holyfield, 1996; Shils, 1956; Simmel, 1906) have proposed that the consequences of
transparency follows an inverted-U curve, where there is an optimum below which and above which dysfunctions occur. One unexpected finding from the experience of the four organizations was that while many observed situations were found to be located below the optimum degree of a certain type of transparency, there were very few situations located above an optimum degree of transparency, which understood here in terms of insight, not access. It seldom occurred that an informant mentioned some variant of “there is too much transparency” or “we know too much”, for instance. The only obvious situation where such situation occurred concerned EdgeSoft’s sales representatives’ manipulative use of SalesForce spurred by the conflict between their role demands for expediency and the necessity of getting approval by all concerned parties in a sale.

Three tentative explanations could account for this finding and could be worthy of future inquiry. First, because these organizations were small and nascent they might not have had a technological infrastructure sophisticated enough to generate levels of certain types of transparency above the optimum (for pooling artefacts and reporting accountability transparencies, in particular). Yet, the experience of TradSoft seems to indicate that size is not necessarily a strong constraint on designing a sophisticated technological infrastructure that provides extensive transparency. Second, it seems that if such situations of “too much transparency” happened, they did so only briefly; they were prevented or corrected quite instantaneously giving the appearance to the external observer that they never happen in practice. People may then even forget about such situations. A third explanation is that the optimum degree of a certain type of transparency is a socially constructed moral standard (Allen, 2005; Marx, 2001); the standard depends on what people in that organization consider as legitimate and right. The standard could thus change from one similar organization to the other and even within the same organization depending given social and institutional conditions such as those identified in this research. This possibility suggests that even though TradSoft may be considered as an “outlier” in the organizational panorama because of its idiosyncratic practices, even more transparent organizations, for given types of transparency, may be found. For instance, all
organizations drew a line concerning pay and compensation data, as the data were all kept officially private (apart for the top management of EdgeSoft due to the public nature of the company, obviously). The inclusion of TradSoft in the case study provided an opportunity to understand the “roads not taken” by EdgeSoft, CasualGames, and BigGames concerning certain types of transparency and to identify critical contextual conditions to explain why the roads were not taken. Hence, further comparison with other organizations having different moral standards about optimum degrees of transparency may provide alternative insights. Understanding the collective practices of “legitimizing” degrees of transparency associated with technology use and the negotiations implied by such practice through longitudinal research designs appear like a research endeavour with promising outcomes for social informatics and information systems researchers.

9.3.2 The materiality of information technology and organizational change

The findings of this study also add a new twist to the growing interest within the social informatics and the information systems literatures to clarify the role of the material properties of technology in organizational change without relying upon technological determinism arguments (Orlikowski & Scott, 2008). Recently, it was suggested that researchers should compare the dynamics surrounding radically different technologies in the same or similar social contexts in order to tease out the effects particular to each technology (Leonardi & Barley, 2008; Markus, 2000). This research tried to follow this intuitively sound advice. While valuable, the findings suggest that the notion of similarity is problematic because no advice is provided about how it should be assessed. As this research unfolded, it became increasingly evident that significant aspects of the social and institutional contexts could be differentiated simply by lowering the level of analysis. At the onset of this research, small ventures operating within the broad new media and software industry within a delimited geographical space (the Province of Québec) were deemed to be sufficiently similar. Throughout the data collection, I discovered that the
organizations faced distinct challenges depending on whether they operate in the business software segment or in the entertainment software segment of the industry. Furthermore, within each segment, the organizations studied faced very specific social contexts which origins could be traced as far back as their founding (and even before, as was the case for CasualGames)\textsuperscript{41}. In the end, the major differences among the socio-technical arrangements exhibited by the organizations could be traced back to the notions of values, aspiration, time, slack, workforce demography and identity. While the possibility that my data collection methods were too crude to capture some nuances cannot be entirely ruled out, teasing out the specific effects tied to the fine-grained features of each specific technology appropriated would have surely increased the complexity of the theoretical explanation. Assessing similarities and differences in social contexts \textit{a priori} is thus a challenge in itself, as they may only be discovered and judged as salient through active engagement with the social settings studied later on. For researchers, the implication of this finding is not to render the advice to compare similar contexts employing different technologies unsound; rather, it warns researchers that aiming for a comparative research design that \textit{empirically} nullifies the influence of the social contexts in the hope that only the residue of technology effects remains is simply a very difficult feat to accomplish in practice. In this research, I employed a case selection procedure that aimed to maximize diversity while reducing differences in context to their maximum. One of the major difficulties I encountered was that the 15 industry insiders who participated in the procedure had very uneven knowledge of the organizations in the industry; they knew about the practices of six organizations on average. Interestingly, this growing interest within the social informatics community comes at a time when the organizational studies literature is shifting in the opposite direction by giving ever more importance to social context (Johns, 2006a). Thus, social informatics researchers should be careful about labelling social contexts as similar, since subtle differences in contexts could have large implications.

\textsuperscript{41} Appendix 8 provides a narrative description of each organization’s history.
9.3.3 The social construction of information technology security risk

These findings also have significance for the growing interest on the social construction of security values and practices by information systems researchers (Dhillon & Torkzadeh, 2006). Contrary to what I expected when I entered the field, little use was made of technical practices (passwords, firewalls, procedures, etc.) to enforce confidentiality and to restrict access in comparison to the use of social practices like ignorance and voluntary silence. As the IT manager from CasualGames mentioned, a lack of technical security which provides too much openness of data is sometimes perceived as a “lack of maturity”. Yet, managers at TradSoft mindfully preferred to keep technical practices of security at their bare minimum; this preference was not due to a leap of faith made necessary by the need for expediency, like the one observed at BigGames or CasualGames for instance. The interesting question spurred by such observation is not about which type of security practices is superior and how “maturity” should be assessed, but rather what circumstances trigger a switch from social practices to technical practices for ensuring security and how that affects the associated type of transparency. More importantly, it raises the question; are elevated degrees of certain types of transparency sustainable as an organization continues to grow? For instance, anecdotal evidence suggests that Google might have had practices and technological arrangements, until 2005 at least, akin to those I observed at TradSoft (Farber, 2005). Recent additional anecdotal evidence suggests that transparency has been significantly reduced in recent years, as management “clamped down on who had access the complete state of the business” (Lenssen & Ruscoe, 2007). Since the organizations were small nascent ventures rather than large established firms, it is possible to dismiss the attribution of their lack of technical security practices to their size; after all, one could argue that technical security practices and reduced degrees of certain types of transparency will prevail in the long term as they grow, just as it apparently happened to Google. This logic assumes however that the switch from social types of security practices to technical security practices is an inevitable outcome that results from a typical process; it also obscures the dynamics of the process and the
interesting possibility that there might be deviations from the typical process. Furthermore, even though TradSoft’s CEO confided to me that “the academic debate about whether [TradSoft’s] model is scalable or not to larger organizations... we don’t really care. It works for us.” (James, TradSoft CEO, quotation 45:2), there certainly are many practitioners who care about such issue.

9.3.4 The adoption and appropriation of information technology by high-growth ventures

Finally, the findings yield novel insights in how people in small ventures adopt and appropriate information technology due to the particular contexts in which this case study was conducted. The evidence collected at EdgeSoft, BigGames and CasualGames showed that ventures experiencing high-growth face critical technological challenges and dilemmas. Despite noteworthy stage models of the sophistication of technology management practices (King & Kraemer, 1984) and sophistication assessment frameworks (Cragg, 2002; Raymond & Paré, 1992), much of the literature on small ventures is relatively silent about the challenges imposed by the transition from a small organization to a large organization from a technological perspective. The consistent and dominant findings in this stream of research is that small ventures are impeded by a lack of financial resources and knowledge and that the influence of top management is significant (e.g. Ballantine, Levy, & Powell, 1998; Harrison, Mykytyn, & Riemenschneider, 1997; Raymond, 1985; Thong, 1999). The current research echoes those previous findings, but it goes a little further in two ways.

First, this research showed that growing small ventures manage to find a way to overcome adoption challenges by relying on low-cost improvised bricolage by “making do” with the technologies at hand. Managers and workers at BigGames, CasualGames, and EdgeSoft employed quick and dirty arrangements to fuel growth and free their attention so it can be allocated to other important issues. Even though improvised bricolage could generally be considered as mindless in comparison to a careful cycle of design, planning and analysis when adopting technology (Swanson & Ramiller, 2004), the findings suggest that some forms of
improvised bricolage may be functional and mindful when considering the multiplicity of conflicting functional requirements that nascent ventures need to deal with to ensure survival and growth in dynamic and turbulent environments. The answer to the question of when improvised technological bricolage becomes dysfunctional may rest with the idea that the fundamental recurring problems that are not solved by the improvised technological bricolage may accumulate past a tipping point beyond which they crowd out the organizational members’ attention and prevent the technological bricolage to provide the desired leverage to attend and spend resources on other pressing demands. Hence, whether improvised bricolage with technology is mindful or mindless remains an open question in need of further theoretical development and empirical investigation.

Second, this research also showed that information systems researchers should be careful about contextualizing their inquiries within small businesses (SME’s), as nascent and high-growth ventures in dynamic and turbulent environments face quite different information systems challenges than those faced by SME’s operating in more mature environments. The findings showed that the transition from a small organization to a large organization from a technological perspective is sensitive to specific contextual conditions, such as aspirations, time pressures, and slack. Early choices about aspirations and growth speed appear to be key influences on the time and resources available to a growing organization’s members not only for the adoption and appropriation of new technologies, but also for the development of an expert capability to adopt and appropriate new technologies. By slowing down growth, by taming its aspirations, and by pursuing a business model that generates slack resources, TradSoft appeared to have been able to mindfully adopt information technology to fulfill transparency functions, but also to develop an expert capability about how to select, adopt, and appropriate information technologies in a way that fits its activities. The constraints on the path-dependent technical trajectory which will be followed by an organization throughout its growth and lifespan thus appear to be at least partly the result of its own choosing; information systems researchers may thus need to extend their
inquiries back to the organization’s early beginnings to capture traces of this choice. Although the dynamics pertaining to high-growth ventures have been extensively documented in the organizational theory literature (e.g. Hambrick & Crozier, 1985; Perlow et al., 2002; Staw et al., 1981), there is an opportunity for information systems researcher to extend this literature with rich observations about how an information technology capability is developed effectively within those dynamics.

9.4 Limitations

This research contributes a number of findings and theoretical insights about transparency in organizations and its relationship to technology appropriations. However, three key limitations related to the research design need to be outlined.

First, the findings are limited by the cross-sectional nature of the data. Some informants provided retrospective accounts of how the past actions and events led to the present. Due to the semi-structured nature of interviews as well as documentary sources, I was able to gain insights into the origins of the social contexts faced by each organization. A number of contextual conditions were thus found to influence the ability of each organization to search for, to learn and to routinize new technology appropriations when transparency functions were felt to be unmet. These contextual conditions provide, however, only the seeds of a theory that can account for the variations in the nature of technology appropriations that emerge to meet transparency needs because the data collected for this study is cross-sectional and provides a static picture of current technology appropriations, functional alternatives and experienced consequences. Data pertaining to the specific “technological-trajectories” followed by each organization could not be collected in sufficient amount in order to provide a longitudinal analysis of the various appropriations made by the organizations. To gain a full understanding of the process through which technology appropriations evolve (or fail to evolve) from nascent appropriations to routinized appropriations.
to replace other technology appropriations, a longitudinal process-based research design would be more appropriate.

Second, the findings are also limited by the nature of interview data. Interviews are useful to gain an understanding of personal experiences and accounts of events, as well as to collect conflicting perspectives about an issue. The risk inherent with interview data is that it constitutes talk away from what Weick (1995, pp. 43-49) referred to as “thrownness”. In comparison to ethnographic and informant observation methods, interviews are occasions that punctuate informants’ ongoing flow of actions and force them to reflect and make sense of their and others’ actions. Decisions actually made on gut feelings or for a particular reason may be rationalized and provided with an unrelated justification post-hoc. The statements made during interviews may also differ significantly from what informants actually felt in actual situations or from how the situations would have been perceived by an observer. This bias was reduced as the informants within each organization tended to converge consistently in assessments and their accounts of their organization’s practices. In those occasions where informants within an organization didn’t agreed about certain issues, such divergence was interpreted as a symptom of latent tensions or conflicts to be further investigated – disagreements could thus be quite revelatory and such diversity of perspectives was intended rather than avoided. Furthermore, since the researcher is the data collection tool, the same experiences and situations may also have been recounted differently if someone different than me had conducted the interviews although the use of a standard semi-structured interview protocol reduces this threat to reliability. Finally, asking questions about information access, diffusion, and secrecy in organizations involves issues loaded with moral connotations. Some informants might not have felt at ease to discuss issues and events that would have an implication for this study’s findings. Because of the revelatory and candid nature of many of the statements made by informants across all organizations, this threat seems reduced however.
The third limitation pertains to the difficulty in generalizing these findings to settings other than small ventures in the business and entertainment software industry. Since the theoretical explanation was elaborated from the specific contexts faced by the organizations studied, the generalizability limitation rather consists of a current boundary condition to the theoretical explanation. To make sure that the theoretical explanation isn’t too specific, care was put into formulating the explanation at a mid-range level by employing concepts that are accompanied by their own theoretical baggage. This limitation thus calls for the explanation to be applied to different and larger contexts and to elaborate nuances to the notions of mobilizing, pooling artefacts, and reporting accountability transparencies.

9.5 Conclusion

This research was motivated by the desire to unpack the pervasive notion of transparency at the core of so many theoretical explanations of IS-related phenomena. I attempted to reduce the complexity surrounding this notion by examining its diverse meanings and its role in explanations among multiple social science and humanities literatures. While transparency was found to be an amorphous notion, a set of dimensions were derived to facilitate the comparison and accumulation of findings.

I also demonstrated the usefulness of functional analysis, complemented by a thick description of social context, by the exploration of the unexamined question of how technology appropriations relate to three types of transparency functions – mobilizing, pooling artefacts, and reporting accountability – as well as what consequences the failure to satisfy these types of transparency engender in four high-growth ventures from the new media and the creative industries, contexts which are in dire need of attention from information systems and social informatics researchers. Transparency functions were found to be equifinal, in that the organizations’ studied enacted a diversity of technology (and “offline”) appropriations to fulfill similar transparency functions. I also found that organizational members tend to seek alternative
practices, which are not necessarily technology-based, to complement or compete with technology appropriations when these latter fail to satisfy their intended transparency function. The dynamics surrounding the emergence of adequate technology appropriations to satisfy transparency functions was found to vary according to the type of transparency function, as a specific set of contextual conditions has particular relevance for each type of transparency function.

In organizations with little slack and a heightened perception of time famine due to the demands for rapid growth, people may resort to improvised bricolage with the technologies at hand to satisfy the transparency functions of pooling work artefacts and reporting accountability. However, such improvised bricolage allows organizational members to free up their attention on to other pressing functional demands. In the long term however, the reliance on “low-cost” improvised bricolage to satisfy transparency functions prevents the learning required for the development of an IT capability to take place, and may generate firefighting which crowds out organizational members attention from important functional needs of a high-growth venture.

Top management values and the demographic profile of a high-growth venture was also found to influence the adequacy with which technology appropriations fulfilled mobilizing transparency. Top managers holding values which favor a communal form of organization and a value-based employment relationship will generally tend to fulfill, either through technology appropriations or offline practices, the need for mobilizing transparency more satisfactorily than top managers holding values which favour a transactional employment relationship. However, the successful appropriation of technology to satisfy mobilizing transparency is also conditional upon the ethos of the occupational communities constituting the organization. When organizational members have liminal identities because they consider themselves as itinerant professionals, it becomes difficult to generate enthusiasm and the drive necessary for the technology appropriations to succeed in fulfilling mobilizing transparency requirements.
While it is now common knowledge that similar information technologies may be appropriated according to a diversity of purposes, this research is one of the first to demonstrate the theoretical usefulness of considering the possibility that different technologies may be appropriated to satisfy similar purposes, i.e., organizational functional requirements such as mobilizing the workforce, pooling work artefacts, and reporting accountability. In guise of concluding thought, I will appropriate Davis’ (1999, p. 269) elegant formulation: maybe the intricate tinkering and polishing of a quaint, old, worn, but still serviceable ideas like transparency, equifinality and function that I accomplished in this dissertation will help, hopefully, to bring new light upon core research questions of the information systems literature.

“Someone should start a flea market of ideas: where people with esoteric and nostalgic tastes could browse among quaint, old, worn, but still serviceable thoughts to find those that could be made interesting again with just a little tinkering and polishing.”

(Davis, 1999, p. 269)


Appendix 1

Literatures Surveyed for the Meanings of Transparency

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Appendix 2

The Meanings of Transparency: Summary Tables
## Social psychology

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<td>Theoretical</td>
<td>Theory of group behaviour and interpersonal relationships</td>
<td>“When organizations acquire a formal structure the spontaneous bond of intimacy and unity that sustains face-to-face groups is broken and replaced by more indirect arrangements. One fundamental consequence is that the understanding of the general purpose may no longer be available to many or most of the members. The objective of the organization may be known to only a few who are in control and may be shrouded in obscurity as far as most are concerned. Under these conditions arise relations of impersonality and lack of knowledge.” (p.265). “Much that happens in groups is known to some of their members and not to others. There is also much in group action that in the absence of special methods of observation remains unknown to all of the members. This is not in itself a surprising fact, since individuals are often not aware of the relations between their own actions. But the fact is significant; gaps in psychological representation must have consequences for group functioning. They become particularly important with increases in the size and complexity of groups.” (p.265).</td>
<td>Having knowledge of</td>
</tr>
<tr>
<td>Kiesler &amp; Kiesler (1969)</td>
<td>Theoretical</td>
<td>Theory of conformity</td>
<td>“This is often a good paradigm for studying the difference between public compliance and private acceptance. We simply remove the subject to a position or situation where the group cannot observe her. [...] Her public behaviour would be dependent on the possibility that the group could observe the behaviour. Of course, we don’t mean that the group must physically observe the behaviour, but only that the group be aware of the behaviour.” (p.63).</td>
<td>Having knowledge of</td>
</tr>
<tr>
<td>Kiesler (1971)</td>
<td>Theoretical</td>
<td>Theory of commitment</td>
<td>“I hypothesize, then, that one may increase the degree of commitment by increasing one or more of the following. 1. The explicitness of the act, e.g., how public or otherwise unambiguous the act was.” (p.33).</td>
<td>Having knowledge of</td>
</tr>
<tr>
<td>Zajonc (1965)</td>
<td>Theoretical</td>
<td>Theory of social facilitation</td>
<td>“Research in the area of social facilitation may be classified in terms of two experimental paradigms: audience effects and co-action effects. The first experimental paradigm involves the observation of behaviour when it occurs in the presence of passive spectators. The second examines behaviour when it occurs in the presence of other individuals also engaged in the same activity.”</td>
<td>Having knowledge of</td>
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<td>Source</td>
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<tr>
<td>Altman (1975)</td>
<td>Theoretical</td>
<td>Theory of privacy</td>
<td>“Selective control of access to the self or to one’s group by regulation of input from others through use of barriers and regulation of personal output in the form of communication with others.” (p.24).</td>
<td>Control of access</td>
</tr>
<tr>
<td>Salancik &amp; Pfeffer (1978)</td>
<td>Empirical</td>
<td>Effect of secrecy on decision making in organizations</td>
<td>[About secrecy] “Thus, one argument is that making public the decision-maker’s name and the information used might increase the salience of the social context in which the decisions are being made. The person might then attend more to the implications of the decision for the social context and make greater use of normative standards for resolving decision uncertainties.” (p.248).</td>
<td>Having knowledge of</td>
</tr>
<tr>
<td>Gilovich &amp; Savitsky (1999)</td>
<td>Theoretical/ Review</td>
<td>The spotlight effect and the illusion of transparency</td>
<td>“people tend to overestimate the extent to which their internal sensations leak out and are apparent to others. We refer to this as the illusion of transparency” (p.167).</td>
<td>Having knowledge of</td>
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Table 1. Meanings of transparency & related terms in the social psychology literature
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<th>Source</th>
<th>Theoretical/ Empirical</th>
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<th>Meaning</th>
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<tr>
<td>Coser (1961)</td>
<td>Theoretical</td>
<td>Relationship between insulation from observability and social conformity</td>
<td>“The extent to which role performances within an organization are open to observation by others is structurally determined. <strong>Observability</strong> provides transparency of social arrangements and makes modelling behaviour possible. […] Who observes whom, when, where, and how must be more or less established and therefore roughly predictable if a social structure is to operate with a certain amount of stability. Regulation of <strong>observability</strong> […] is a structural requirement. […] Whether in industrial plants or in the army, in universities, hospitals, or among businessmen, offices insulate and connect the actors through an apparatus both physical and social of telephones, paper records and intermediary persons such as secretaries, assistants, etc., thus affecting the patterned amounts and kinds of <strong>observability</strong>. Insulation from <strong>observability</strong> and access to it are just as important structural elements in a bureaucracy as the distribution and delimitation of authority.” (p.28-29).</td>
<td>Exposure to public notice</td>
</tr>
<tr>
<td>Friedkin (1983)</td>
<td>Empirical</td>
<td>Structural analysis of social influence &amp; differentiation</td>
<td>“<strong>Observability</strong> of role performance has been of interest to sociologists since preliminary statements on the subject by Simmel. Simmel used the term, surveyable, to refer to the extent to which the role performance of persons in a system may be scrutinized.” (p.56).</td>
<td>Exposure to public notice</td>
</tr>
<tr>
<td>Garfinkel (1967)</td>
<td>Theoretical</td>
<td>Theoretical statement of ethnomethodology</td>
<td>“Their [the studies] central recommendation is that activities whereby members produce and manage settings of organized everyday affairs are identical with members’ procedures for making those settings ‘account-able’. […] When I speak of accountable my interests are directed to such matters as the following. I mean <strong>observable</strong> and reportable, i.e. available to members as situated practices of looking-and-telling” (p.1).</td>
<td>Having the potential to be justified, explained to others</td>
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<tr>
<td>Schwartz (1968)</td>
<td>Theoretical</td>
<td>Theory of privacy</td>
<td>“Patterns of interaction in any social system are accompanied by counter-patterns of withdrawal, one highly institutionalized (but unexplored) mode of which is <strong>privacy</strong>. There exists a threshold beyond which social contact becomes irritating for all parties; therefore, some provision for removing oneself from interaction and <strong>observation</strong> must be built into every establishment. […] <strong>Privacy</strong>, which is bought and sold in social establishments, reflects and affirms status”</td>
<td>Exposure to public notice</td>
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<td>Source</td>
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<tr>
<td>Shils (1956)</td>
<td>Empirical</td>
<td>Role of secrecy in McCarthyism in the early Cold War</td>
<td>“Privacy is the voluntary withholding of information. The right to privacy restricts the power of outsiders to uncover or to force the disclosure of private matters. Privacy is the antithesis of publicity, which is the disclosure of information to a broad public [...]. The restriction on publicity imposed by secrecy has by its nature an element of coercion in it. Privacy is the voluntary withholding of information reinforced by a willing indifference. Secrecy is the compulsory withholding of knowledge, reinforced by the prospect of sanctions for disclosure. Both are enemies, in principle, of publicity.” (p.22-26).</td>
<td>Access to information</td>
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<tr>
<td>Lowry (1972)</td>
<td>Theoretical</td>
<td>Secrecy and security systems</td>
<td>“Defined as the possession of special, hidden, and unacknowledged information, secrecy has always been a characteristic of human organizations. […] Secrecy as an elaborate social system of rules, rituals, codes, and penalties is particularly characteristic in modern organizations.” (p.438).</td>
<td>Access to information</td>
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<tr>
<td>Moore &amp; Tumin (1949)</td>
<td>Theoretical</td>
<td>Theory of the social functions of ignorance</td>
<td>“Ignorance is to be taken here as simply referring to ‘not knowing,’ that is, the absence of empirically valid knowledge. […] The central theorem of this paper holds that, quite apart from the role of ultimate values and the attitudes relative to them, perfect knowledge is itself impossible, and an inherently impossible basis of social action and social relations. Put conversely, ignorance is both inescapable and an intrinsic element in social organization generally, although there are marked differences in the specific forms, degrees, and functions of ignorance in known social organizations. […] In many instances, of course, the counterpart of ignorance on the part of the outsider is secrecy on the part of the possessor of knowledge.” (p.788).</td>
<td>Having knowledge of</td>
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<tr>
<td>Weber (1948)</td>
<td>Theoretical</td>
<td>Theory of bureaucracy</td>
<td>“Every bureaucracy seeks to increase the superiority of the professionally informed by keeping their knowledge and intentions secret. Bureaucratic administration always tends to be an administration of ‘secret sessions’; in so far as it can, it hides its knowledge and action from criticism […]. The tendency toward secrecy in certain administrative fields follows their material nature: everywhere that the power interests of the domination structure toward the outside are at stake, whether it is an economic competitor of a private enterprise, or a foreign, potentially hostile polity, we find secrecy. […] The concept of the ‘official secret’ is the specific invention of bureaucracy, and nothing is so fanatically defended by the bureaucracy as this attitude” (p.233).</td>
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<td>Holzner &amp; Holzner (2006)</td>
<td>Empirical</td>
<td>Analysis of the societal trend toward transparency</td>
<td>“it [transparency] is the social value of open, public, and/or individual access to information held and disclosed by centers of authority” (p.13).</td>
<td>Access to information</td>
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<tr>
<td>Simmel (1906)</td>
<td>Theoretical</td>
<td>Theory of secrecy and secret society</td>
<td>“If there were such a thing as complete reciprocal transparency, the relationships of human beings to each other would be modified in a quite unimaginable fashion. […] the reciprocal knowledge, which is the positive condition of social relationships, is not the sole condition. On the contrary, such as those relationships are, they actually presuppose also a certain nescience, a ratio, that is immeasurably variable to be sure, of reciprocal concealment.” (p.447-448).</td>
<td>Having knowledge of</td>
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<tr>
<td>Goffman (1959)</td>
<td>Theoretical</td>
<td>Theory of the presentation of self in society</td>
<td>“A region may be defined as any place that is bounded to some degree by barriers to perception. Regions vary, of course, in the degree to which they are bounded and according to the media of communication in which the barriers to perception occur.” (p.106). “A back region or backstage may be defined as a place, relative to a given performance, where the impression fostered by the performance is knowingly contradicted as a matter of course. […] Since the vital secrets of a show are visible backstage and since performers behave out of character while there, it is natural to expect that the passage from the front region to the back region will be kept closed to members of the audience or that the entire back region will be kept hidden from them.” (p.112-113).</td>
<td>Having knowledge of</td>
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<tr>
<td>Jaworski (1990)</td>
<td>Theoretical</td>
<td>Analysis of the contribution of Simmel's work to Merton’s work.</td>
<td>“Merton uses two words, visible or observable, to refer to one group property. […] On the one hand, the terms refer to a property of an observable, that is, the extent to which some behaviour pattern is obvious or hidden to others in a group. […] On the other hand, the terms are also used by Merton to refer to an attribute of a social position.” (p.101).</td>
<td>(1) Exposure of a behaviour to public notice within a social structure (2) Exposure of a role to public notice within a social structure</td>
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<tr>
<td>Merton</td>
<td>Theoretical</td>
<td>Theory of reference group and social structure</td>
<td>“Degree of visibility or observability within the group: This property refers to the extent to which the norms and the role-performances within a group are readily open to observation by others (status-inferiors, peers, and status-superiors).” (p.373). “It was provisionally suggested that from the standpoint of sociological theory, visibility is the counterpart in social structure of what, from the standpoint of psychological theory, is social perception. The sociological study of visibility is addressed to the problems of how social structures make for ready or difficult awareness of the norms prevailing in the group and of the extent to which members of the group live up to these norms. […] ‘Visibility,’ then, is a name for the extent to which the structure of a social organization provides occasion to those variously located in that structure to perceive the norms obtaining in the organization and the character of role-performance by those manning the organization. It refers to an attribute of social structure, not to the perceptions which individuals happen to have.” (p.404).</td>
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<tr>
<td>Warren</td>
<td>Empirical</td>
<td>Analysis of power bases within an organization</td>
<td>“‘Visibility’ refers to the extent to which the carrying out of role requirements permits direct access to role performance.” (p.954).</td>
<td>Exposure to public notice</td>
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Table 2. Meanings of transparency & related terms in the sociology literature
## Anthropology

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<td><strong>Seeing</strong></td>
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<td>Goodwin (1994)</td>
<td>Empirical</td>
<td>Theory of vision from a ‘practice’ ontological perspective</td>
<td>“I examine two contexts of professional activity: archaeological field excavation and legal argumentation. In each of these contexts, I investigate three practices: (1) coding, […] (2) highlighting, […] and (3) producing and articulating material representations. By applying such practices to phenomena in the domain of scrutiny, participants build and contest professional vision, which consists of socially organized ways of seeing and understanding events that are answerable to the distinctive interests of a particular social group.” (p.606)</td>
<td>Embodied, contextualized practice</td>
</tr>
<tr>
<td>Goodwin &amp; Goodwin (1996)</td>
<td>Empirical</td>
<td>Analysis of vision from a ‘practice’ ontological perspective within an airport control room</td>
<td>“One of the themes that will quickly become apparent in this paper is the way in which the ability to see something is always tied to a particular position encompassing a range of phenomena including placement within a larger organization, a local task, and access to relevant material and cognitive tools.” (p.61).</td>
<td>Embodied, contextualized practice</td>
</tr>
<tr>
<td>Jasanoff (1998)</td>
<td>Empirical</td>
<td>Analysis of vision from a ‘practice’ perspective within the context of trials</td>
<td>“Drawing on transcripts and opinions from US legal cases involving DNA testimony, I suggest that seeing is an essential precondition for believing, but that the right to see is itself in dispute when science comes under legal scrutiny. To establish a privileged point of view with respect to scientific facts, conflicts must be resolved between divergent visual representations of the evidence, between direct and ‘virtual’ witnessing, and between lay and professional vision. Who resolves such disputes and by what rules, emerge therefore as substantial questions for the legal process.” (p.717).</td>
<td>Embodied contextualized practice</td>
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<td><strong>Transparency</strong></td>
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<td>Lave &amp; Wenger (1991)</td>
<td>Theoretical</td>
<td>Theory of learning in communities of practice</td>
<td>“Transparency in its simplest form may just imply that the inner workings of an artefact are available for the learner’s inspection: The black box can be opened, it can become a ‘glass box.’ But there is more to understanding the use and significance of an artefact: Knowledge within a community of practice and ways of perceiving and manipulating objects characteristic of community practices are encoded in artefacts in ways that can be more or less revealing. […] In focusing on the epistemological role of artefacts in the context of the social organization of knowledge, this notion of transparency constitutes, as it were, the cultural organization of access. As such, it does not apply to technology only, but to all forms of access to practice.” (p.102). “the notion of transparency, taken very broadly, is a way of organizing activities</td>
<td>Access to information &amp; Insight</td>
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Table 3. Meanings of transparency & seeing in the anthropology literature

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<td>that makes their meaning visible.&quot; (p.105).</td>
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"that makes their meaning visible." (p.105).
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<tbody>
<tr>
<td>Angeletos &amp; Pavan</td>
<td>Empirical</td>
<td>Simulation of optimal transparency in an economy</td>
<td>“We interpret an increase in the transparency of public information either as a reduction in the level of common uncertainty for given level of idiosyncratic uncertainty (that is, an increase in the absolute precision of public information), or as a reduction in the heterogeneity of expectations across market participants for given level of overall uncertainty (that is, an increase in the relative precision of public information).” (p.2).</td>
<td>Precision of information</td>
</tr>
<tr>
<td>Bloomfield &amp; O’Hara</td>
<td>Empirical</td>
<td>Simulation of whether transparency decreases the competitiveness of markets or not</td>
<td>“We focus on two market settings: a transparent market, in which trades are immediately reported and a low-transparency market, in which trades are not reported.” (p.428-429).</td>
<td>Disclosure</td>
</tr>
<tr>
<td>Demirgüc-Kunt &amp; Kane</td>
<td>Empirical</td>
<td>Analysis of the institutional requirements for deposit insurance policies</td>
<td>“Complete transparency is obtained when institutions disclose information that perfectly and costlessly informs either bank creditors or supervisors about changes in a bank’s financial condition and risk taking.” (p.182).</td>
<td>Disclosure</td>
</tr>
<tr>
<td>Geraats</td>
<td>Theoretical</td>
<td>Review of the consequences of central bank transparency</td>
<td>“Central bank transparency could be defined as the absence of asymmetric information between monetary policy makers and other economic agents. This means that it reduces uncertainty and this is often believed to be beneficial (although it need not be).” (p.F533).</td>
<td>Access to information</td>
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<tr>
<td>Jin &amp; Myers</td>
<td>Empirical</td>
<td>Analysis of how disclosure affect risk bearing between managers and shareholders</td>
<td>“MYY are on the right track, but it turns out that imperfect protection for investors does not affect ( R^2 ) if the firm is completely transparent. Some degree of opaqueness (lack of transparency) is essential. We show how limited information affects the division of risk bearing between inside managers and outside investors.” (p.258).</td>
<td>Access to information</td>
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<tr>
<td>Morris &amp; Shin</td>
<td>Empirical</td>
<td>Simulation of the welfare</td>
<td>“More generally, the policy response to the recent turbulence in international financial markets has been to call for increased transparency through disclosures”</td>
<td>Disclosure</td>
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<tr>
<td>Morris &amp; Shin</td>
<td>Empirical</td>
<td>Analysis of the consequences of central bank transparency</td>
<td>“A narrower debate over central bank transparency considers whether a central bank should publish its forecasts and whether it should have a publicly announced, numerical target for inflation.” (p.1).</td>
<td>Disclosure</td>
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<td>(2005)</td>
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<td>Porter &amp; Weaver</td>
<td>Empirical</td>
<td>Analysis of the determinants of trade reporting transparency</td>
<td>“Post-trade transparency is defined as the amount of trading information that is made publicly available on a timely basis following a completed transaction.” (p.231).</td>
<td>Access to information</td>
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<td>(1998)</td>
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<tr>
<td>Prat (2005)</td>
<td>Empirical</td>
<td>Simulation of the consequences of transparency</td>
<td>“There is a widespread perception, especially among economists, that transparency is a beneficial element in agency relationships because more information about the agent makes the agent more accountable to the principal.” (p.1).</td>
<td>Access to information</td>
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<tr>
<td>Stiglitz (2000)</td>
<td>Theoretical</td>
<td>Review of the research in information economics</td>
<td>“The recent global crisis also brought to the fore concerns about transparency—another name for information. Lack of transparency was blamed not only for misleading investors into putting excessive funds into the region, but also for the subsequent flight of funds from the region. Lack of information implied that investors could not discriminate effectively among borrowers, and so rationed credit to all.” (p.1466).</td>
<td>Access to information</td>
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<tr>
<td>Svensson (2006)</td>
<td>Empirical</td>
<td>Analysis of Morris &amp; Shin (2002) findings</td>
<td>“Transparency is defined here as the precision of the public signal, ( \alpha ). That is, more transparency is identified with higher precision of (less noise in) the public signal.” (p.448).</td>
<td>Precision of information</td>
</tr>
<tr>
<td>Thomas (2002)</td>
<td>Empirical</td>
<td>Analysis of the role of diversification in disclosure problems</td>
<td>“The degree of information asymmetry between managers and outsiders may differ for diversified versus focused firms. The source of the difference in asymmetry could be that diversified firms are less transparent than focused firms. For instance, while managers of diversified firms can observe divisional cash flows, outsiders can observe only noisy estimates of divisional cash flows.” (p.375).</td>
<td>Access to information</td>
</tr>
<tr>
<td>Yu (2005)</td>
<td>Empirical</td>
<td>Analysis of the consequences of disclosure for</td>
<td>“Following an extensive accounting literature, the annual ranking of corporate disclosure practices published by the Association for Investment and Management Research is used to measure the transparency of accounting.”</td>
<td>Disclosure</td>
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<td>credit spreads</td>
<td>information.” (p. 61).</td>
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Table 4. Meanings of transparency in the economics literature
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| Eden (2004)  | Empirical             | Analysis of how and why the U.S. government failed to predict nuclear fire damage for more than 50 years | “Although professional standards within the nuclear weapons effects community have been high, the issue of nuclear fire damage has been nearly invisible to the public. There has been very little mention in the press or discussion by scholars of its importance or omission in war planning, and no discussion until now of how this has come about. The lack of visibility resulted from both formal secrecy and opacity. […] Still, it may not be the formal secrecy that has kept the issue from public awareness so much as opacity: Even unclassified information is not widely understood. Unlike building design, the technical issues are not familiar to a broad community of practicing professionals.” (p.303). | Secrecy: Access to information  
Opacity: Lack of insight  
Visibility: Awareness/Having knowledge of |
| Transparency |                       |                                                       | “In states, we define transparency as legal, political, and institutional structures that make information about the internal characteristics of a government and society available to actors both inside and outside the domestic political system. […] In general, transparency is increased by any mechanism that leads to the public disclosure of information such as a free press, open government hearings, and the existence of nongovernmental organizations with an incentive to release objective information about the government.” (p.316).  
“Nonetheless, it should be noted that transparency affects the amount and type of information observers receive rather than its interpretation.” (p.317). | Access to information |
| Finel & Lord (1999) | Empirical             | Analysis of the consequences of transparency for the resolution of international conflict | “In states, we define transparency as legal, political, and institutional structures that make information about the internal characteristics of a government and society available to actors both inside and outside the domestic political system. […] In general, transparency is increased by any mechanism that leads to the public disclosure of information such as a free press, open government hearings, and the existence of nongovernmental organizations with an incentive to release objective information about the government.” (p.316).  
“Nonetheless, it should be noted that transparency affects the amount and type of information observers receive rather than its interpretation.” (p.317). | Access to information |
<p>| Finel &amp; Lord (2000) | Theoretical           | Statement about the importance of research about transparency | “transparency in the political realm is a condition in which information about governmental preferences, intentions, and capabilities is made available either to the public or other outsiders.” (p.3). | Access to information |
| Florini (1998) | Theoretical           | Analysis of the role of transparency in society and politics | “Just what is transparency? Put simply, transparency is the opposite of secrecy. Secrecy means deliberately hiding your actions; transparency means deliberately revealing them. This element of volition makes the growing acceptance of transparency much more than a resigned surrender to the technologically facilitated intrusiveness of the Information Age.” (p.50). | Exposure to public notice |</p>
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<tr>
<td>Jervis (1985)</td>
<td>Empirical</td>
<td>Analysis of international security cooperation</td>
<td>“Cooperation is made more likely not only by changes in payoffs, but also by increases in the states’ ability to recognize what others are doing – called ‘transparency’ in the literature on regimes.” (p.45).</td>
<td>Awareness/Having knowledge of</td>
</tr>
<tr>
<td>Mitchell (1998)</td>
<td>Theoretical</td>
<td>Analysis of the sources and the role of transparency in international institutions</td>
<td>“Transparency as used here refers to the availability of regime-relevant information. Although transparency also includes the ‘openness’ of a government’s political system and decision-making procedures to external observers, I focus in this article on a narrower conception of transparency as information regarding the operation and impact of a regime.” (p.110).</td>
<td>Access to information</td>
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</tbody>
</table>

Table 5. Meanings of transparency & related terms in the political science literature
<table>
<thead>
<tr>
<th>Source</th>
<th>Theoretical/ Empirical</th>
<th>Focus</th>
<th>Quote</th>
<th>Meaning</th>
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<tbody>
<tr>
<td>Ball, Robin, &amp; Wu (2003)</td>
<td>Empirical</td>
<td>Analysis of the consequences of incentives and accounting standards on disclosure quality</td>
<td>“‘Quality’ here addresses the extent to which accounting information reflects the underlying economic situation of the firm. It is related to the concept of ‘transparency,’ defined as the ability of users to ‘see through’ the financial statements to comprehend the underlying accounting events and transactions in the firm.” (p.237).</td>
<td>Insight</td>
</tr>
<tr>
<td>Bushman, Chen, Engel, &amp; Smith (2004)</td>
<td>Empirical</td>
<td>Analysis of corporate governance systems on disclosure timeliness</td>
<td>“We use the term corporate transparency to refer to the clarity of the activities and performance of the firm to outsiders.” (p.168).</td>
<td>Insight</td>
</tr>
<tr>
<td>Bushman, Piotroski, &amp; Smith (2004)</td>
<td>Empirical</td>
<td>Analysis of the components of the construct of transparency in accounting</td>
<td>“we develop a framework for conceptualizing and measuring information systems that contribute to corporate transparency, defined as the availability of firm-specific information to those outside publicly traded firms […] We conceptualize corporate transparency within a country as the joint output of a multifaceted system whose components collectively produce, gather, validate, and disseminate information to market participants outside the firm.” (p.208).</td>
<td>Access to information</td>
</tr>
<tr>
<td>Khanna, Palepu, &amp; Srinivasan (2004)</td>
<td>Empirical</td>
<td>Analysis of the disclosure practices of firms outside the U.S.A.</td>
<td>“We also look at only one element of corporate governance: disclosure and transparency. As Bushman and Smith (2001) point out, financial reporting and disclosure is an important component of a corporate governance system because it allows investors and other outside parties to monitor firm performance and contractual commitments.” (p.476).</td>
<td>Access to information</td>
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<td>Source</td>
<td>Theoretical/ Empirical</td>
<td>Focus</td>
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<tr>
<td>Macintosh (2002)</td>
<td>Theoretical</td>
<td>Critical analysis of accounting as a discursive practice</td>
<td>“The conventional wisdom also holds that financial accounting signs, such as costs, revenues, income, and capital, should reflect their underlying events and transactions in a transparent manner. [...] The assumption that costs and revenues, and indeed accounting statements in general, should transparently reflect something real, existing ‘out there’ before its capture in the accounts, indicates that conventional accounting thought remains wedded to the proposition that there is an underlying objective reality to which accounting signs should correspond and against which their faithfulness may be judged. [...] This realist ontology still dominates accounting theory and practice and shows little danger of waning.” (p.68). “This tenet, it is important to realize, is underpinned by philosophy’s theory of correspondence.” (p.115).</td>
<td>Correspondence</td>
</tr>
<tr>
<td>Richardson &amp; Welker (2001)</td>
<td>Empirical</td>
<td>Analysis of the linkages between social &amp; financial disclosure and the cost of capital</td>
<td>“Regulators have argued that equity markets require comprehensive and transparent disclosures of value-relevant information by firms in order to function efficiently [...]” (p.597)</td>
<td>Access to information</td>
</tr>
<tr>
<td>Bhattacharya, Daouk, &amp; Welker (2003)</td>
<td>Empirical</td>
<td>Analysis of the costs of the opacity of earnings disclosure</td>
<td>“We define the earnings opacity of a country as the extent to which the distribution of reported earnings of firms in that country fails to provide information about the distribution of the true, but unobservable, economic earnings of firms in that country. As reported earnings of a particular firm in a country equals unobservable economic earnings plus a noise term, earnings opacity of a country is simply the average lack of informativeness of reported earnings in that country.” (p.642).</td>
<td>Informativeness</td>
</tr>
<tr>
<td>Boland (1987)</td>
<td>Theoretical</td>
<td>Discussion of cost accounting as a discursive practice</td>
<td>“I sense, however, that the important notion of visibility and the way cost accounting (and social science in general) makes the individual visible may not be emphasized well enough. The paper may leave the impression that making visible is akin to merely shining a light on something that was simply there but hidden. On the contrary, the visibility created by cost accounting is an invention. It is a visibility made possible by the discursive practices in which cost accounting is located. The person we see through cost accounting is a creation of that discourse, not a human essence that had simply been waiting to be illuminated.” (p.271).</td>
<td>Exposure to public notice</td>
</tr>
<tr>
<td>Burchell,</td>
<td>Theoretical</td>
<td>Discussion of</td>
<td>“By creating a new pattern of organizational visibility, for instance, computational exposure to public notice is...”</td>
<td>Exposure to...</td>
</tr>
<tr>
<td>Source</td>
<td>Theoretical/ Empirical</td>
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<tr>
<td>Hopwood, Clubb, &amp; Hughes (1980)</td>
<td>Theoretical</td>
<td>the roles and functions of accounting in society</td>
<td>“practices can often significantly change organizational participants’ perceptions of the problematic and the possible.” (p.16).</td>
<td>public notice</td>
</tr>
<tr>
<td>Hopwood (1987)</td>
<td>Theoretical</td>
<td>Analysis of theoretical approaches to the study of accounting changes</td>
<td>“Emphasis has been placed on the particular visibilities created by accounting systems and the means by which they, in turn, shifted perceptions of organisational functioning, mediated the recognition of problems and the options available for their resolution, and infused the patterns of language, meaning and significance within the organisation.” (p.228).</td>
<td>Exposure to public notice</td>
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<tr>
<td>Miller &amp; O’Leary (1987)</td>
<td>Theoretical</td>
<td>Analysis of the emergence of cost accounting as a technique of power</td>
<td>“we have been concerned with the way accounting, in conjunction with other practices, serves to construct a particular field of visibility. Rather than view accounting as a neutral tool of observation we have attempted to examine how accounting assists in rendering visible certain crucial aspects of the functioning of the enterprise.” (p.239).</td>
<td>Exposure to public notice</td>
</tr>
<tr>
<td>Morgan &amp; Willmott (1993)</td>
<td>Theoretical</td>
<td>Review of critical accounting research</td>
<td>“The insight that accounting practices are productive of visibility, and invisibility, merits close considerations. First, it suggests that accounting practices are selective in what they render visible. Some things are endowed with an existence and are given attention; others go unrecognized and unrecorded. […] Second, there is the related issue of how accounting renders phenomena visible. […] Accounting produces visibility in a distinctive manner: as it gives phenomena attention, it simultaneously translates and transforms them into a numerical value.” (p.9-10).</td>
<td>Exposure to public notice</td>
</tr>
<tr>
<td>Roberts &amp; Scapens (1985)</td>
<td>Theoretical</td>
<td>Statement of a framework for the study of how accounting is used in organizations</td>
<td>“The principal potential of accounting systems lies both in the way they reduce information about a whole variety of situations to a common and hence comparable form, and in the way they allow this information to bridge physical distance by making what is physically remote from senior managers “visible” to them, and giving them a form of “presence” at lower levels in an organization. This visibility and this presence, however, are only partial.” (p.451).</td>
<td>Exposure to public notice</td>
</tr>
<tr>
<td>Swieringa &amp; Weick (1987)</td>
<td>Theoretical</td>
<td>Analysis of accounting statements as inducers of commitment</td>
<td>“Finally, the accounting system provides ways in which managers can obtain new insights into their business. Breaking return on investment into the components of profitability and turnover can clarify the structure of profit and loss in operations. Essentially, accounting is a way of making things visible. But, the accounting data may not always mirror economic realities and accounting reports may suggest a world that may not exist.” (p.294).</td>
<td>Exposure to public notice</td>
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Table 6. Meanings of transparency & visibility in the accounting literature
## Institutional & corporate governance

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<tr>
<th>Source</th>
<th>Theoretical/ Empirical</th>
<th>Focus</th>
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<th>Meaning</th>
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<tbody>
<tr>
<td>Doern (1996)</td>
<td>Theoretical</td>
<td>Analysis of antitrust policies in international trade</td>
<td>“<em>Transparency</em> involves openness as to decision-making and the exercise of discretion. But as a realm of corporate micro-economic governance, competition policy immediately involves a partial collision between <em>transparency</em> and the vital issue of confidential commercial information.” (p.280).</td>
<td>Exposure to public notice</td>
</tr>
<tr>
<td>Hanson (2003)</td>
<td>Theoretical</td>
<td>Analysis of transparency policies in emergent financial markets</td>
<td>“The ‘politics of <em>transparency</em>’ in global markets are characterized by politics that emerge along these two processes. There are contests of authority regarding what is pertinent information – that is, financial information – and how it is collected. There are also contests of authority over the boundaries in which such financial information is diffused – that is, to whom the information is made accessible.” (p.67-68).</td>
<td>Access to information</td>
</tr>
<tr>
<td>Hebb (2006)</td>
<td>Empirical</td>
<td>Analysis of the role of pension funds in corporate governance</td>
<td>“we conclude that […] <em>transparency</em> is fundamentally about the availability of information to all the actors within the firm, principals, agents and stakeholders alike […]. <em>Transparency</em> mechanisms require increased material disclosure of corporate information in a manner that allows shareholders and stakeholders to be fully informed.” (p.386).</td>
<td>Access to information</td>
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<tr>
<td>Mallin (2002)</td>
<td>Opinion</td>
<td>Editorial about the importance of research on transparency in governance</td>
<td>“*Transparency/disclosure includes disclosure of information on: financial/operating results, ownership structure, members of Board of Directors and management, quantitative and qualitative matters concerning employees and other stakeholders in the corporation, governance structures and policies, corporate targets and prospects, execution of unusual and complex transactions on derivative products and their level of risk.” (p.253).</td>
<td>Access to information</td>
</tr>
<tr>
<td>Millar, Eldomiatiy, Choi, &amp; Hilton (2005)</td>
<td>Theoretical</td>
<td>Analysis of the consequences of corporate transparency in emerging markets</td>
<td>“Institutional <em>transparency</em> is the extent to which there is publicly available clear, accurate information, formal and informal, covering accepted practices related to capital markets, including the legal and judicial system, the government’s macroeconomic and fiscal policies, accounting norms and practices (including corporate governance and the release of information), ethics, corruption, and regulations, customs and habits compatible with the norms of society.” (p.166).</td>
<td>Access to information</td>
</tr>
<tr>
<td>Otness (2002)</td>
<td>Theoretical</td>
<td>Comment about the rights</td>
<td>“Essentially, the problem is one of fragmentation and <em>transparency</em>. Increasing order interaction and competition among market centers depends on ‘giving”</td>
<td>Access to information</td>
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<tr>
<td>Source</td>
<td>Theoretical/ Empirical</td>
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<tr>
<td>Smythe &amp; Smith (2006)</td>
<td>Empirical</td>
<td>Analysis of the WTO’s transparency policies</td>
<td>“Two means by which citizens hold governments accountable are, first, the formality and clarity of the decision making process and, second, the public’s right to information about that decision and how it has been made—that is, transparency.” (p.33).</td>
<td>Access to information</td>
</tr>
<tr>
<td>Stiglitz (2003)</td>
<td>Theoretical</td>
<td>Comment about the governance policies of the World Bank</td>
<td>“When direct democratic accountability is lacking, alternative control mechanisms must be sought. Of these, openness and transparency are the most important. It is not just that they are fundamental to democratic processes. Public scrutiny will put a check on the most abusive practices. It can increase the likelihood that the policies that are in the general interest – not just in the special interest of, say, the financial community – are pursued. […] The IMF, no less than democratic governments, should be subjected to Freedom of Information acts.” (p.133).</td>
<td>Access to information</td>
</tr>
<tr>
<td>Williams (1999)</td>
<td>Theoretical</td>
<td>Statement about the legitimacy of requirements for corporate social disclosure in the SEC policies</td>
<td>“This financial transparency derives primarily from the specific information about operating results, presented using rigorous accounting principles, that federal securities laws require public companies to report on a quarterly and annual basis. […] This Article evaluates whether the Securities and Exchange Commission (SEC) has the power to require social as well as financial disclosure. Social disclosure would provide additional information bearing on how profits are being generated, in addition to financial information stating that profits are being generated.” (p.1199-1201).</td>
<td>Access to information</td>
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</tbody>
</table>

Table 7. Meanings of transparency in the institutional & corporate governance literature
## Operations management

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<tr>
<th>Source</th>
<th>Theoretical/ Empirical</th>
<th>Focus</th>
<th>Quote</th>
<th>Meaning</th>
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<tbody>
<tr>
<td><strong>Transparency</strong></td>
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<tr>
<td>Akkermans &amp; Vos (2003)</td>
<td>Empirical</td>
<td>Analysis of the bullwhip effect in supply chains</td>
<td>“A proposed countermeasure is to share point-of-sales (POS) and inventory data among stakeholders in the supply chain. This information transparency facilitates the implementation of an echelon-based inventory control system yielding superior performance.” (p.206).</td>
<td>Information sharing</td>
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<tr>
<td><strong>Visibility</strong></td>
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<tr>
<td>Croson &amp; Donohue (2003)</td>
<td>Empirical</td>
<td>Analysis of the behavioural causes of the bullwhip effect</td>
<td>“For example, Home Depot now uses POS scanning systems to collect data on everything from ten-penny nails to deck coating. Home Depot shares this data with 400 of its highest volume vendors, with more expected to follow in coming years. Since this type of system installation is often accompanied by changes in warehouse, shipping, and replenishment policies, it is difficult to measure empirically what fraction of improvements (if any) is due to POS data visibility itself.” (p.2).</td>
<td>Access to information</td>
</tr>
<tr>
<td>Lee, So, &amp; Tang (2000)</td>
<td>Empirical</td>
<td>Simulation of the consequences of visibility in a supply chain</td>
<td>“By letting the supplier have visibility of point-of-sales data, the harmful effect of demand distortion can be ameliorated.” (p.626-627).</td>
<td>Access to information</td>
</tr>
<tr>
<td>Kleindorger &amp; Saad (2005)</td>
<td>Empirical</td>
<td>Analysis of the risks of disruption in supply chains</td>
<td>“In the multi-company supply chain, two key issues arise: first, is the requirement in the risk assessment process to have supply-chain wide visibility of vulnerabilities […] The first of these requires information sharing across supply chain participants, and is certainly not an easy matter, since a company with special vulnerabilities may have every incentive to hide these from other supply chain participants.” (p.57).</td>
<td>Information sharing</td>
</tr>
<tr>
<td>Swaminathan &amp; Tayur (2003)</td>
<td>Theoretical</td>
<td>Review of the theoretical models used to study supply</td>
<td>“Visibility and Information Sharing: The prevalence of ERP allows firms to have access to data across their supply chains, which could be used for gaining better efficiency and effectiveness […]. The current trend in the industry is to try to leverage the benefits obtained through information sharing (also called visibility)</td>
<td>Access to information/ Information sharing</td>
</tr>
<tr>
<td>Source</td>
<td>Theoretical/Empirical</td>
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<td></td>
<td>chain management across the supply chain to improve operational performance, customer service, and solution development.‖ (p.1391-1395).</td>
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Table 8. Meanings of transparency & visibility in the operations management literature
## Organization studies

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<tr>
<th>Source</th>
<th>Theoretical/Empirical</th>
<th>Focus</th>
<th>Quote</th>
<th>Meaning</th>
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<tbody>
<tr>
<td><strong>Noticing</strong></td>
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<tr>
<td>Pfeffer &amp; Salancik (1977)</td>
<td>Theoretical</td>
<td>Statement of a coalesional model of organization design</td>
<td>“The fact that participants are only partially included in the organization and partially involved in decisions, coupled with the imperfect distribution of information about organizational activities, means that organizations are relatively uncoupled both internally and externally. In other words, an action taken in one part of the organization, or a single organizational decision, may go unnoticed by other participants in the organization and can be inconsistent with other actions taken by the organization.” (p.19).</td>
<td>To discover, discern or determine the existence, presence, or fact of</td>
</tr>
<tr>
<td>Starbuck &amp; Milliken (1987)</td>
<td>Theoretical</td>
<td>Review of the determinants and consequences of managers’ perceptual processes</td>
<td>“Noticing is an act of classifying stimuli as signals or noise. […] Noticing is influenced by perceivers’ habits, their beliefs about what is, and their beliefs about what ought to be.” (p.46).</td>
<td></td>
</tr>
<tr>
<td>Weick (2002)</td>
<td>Theoretical</td>
<td>Analysis of the determinants of medical errors from an organizing perspective</td>
<td>“Over time all organizations accumulate unnoticed events that are at odds with their accepted beliefs about hazards and their norms for avoiding those hazards. These unnoticed events are partly encompassed by the well-known concept of latent conditions.” (p.183).</td>
<td>To discover, discern or determine the existence, presence, or fact of</td>
</tr>
<tr>
<td><strong>Obscurity</strong></td>
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<tr>
<td>March &amp; Olsen (1976)</td>
<td>Theoretical</td>
<td>Analysis of the role of ambiguity and bounded rationality in decision making</td>
<td>“Situations of ambiguity are common. The patterns of exposure to events and the channels for diffusing observations and interpretations often obscure the events.” (p.62-63)</td>
<td>Lack of insight</td>
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<tr>
<td><strong>Opacity</strong></td>
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<tr>
<td>Feldman &amp; Pentland (2003)</td>
<td>Theoretical</td>
<td>Statement of routines as source of organizational flexibility</td>
<td>“That people perform organizational routines across time and space adds to the opportunities for different understandings of the actions people have taken as well as the appropriate next action. People may be unaware of others’ actions because they see only the artifacts of these actions. […] This opaqueness of the performance of the routine provides opportunities for different interpretations of what the routine “actually” is.” (p.104).</td>
<td>Visual impairment/ Lack of exposure to public notice</td>
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<tr>
<td>Source</td>
<td>Theoretical/Empirical</td>
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<tr>
<td>Weick (2005a)</td>
<td>Theoretical</td>
<td>Essay about sensemaking as a tool for theorizing</td>
<td>[About Weick (1974)]: “The argument is that organizational functioning is opaque, and equivalent functioning elsewhere is less opaque (e.g., collective sensemaking in a fire crew of strangers). Said differently, the advice is to theorize about units and events you can understand. Once you understand, summarize that understanding in mechanisms, and generalize (perhaps shamelessly) those mechanisms to other settings. That’s what people do in everyday sensemaking when they extract lessons from a vivid experience, and then treat subsequent experiences as moments of recognition.” (p. 407).</td>
<td>Lack of insight</td>
</tr>
<tr>
<td>Salancik (1977a)</td>
<td>Theoretical</td>
<td>Review of the determinants and consequences of commitment</td>
<td>“While all action and behavior is by definition observable, publicity refers to the extent to which others know of the action and the kinds of persons who know of it.” (p. 7)</td>
<td>Awareness/ Having knowledge of publicity</td>
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<tr>
<td>Source</td>
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<tr>
<td>Weick (1979)</td>
<td>Theoretical</td>
<td>Statement of organizations as epistemological evolution processes</td>
<td>“The attractive feature of this is that we know most organizations function quite well even though no one knows quite what’s going on. As we’ve seen, no one needs to know. The coordination is built into simple structures, the assemblage of which creates units more complex than anyone can comprehend. This greater complexity allows these structures to be used to cope with, manage, and resolve issues that are more complex than any participant can visualize or articulate. In this sense the outcomes are truly collective and truly are not represented in the perceptions of any one actor.” (p.109).</td>
<td>Insight</td>
</tr>
<tr>
<td>Weick (1995)</td>
<td>Theoretical</td>
<td>Review and statement of sensemaking in organizations</td>
<td>“seeing what one believes and not seeing that for which one has no beliefs are central to sensemaking. […] The greater the variety of beliefs in a repertoire, the more fully should any situation be seen, the more solutions that should be identified, and the more likely it should be that someone knows a great deal about what is happening.” (p.87). “In matters of sensemaking, believing is seeing. To believe is to notice selectively.” (p.133).</td>
<td>To discover, discern or determine the existence, presence, or fact of</td>
</tr>
<tr>
<td>Weick (2002)</td>
<td>Theoretical</td>
<td>Analysis of the determinants of medical errors from an organizing perspective</td>
<td>“People tend to see what they are able to deal with. If a team enlarges what it can do, then it may also enlarge what it will see. A team that sees more has a better chance to see small errors earlier and to do something about them. Small improvements in seeing can occur when individuals enlarge their personal repertoires of what they can do. But larger improvements in seeing should occur when people with more diverse skills, experience, and perspectives think together in a context of respectful interaction.” (p.186-187). “People in systems with higher reliability tend to pay close attention to operations. Everyone, no matter what his or her level, values organizing in order to maintain situational awareness. Resources are deployed so that people can see what is happening, can comprehend what it means, and can project into the near future what these understandings predict will happen.” (p.196).</td>
<td>To discover, discern or determine the existence, presence, or fact of</td>
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<tr>
<td>Weick (2005b)</td>
<td>Empirical</td>
<td>Analysis of the determinants of the Columbia accident</td>
<td>“Given the complexity of the context and the task in most high-reliability systems, it is important to have ongoing situational awareness which enables people to see what is happening, interpret what it means, and extrapolate what those interpretations suggest will happen.” (p.170-171).</td>
<td>To discover, discern or determine the existence, presence, or fact of</td>
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<td>Source</td>
<td>Theoretical/ Empirical</td>
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<tr>
<td><strong>Transparency</strong></td>
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<tr>
<td>Adler &amp; Borys (1996)</td>
<td>Theoretical</td>
<td>Analysis of enabling and coercive bureaucracies</td>
<td>“Internal <strong>transparency</strong> refers to internal functioning of the equipment or procedure as used by employees; global <strong>transparency</strong> refers to the intelligibility for employees of the broader system within which they are working.” (p.72-73).</td>
<td>Insight</td>
</tr>
<tr>
<td>Case (1998)</td>
<td>Empirical</td>
<td>Review of experiences with open-book management</td>
<td>“First, you have to create a transparent company, a company in which everyone, not just those at the top, sees and understands the real numbers. What are the real numbers? They're the numbers that management uses to run the business and to gauge its performance.” (p.2-3).</td>
<td>Insight</td>
</tr>
<tr>
<td>Ferrante &amp; Rousseau (2001)</td>
<td>Theoretical</td>
<td>Analysis of the determinants and consequences of open-book management</td>
<td>“Another way to think of <strong>transparency</strong> is mutuality, which means that information means the same thing to all parties.” (p.104)</td>
<td>Common/mutual insight</td>
</tr>
<tr>
<td><strong>Visibility</strong></td>
<td></td>
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<tr>
<td>DeSanctis &amp; al. (1999)</td>
<td>Theoretical</td>
<td>Analysis of the nature of interdependence in virtual organizations</td>
<td>“Interdependencies among members of virtual teams may become more <strong>visible</strong> to both teams and outsiders than in the past. In distributed teams, members are more likely to rely on documents, mail messages, and written forms of information exchange rather than face-to-face discussions or informal meetings. [...] If these kinds of products of interdependent relationships are archived or made available to outsiders, it is possible that parties external to the team may more readily observe how work in the team is coordinated, formalized, negotiated, and so on. On the other hand, the decentralized and dynamic nature of work in virtual teams suggests that some interdependencies may remain ‘hidden’ from full group consciousness.” (p.93).</td>
<td>To discover, discern or determine the existence, presence, or fact of</td>
</tr>
<tr>
<td>Perrow (1984)</td>
<td>Empirical</td>
<td>Theory and analysis of normal accidents</td>
<td>“Linear interactions are those in expected and familiar production or maintenance sequence, and those that are quite <strong>visible</strong> even if unplanned. [...] Complex interactions are those of unfamiliar sequences, or unplanned or unexpected sequences, and either not <strong>visible</strong> or not immediately comprehensible.” (p.78).</td>
<td>To discover, discern or determine the existence, presence, or fact of</td>
</tr>
<tr>
<td>Pfeffer &amp; Salancik (1978)</td>
<td>Theoretical</td>
<td>Statement of resource dependence theory</td>
<td>“To be <strong>visible</strong>, behaviour does not have to be directly observed. Very often, activity is not directly observed but inferred from the presence of certain effects. The important thing about <strong>visibility</strong> for it to constrain behaviour is that the social actor thinks the behaviour can be observed or inferred from observable outcomes.” (p.105)</td>
<td>Exposure to public notice</td>
</tr>
<tr>
<td>Salancik (1977b)</td>
<td>Theoretical</td>
<td>Analysis of the determinants of</td>
<td>“That behavior can be made more or less <strong>visible</strong> makes it relatively easy to induce commitment. The claims frequently made that modern organizations are anonymous</td>
<td>Exposure to public notice</td>
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<tr>
<td>Source</td>
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<tr>
<td>Weick (1995)</td>
<td>Theoretical</td>
<td>Review and statement of sensemaking in organizations</td>
<td>“Organizations can be characterized by the degree to which the contexts they create allow action to be visible, volitional, and irrevocable. Organizations that routinely create a context that is high in visibility, volition, and irrevocability should generate stronger commitments, richer justifications, and should make more sense to members. Organizations that create contexts that are low on these three dimensions should make less sense to their members because there are fewer commitments, fewer reasoned justifications, and more alternative possibilities concerning what subsequent action may mean and what interpretations it may validate.” (p.159).</td>
<td>Exposure to public notice</td>
</tr>
<tr>
<td>Weick (2002)</td>
<td>Theoretical</td>
<td>Analysis of the determinants of medical errors from an organizing perspective</td>
<td>“If latent conditions are always present, then there is a premium on making them visible so that they can be made correctable.” (p.184).</td>
<td>To discover, discern or determine the existence, presence, or fact of</td>
</tr>
<tr>
<td>Visibility &amp; Transparency</td>
<td></td>
<td></td>
<td>“Adweb members made their work visible to each other in a set of activities we label display practices. That is, they regularly made their current work available to each other, and made their time commitments and work assignments transparent so as to facilitate ongoing coordination across the communities. Display practices involved using multiple information technologies, most notably the firm’s internal and external networks, electronic mail system, online calendaring tool, and project management system.” (p.29).</td>
<td>Access to information</td>
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Table 9. Meanings of transparency & related terms in the organizational studies literature
### Information systems

<table>
<thead>
<tr>
<th>Source</th>
<th>Theoretical/Empirical</th>
<th>Focus</th>
<th>Quote</th>
<th>Meaning</th>
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<tbody>
<tr>
<td>Awad &amp; Krishnan (2006)</td>
<td>Empirical</td>
<td>Analysis of the role of website privacy policies</td>
<td>“By information transparency features we mean features that give consumers access to the information a firm has collected about them, and how that information is going to be used.” (p.14).</td>
<td>Access to information</td>
</tr>
<tr>
<td>Benko &amp; McFarlan (2003)</td>
<td>Theoretical</td>
<td>Theory about the alignment of projects to organizational goals</td>
<td>“Transparency refers to the fact that organizations have become easier to see into and out of. On this frontier, extraordinary amounts of information are available on a reasonably democratic basis.” (p.37).</td>
<td>Access to information</td>
</tr>
<tr>
<td>Cousins &amp; Robey (2005)</td>
<td>Empirical</td>
<td>Institutional analysis of electronic markets survival</td>
<td>“Information access is a central feature of most attempts to establish electronic markets. The primary economic value of greater transparency of information is consistent with the principle of improving market efficiency by increasing access to information. Under conditions of free, instantaneously available, and unrestricted information, markets may even approach &quot;perfection.&quot;” (p.224).</td>
<td>Access to information</td>
</tr>
<tr>
<td>Granados, Gupta, &amp; Kauffman (2006)</td>
<td>Theoretical</td>
<td>Theory about the consequences of IT for market transparency</td>
<td>“Market transparency specifies the extent to which information is made available to market participants, including pricing, product, and supplier information. [...] We define opaque markets as those where information is incomplete or distorted.” (p.150).</td>
<td>Access to information</td>
</tr>
<tr>
<td>Herrmann, Hoffmann, Kunau, &amp; Loser (2002)</td>
<td>Theoretical</td>
<td>Analysis of the role of modelling in designing CSCW applications</td>
<td>“In particular the members of transparent organization create an understanding of the following: (1) The goals of the organization; (2) The members of the organization; (3) Their place in the structure of the organization; (4) Their tasks and responsibilities; (5) The prerequisites of their actions: upon whom and what do they depend?; (6) The effects of their own actions: Who is affected by their actions? Who depends and in which way on their actions?; (7) The importance of their actions for the organization as a whole.” (p.61).</td>
<td>Having knowledge of/ Insight</td>
</tr>
<tr>
<td>Johnson (2004)</td>
<td>Theoretical</td>
<td>Analysis of the role of IT for increasing transparency in society</td>
<td>“One definition of transparency refers to the availability of information for traversing and exploring a large-scale social system.” (p.134).</td>
<td>Access to information</td>
</tr>
<tr>
<td>Kohli &amp; Kettinger</td>
<td>Empirical</td>
<td>Analysis of resistance to</td>
<td>“Greater information transparency through the use of a performance monitoring information system (providing valid measures of behaviors and outcomes) will lead</td>
<td>Access to information</td>
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<tr>
<td>Source</td>
<td>Theoretical/ Empirical</td>
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<td>(2004)</td>
<td></td>
<td>informing professionals</td>
<td>to greater goal congruence between the principal (hospital) and the agents (physicians).” (p.371).</td>
<td>information</td>
</tr>
<tr>
<td>Marchand, Kettinger, and Rollins (2001)</td>
<td>Empirical</td>
<td>Theory of information orientation</td>
<td>“Transparency – treating errors, mistakes, failures, and surprises as constructive learning opportunities – accelerates the feedback loop between a company’s intended strategy, its actions to implement the strategy, and its capability to correct or change course along the way” (p.103).</td>
<td>Psychological safety</td>
</tr>
<tr>
<td>Street &amp; Meister (2004) #1</td>
<td>Empirical</td>
<td>Analysis of the antecedents and outcomes of transparency in a SME</td>
<td>“A measurable result of the management team’s communication process should then be the degree to which management personally understands what is going on throughout the enterprise. While many authors discuss such outcomes without specifically defining an outcome measure (arguing more is better), there is a consistent theme in several literatures that supports a construct called internal transparency.” (p.477).</td>
<td>Having knowledge of/ Insight</td>
</tr>
<tr>
<td>Street &amp; Meister (2004) #2</td>
<td>Empirical</td>
<td>Analysis of the antecedents and outcomes of transparency in a SME</td>
<td>“we define internal transparency to be an outcome of communication behaviours within an organization that reflects the degree to which employees have access to the information requisite for their responsibilities.” (p.477).</td>
<td>Access to information</td>
</tr>
<tr>
<td>Volonino, Watson, &amp; Robinson (1995)</td>
<td>Theoretical</td>
<td>Analysis of how DSS contribute to flexibility &amp; adaptation</td>
<td>“By increasing the transparency of what is known to executives and subordinates, an EIS supports coordination and control processes and increases the capacity for self-management.” (p.110).</td>
<td>Having knowledge of</td>
</tr>
<tr>
<td>Bloomfield &amp; McLean (2003)</td>
<td>Empirical</td>
<td>Analysis of the consequence of the use of IT in mental health hospitals</td>
<td>“When patients resided in an asylum they could in effect be observed at will, but in the context of care in the community this is no longer possible. Instead they are rendered visible though information. Visibility in this context acts as a condition for the exercise of control. In addition, the work of the various mental health professions is meant to be co-ordinated and has become subject to audit—requiring that the professionals too must become visible.” (p.78-79).</td>
<td>Access to information</td>
</tr>
<tr>
<td>Cunha (2005)</td>
<td>Empirical</td>
<td>Analysis of impression management practices employed by users of a CRM</td>
<td>“Managers used the process of representing work to manage their visibility to senior management and the visibility of their employees’ representation work” (p.9).</td>
<td>Exposure to public notice</td>
</tr>
<tr>
<td>Doolin (2004)</td>
<td>Empirical</td>
<td>Analysis of resistance to the implementation</td>
<td>“Scrutinizing clinical procedures and explicitly linking patient treatment decisions to standard costs make clinical activity visible and susceptible to intervention by management, who can then influence clinical decisions.” (p.349).</td>
<td>Exposure to public notice</td>
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*Visibility* is...
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<th>Source</th>
<th>Theoretical/ Empirical</th>
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<th>Meaning</th>
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<tr>
<td>El Amrani, Rowe, &amp; Geffroy-Maronnat (2006)</td>
<td>Empirical</td>
<td>Analysis of the antecedents of integration effects of ERPs</td>
<td>“By adopting an ERP system, companies try to both select the best practices, whether they are internal or external, and make them a standard process in order to improve visibility of who does what and how.” (p.97).</td>
<td>Exposure to public notice</td>
</tr>
<tr>
<td>Elmes, Strong, &amp; Volkoff (2005)</td>
<td>Empirical</td>
<td>Analysis of the consequences of ERPs on control and empowerment</td>
<td>“At the same time an ES provides visibility of data, which goes beyond the characteristics of a hierarchical bureaucracy, but which is the cornerstone of Foucault’s (1977) views on disciplinary power and control.” (p.2). “we discovered that changes in visibility of information might occur along four different dimensions, namely visibility of information from other functional areas, visibility of information from other geographic locations, visibility of new forms of historical data, and visibility of all of this information in real-time.” (p.14).</td>
<td>Access to information</td>
</tr>
<tr>
<td>Heath et al. (2002)</td>
<td>Empirical</td>
<td>Analysis of the coordination practices enacted by subway control room operators</td>
<td>“In settings such as control centres and news rooms where people are engaged in concurrent independent activities which require real time coordination at particular moments, we find personnel using various practices and procedures through which they render particular actions ‘visible’ to others in relatively unobtrusive and non demanding ways.” (p.333-334).</td>
<td>Exposure to public notice</td>
</tr>
<tr>
<td>Kasper (1996)</td>
<td>Theoretical</td>
<td>Theory of the role of user calibration in DSS use</td>
<td>“Visibility requires that the user see the DSS work and at work, that the user see the logical operations performed by the DSS and their application to a specific problem.” (p.224).</td>
<td>Exposure to public notice</td>
</tr>
<tr>
<td>Norman (1988)</td>
<td>Theoretical</td>
<td>Statement about design principles that foster usability</td>
<td>“When the number of controls equals the number of functions, each control can be specialized, each can be labelled. The possible functions are visible, for each corresponds with a control. If the user forgets the functions, the controls serve as reminders.” (p.22-23)</td>
<td>Exposure to public notice</td>
</tr>
<tr>
<td>Schultze &amp; Orlikowski (2001)</td>
<td>Empirical</td>
<td>Review of the metaphors of “virtuality” in the IS trade literature</td>
<td>“The marketspace represents a world of information, which acts as a mirror that reflects the world of physical goods. According to Rayport and Sviokla (1995), the virtual realm or information mirror presents organizations with the capability to ‘see their operations more effectively’ (p. 78). This visibility granted by the reflective vantage point of the mirror world, allows organizations to shift — without any apparent friction — activities from ‘the place’ to ‘the space.’” (p.58).</td>
<td>Exposure to public notice</td>
</tr>
<tr>
<td>Sia, Tang, Soh, &amp; Boh (2002)</td>
<td>Empirical</td>
<td>Analysis of ERPs as instruments of</td>
<td>“In the same way, ERP implementation can be observed as a technology of power that enables a much greater visibility of one’s workplace behavior.” (p.25).</td>
<td>Exposure to public notice</td>
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<tr>
<td>Source</td>
<td>Theoretical/ Empirical</td>
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<td>Quote</td>
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<tr>
<td>Star &amp; Strauss (1999)</td>
<td>Theoretical</td>
<td>Analysis of the consequences for making work visible by requirements modelling</td>
<td>“For any requirements analysis, understanding where in the relationship of visible to invisible work one would locate a given set of work practices is crucial [...]. If one attempts to open up backstage practices to scrutiny, where no occupational culture or previous conventions for doing so exist, the analyst or systems developer risks violating people’s autonomy, or simply getting no useful information about how work is really done.” (p.22).</td>
<td>Exposure to public notice</td>
</tr>
<tr>
<td>Straub &amp; Watson (2001)</td>
<td>Theoretical</td>
<td>Review of important constructs for the study of net-enabled organizations</td>
<td>“Information visibility: It is inevitable that information sharing between the firm and complementors (suppliers, outsourcers, strategic partners) and supplementors (competitors) will increase with the advancement of NE.” (p.341).</td>
<td>Information sharing</td>
</tr>
<tr>
<td>Suchman (1995)</td>
<td>Theoretical</td>
<td>Analysis of the consequences for making work visible by requirements modelling</td>
<td>“At the same time that we take Wellman’s statement as a call to action, however, we need to reflect carefully on the kinds of secrecy that surround specific knowledges and experiences of working practice and the implications of making them visible. The notion of secrecy implies things known differentially among different actors, usually because those who hold the secret deliberately withhold it from others.” (p.56).</td>
<td>Exposure to public notice</td>
</tr>
<tr>
<td>Swaminathan &amp; Tayur (2003)</td>
<td>Theoretical</td>
<td>Review of the theoretical models used to study supply chain management</td>
<td>“Visibility and Information Sharing: The prevalence of ERP allows firms to have access to data across their supply chains, which could be used for gaining better efficiency and effectiveness.” (p.1391).</td>
<td>Access to information/ Information sharing</td>
</tr>
</tbody>
</table>
| Volkoff, Strong, & Elmes (2005)| Empirical              | Grounded theory of the organizational consequences of ERP-enabled integration | “Standardizing processes and data made these organizations more interchangeable and visible to management, thus achieving the often-cited benefits of integration via an ES.” (p.114-115).  
“Because an ES allows for real-time data visibility across functions, outputs are being shared continuously. [...]Even if data are visible to all, it may not be ready for use by another group.” (p.118). | Access to information          |
<p>| Wareham, Bjorn-Andersen, &amp; Neergaard (1997) | Empirical              | Analysis of the determinants of resistance to a new IS | “To support the service function, as well as facilitate the productivity improvements necessitated by the marketplace, Bruhn decided that a focused system was needed to increase the visibility of both efficiency and customer service levels.” (p.320). | Exposure to public notice      |</p>
<table>
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<tbody>
<tr>
<td>Zuboff (1985)</td>
<td>Theoretical</td>
<td>Statement about the dual capacity of IT to automate and to informate</td>
<td>“In either case, when managers harness information technology to their strategic goals, they usually plan to accomplish one or more of three interdependent operational objectives – to increase the <em>continuity</em> (functional integration, enhanced automaticity, rapid response), <em>control</em> (precision, accuracy, predictability, consistency, certainty), and <em>comprehensibility</em> (<em>visibility</em>, analysis, synthesis) of productive functions.” (p.7).</td>
<td>Insight</td>
</tr>
<tr>
<td>Argyris (1971)</td>
<td>Empirical</td>
<td>Analysis of the consequences of IS on managers</td>
<td>“Consequently, the MIS expert may ask that behaviour, policies, practices and norms that have been <em>operating covertly be surfaced</em> so that their contributions to the problem be made explicit. This requirement can be threatening because what has been <em>hidden</em> may be incriminating to some participants.” (p.277).</td>
<td>Exposure to public notice</td>
</tr>
<tr>
<td>Lindgren, Henfridsson, &amp; Schultze (2004)</td>
<td>Empirical</td>
<td>Statement of design principles for competence management systems</td>
<td>“The principle of <em>transparency</em>: CMS should make competence-in-stock <em>visible</em> and accessible to the entire organization. This principle responds to the problem of CMS limiting the opportunities of knowledge sharing by restricting access to competence data.” (p.452).</td>
<td>Access to information</td>
</tr>
<tr>
<td>Star &amp; Ruhleder (1996)</td>
<td>Empirical</td>
<td>Analysis of the development and use of a collaborative IS</td>
<td>“Infrastructure is <em>transparent</em> to use, in the sense that it does not have to be reinvented each time or assembled for each task; but <em>invisibly</em> supports those tasks; […] The normally <em>invisible</em> quality of working infrastructure becomes <em>visible</em> when it breaks; the server is down, the bridge washes out, there is a power blackout. Even when there are back-up mechanisms or procedures, their existence further highlights the now-<em>visible</em> infrastructure.” (p.113).</td>
<td>Lack of awareness/no t having knowledge of (note: transparency is analog to invisibility)</td>
</tr>
<tr>
<td>Zhu (2004)</td>
<td>Theoretical</td>
<td>Analysis of the consequences of market transparency</td>
<td>“This makes information more <em>transparent</em> in electronic markets than in traditional physical markets. Information <em>transparency</em> is defined as the degree of <em>visibility</em> and accessibility of information (Zhu 2002).” (p.670).</td>
<td>Access to information</td>
</tr>
<tr>
<td>Zuboff (1988)</td>
<td>Empirical</td>
<td>Theory of the dual capacity of IT to automate and to informate and its associated dilemmas</td>
<td>“It [information technology] provides a deeper level of <em>transparency</em> to activities that had been either partially or completely <em>opaque</em>. […] Activities, events, and objects are translated into and made <em>visible</em> by information when a technology informates as well as automates.” (p.10). “Significance is not a <em>transparent</em> feature of the data from the system; rather, significance is a construction that emerges from the application of intellective skill to the available data.” (p.80-81). “This kind of integrated data base increases the <em>visibility</em> of a firm’s productive and...”</td>
<td>Insight</td>
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</table>
administrative activities. It provides a powerful means with which to gain new insight into and control over business functions. The integration of text and data processing can create informed environments in which organization members can ‘see’ and understand the business in new ways” (p.158).

“Action-centered skills (acting-on and acting-with) are built into the technology as it substitutes for bodily presence – that is automation. As the same time, activities are made transparent. They are exposed in detail as they are textualized in the conversion to explicit information – that is informating.” (p.181).

“Informating assumes that making the organization more transparent will evoke valuable communal insight.” (p.305).

“Universal access, as a correlate of universal transparency, diminishes the feeling of oppressive surveillance” (p. 347).

“It rests on a new collectivism in which “the many” view themselves and each views “the other”. Horizontal visibility is created even as vertical visibility is intensified.” (p.351).

“Information technology essentially alters the contours of reality – work becomes more abstract, intelligence may be programmed, organizational memory and visibility are increased by an order of magnitude beyond any historical capability.” (p.390).

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<tbody>
<tr>
<td>Zuboff &amp; Maxmin (2002)</td>
<td>Theoretical</td>
<td>Statement of a model of organizing economic activities based on the primacy of people in contrast to organizations</td>
<td>“Digital technologies – the combination of computers and communication networks – bestow a new and global transparency on everything they touch. Processes, objects, and events are translated into information (data, text, image, and sound) and connected to a wider network, thus making them visible and accessible anywhere, anytime. This transparency contributes to what has been called the unique ‘informating’ capacity of digital technologies, when a complex, three-dimensional world that includes everything from factories to blood cells can be digitized and transformed into information, becoming visible, knowable, shareable, mobile, and manageable in wholly new ways.” (p.291).</td>
<td>Insight</td>
</tr>
</tbody>
</table>

Table 10. Meanings of transparency & visibility in the information systems literature
Appendix 2 The Meanings of Transparency


Appendix 3

Survey of Electronic Commerce and Technology (Statistics Canada)

The following is a summary description of the survey. A detailed description of the content, the methodology, and the questionnaires employed for the survey is found on the following Statistics Canada web page: [http://www.statcan.ca/english/sdds/4225.htm](http://www.statcan.ca/english/sdds/4225.htm)

The survey frame consists of the Business Register developed and maintained by Statistics Canada. The Business Register consists of a structured database of all incorporated businesses in Canada, public and private. In addition to direct inquiries by Statistics Canada, the database is updated through tax filings. The sample frame excludes very small organizations that have a gross income less than $100,000 or $250,000 depending on the industry. The sample frame contained about 682,000 organizations.

The sampling method employed by Statistics Canada consists of stratification, allocation, and sample selection. The sample frame were stratified according to industries (NAICS codes) and the number of employees in small (0-19, 20-99), medium (100-499), and large (500+) organizations. Note that all organizations from the large organizations stratum were selected to be included in the final sample. From each remaining strata, a random sample of organizations was selected under the constraint of maximizing the overlap with the previous year’s sample.

Overall, a total of 19,434 organizations were sampled across industries, but only 18,031 organizations were sent the questionnaire. The 1,403 organizations that were not sent a questionnaire either had their status changed since the frame was created or there were errors in the frame. A total of 12,583 organizations completed a questionnaire, for a response rate of 70%.

Outlier detection was conducted on one variable in the survey (“Sales over the Internet”). Missing and incomplete fields were imputed in partial questionnaires. Overall, 6% of fields had
to be filled in by deterministic imputation, by using administrative data, by historical imputation or by donor imputation, depending on the nature of the field.

Sampling error was measured by the coefficient of variation. On a total of 19,434 organizations sampled, the coefficient of variation was of 37% for questionnaires completed and of 24% for questionnaires that were partially completed. Given these coefficients of variation and the imputation rate, Statistics Canada qualifies the estimates obtained from the survey as “use with caution”. Hence, the survey provides one source of data, but because of these data quality concerns, it should be triangulated with at least another source of data.
Appendix 4

Semi-Structured Interview Protocol

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<th>Informant description</th>
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<td>Name of the company :</td>
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<td>Department :</td>
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<td>Name of informant:</td>
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<tr>
<td>Title:</td>
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<td>Phone:</td>
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<td>Email:</td>
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<tr>
<td>Interview #:</td>
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<td>Date &amp; Time:</td>
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Purpose of the interview

[Before the interview, state why an interview is sought with this particular informant]

Researcher introduction

First of all, let me thank you for agreeing to meet with me today. Just to make sure you understand the purpose of the interview, let me give you a quick summary of the project. I am studying how information technology use practices differ from one organization to another and what their consequences are for the management of organizations. I will interview people from 4 organizations, looking for commonalities, differences, and trends in the way that information and knowledge is used, shared, and distributed with a particular focus on the role of information technologies. Questions will focus on the distribution and rules of access to information about resource allocation decisions, financial statements, work processes inputs and outputs, procedures and rules, for instance. Some questions will refer to workplace politics. These interviews are part of my doctoral dissertation. The interview will take about [time agreed: min.1 hour]. Before we start, do you have any questions?

Role

1. What is your current position? May I have a business card?
2. How long have you held this position?
3. What are your major responsibilities? What does that involve?
4. To whom are you accountable and on what basis?
5. What do your colleagues expect from someone in your position?
6. What is the most important issue you have to deal with nowadays?
7. How do you consider yourself first: as a member of [Company Name]? or as a career [role]?

Contextual and cultural information

1. What issue is important to senior management in the organization today?
2. What 3 words would best describe your organization? Why?
3. How would you assess [Company Name]’s performance nowadays? How does it compare to the past? What do you expect about [Company Name]’s future performance?

Information retrieval and technologies

1. Could you describe the information technologies (IT) that support the handling and distributing of this type of information? (ERPs, intranets, portals, email, calendaring tools, forums, project management systems, etc.) – This list was adjusted within each organization to take account for how information is labeled as what were the “information focus”.
   a. Profit/loss statement, Balance sheet & operating results
b. Budgets, resource, facilities, equipment allocation

c. Expense reports & revenue reports

d. Compensation, pay & reward information

e. Products and R&D

f. Expansion plans

g. Sales and order forecasts

h. Ideas for improvement & best practices

i. Personnel policies, employee objectives, work, time commitments and work assignments, work appraisals

j. Promotions, hiring and transfers

2. Do you feel that there are any disagreements about how [type of information] should be handled?

3. Do you get access to [type of information] as part of your responsibilities? If not, and the need arose, could you get access to this information? How?

4. Have you ever had any problems accessing and retrieving [type of information] from other units or senior management, if needed?

5. In your opinion, should any practices of how [type of information] is handled be changed at [name of company]?

6. In the past 5 to 10 years, do you think that the retrieval of information from the systems you employ has generally increased or decreased? Is it easier or more difficult to retrieve information? Why?

7. What is [name of the company] official policy, if any, regarding access and distribution of confidential information?

8. In your experience at [name of the company], did you ever felt that you got “clouded” or “snowed” by data? That is, information was presented to you in such a complex manner that it was difficult to sort out fact from fiction?
Did any of these situations involve the use of IT-based tools?

Transparency

These questions were asked at the end of the interview or when the respondent employed the idea in responses to other questions

1. What would it mean in the context of your work unit to talk about “transparency” (in terms of behavior, roles, values, beliefs, etc.)?
Can you give an example to explain?

2. In your opinion, do the IT-based tools and systems that are employed in your unit create transparency?
In what way do they do so?
In what way don’t they?

3. How would you feel if others had access to financial statements, balance sheet, budgets, expense & revenue reports, quality control numbers that are within the purview of your position?
Appendix 5

Documentary Sources
## Appendix 5.1

### Documentary Sources – TradSoft

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Appendix 5.3

Documentary Sources – BigGames

This list also includes documentary sources concerning SuperComics (1992-1999).

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Notes to consolidated financial statements (NewMedia Inc.) 2000
Newspaper article 1999 12 21
Newspaper article 1999 12 01
Newspaper article 1999 12 01
Newspaper article 1999 11 05
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Consultant Report 1999 11 04
Newspaper article 1999 08 18
Newspaper article 1999 05 08
Newspaper article 1999 02 20
Newspaper article 1999 01 30
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Newspaper article 1999 01 23
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Newspaper article 1998 03 21
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Newspaper article 1997 12 06
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Newspaper article 1997 08 23
Newspaper article 1997 08 09
Newspaper article 1997 06 13
Newspaper article 1997 05 17
Newspaper article 1997 04 30
Newspaper article 1997 03 14
Annual Report, New Media Inc. 1997
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Newspaper article 1996 11 06
Newspaper article 1996 11
Newspaper article 1996 09 21
Newspaper article 1996 09 14
Newspaper article 1996 08 16
Newspaper article 1996 07 13
Newspaper article 1996 07 06
Newspaper article 1996 06 01
Appendix 5.4

Documentary Sources – CasualGames

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<tr>
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Press release 1999 08 17
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Company profile, CasualGames website (archive.org) 1998 07
Newspaper article 1998 06 20
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Appendix 6

Validation of the Coding Scheme

Instructions

Below are the instructions for validation of the coding scheme relevant to the current research project which deals with how organizations appropriate information technology to foster different types of transparency. Table 1 summarizes the steps you will go through to accomplish this task.

<table>
<thead>
<tr>
<th>Coding Scheme Validation Procedure</th>
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<tbody>
<tr>
<td><strong>Step 1</strong></td>
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<td><strong>Step 2</strong></td>
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<td><strong>Step 3</strong></td>
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<td><strong>Step 6</strong></td>
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Table 1. Coding Scheme Validation Procedure

**Step 1: Get familiar with the case study**

Information technologies are complex combinations of material features, many of which may be specifically tailored by those who commission, deploy, or use them. Managers, designers, and users make two key design choices at some step during the appropriation process before any technology congeals into a unique socio-technical configuration:

1. They select a specific technology from a range of relevant but different technologies in order to increase the efficiency and reliability of existing work practices. Most research to date has focused on comparing the outcomes of the application of one type of technology in different organizational contexts; the findings have shown that the context often matters and overrides the effects due to the technology’s material features. Yet, we see that managers of organizations operating within similar contexts may apply different technologies to fill similar business needs, but still end up with different outcomes. For example, in one

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1 The validation procedure was adapted from the work of Paré (1995), which procedures were drawn upon those proposed by Miles and Huberman (1989).
organization managers may choose to maintain sophisticated blogs to provide for internal communication while in another they might prefer conventional email technology. Each group of managers may be satisfied with the technology they selected but the selection of one instead of the other could imply differences in the nature and flow of information, which could also result in differences in how work is performed, even in similar organizational contexts.

(2) Managers, designers, and users enact a mix of explicit and tacit rules authorizing people to use features and access information from the technology in specific ways. For instance, in one software development organization, project management systems may be configured so that reports and analysis of workforce allocation data is accessible by all project managers within the organization. In another similar organization, access to such reports and analysis may be restricted to each project manager. If the managers share a common pool of scarce workers to staff their projects, such difference in access mean that coordination problems between projects will be solved by different means. Despite Zuboff’s (1988, p.356) affirmation about “the central importance of the rules that govern access to the data base”, how these rules should be designed is not well understood by the IS academic community currently and little evidence-based advice can be provided to managers, designers, and users.

Both these design choices imply differences in socio-technical configurations that have consequences for how work is performed since they influence the kinds of transparency that will be generated following the appropriation of information technologies within an organization.

A case study of 4 similar high-growth ventures from the software and video games development industries was conducted to understand how and why these design choices were made. These organizations were sampled because they were perceived by industry insiders to differ according to how they manage information, and thus, exhibited varying degrees of transparency. I conducted 55 interviews with 52 representatives of key occupational groups within the organizations.

Step 2: Get familiar with the research model

The coding scheme used in this study is divided into 2 sections.

Section 1 contains the codes describing contextual conditions. Contextual conditions are the “environmental” variables that shape how people in organizations adopt, design, deploy and appropriate information technology in organizations. Not one organization is perfectly alike even in the same industry and small variations in context may imply large differences in how organizations employ information technology. As shown in Table 2, contextual conditions are grouped into five distinct categories: Aspirations, Time pressures, Slack resources, Workforce demography, and Labour relations.

Section 2 lists the transparency functions that were fulfilled by appropriations of information technology (as well as other practices) in the organizations studied for this research project. We now ask you to examine Table 2 in order to get acquainted with the logical structure of the coding scheme.

### Section 1: Contextual Conditions

**Aspirations**
- Corporate values A-VALUES
- Growth goals A-GROWTH

**Time Pressures**
- Sense of (non-)urgency TP-URGENCY
- Firefighting and heroic behaviors TP-FIRE

**Slack Resources**
- Financial resources SR-FINANCE
- Skill and knowledge resources SR-SKILLS

**Workforce demography**
- Composition of workforce OD-COMPOSITION
- Turnover OD-TURNOVER
- Role changes OD-ROLES
- Conflicts between cohorts and occupations OD-CONFLICTS

**Workforce relations**
- Locus of identity LR-IDENTITY
- HR Practices LR-HR

### Section 2: Appropriations of technology

**Function**
- Mobilizing F-MOBILIZING
- Pooling artefacts F-POOLING
- Reporting accountability F-REPORTING

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Table 2. Coding Scheme
Step 3: Get more familiar with the different codes representing “Contextual Conditions”

You will find below a definition as well as an example of segment for each code included in Section 1 (Contextual Conditions) of the coding scheme (ref. Table 2). You now need to read attentively the following to familiarize yourself with the meaning of the codes.

Corporate values (A-VALUES)

A segment which presents subjective goals that managers strive for performance. Values serve as reference points and criteria for feelings of success or failure. They are generally interconnected beliefs that have an evaluative component that qualifies behaviours and organizational practices as good or bad, as right or wrong.

Examples:
- “It is clear that TradSoft will never become a public company, because it would mean that stockholders expectations would become the priority over those of the employees.” (TradSoft CEO’s daughter, Newspaper interview, March 22, 2003).
- “The message of our president is very, very sales-oriented. Thus, it shows in every communication that we’ll see flying around. It shows in the focus of people. He must probably spend 95% of his time with the sales team. So you asked me what are the firm’s values? They probably consists of having a strong sales team and selling as much as we can, as fast as we can.” (Brian, Product Designer, quotation 6:39)

Growth goals (A-GROWTH)

A segment which presents evidence of a growth goal made explicit, whether it consists of slow incremental growth, or quick radical growth. The segment may also express the means through which growth should be attained, whether by organic development or by acquisition of other organizations.

Examples:
- “You can lose your culture because you don’t have a core solid enough to protect it. Thus, our growth is controlled. We are not going to double the size of the firm in one year. By controlling our growth, we can take the time to absorb our new employees well.” (Scott, Operations Director, quotation 51:32)
- “The vision is to be a business of 800 to 1000 employees within a few years.” (Dorothy, VP HR, quotation 29:3)
**Sense of (non-)urgency (TP-URGENCY)**

A segment which makes salient the notion of time as well as whether it is felt to be abundant or scarce. Respondents may express a time famine, that is, a feeling of having too much to do and not enough time to do it. Or they may express that they make sure that they allocate enough time to execute plans and task.

Examples:

- “This is a production minded company. You come in here and you feel the pace.. You feel there is the sense of urgency in anything you do, the sense you need to get stuff done; that hasn’t changed. It is a company about doing things, getting things done first and foremost.” (Kurt, VP Operations, quotation 30:11)
- “We have very normal work schedules, about 37-38 hours per week on average. And we follow such schedules even though we work in a crazy industry; the implementation of ERPs in very large organizations often makes for rock’n’roll projects. It’s never easy. Nevertheless, our customers are advised of how we work. For them, the project happens only once. For us, it’s all the time. We cannot be in a mode where people work evenings, at night or on the weekends. Customers that do not want to free up their people to avoid such situations or that do not respect our way of working, we don’t do business with them.” (James, CEO, quotation 45:3)

**Firefighting and heroic behaviours (TP-FIRE)**

A segment which provides evidence of firefighting and heroic behaviours when time gets scarce on a chronic basis. In situations of perpetual crises, it is not surprising to find people rewarded for doing whatever it takes to solve crises. Firefighting is often due to a vicious cycle in which problems experienced today draw resources away from other activities that might prevent those problems from occurring again in the long term.

Examples:

- “Now, we are in a firefighting mode. Since I arrived, I am only managing fires, not even my priorities. That gives you an idea of how we work here.” (Dorothy, VP HR, quotation 29:5)
- “Even if we promote reduced work hours, there are some intense periods when we say to people ‘Look, do some overtime. And some more. And more. And more. I guess I did my job wrong if I ask people to do a lot of overtime because I badly planned what I would need, but sometimes it’s simply because someone got sick or left the company. We’re so tight that we can’t allow any downtime, we have to utilize our staff at 110%.” (Kyle, Game Producer, quotation 21:18)
Financial resources (SR-FINANCE)

A segment which illustrates how cushions of actual or potential financial resources allow an organization to solve internal problems or to react to external pressures for change. The size of such cushion of financial reserves determines the discretion that managers have to initiate changes for the achievement of organizational goals.

Example:
- “Frugality, that is, not wasting money, and extreme prudence allowed us to survive up till now. There are so many businesses in our industry that never got where we are now because they were not careful about their cash flow and badly managed their finances. They made bad bets and we simply don’t do bets.” (Owen, Game Executive, quotation 39:15)
- “We have developed a customer portfolio, some of them being ‘majors’ in the entertainment industry, with which we have annual agreements for the development of a specific number of products. I’m sure it’s the kind of agreement that many of our competitors would like to have. These are not true recurring revenue streams, but in some ways, it allows us to plan ahead in the long term more than other firms would.” (Daniel, CEO, quotation 13:7)

Skill resources (SR-SKILLS)

A segment which illustrates how cushion of actual or potential skill and knowledge resources allow an organization to solve internal problems or to react to external pressures for change. The size of such cushion of workers determines the discretion that managers have to initiate changes for the achievement of organizational goals.

Examples:
- “I have 5 people in my team. The products are complex and they don’t all have the same knowledge of the products. And the projects do not stop coming in and I have to allocate these resources. Even if I believe that 5 projects at a time is the most I can handle, sometimes we get 7, 8, 9, or 10 projects at a time... it’s a quite headache to manage that” (Scott, Project Manager, quotation 9:5)
- “There is a great depth of skills. The product has about 20 modules, each different with its own specificities. For each module, we have people that have master degrees and that have spent about 25 years to learn these topics. So people here have highly specialized skills.” (James, CEO, quotation 45:10).
Composition of workforce (OD-COMPOSITION)

A segment which describes the distribution of workers’ occupations, age, skills, and backgrounds in an organization.

Examples:
- “People in their 40s are rare. The average age here must be about 25 years old” (Jayden, Animation Artist, quotation 19:12)
- “It’s an environment where the average age is about 31 years old, 87% male, 35% software engineers, and the rest are artists.” (Dorothy, VP HR, quotation 32:14)

Turnover (OD-TURNOVER)

A segment which describes whether an organization has a turnover problem or not. The segment may also portray what kind of workers is leaving the organization, if any.

Example:
- “The firm has grown incredibly fast in the last year and a half. It has doubled in size. Some have left. I wouldn’t say that there is a huge turnover, but we may be getting into a period where it will need to be more attentive to the needs of its most experienced resources so they don’t leave. You feel that there is some fatigue by the artists about the type of contracts that come in. Many have left these days.” (Laurencio, Graphic Artist, quotation 25:56)
- “Do we only keep the bests? No. I believe we lose some very very good employees now and then. But it’s OK somehow that people look elsewhere, it helps everyone.” (Owen, Game Executive, quotation 39:19)

Conflicts between cohorts and occupations (OD-CONFLICTS)

A segment which describes whether tensions and conflicts occur between cohorts of workers that were employed at different times, and between workers with different backgrounds or occupations. These segments may also employ language used to cast stereotypical traits upon others.

Example:
- “At one time, a lot of people got hired from that other video games company. We couldn’t get enough of them because we we had to grow quickly and it created pressures. For one project in particular, there were lots of people from that other company that didn’t really want to listen to the BigGames people that were already staffed on the project. It was really ‘we know how to do games and we’ll show you how to do it’. A lot of aggressivity. They are not all like that... but... that’s my perception. Ask around, you’ll see.” (Eloise, IT Manager, quotation 44:29)
- “It’s difficult to work with artists... they are spoiled kids.” (Chloe, Operations Director, quotation 15:54)
Role changes (OD-ROLES)

A segment which shows how a worker’s role may evolve and change over time. The person may also express how she felt about the change and what the consequences of the change are.

Example: - “There is something that we are living through, from the team leads to the directors and to us. Being an executive of a company of 150 employees is not the same thing as being an executive of 450 employees. It’s not the same job at all. I think we are learning that with some humility. There is not one of us who has done that before. So we’re all learning. It’s a big shift.” (Owen, Game Executive, quotation 39:37)
- “CasualGames chose its best elements, so I was one of the best elements for visual skills; my work was appreciated. So I was asked to be team lead. Over time, I was getting more and more into managerial work. So I ended up having not enough time for drawing beautiful art, which was what I was good for. And I was managing people who were doing it much poorly than I would have done.” (Jayden, Animation Artist, quotation 19:12)

Locus of identity (LR-IDENTITY)

A segment which contains the meanings that people attribute to their role or career. Such meaning generally entails a definition of self and others that enable individuals to orient to situations. Such meaning enables to develop a sense of becoming, a narrative and a biography of events. Because people become connected to an organization, to a project or to an occupation over their career, anyone of these be the dominant locus of someone’s definition of self.

Example: - “As artists, we always like to have some sort of personal artwork, cartoons or whatever as a sideline to CasualGames to help us define our identity. Because here, we keep our identity, but we have to mold ourselves to our customers’ intellectual properties, it’s not of our creation.” (Jayden, Animation Artist, quotation 19:46)
- “In our industry, people never really have great commitment to their firm; it’s more about their project, or their team.” (Owen, Game Executive, quotation 39:24)

HR Practices (LR-HR)

A segment which describes organizational practices or policies that were put in place to hire, socialize, assess, pay, retain, and train workers, among others.

Example: - “Every new hire gets a mentor, or what we call a ‘shadow’. That person takes that responsibility for at least 2 years. He or she’s the one who is going to answer all the questions that the new hire can have. It gives the new hire time to take in the culture of the organization.” (Robert, R&D manager, quotation 47:11).
- “Most of the employees have stocks, and all have access to a stock purchase plan. It’s a concern for everyone, from the first to last one of us.” (Rebecca, Project Manager, quotation 8:23)
Step 4: Assign codes to segments representing “Contextual Conditions”

You now need to assign a code to each of the 20 segments presented below. Please, take note that (1) you might find two or more segments representing the same contextual condition and (2) any given contextual condition might not be represented below. Use Table 2 to refer to the list of codes and, most importantly, do not hesitate to go back to Step 3 where definitions and examples of the codes were given.

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<td>“Some have been put in the wrong positions. They were domain experts: an expert programmer, not an expert manager; an expert artist, not an expert manager. Thus, I often have to manage for them so things don’t get too much out of hands. And then you end up managing 60 people at a time!” (Susan, Game Director, quotation 35:13)</td>
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<tr>
<td>02</td>
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<td>“We believe that money is not the answer. We believe that money is the lazy way of doing things. Because the staff, and even the executives, they come and say ‘You have got to give us more people! You have got to give us more software! You have got to give us better machines, so that we are competitive!’ And I don’t necessarily disagree with the CEO on the fact that that might be the lazy way of dealing with the problem. It’s so easy to think ‘Okay, in order for me to be more effective and accomplish more, I need more means’. I don’t know... I don’t know. I think we have to challenge the organization to sit down, re-think what it does, how it does it, to do it more effectively.” (Kurt, VP Operations, quotation 30:15)</td>
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<td>03</td>
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<td>“There is not much loyalty in this industry. That’s really because of the nature of the entertainment industry; people work on a project first and foremost. It’s the same thing in TV and the movies, but it’s probably worse over there, because they don’t even have an employment relationship. So it’s a battle every day, each time that a project ends, if they don’t like the boss’ face, then it’s bye bye! Two days later, they have a job elsewhere.” (Clayton, VP Finance, quotation 33:18)</td>
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<td>04</td>
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<td>“In an environment of high growth as ours, the firm has more than doubled in size since last year. It is thus obvious that there is never enough people to do all the work. The delivery people would like the sales people to stop selling, and the sales people would like the R&amp;D people to finish developing version 5 before version 3 is even completed.” (Sean, CEO, quotation 1:4)</td>
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</table>
“There is a problem right now and it’s all the old-timers who are leaving or left, for whatever reason. And we hire a lot of new people. So the old guys who are staying ask themselves ‘why didn’t I leave also?’ So we hear them talking and we have doubts that one day it will be their turn. [...] As a programmer, because my skill is rare, I may be getting better conditions... maybe. But there is definitely a problem with the artists.” (Samuel, Programming Lead, quotation 23:41)

“EdgeSoft has lost money each year since its founding. Last year was the first time when we broke even. So when you’re put in an environment where profitability is THE objective like we have been, it pervades everything. Maybe it’s only because of my role, but I would say that the strongest value is... [laughs] profitability and cost control nowadays.” (Rebecca, Project Manager, quotation 8:22)

“Each employee manages his or her own vacation time. I will not tell anyone how they should manage their own vacation time. The sole requirement is that you are available for your customers. The rest, ultimately, is managed within the team. The decision to take time off is left to the customer pilot and to his people. If someone comes by today and says ‘I am going to play golf this afternoon!’, I will only say ‘OK! Have a good game!’. And I can only encourage that person to get a good score.” (Jordan, Operations director, quotation 46:13)

“The company is not owned by external shareholders, foreigners or large venture capital firms. Thus, it’s only two shareholders that have their own priorities which are of course financial, but also in terms of pleasure at work. It definitely creates a certain context.” (Mark, VP Finance & Operations, quotation 14:5)

“We try to make BigGames really a place of work. Let me explain this. It isn’t necessarily negative. We think it’s positive. There was a trend back in late 90s where the high tech companies created all kinds of rooms for people to relax, play and chill. [...] We are the anti-Google model. Other companies in our industry are more of the Google model. Why? Because there is a price that comes with the Google model. Unavoidably, unavoidably, unavoidably, you will end up spending 80 hours a week at the office. And we take the position that of those 80 hours, there is maybe 50 at your desk that are actually spent at work, doing what you have to do. The rest is about God knows what else.” (Kurt, VP Operations, quotation 30:12)

“This industry hasn’t really matured yet. You’d be surprised how last minute some decisions are made. We are on the receiving end. We see the publisher and we go... my God! Couldn’t they have made this decision six months ago? [...] So there is this ‘hurry up and wait’ type of culture in this industry.” (Kurt, VP Operations, quotation 30:16)
“For about a year and a half [in 1993] we were without any customers, coding what became our product. [...] It cost a lot more than we thought. It took more time and burnt all our cash reserves. We took mortgages on our houses, sold our toys; there is nothing we didn’t do. [...] This episode made us become an extremely prudent firm on financial matters; we could go through the whole adventure again today very easily, we have enough cash reserves to do so. We never know what to expect in our industry. So in all of our decisions, not only the financial ones, we never make decisions that would put at risk the viability of the business. We don’t delude ourselves into thinking that because we are good in one market that we would be good in others. We focus on what we do well.” (James, CEO, quotation 45:10).

“I see myself more as the artistic lead of a team of artists, than as a member of the BigGames team. I prefer to be closer to my people than to be... let’s say a ‘corporate’ person.” (Oliver, Artistic Lead, quotation 36:34)

“EdgeSoft is growing very quickly, and within that growth strategy, there is also the idea of acquiring firms that can complement our sales offering, so everything is changing quickly here at EdgeSoft... very quickly” (Steven, VP Service Delivery, quotation 5:2)

“For Project XYZ, I felt a lot of stress. I had so much difficulty getting through that one, that I got sick. I really wanted to finish it; that was really important. [...] Now it’s going better, but that was a really bad time, at a point that you ask yourself what’s the meaning of your work” (Susan, Game Director, quotation 35:13)

“There is not a lot of turnover. And that is from the beginning. I am here from day 1. There are people that are here since day 1, and there are many others that have been here for 7 years, from the first or second year. It’s good for a firm of our size.” (Scott, Project Manager, quotation 9:33)

“We are in a business where speed is terrible. Competition is fierce. It’s more a question of time to market than one of process. And what I say often, the ingredient that we can never have enough of, or replace by anything else, is time. I can lack money; banks are going to be there to lend me some and investors will be there to put more money in the pot. If you have a good project but you lack money at some point, you are probably going to find more along the way.” (Sean, CEO, quotation 1:8)

“When I look at the people that I have, they are all people with at minimum, a bachelor’s degree, and one half with a master degree. The average is about 10 years of experience each. It’s strong. Very strong. The technical expertise is impressive.” (Steven, VP Service Delivery, quotation 5:5)
“I am happy not to be part of the production teams. You can see the crazy hours that they are doing. One morning they had a milestone due for a game. When I arrived I heard that one guy slept in! Some other guys spent about two insane weeks, and some others also did 24 hours straight at some point. I know that it’s not all of our games that are shipped within such madness, but you have to ask yourself ‘how did we get there?’ ” (Eloise, IT Manager, quotation 43:12)

“Slowly but surely, people are learning to work together. There are a lot of egos around here, but they are learning to cool down. It has always been a business of egos; people who are highly intelligent and work hard. But it often ends up in cockfighting.” (Scott, Project Manager, quotation 9:39)

“Sometimes, we lack qualified resources. It happens that teams share resources... or battle for the services of one resource in particular. ‘Hey, this project would be a perfect fit for that guy, we need him; No, look, he’s booked for the next 2 months, I can’t share him with you...’ We battle for the AAs, not the Bs or the As...” (Jayden, Animation Artist, quotation 19:15)
Step 5: Get more familiar with the different codes representing “Transparency Functions”

You will find below a definition as well as an example of segment for each code included in Section 2 (Transparency Functions) of the coding scheme (ref. Table 2). You now need to read attentively the following to familiarize yourself with the meaning of the codes.

Mobilizing (F-MOBILIZING)

A segment which describes how people may employ technology to mobilize and to motivate peers or subordinates. For instance, managers may employ technology to align workers’ identities with their own and foster their commitment to the team’s or the organization’s goals. They may also employ technology to convince workers to trust and to consider their decisions as legitimate.

Example: “People here are in the now about everything that goes on in this business. And exactly as if members of a board of directors. And that obviously takes considerable time each day... to continuously interpret what we are doing, why we are doing it, how it fits in the philosophy and the culture. There are exchanges about that. People will come back with questions – Why did do we do this? Why in a proposal to Lottery Corporation are we putting that we’ll do this, but that we’ll refuse to do that other thing?”
Me: “And the forum usually employed for these exchanges is ...?”
James Lewis, CEO: “People come into my office. But we prefer to do it by email because it is so much easier to include everyone in the conversation. Thus we spend a considerable time over email. Before email existed, THE issue that generated discussions and dissatisfaction was – Well, nobody told me about that! I am always the last one to know! Why did nobody talk to me? I didn’t know! – There is none of that anymore!” (James, CEO, quotation 45:27).

Pooling artefacts (F-POOLING)

A segment which illustrates how technology is employed to gather, store, and share work artefacts, such as documents, files, forms, procedures, drawings, schemas, etc. Technology may also be employed to make procedural knowledge available to workers from other occupational communities as resources in the accomplishment of work. Using technology in such a way may reduce dependencies between tasks and facilitate coordination; as well as help to speed up problem solving and skill acquisition by novice members of an occupational community.

Example: “So the other thing that we have is Sharepoint. Every document that we develop, whether it is a powerpoint, a slideshow or whatever, it is put in the sales section of Sharepoint. In that section, there is tons of stuff. So the idea is that all the information produced by everyone is put into the pool and shared with everyone so it’s reused.” (Charles, VP Sales and Development, quotation 10:30)
Reporting accountability (I^2-REPORTING)

A segment which presents evidence of technology being employed to render accountable workers responsible for accomplishing tasks according to certain criteria: when, where, how, how soon, how well? Technology is used for the purpose of knowing how work is accomplished in the organization, attributing blame if necessary, prioritizing the allocation of limited resources, and articulating arrangements to integrate lines of work.

Example: “We have a lot of tools to help us see what is going on. Obviously, the value of these tools is that we get all the historic perspectives. We have a bunch of graphs that are on 5 years, on 8 years, or even on 10 years. They are a very accurate measurement of what’s going on and what’s coming in the organization. We highly trust these tools to see how the organization evolves. I would say that this tool is the heart of TradSoft. We could even sell this tool, because it is so highly sophisticated.” (Scott, Operations director, quotation 51:40).
**Step 6: Assign codes to segments representing “Functions of Transparency”**

You now need to assign a code to each of the 20 segments presented below. Please, take note that (1) you **might** find two or more segments representing the same contextual condition and (2) any given contextual condition **might not** be represented below. Use Table 2 to refer to the list of codes and, most importantly, do not hesitate to go back to Step 5 where definitions and examples of the codes were given.

<table>
<thead>
<tr>
<th>No</th>
<th>Your Code</th>
<th>Excerpt from interview transcripts</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>____________</td>
<td>“In terms of computerized systems, we have all the budgeting systems and workforce monitoring systems. We built these systems to monitor headcount so we have a better idea of who is where and who is idle, but... can we know if are using the maximum of resources at any given time? We can’t answer that. It all holds together with stuff that is less than duck tape. We lose so much time with these systems, it’s crazy.” (Clayton, VP Finance, quotation 39:13)</td>
</tr>
<tr>
<td>02</td>
<td>____________</td>
<td>“Transparency. I use that word because all the information circulates here. Highly strategic information circulates, at all levels of the business. There are mails sent by the president, and by us, the directors, to inform people about what is going on in the business. It is information that I believe elsewhere would never get disclosed to anyone. Here, we disclose it, so that everyone knows what is going on at TradSoft. So I would say that concerning transparency, it’s extraordinary what is going here.” (Scott, Operations director, quotation 51:22).</td>
</tr>
<tr>
<td>03</td>
<td>____________</td>
<td>“Access for everyone; that is also something very special here at TradSoft. There is no access management for documents, or anything else that is on the network for that matter. Elsewhere, everyone has his or her own small drive, with security so you can make sure you have access to your things and people do not have the right to access these. There could be access privileges by groups or by sectors. Here, everything is open. We can access anything. I would say that the only security that we have is on the pay system and a few very specific documents. That’s it. It’s quite unique. All the other companies I worked for were heavy on security. For instance, all of our customers... forget about it. At all places where I regularly land to do some consulting on behalf of TradSoft, the first issue that comes up is always who is going to get access to the data, how security is going to be managed. Here at TradSoft, security is... open. Totally... as if there was an absence of security somehow, even though there is some.” (Brandon, IT manager, 50:17).</td>
</tr>
</tbody>
</table>
“Each week, the directors and I verify all the time sheets. Of everyone. It is our way to get the exact pulse of what is going on in the organization. Systematically, we verify what our 95 people did. [...] We verify that the wording is correct, that it makes sense, and that activities are assigned to the right projects. For the customer, it must be as clean as possible. We thus have very few debates. We never have accounts receivable that are not ultimately paid, because we are so clear, so transparent in our way of working with our customers. They like that. And, that allows us to get a repository of what’s going on as a by-product. That is very, very, very precious. Imagine: it’s 500 timesheets on average, which means about 4000 entries every week, that describe time here at TradSoft in a highly normalized way.” (Scott, Operations director, quotation 51:40, 51:47).

“Right now, we’re using Great Plains with a bundle of Excel files, which are monstrous and impossible to maintain. And the timesheet management system is now hosted on Lotus Notes... these are all odd and differentiated systems... it’s all wrong.” (Owen, Game Executive, quotation 39:33)

JGB: “You said that you communicate one hour each day by email... what do you communicate about?”
James, CEO: “Everything. Everything. For instance, they know that right now we have an offer on the table for Lottery Corporation. People are aware of it, they know the content and the numbers, and they know exactly what these are based upon.”
Me: “All 90 employees?”
James, CEO: “Everyone. The janitor included. [...] They know what they have to do, the strategies that we will take, how we positioned ourselves toward SAP, where we are not conform to the RFP. Everything... Not everything in the sense that... the offer is there [note: he points to a full 3” binder on a table in the corner of his office]. It must weigh 16 pounds. Obviously, it was in the middle of the main office for a full week. When we got it out, we put it at the disposal of everyone, and people came to browse it.” (James, CEO, quotation 45:25).

“Often. At least once per month, maybe sometimes less often than that, but we receive an email from the CEO that will include the list of 12 monthly news. Most of the times, it’s stuff that we already knew and which nothing can be changed about. So in general, we don’t learn much from these emails.” (Rebecca, Project Manager, quotation 8:25)

“It’s not a flat intranet, where everyone is cute and everyone is nice. There is a sales section, a marketing section, a project management section, and an IT section. There is also some intra-department communications that are made through the intranet, as well as between the departments and their external customers.” (George, VP IT&QA, quotation 2:24)
“In addition to my role in R&D, I am also a customer pilot. The other customer pilots are people specialized in pay or benefits and I am the only one managing the pension module. Thus, when we’re done with a customer or that we just completed a milestone, we tell the others – Look, we just finished 600 hours of development at this customer’s site and they are now in production. Here is the list of all the people that contributed to this project and the amount of hours they put into the project. – These are reinforcement communications. Again, it’s only an email, but what’s in it is important.” (Robert, R&D manager, quotation 47:37).

“For strategy, R&D and marketing documents, it’s different from elsewhere. Elsewhere, these groups wouldn’t be able to see the documents produced by the others. Here, people from marketing can go to the drives of people in R&D and look up what there is and... It’s as simple as that. We could take people in R&D and put them in the marketing team, because all the files are accessible right away on the network. It’s all the same network and there is no security at all. If you know where to look for, you’ll find it. It’s very open... very open.” (Brandon, IT manager, quotation 50:18).

“I often look into Salesforce, but it’s only to check upon the last accounts that were approached by the reps or my own accounts that are in the pipeline. I won’t do stats such as ‘the accounts of the last 30 days that were not solicited in between etc., etc.’. I am in charge of business development, for God’s sake. [...] There is so much information in this system that you lose yourself in it. My assistant and my VP Finance also do. We generate some reports and then a box shows up saying that if you maintained such information using feature X, you could synchronize with feature Y... Hey! We are not even able to get address labels out of this. You need to push so many buttons that it’s impossible to do. So we put everything in an Excel file, we send it over by email to a guy who only does mailing for a living, he prints it out, and it’s done.” (William, VP Sales, quotation 77:6)

“Internet... we use it all the time. All the programmers use it. It’s the best resource. If we have problem, we go on the Net because there are so much resources and it’s so easy to find solutions, formulas, whatever. I use it all the time.” (Vincent, 3D Programmer, quotation 27:17)

“I know a project that developed a really nice application to do that; it’s interactive and very powerful to motivate the team. It shows the project progress, the last artistic assets and screen captures. It encourages people to work even harder. We created this newsletter for the same reason, to show what’s now under development. We put on videos, images, etc. so people get a feel that the project is progressing and that people do not only live in their own bubble. It’s sent by email every 3 to 4 weeks.” (Nicole, Assistant Project Manager, quotation 34:44)

“What Sharepoint allowed us to do is to formalize all our processes, our templates, and our tools to support the service delivery team. So now, when we begin the requirements analysis at a customer’s site, we have a standard template for that. If there is a change request, there is also a standard template. So everything is in there. One of the big problems we have now is that people will use the template, modify it, and put it back. Over time, it’s very dangerous because you lose the standardized comparative basis. So we try to keep all the standardized templates together through Sharepoint and use those each time we get a new customer.” (Linda, VP Organizational Development, quotation 11:8)

“Email… if you want to communicate emotion, motivation or encouragements… or, if you want to tell that you’re angry because we missed an opportunity… well, an email is not very good for such things. An email, it’s factual, to announce the new procedure for expense accounts or the steps for a procedure. That’s OK. But to tell people, ‘Hurray! We just got this contract!’? It’s much better to just walk around, take 10 minutes and get people together to make the announcement.” (Sean, CEO, quotation 1:34)

“Everything that was in the old wiki, we put it in the new one. It’s very easy to access now, because it’s a simple tab and the search engine is much more powerful than the one of the initial wiki. The visual is much clearer. I don’t use it much now because it’s not finalized, but I am sure I will spend much more time in it than in the old one. It’s goal is really to document everything… bugs, problems, solutions, the stuff we found on the internet…” (Samuel, Programming Lead, quotation 23:17)

“This system allows us to manage all our projects and our customers. It generates our invoices and all the reports to the customer. It provides them with a way to find out and know about the progress of work, and so on. It is used to do all our analysis about the past. If I want to know how much time we did in such and such activities – there are 95 types of activities. If I want to see what we did in ‘training’… about the topic called the payroll, I can go back 14 years. I can output all sorts of graphs… I filter the data by person, by customer. It’s a gigantic Oracle database.” (James, CEO, quotation 45:24).

“I believe it reflects some sort of inherited aspect of the culture of CasualGames. The server is fully open and accessible. When we implemented the new servers we did a little bit restructuring and some limitations were put in place to ensure some sort of order. But much of it is still wide open and people have access to everything that has been done at CasualGames in the past… software code, visual assets, everything. I will probably need to take a look at that situation soon.” (Clarence, IT Manager, quotation 28:19)
“MS Project... I only use it to monitor bugs. In normal times, we would use it for to manage timesheets and schedules, but I only use it as a bug tracker. It’s interesting because I can assign a bug to individuals and program daily reminders with the count of bugs to solve and their descriptions. It’s highly customizable. And everyone can customize his or her own views. Some like to see the bugs assigned to others, while others prefer to see only their own. In my case, I prefer to see the bugs that were assigned to all the programmers that work on the same projects as I do.” (Vincent, 3D Programmer, quotation 27:26)

“We have some... arcane tools I would say. The tools were created to provide us with information that is found in different systems. In the HR system, an employee is assigned to one project. Well, we simply can’t generate stats about who is currently assigned and on what projects they are assigned. We have some awkward calendars that allow us to determine at what moment staff will become available to begin a new project... It’s all very complex to work with these tools. It was fine when we only had 2 projects, but now we have 15 and it’s much more complicated.” (Dorothy, VP HR, quotation 31:19)
THE VALIDATION PROCEDURE IS NOW COMPLETE

Please return this completed document to the principal investigator of the research project.

THANK YOU FOR YOUR HELP!
The entertainment software industry is no longer a niche market\(^1\). Entertainment software, or video games, generally consists of “interactive, software-based games that are played on a variety of electronic platforms with display devices (typically screens), sound reproduction capabilities, input interfaces such as keyboards, joysticks, and mice. These games combine narrative, sophisticated visual representations, music and sound, artificial intelligence, and often interaction with other players to produce unique entertainment experiences” (Hickling Arthurs Low Corporation, 2007, p. 1). As such, video games are not only interactive experiential products (Tschang, 2005), but also cultural products (Hirsch, 1972). The release of any new installment of bestselling video game franchises such as Mario, Zelda, Final Fantasy, Halo, Gran Turismo, Grand Theft Auto, and The Sims is awaited by the same fever than Hollywood’s blockbuster movies and are now part of pop culture (Kline, Dyer-Witheford, & De Peuter, 2003). According to a report released in 2008 by PricewaterhouseCoopers, by 2011, the global gaming market will be worth $48.9 billion, up from $31.6 billion in 2006 (PricewaterhouseCoopers, 2008).

The video games industry has a value chain that resembles the crossover of a cultural industry and a software production industry. The activities of the value chain may be divided among 10 actors, apart from the final consumer: publishers, developers, QA and post-production services providers, art and animation services providers, platform holders, delivery media

\(^1\) This appendix was in large part written before I conducted interviews in the organizations as a way to gain better understanding of the challenges faced by the organizations of the entertainment software industry, as I had little previous knowledge about this industry.
manufacturers, distributors, retailers, PR firms and ad agencies, media outlets (Johns, 2006; Schoback, 2005).

Publishing activities are managed by a small group of large, multinational firms (Table 1 provides a ranking of the world’s largest publishers). Some of these firms have grown organically within the industry (Electronic Arts, Nintendo, for instance), while others are content publishers from other media industries that have acquired assets within the industry (Vivendi Universal Games, Sony). Publishers serve as gatekeepers and provide funding and resources to video game developers. Publishers are those that assume most of the risks tied to the launch of a new product. Only those publishers which are big enough to take on an extensive portfolio of products can ensure any degree of continuity in their activities, and hope to obtain an appropriate return on their investments (Tschang, 2007). As for many other cultural industries (Hirsch, 1972), publishing and producing video games involve high fixed costs while revenues are highly uncertain. An extensive portfolio of content (licenses and intellectual properties) ensures that income generated by the better-performing properties will compensate for the poor performance of the others. Also, publishers need to maintain a network of distribution partners in order to succeed and generate sufficient presence on the global market.
### Table 1. Global top 20 PC & consoles video games publishers (by revenues, in $USD million)

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Nintendo (*)</td>
<td>Kyoto, Japan</td>
<td>4,762</td>
<td>8,188</td>
<td>16,724</td>
<td>251.2%</td>
<td>3,904</td>
</tr>
<tr>
<td>2</td>
<td>Sony (*)</td>
<td>Tokyo, Japan</td>
<td>6,972</td>
<td>8,641</td>
<td>12,155</td>
<td>74.3%</td>
<td>(**) 180,500</td>
</tr>
<tr>
<td>3</td>
<td>Microsoft (*)</td>
<td>Redmond, WA</td>
<td>2,731</td>
<td>6,132</td>
<td>8,140</td>
<td>198.1%</td>
<td>(**) 79,000</td>
</tr>
<tr>
<td>4</td>
<td>Sega Sammy Hold.</td>
<td>Tokyo, Japan</td>
<td>4,093</td>
<td>4,489</td>
<td>4,344</td>
<td>6.1%</td>
<td>7,665</td>
</tr>
<tr>
<td>5</td>
<td>Namco Bandai</td>
<td>Tokyo, Japan</td>
<td>4,030</td>
<td>3,889</td>
<td>-</td>
<td>-3.5%</td>
<td>7,117</td>
</tr>
<tr>
<td>6</td>
<td>Electronic Arts</td>
<td>Redwood City, CA</td>
<td>2,957</td>
<td>3,091</td>
<td>3,665</td>
<td>23.9%</td>
<td>9,000</td>
</tr>
<tr>
<td>7</td>
<td>Konami</td>
<td>Tokyo, Japan</td>
<td>2,620</td>
<td>2,375</td>
<td>2,968</td>
<td>13.3%</td>
<td>5,472</td>
</tr>
<tr>
<td>8</td>
<td>Activision (***</td>
<td>Santa Monica, CA</td>
<td>947.7</td>
<td>1,513</td>
<td>2,898</td>
<td>205.8%</td>
<td>2,125</td>
</tr>
<tr>
<td>9</td>
<td>Disney Interactive Studios</td>
<td>Burbank, CA</td>
<td>(**) 2,511</td>
<td>(**) 2,347</td>
<td>-</td>
<td>-6.5%</td>
<td>(**) 137,000</td>
</tr>
<tr>
<td>10</td>
<td>Take-Two Interactive</td>
<td>New York, NY</td>
<td>1,127.8</td>
<td>981.8</td>
<td>(p) 1,525</td>
<td>35.2%</td>
<td>1,900</td>
</tr>
<tr>
<td>11</td>
<td>Square Enix</td>
<td>Tokyo, Japan</td>
<td>584.6</td>
<td>1,389</td>
<td>1,472</td>
<td>151.8%</td>
<td>3,040</td>
</tr>
<tr>
<td>12</td>
<td>Ubisoft</td>
<td>Montreuil-sous-Bois, France</td>
<td>632.4</td>
<td>932.6</td>
<td>1,422</td>
<td>124.9%</td>
<td>4,323</td>
</tr>
<tr>
<td>13</td>
<td>Vivendi Universal (***</td>
<td>Los Angeles, CA</td>
<td>590.8</td>
<td>1,396</td>
<td>-</td>
<td>136.3%</td>
<td>(**) 39,919</td>
</tr>
<tr>
<td>14</td>
<td>THQ</td>
<td>Agoura Hills, CA</td>
<td>640.9</td>
<td>1,027</td>
<td>1,030</td>
<td>60.7%</td>
<td>2,400</td>
</tr>
<tr>
<td>15</td>
<td>Capcom</td>
<td>Osaka, Japan</td>
<td>498.6</td>
<td>633.2</td>
<td>786.5</td>
<td>57.7%</td>
<td>1,506</td>
</tr>
<tr>
<td>16</td>
<td>Navarre</td>
<td>New Hope, MN</td>
<td>475.2</td>
<td>698.4</td>
<td>685.5</td>
<td>44.3%</td>
<td>648</td>
</tr>
<tr>
<td>17</td>
<td>NCSoft</td>
<td>Seoul, South Korea</td>
<td>214.7</td>
<td>330.5</td>
<td>-</td>
<td>53.9%</td>
<td>1,571</td>
</tr>
<tr>
<td>18</td>
<td>Eidos (SCI)</td>
<td>London, UK</td>
<td>245.4</td>
<td>288.2</td>
<td>-</td>
<td>17.4%</td>
<td>971</td>
</tr>
<tr>
<td>19</td>
<td>Midway</td>
<td>Chicago, IL</td>
<td>162</td>
<td>157.2</td>
<td>-</td>
<td>-3.0%</td>
<td>810</td>
</tr>
<tr>
<td>20</td>
<td>Atari</td>
<td>New York, NY</td>
<td>468.9</td>
<td>122.3</td>
<td>80.3</td>
<td>-82.9%</td>
<td>143</td>
</tr>
</tbody>
</table>

*Figures for revenues generated by publishing cannot be separated from revenues generated by console production
** Figures are global and are not specific to the video games unit of the firm
*** On July 9, 2008, Vivendi Universal Games completed the acquisition of Activision.
(p) Projected revenues
Sources: Bureau van Dijk (Osiris), S&P, I/B/E/S International, firms’ websites and annual reports

Development activities may be accomplished by either independent studios or internal studios owned by the publishers. Developers may work on products based on their own original intellectual property, or they may engage in work-for-hire from publishers that own intellectual properties. Developers interact primarily with a publisher, but they also interact on occasion with
the console platform holder (Microsoft, Sony, Nintendo) for technical assistance. Developers also purchase a development kit upon which they can design and test their products (Schoback, 2005). Table 2 provides a ranking of the world’s largest independent video games developers.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Firm</th>
<th>Location</th>
<th>Employees in 2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Foundation 9 Entertainment</td>
<td>Emeryville, CA</td>
<td>900</td>
</tr>
<tr>
<td>2</td>
<td>PerfectWorld</td>
<td>Haidian, China</td>
<td>603</td>
</tr>
<tr>
<td>3</td>
<td>GluMobile</td>
<td>San Mateo, CA</td>
<td>600</td>
</tr>
<tr>
<td>4</td>
<td>Gravity</td>
<td>Seoul, South Korea</td>
<td>511</td>
</tr>
<tr>
<td>5</td>
<td>BigGames</td>
<td>Canada</td>
<td>425</td>
</tr>
<tr>
<td>6</td>
<td>Codemasters</td>
<td>Southam, UK</td>
<td>322</td>
</tr>
<tr>
<td>7</td>
<td>Digital Chocolate</td>
<td>San Mateo, CA</td>
<td>300</td>
</tr>
<tr>
<td>8</td>
<td>Rebellion</td>
<td>Oxford, UK</td>
<td>280</td>
</tr>
<tr>
<td>9</td>
<td>Eurocom</td>
<td>Derby, UK</td>
<td>270</td>
</tr>
<tr>
<td>10</td>
<td>Kuju Entertainment</td>
<td>London, UK</td>
<td>258</td>
</tr>
<tr>
<td>11</td>
<td>Slipgate Ironworks</td>
<td>San Francisco, CA</td>
<td>250</td>
</tr>
<tr>
<td>12</td>
<td>Blitz Games Studios</td>
<td>Warwickshire, UK</td>
<td>230</td>
</tr>
<tr>
<td>13</td>
<td>Realtime Worlds</td>
<td>Dundee, Scotland</td>
<td>200</td>
</tr>
<tr>
<td>14</td>
<td>Turbine</td>
<td>Westwood, MA</td>
<td>200</td>
</tr>
<tr>
<td>15</td>
<td>Digital Tainment Pool</td>
<td>Hamburg, Germany</td>
<td>180</td>
</tr>
<tr>
<td>16</td>
<td>Frontier Entertainment</td>
<td>Cambridge, UK</td>
<td>170</td>
</tr>
<tr>
<td>17</td>
<td>Yuke’s</td>
<td>Osaka, Japan</td>
<td>160</td>
</tr>
<tr>
<td>18</td>
<td>NeoStorm</td>
<td>Seoul, South Korea</td>
<td>156</td>
</tr>
<tr>
<td>19</td>
<td>Blue Castle Games</td>
<td>Vancouver, BC</td>
<td>155</td>
</tr>
<tr>
<td>20</td>
<td>Gearbox Software</td>
<td>Plano, TX</td>
<td>155</td>
</tr>
<tr>
<td>21</td>
<td>Climax Group</td>
<td>Porthsmouth, UK</td>
<td>150</td>
</tr>
<tr>
<td>22</td>
<td>Valve Corporation</td>
<td>Bellevue, WA</td>
<td>150</td>
</tr>
<tr>
<td>23</td>
<td>Insomniac Games</td>
<td>Burbank, CA</td>
<td>145</td>
</tr>
<tr>
<td>24</td>
<td>Cryptic Studios</td>
<td>Los Gatos, CA</td>
<td>140</td>
</tr>
<tr>
<td>25</td>
<td>Day 1 Studios</td>
<td>Chicago, IL</td>
<td>140</td>
</tr>
</tbody>
</table>

Sources: Develop Magazine (www.develop100.com), firms’ web sites and annual reports

Table 2. Global top 25 PC & consoles independent video game developers (by number of employees)

Developers will generally attempt to secure funding and distribution agreements from publishers before venturing into the production of novel intellectual property because of the high risks involved (Tschang, 2007). Most independent developers will work with publishers on a contract basis. The publisher finances the developer through “advances” against a schedule of development milestones. Developers also get a certain percentage of sales revenues as royalties per units sold. Royalties are however generally paid only if the advance payments have been recouped against sales volume by the publisher (Schoback, 2005). Other sources of financing, such as venture capital and debt are common for developers.
Developers accomplish most of the creative work involved in producing video games. They are responsible for the gameplay, genre, and narrative of the product (Tschang, 2007). They are also responsible for the artistic components of games such as graphics, animation, lighting, texture, and sound, as well as the technological components of the games such as artificial intelligence and software code. Some developers may attempt to generate additional revenues by commercializing the technology they employ to produce their games; such technology is called a “game engine”. Some activities involved in the production of video games may get outsourced to service providers. Developers may employ the services of firms that provide artistic assets, such as motion-capture service providers, as well as animation and visual effects production companies (Schoback, 2005). They may also employ the services of post-production service providers.

Post-production activities are ensured by a fragmented market of small firms. These firms provide quality assurance (QA) services that ensure that the products are bug-free and of adequate gameplay on a contract basis (Schoback, 2005). They also provide localization services, which consists of adapting the product to a particular geographical area or culture. These adaptations may involve translation of menus and screens, changes to fonts, keyboard usage, and date and time formats. Other production services that are offered include porting products from one console to another, as well as optimization and certification for specific console hardware.

Platform holders are those companies that manufacture the hardware on which video games software runs (Schoback, 2005). In the home and mobile consoles market, there are mainly 3 platform holders: Microsoft, Nintendo, and Sony. Each of these platform holders rely upon a global network of suppliers and manufacturers to provide components and services that are required to assemble their consoles (Johns, 2006). The manufacturers also provide hardware configurations and software development kits to developers and to publishers, which have to submit their games to a certification process before their commercialization. In addition to their activities in manufacturing hardware, platform holders also engage in publishing and video game
development activities, because they have a vested interest to attract publishers and developers that will provide a critical mass of games to consumers (Johns, 2006).

The activities of manufacturing and assembling game discs and packages are provided by delivery media manufacturers. Some platform holders may control part of these activities in-house (Nintendo and Sony, according to Schoback (2005)), while they may also outsource these to specialized firms for each geographical market they serve. While publishers are those that negotiate distribution agreements, platform holders still retain an important controlling stake upon the process of manufacturing and assembling game disks, especially during the busy last quarter of the year where video games sales are the highest: “During busy seasons when manufacturing capacity is strained, the platform holder has final say over which products receive priority” (Schoback, 2005, p. 106).

Home and mobile consoles video games have been traditionally, and still mostly are, sold through physical retailing. Publishers may negotiate directly with large retail store chains, such as Wal-Mart or Costco Wholesale Corporation in North America, but they generally distribute their products through a distributor. Distributors will sell to stores whose size precludes dealing directly with publishers. While retailers may retain about a 30% margin on sales revenues, distributors generally only get about a 3% margin on sales revenues (Schoback, 2005).

To promote their products, publishers may engage public relations and advertising agencies. Video games being consumer products, media outlets play an important role in order to ensure their visibility. While the mass media, such as TV and mainstream newspapers, may not be as important as for the movie and music recording industry, they nevertheless play a role in terms of niche TV channels and magazines dedicated to video games. Exposure and good reviews in these outlets are critical for assuring the success of a title. Publishers may aggressively attempt to coopt reviewers and critics in order to obtain favorable reviews (Hirsch, 1972), especially for games that are “middle of the road” and that are based on less well known franchises: “In addition to copies of the game, most game reviewers receive accompanying
accouterment from game publishers. These typically include t-shirts, caps, backpacks, and other assorted company and game branded items. However, when these perks become over-the-top, such as free trips to Japan and Europe, transportation by limousine, and movie premiers, some critics call this practice ‘playola’.” (Cambron, 2005, p. 297).

The value chain of the home and mobile console video games industry is illustrated in Figure 1.

While successful in general, the video games industry is highly dynamic and uncertain. Success today is difficult to capitalize on for generating tomorrow’s success, as many of the developers and publishers that were successful in the 80’s and 90’s are now out of business.
Some of the better-known publishing names in gaming history, such as SSI, Origin Systems, Sierra, GT Interactive, Infocom, StormFront, Acclaim are gone, while others remaining are in serious financial difficulties (Midway, Infogrames-Atari). An unprecedented number of acquisitions and liquidations of independent developers occurred between 2000 and 2006, but today the remaining studios cannot supply demand from publishers looking to expand their portfolios in anticipation of the apex of the industry cycle (Johns, 2006).

The uncertainties that plague the video game industry are numerous, but they can be classified in four broad categories: (1) unpredictable demand for video games, (2) changes in distribution business model, (3) technological evolution, and (4) governmental policies and regulations.

**Unpredictable demand for video games.** Similarly to other cultural industries, the demand for videogames and the success of a particular title are highly unpredictable and are generally short-lived (Lampel, Lant, & Shamsie, 2000; Tschang, 2007). Consumer preferences are difficult to decipher and very few products achieve market dominance. Some in the industry consider that a hit equals to one million units sold, but very few succeed in selling that much of one title (Tschang, 2007). To counter this unpredictability of sales, publishers and developers deploy many tactics that are similar to those found in other cultural industries, such as the movie and music recording industry.

Game development studios and publishers may recruit and employ a portfolio of “celebrity” game designers that have a track record of success and innovation. For instance, a New Yorker reporter described how Electronic Arts (EA) treats Will Wright, the game designer who created innovative and best-selling simulation games such as Sim City and The Sims: “EA allowed Wright to put together a development team [for its next project] by choosing some of the most talented artists and programmers from EA’s vast network of game makers. The company also constructed a separate headquarters for the seventy-five-member team in Emeryville, about fifty miles north of the corporate campus, near Orinda, where Wright was living” (Seabrook,
These designers are very important for publishers and developers in enabling these to produce innovative games that will differ from the existing products on the market. However, it is important to note that very few designers are able to gain such "celebrity" status and to obtain free rein to create new concepts. More generally, designers have to sell their ideas to an executive committee in which marketing and sales are well-represented.

Publishers also hold a portfolio of franchises and intellectual properties. These franchises either originate from original intellectual properties of the game industry that succeeded well in the past (e.g. Zelda, Mario) or from other medias, such as books and movies (e.g. Harry Potter, The Godfather). In the last decade, publishers have tried to broaden the demographic to which videogames appeal to. Videogames have traditionally served the needs of a niche demographic of young, teenage males between 15 and 25 years old. In the last few years, however, the success of World of Warcraft, the Wii console and the Guitar Hero franchise has contributed to grow the market outside that niche: "video games have begun to climb out of the cultural basement and move into the mainstream living room" (Schiesel, 2007). Games are now being developed for a broader audience by crossing the gender divide and by targeting more mature audiences. However, while "younger children, women and older consumers, who historically have not been sought by the video-game industry, have discovered video games through the Wii, [...] these new gamers are content with the games they have, often going no further than the Wii Sports game that comes with the machine. They don’t buy new games with the fervor of a traditional gamer who is constantly seeking new stimulation" (Muskus, 2008). To appeal to such broad demographic, it is necessary to produce well-understood products, generally based on well-known intellectual property, that have immediate market interest to counter the unpredictability of sales (Tschang, 2007). Games that are based on new original intellectual property (i.e., that are not sequels) are more risky because they have greater variance in their expected revenues than those based on licensed, well-known intellectual properties (Della Rocca, 2007). However, if a
game based on new original intellectual property succeeds, the production of sequels can be more profitable than games based on licensed intellectual properties.

**Changes in the distribution business model.** The business model of the industry is impacted by developments and deployment of broadband and wireless networking technologies. Online distribution, rather than physical distribution through retail stores is now more and more employed by publishers to push their products to consumers (PricewaterhouseCoopers, 2008). Access to the shelf-space of large retailers such as Wal-Mart and Best Buy becomes a less important variable to ensure market dominance. It also increases the potential diversity of games that can be published and distributed at low cost. However, this increase in distribution capabilities does not necessarily ensure market access for smaller and independent game development studios, since market access and dominance is still dependent upon access to mass media gatekeepers as explained previously (Hirsch, 1972).

**Technological evolution.** The entertainment software industry and the home console market in particular, are also affected by Moore’s law. Hardware breakthroughs make it possible to display better-detailed graphics and higher polygon counts. Great visual quality is now an important purchasing criterion for games. Greg Costikyan, a “celebrity” game designer, explains how developing and managing art assets, rather than programming code are becoming the major cost drivers of game development nowadays:

“As machines become capable of rendering more detailed 3D models in real time, the market demands more detailed 3D models - and models are hand-created by artists using tools such as 3D Studio Max and Maya. All things being equal, a doubling in polygon count means a doubling in the amount of time an artist needs to spend generating the model - and a doubling in cost. Faster machines can push more polygons; more polygons means more cost.” (Costikyan, 2005)

This trend toward increasing development costs over time was confirmed by a review of 30 projects’ post-mortems that occurred between 1999 and 2001 and that were published in the industry’s main trade journal (Tschang, 2005). During that period, development budgets for
home console video games averaged $2.29 million and varied from $350K to as high as $5.7 million. In comparison, the overall development cost of the typical home console game had already increased dramatically in 2005 according to Greg Costikyan:

“As recently as 1992, the typical development budget for a PC game was as little as $200,000. Today, if you want a title that will be taken seriously by the retailers - an A-level title - your minimum buy-in is $5m, and $10m for a triple-A title is common². With the next generation of console hardware, the talk is of $20m budgets - not as something that will be unusual, but typical.” (Costikyan, 2005).

In addition to advances in technology, publishers and developers need to support more, increasingly differentiated consoles. This situation leads some insiders of the industry, such as one general manager from Electronic Arts (EA), to question whether the current business model is sustainable in the long term:

"I'm not sure that the model we have here will be the model in 15 years, and that the EA you know today will be the EA you know then. I'm sure we'll do things differently, just because of the cost. The cost of games now is crazy." (Gibson, 2006).

**Governmental policies and regulations.** The fourth source of uncertainty in the entertainment software market is due to governmental policies and regulations. Policies and regulations come into play for two reasons. First, Western governments compete to attract game development studios on their territory by providing generous tax benefits and by contributing to the establishment of educational institutions for the industry. In Canada, the federal and

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² Triple-A video games can be defined the following way: “AAA (Triple-A) refers to the success, or anticipated success if in development, of a title. Sometimes AAA is defined by the amount of money it costs to develop the game. A $10-20 million budget qualifies as a AAA title in development. If during alpha and beta the publisher feels the title will be a smash hit, they might invest a similarly-sized marketing budget with a big marketing push on the game, believing it will be a AAA title. Generally speaking, at the end of the day, regardless of how much money was spent in development and marketing, if the title comes out and is a blockbuster, selling over a million units, it’s considered a AAA title” (Todd, 2007, p. 8). During my time at the offices of BigGames and CasualGames, I often heard the term “triple-A” video games mentioned during informal discussions. When I asked what criteria a game needs to satisfy to be considered as a “triple-A” video game, most proposed a definition similar to the one above, but some added that the game had to be based on original intellectual property. Very few game development studios succeed in producing a triple-A title based on original intellectual property and thus it is an important source of status differentiation between studios (Podolny, 2005).
provincial governments provide a patchwork of financial subsidies and incentives to reduce labor costs in the industry. The federal government provides support through Telefilm Canada’s New Media Fund, the National Research Council’s Industrial Research Assistance Program (NRC-IRAP) and the Scientific Research and Experimental Development Program (SR&ED), which offers tax incentives of 20% to 35% on salaries, contracting, and research and development costs (Dyer-Witheford & Sharman, 2005). One of the most aggressive programs is found in the province of Quebec, where in most cases the tax assistance is equal to 40% of salaries paid, up to a maximum of $15 000 per job, per year (Gagné, Godbout, & Lacroix, 2008). The program was successful in attracting to Montreal French publisher Ubisoft in 1997, American publishers Electronic Arts in 2003, THQ in 2009, and Warner Brothers in 2010, as well as UK-based publisher Eidos in 2007. This program has generated threats of sanctions and of legal proceedings through the WTO by the UK (French, 2008). While these financial support programs are generous, many firms are now establishing studios in China, Brazil and the Eastern European countries to benefit from low labor costs. Furthermore, these financial supports might be revoked at any time following power changes in government.

State policies and regulations are also a source of uncertainty because the content of videogames is getting increasingly scrutinized by the media and regulators. While the industry is pleased by the financial support the states offer, it is less so by its attempt to control the content of games. Many videogames have violent themes and numerous studies seem to indicate playing violent videogames for extended periods of time by children and teenagers may lead to a decrease in pro-social behaviors, to an increase in aggressive behavior and delinquency, to a decrease in academic achievements, as well as to obesity problems (Anderson, 2004; Anderson & Bushman, 2001; Anderson & Dill, 2000; Gentile, Lynch, Linder, & Walsh, 2004; Trost, Kerr, Ward, & Pate, 2001). Furthermore, a content analysis conducted on all existing E-rated video games available for rent or sale in the United States in April 2001, found a significant amount of violence in some video games that are targeted for kids (Thompson & Haninger, 2001). Because many of the best-
selling franchises in the industry are based on violent themes (Halo and Grand Theft Auto, for instance), stricter content regulations would mean decreased sales for these franchises. It is not surprising then, that threatened by stricter regulation about the content of games, the industry created its own vehicle for collective action in the USA, in Europe, and Canada (the Entertainment Software Association). The ESA actively lobbies regulators and sponsors studies that have a positive spin on the behavioral consequences of video games. Currently, the industry is mostly self-regulated, but the future of that situation is uncertain.

1.1.1 Market Segments

In order to better understand the activities and the context within which BigGames and CasualGames operate, it is necessary to describe the various market segments of the industry. The entertainments software industry can be segmented into four broad markets: the home console games market, the mobile consoles market, the PC market, and the casual games market.

**Video games for home consoles.** BigGames operates mainly in the games for home consoles market segment. The home consoles market has been largely driven by the cyclical launching of next generation consoles by giants of the video game console world: Microsoft, Sony, and Nintendo. The launches of Sony’s PlayStation 3 and Nintendo’s Wii in November 2006 completed the introduction of the seventh-generation video game consoles, which began with Microsoft’s release of the Xbox 360 in November 2005. Successful consoles can have a major impact on game sales because they provide an installed base of locked in customers. The home consoles market is highly cyclical (see Figure 2), because consumers anticipate the launch of next generation consoles that are launched about every 5 years to benefit from new developments in hardware technology (Johns, 2006).

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3 The Entertainment Software Association: [http://www.theesa.com](http://www.theesa.com)
Figure 2. Unit sales by console type, 1980-2006 (million units)

Figure 3 illustrates the cumulative sales of each brand of the seventh and current generations of consoles. While the market has traditionally rewarded the first mover in the previous console generations, Nintendo’s Wii has nevertheless captured the lead in cumulative unit sales for the home market despite its arrival a year later than Microsoft’s Xbox360. This rapid growth in sales is explained by the fact that Nintendo’s Wii targets a larger demographic and provides highly innovative gameplay that departs from current consoles (Muskus, 2008). When compared to Figure 2 that portrays the historical sales cycles of the industry, Figure 3 shows that the industry is currently in the first few years of a new sales cycle.

**Video games for mobile consoles.** BigGames also operates in the mobile consoles game segment. Similar to home consoles, the mobile consoles market is dominated by the giants Nintendo and Sony that offer the DS and the PSP, respectively. These mobile devices integrate controls, screen, and speaker into a single handheld unit. The games developed for these consoles are generally less complex games than for home consoles, due to limited graphics and processing.
power. These consoles are also usually less expensive than their home consoles counterparts, which explains their greater unit sales totals over home consoles (Figure 3).

The popularity of each console directly affects the sales of video game products. The broader the installed base of a console, the greater the market for video game products (Johns, 2006). Hence, it is not surprising that with 77 million consoles sold, the Nintendo DS is the 7th generation console for which the most games have been developed and sold, that is 169 games that totaled 234 million video game units sold.
Sales of video game products for home and mobile consoles follow a function that is closely similar to a power law distribution. Very few products provide the majority of the unit sales total. Figure 5 below illustrates the unit sales for each video game title that was released for the 7th generation home and mobile consoles (DS, PSP, Wii, Xbox360, PS3). Industry insiders generally consider that a video game is a “hit” when it sells at least 1 million units (Tschang, 2007). The figure shows that out of 548 video games released on the market, only 151 of these sold over 1 million units (28%), and these 151 account for about 68% of the total unit sales of the industry. Moreover, only 64 of these 548 video games sold at least 2 million units (12%), and only 20 sold over 5 million units (4%). The top 20 bestselling video games account for about 29% of the total unit sales of the industry. If we do not consider these 20 bestselling video games that have sold over 5 million units, the typical video game sold an average of 809 000 units, with a standard deviation of 769 000 units. Thus, these figures show the extent to which the market
for home and mobile consoles video games is highly uncertain and highly risky, where a few products win it all.

![Graph showing unit sales per home and mobile console video game title](image)

*Source: www.vgchartz.com (last accessed June 1st, 2008)*

**Figure 5. 7th generation home and mobile console games unit sales: DS, PSP, Wii, Xbox360, PS3 (in decreasing order of million units sold)**

*Video games for the PC.* The third market segment is the games for personal computers (PC), in which BigGames operated in the beginning of the 90’s when it was known as “SuperComics”. The market for stand-alone, boxed PC games is on the decline (Hickling Arthurs Low Corporation, 2007). This market traditionally fulfilled the needs of “hard-core” gamers, that is young males between 15 and 25 years old for which gaming is a primary hobby and source of entertainment. Home consoles, such as the Xbox 360 and the PS3, are becoming more and more attractive as alternate, less expensive, platforms for this market. Avoiding this decline is the highly successful and lucrative massive multi-player online role-playing game World of Warcraft, developed by Blizzard Entertainment and published by Vivendi Universal, with 10 million subscribers worldwide since its launch in November 2004 that generated about 783M euros in
revenues for 2007 (Alexander, 2008; Vivendi Universal, 2007). In this game, the average player spends 22 hours a week and pays a monthly fee of $15 to interact through avatars in a virtual world and complete collective quests (Yee, 2006). Some researchers of virtual worlds concluded that World of Warcraft is essentially a work platform that train people to become better game workers using well-known behavior conditioning principles (Yee, 2006). It is thus not surprising to find complaints and concerns by players and the media about addiction problems to these particular types of video games (Yee, 2006).

Casual video games. The last market segment that can be distinguished is that of casual games. These games can be downloaded to, and played on mobile phones or wireless enabled digital assistants, as well as on the PC or interactive TV. Because of limitations in processing power and graphic capabilities and also in order to provide a quick learning curve, most casual games are simple and exploit game designs that have been developed at the onset of the game industry in the 1980’s. However, networking and GPS capabilities are now generating a wave of innovative multi-player games to this market. BigGames does not operate in this market segment, but CasualGames does. The particular dynamics of this segment of the industry will be discussed in the next chapter about CasualGames.

1.2 The Entertainment Software Industry: the Casual Games Market Segment

While BigGames operates in the home and mobile consoles market segments, CasualGames operates in the online-downloadable casual games market segment. The environment of CasualGames is similar to the one of BigGames, in that it faces the same constraints and scarcities from the labour market. There are, however, important differences in the product market that each firm caters to and these differences have implications on the organization of CasualGames in comparison to BigGames. The following paragraphs, will explore CasualGames’ environment before describing CasualGames’ history.
Casual video games differ from home and mobile console video games in many ways. Casual video games are “easy to learn, utilize simple controls and aspire to forgiving gameplay” (Wallace & Robbins, 2006, p. 9). The games usually require very little up-front knowledge or skill in order to master the basic game-play and are designed to be played in a series of micro time slices - between 5 to 10 minutes. There are a variety of casual games designs, such as puzzles, word games, action-adventure, episodic games, collective-card games, role-playing games, and board games, among others. People play casual games for enjoyment and relaxation rather than other games with steep learning curves or games that require high levels of commitment or involvement. The targeted demographic of casual games consists of both men and women between the age of 35 and 65, with a slightly greater proportion of women (Wallace & Robbins, 2006).

CasualGames much like BigGames, does not publish products but operates in every segment of the casual games market as a developer. The market for casual games is very fragmented and no dominant developer or publisher has yet to emerge even though, in the last decade, large firms such as Electronic Arts, Microsoft, and Yahoo have developed or acquired assets in the industry. Some of CasualGames competitors that develop casual video games include: Arkadium (New York City), BlockDot (Dallas), Denwerk (Germany), Fuel Industries (Ottawa), Funny Garbage (New York City), gameLab (New York City), Leviathan Games (Boulder), MumboJumbo (Dallas), Panlogic (London, UK), PopCap (Ireland), and SkyWorks (New Jersey). Most of these companies have been established in the last 10 years and are very small; the largest is PopCap with about 200 employees, followed by Denwerk with 150 employees and Fuel Industries with 100 employees. It is also important to note that, in contrast to the home consoles video game market, many new entrants in the casual video games market originate from Eastern European, Asian or Latin American countries in recent years (Wallace & Robbins, 2006).
Table 3. Global top 10 independent casual video games developers (by employees)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Firm</th>
<th>Location</th>
<th>Employees</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>PopCap</td>
<td>Dublin, Ireland</td>
<td>200</td>
</tr>
<tr>
<td>2</td>
<td>ABC Company (**)</td>
<td>Canada</td>
<td>165</td>
</tr>
<tr>
<td>3</td>
<td>Deewer</td>
<td>Cologne, Germany</td>
<td>150</td>
</tr>
<tr>
<td>4</td>
<td>AdverGames (**)</td>
<td>Canada</td>
<td>150</td>
</tr>
<tr>
<td>5</td>
<td>CasualGames (**)</td>
<td>Canada</td>
<td>114</td>
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<td>6</td>
<td>WildTangent</td>
<td>Seattle, WA</td>
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<tr>
<td>7</td>
<td>Big Fish Games</td>
<td>Seattle, WA</td>
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<td>8</td>
<td>Arkadium</td>
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<tr>
<td>9</td>
<td>Blockdot</td>
<td>Dallas, TX</td>
<td>50</td>
</tr>
<tr>
<td>10</td>
<td>Funny Garbage</td>
<td>New York, NY</td>
<td>50</td>
</tr>
</tbody>
</table>

*Developers that do not engage in publishing activities
**Pseudonyms to ensure anonymity
Sources: Hoover’s, Companies’ websites and annual reports, Wallace & Robbins (2006)

The casual video games market suffers from the same sources of uncertainty as the home and mobile consoles video games market: (1) the unpredictable demand for video games, (2) fragmentation in the distribution channels and capacity to attract consumers’ attention, (3) technological evolution (to a lesser degree because casual games need to be simple and are limited by networking capabilities), and (4) governmental policies and regulations. Policies and regulations are especially a source of uncertainty for developers and publishers of video games said to be “skill-based” and that allow players pay fees to enter into tournaments with possible money prizes.

In addition to these sources of uncertainty, the casual games market segment suffers a fifth source of uncertainty that resembles one that was present in the 1980’s and 1990’s home and mobile consoles market: low barriers to entry. Casual video games are much less complex to develop than those for home and mobile consoles; a home console game development project may last anywhere between 1 to 3 years, while a typical casual game development project lasts anywhere from a few weeks to 6 months. As for the budget of casual video games, they range anywhere between a few thousand dollars to $500K (Tams, 2006; Wallace & Robbins, 2006). The difference in time and cost is due to the difference in game design and technology.
Casual video games generally rely on simple game designs and gameplay. Innovations in genres do occur in the market for casual video games, albeit infrequently but the genres of casual games are well institutionalized and generally consist of derivatives from 1980’s video games. Furthermore, the technology employed to develop casual video games, such as Adobe’s Flash and Carnegie Mellon University’s spin-off Wild Pockets, is less complex and less expensive than the technology necessary to develop games for home and mobile consoles video games. Therefore, “the speed at which new Flash games can be developed allows such design memes to quickly be explored across many different genres very quickly without the fear of economic failure” (Edge Magazine, 2007).

It is unsurprising to see the growth in popularity of portals dedicated to the publication of independent and amateur casual video games (i.e. Armor Games, Crazy Monkey Games, Kongregate, and Newgrounds); their reach now rivals one of the major casual games portals of the industry (Aaron, 2007; Edge Magazine, 2007; Orland, 2007). According to some industry insiders, while the quality of the games published on these portals varies greatly, some of these games have succeeded in attracting millions of players and most of these games started as a hobby project for their creator, often teenage bedroom coders (Aaron, 2007). While compared to major casual video games portals such as Yahoo! Games and MSN Games, independent portals’ internet audience is still small but their cost structure is also much lower. Developers for these independent portals sometimes provide their games for free or in exchange for small amounts of sponsorship and advertising fees: “Let's say Armor Games gives you a sponsorship for $2,000. You get another $1,000 from ad revenue, another $1,500 from prize money, maybe Miniclip licenses your game for $5,000... you might make $10,000 to $15,000 on your Flash game -- and that's a really successful Flash game” (Orland, 2007). The same low-cost structure also applies to Newgrounds, which has been publishing user-generated content since 1999: “Newgrounds, which receives around 500,000 visitors a day with 200 game and animation submissions, each month awards the top ten contributors, as voted by users, $250” (Edge Magazine, 2007).
Thus, the simplicity of game designs and the accessibility of technology makes the casual game market a highly competitive arena where market share gains are elusive and fleeting for game developers: “For game studios to survive, they need to consistently produce hit games […], this has become less than predictable and a very high-risk proposition” (Thelen, 2007, p. 28). Despite these competitive conditions, others in the trade literature remain generally highly optimistic about the prospects of the casual video games industry: “there is plenty of money to be made. We’re talking about billions of dollars in revenue, of which even a small portion would make for a very comfortable retirement. And let’s be clear: Someone is going to be making that money one way or another” (Holland, 2006, p. 8).

The vagueness of the label “casual” has been criticized by insiders of the industry because casual video games developers target such a large demographic and because the games encompasses so many genres: “The 'casual game' label is getting awfully broad, encompassing everything from the Wii and DS to Flash games, downloadable, mobile games and Rock Band and Guitar Hero. While that can make the 'casual game industry' look really impressive, it's not clear that all those games really fit under the same umbrella. They may need to find more specialized terms soon, if the 'casual' bandwagon gets too crowded or confusing.” (Kumar, 2007). To counter this vagueness, specialized genres of casual games have begun to appear in the vocabulary of the industry, depending on how they are distributed and how they generate revenues. Casual video games are distributed through a variety of channels: online (played in web browser with Flash or Shockwave technology), as a download to the PC from the web, as a download to a home console connected to a publisher’s network, or as a download to a mobile device (a mobile phone or PDA). The process employed for monetization varies from trial-to-purchase, subscriptions, and advertising (Tams, 2006; Wallace & Robbins, 2006). This process is much less institutionalized then the one found in the home and mobile console market segment.

*Trial-to-purchase video games.* Trial-to-purchase video games are games distributed through a home console network (e.g. Xbox Live Arcade) or web portals that allow players to
download and play on a limited-use basis. To eliminate the restrictions in features or in time playable, the player may purchase the full version of the game. Such games are usually less expensive (~$20) than those for home consoles that are sold in retail stores (Clark, 2007). However, trial-to-purchase games usually have a very low conversion rate (between 1 or 2%) which means that 98 to 99% of all players who download trial-to-purchase video games are not buying them (Wallace & Robbins, 2006). Game developers struggle with how to best construct their games in order to increase this conversion rate, either by designing time restrictions, feature limitations, advancement interruptions, or extended trials (Mei, 2006, p. 23). Only a very small percentage of games generate more than $1 million in revenues and the top 20 casual games on the market usually grab a 75% share of units sold each year (Clark, 2007; Wallace & Robbins, 2006). Furthermore, only a handful of web portals distribute trial-for-purchase games with the largest portals being AOL Games, Big Fish Games, PlayFirst, MSN Games, Yahoo! Games, Real Arcade, and Shockwave, among others. The idea of shelfless digital distribution and market accessibility is more a myth than actual reality and portals spend uneven promotion and advertising efforts on the games they publish.

**Subscription-based video games.** Subscription-based video games are those games available for unlimited play to the subscribers of a publisher’s web portal. Subscribers pay a fixed monthly fee in order to get access to a portfolio of games and community features. Among the most well known subscription-based game portals are Pogo.com, Shockwave, RealArcade, and IndiaGames; the majority of the previously identified portals that distribute trial-to-purchase games also offer subscriptions.

Both trial-to-purchase and subscription-based market segments are quickly evolving and have yet to settle on a business model that will be profitable in the long term. In 2007, comScore, a technology statistics service, released a report that found that online casual gaming has reached 217 million people worldwide, an estimated 1 in 4 Internet users. The most frequented online destination was Yahoo! Games which attracted about 52.5 million unique visitors per month,
followed by MSN Games, which attracted about 40.3 million unique visitors per month. What the report also suggests is that the portal market for online casual gaming is highly fragmented; Yahoo! Games and MSN Games only have a 12% reach of the total Internet audience. The rest of the market is served by the portals that were identified previously and they get between 1 to 2% of the total audience reach (comScore, 2007). As mentioned, the growth of portals powered by user-generated content (i.e. Armor Games, Crazy Monkey Games, Newgrounds, and Kongregate) is also a major barrier for the monetization of trial-to-purchase and subscription-based games because their content is usually offered free of charge to consumers.

<table>
<thead>
<tr>
<th>Publisher</th>
<th>Total Unique Visitors (in thousands)</th>
<th>May 2007</th>
<th>Average Visits per Visitor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>May-06</td>
<td>May-07</td>
<td>% Change</td>
</tr>
<tr>
<td>Total Internet : Total Audience</td>
<td>705,644</td>
<td>771,997</td>
<td>9.4</td>
</tr>
<tr>
<td>Online Gaming</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yahoo! Games</td>
<td>185,992</td>
<td>216,715</td>
<td>16.5</td>
</tr>
<tr>
<td>1</td>
<td>52,969</td>
<td>52,796</td>
<td>-0.3</td>
</tr>
<tr>
<td>MSN Games</td>
<td>34,915</td>
<td>40,335</td>
<td>15.5</td>
</tr>
<tr>
<td>2</td>
<td>25,554</td>
<td>30,249</td>
<td>18.4</td>
</tr>
<tr>
<td>Mincilip.com</td>
<td>30,525</td>
<td>21,220</td>
<td>-30.5</td>
</tr>
<tr>
<td>4</td>
<td>10,050</td>
<td>13,660</td>
<td>35.9</td>
</tr>
<tr>
<td>Shockwave.com Sites</td>
<td>N/A</td>
<td>15,689</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>15,950</td>
<td>12,520</td>
<td>-21.5</td>
</tr>
<tr>
<td>FreeOnlineGames.com</td>
<td>N/A</td>
<td>13,660</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>7,271</td>
<td>12,471</td>
<td>71.5</td>
</tr>
<tr>
<td>AddictingGames.com</td>
<td>N/A</td>
<td>13,161</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>2,329</td>
<td>11,584</td>
<td>397.5</td>
</tr>
<tr>
<td>RealArcade Sites</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zylom</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WildTangent Network</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: comScore (2007); home and work traffic, excludes traffic from public computers such as Internet cafes or access from mobile phones or PDAs

Table 4. Casual games publishers, ranked by worldwide unique visitors to internet portals

*Advertising-based video games.* Advertising-based video games usually offer fully functional features and they are played for free because the games are sponsored by advertisers. There are two sub-types of advertising-based games. The first type display in-game advertisements before, during, or after game-play that may not necessarily be connected to the intellectual property of the games themselves. While such a business model is gaining popularity
due to the low conversion rates experienced by the trial-to-purchase games business model, developers and publishers are still experimenting with how to best deliver advertisements, which are often perceived as an intrusive and disruptive for game-play, to players (Orland, 2007). Most of the portals that offer trial-to-purchase and subscription-based video games employ advertising as a source of revenue and for some portals, such as the user-generated content portals, it is even the main source of revenue.

The second type of advertising-based games are those games that are advertisements per se, or what the industry calls “advergames” (Tams, 2006). Sponsors generally hire game development firms to produce a game based on their own intellectual property in order to build brand awareness and to support a broader marketing campaign. In comparison to the trial-to-purchase and subscription-based business models where publishers agree to pay a mix of royalties and licensing fees to game developers, advergames are generally produced for a fixed project fee (Wallace & Robbins, 2006). For instance, as part of the marketing campaign for a Hollywood blockbuster (e.g. Harry Potter), a movie producer (e.g. Warner Brothers) may host a casual video game on the promotional web site for that movie. The objective of advergames is to provide attractive content for the online presence of an advertiser that might increase the time spent by consumers on their web site. They are also employed in viral marketing campaigns, since innovative advergames might get popularized through web content aggregators and social networking applications, such as Facebook, Hi5, Orkut, MySpace, Digg, Wikio, and Boing Boing, for instance. Advergames are commonly developed and published for various industries, including alcoholic beverages, automotive, food & beverage, apparel and sporting goods, toys, and recruitment (i.e. the army) (Wallace & Robbins, 2006).
## Comparison of the casual video games market and the consoles & PC video games market

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Casual Video Games</th>
<th>Consoles &amp; PC Video Games</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary target demographic</td>
<td>All ages, male and female</td>
<td>Varies according to console, but generally 13-35 year old males</td>
</tr>
<tr>
<td>Primary hardware platform</td>
<td>PC, PDA, Mobile phones, Dedicated console networks</td>
<td>Home and mobile consoles, hi-end PC</td>
</tr>
<tr>
<td>Where consumers play</td>
<td>Home, work, airplane, transit stop</td>
<td>Home</td>
</tr>
<tr>
<td>Primary themes of games</td>
<td>Family friendly scenarios, puzzles, word games</td>
<td>Sci-fi, war, horror, strategy, Hollywood intellectual properties</td>
</tr>
<tr>
<td>Time commitment</td>
<td>5-10 minutes per segments of game</td>
<td>20 minutes to 2 hours per segments of game</td>
</tr>
<tr>
<td>Time to completion</td>
<td>1 to 15 hours</td>
<td>15 to 40 hours</td>
</tr>
<tr>
<td>Game price</td>
<td>Free (advertising supported or subscription-based to $20)</td>
<td>$40-$60</td>
</tr>
<tr>
<td>Top 20 games’ share of total units sold yearly</td>
<td>75%</td>
<td>29%</td>
</tr>
<tr>
<td>Development cost for one video game</td>
<td>$10 000 to $500 000</td>
<td>$5 million to $20 million</td>
</tr>
<tr>
<td>Time required to develop one video game</td>
<td>Few weeks to a few months</td>
<td>1 to 3 years</td>
</tr>
<tr>
<td>Team size required to develop one video game</td>
<td>1 to 25 people</td>
<td>10 to 150 people</td>
</tr>
<tr>
<td>Primary distribution channel</td>
<td>Digital (portals and content aggregators)</td>
<td>Physical retailing</td>
</tr>
<tr>
<td>Game promotion and diffusion to market</td>
<td>Free trials, Social networks, Portals, Complementary product to a broader promotion campaign</td>
<td>Marketing campaign by publisher, Cooptation of trade press reviewers, Media (TV, radio, magazines, internet) ads.</td>
</tr>
<tr>
<td>Technical complexity of video game</td>
<td>Low-Medium</td>
<td>High</td>
</tr>
<tr>
<td>Actors of the industry</td>
<td>Numerous small developers; Fragmentation, no dominant publishers has yet to emerge; User-generated content portals; “Traditional” firms (for advergames)</td>
<td>Many development studios; Few, but very large publishers</td>
</tr>
<tr>
<td>Barriers to entry</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Threat of state regulation</td>
<td>High for “skill” based games</td>
<td>High threat of content regulation</td>
</tr>
</tbody>
</table>


Table 5. Comparison of the casual video games market and the consoles & PC video games market

Overall, similarities do exist between the consoles video games market and the casual games market; the above table summarizes these similarities and differences. Both markets suffer from highly unpredictable demand and very few products are financially successful, however, important differences also exist. The products of the casual video games market are simpler, take much less effort and resources to develop than those for the consoles market. Online portals are the main distribution channels of the casual video games, while physical retailing is still the main distribution channel for consoles video games. Furthermore, business models for monetization are still being experimented for casual video games, while business models for monetization are quite institutionalized for consoles video games.
1.3 References in this appendix


This appendix provides an historical account of the founding conditions and events that shaped each case’s current contextual conditions. The following histories of TradSoft, EdgeSoft, BigGames, and CasualGames\(^1\) were put together through publicly available secondary data (newspapers, magazines, annual reports, press releases, etc.) as well as through archives of internet content (historical archives and indexes at Archive.org and Google.com). To ensure the organization’s anonymity, the exact sources of evidence that are referred in these accounts have been kept anonymous by using the format (Nature of source, Date of publication), but are available upon request from the author. These sources are listed in Appendix 5. Interviews with key actors were also employed when deemed appropriate. However, because the interviews were designed to probe into current dynamics in each organization, they provide only a small portion of the evidence gathered to construct the following historical accounts. Furthermore, to ensure that each organization’s anonymity is ensured, identifying information has been either modified or left out of the accounts (e.g. exact figures, names of customers, suppliers, or organizational members).

1.1 History of TradSoft

1.1.1 The beginnings: 1980-1984

TradSoft was officially incorporated in 1980 by James Lewis and Ronald Bray. Both in their early 30’s, James Lewis had obtained a finance degree from a local business school in the

\(^1\) All people and company names (BigGames, CasualGames, EdgeSoft, TradSoft) are fictitious to preserve the anonymity of people involved in this study. Documentary sources are also listed as only “Magazine” or “Newspaper” in order to ensure anonymity. Specific and precise references can be provided upon request.
late 1960’s while Ronald Bray had obtained a computer science degree. James Lewis worked as a financial advisor in recovery and bankruptcy management for a large bank, while Ronald Bray worked as a computer analyst for another firm located in the same building. Before launching TradSoft, they had launched 2 ventures during the 70’s, one that provided IT services to high schools and the other one being a business magazine. Throughout their partnership that ended with Ronald Bray’s death in 2001, James Lewis would concentrate on managing financial and sales activities while Ronald Bray would concentrate on R&D and product delivery activities.

The founders initially acted as part-time sub-contractor to develop customized applications for a larger IT consulting services firm. They were quickly joined by James Lewis’ spouse, who acted as the controller for the firm. In 1983, TradSoft landed a first contract on its own to develop a system for a large insurance firm. In 1984, the trio became committed full time to the firm and hired two employees. The firm’s humble office was installed in the garage of James Lewis’ house, which was also next to Ronald Bray’s house. After this first independent contract, the James Lewis and Ronald Bray positionned the firm as offering “software counsel” for firms that wanted to outsource development of their business applications. Contracts lasted anywhere from a few weeks to a few months at a time.

James Lewis and Ronald Bray had a specific vision of the kind of firm that they wanted to build: “When we founded TradSoft, Ronald and I had already been partners for 10 years (yes indeed, a partnership that has been lasting since 31 years!); we had the idea to build a different enterprise, guided by a philosophy that, in summary, advocated first and above everything else, respect for the human capital that compose the enterprise” (James Lewis, Letter to employees, March 2000). This philosophy had been driven by a desire to avoid the dark times of their past work experiences:
1.1.1 The Consulting Era: 1985-1992

In early 1985, four more employees were hired to staff a contract to develop a customized financial and production management system for a Mid-Western plant of a large Canadian food processing firm. The founders leased a large house to lodge the development team. The system was then implemented at the rest of the large Canadian firm’s plants and sales offices. In the following months and years, a significant number of employees whom had participated in this project left the large Canadian firm to join TradSoft. This contract was TradSoft first big break and increased TradSoft’s credibility when development contracts with large firms were pursued. In 1986 and 1987, the firm obtained 14 contracts from large firms to develop and to implement customized systems to manage financial, HR and production processes. At the end of 1987, the firm had 16 employees.

In 1988, TradSoft secured its largest development contract ever yet, with a large telecommunications firm. Despite a booming market and many sales opportunities, the founders adopted a cautious approach toward growth, as made explicit in the press release announcing the contract: “the new customer will take up a fair share of our implementation capacity, at least in the first year, but […] the urge to accelerate the growth of the corporation will be resisted. ‘We are in the quality game, not quantity.’ said James Lewis. ‘It has been our policy to hire on the opportunity of a given contract. We may have to decline smaller implementations, or delay others. Although painful, this is preferable to losing control on quality’.” (TradSoft, News release, December 15, 1988).

In the early 1990’s, the firm also bought a house next door to James Lewis to enlarge its office space. Due to growth pressures, the founders decided to formalize important aspects of the firm’s culture. Ronald Bray would establish 10 core principles underlying TradSoft’s philosophy toward customer relationship, product development and its own internal organization as well (Table 19 in chapter five). These 10 principles were still exactly the same in 2008. James Lewis would craft “The Virtuous Cycle of TradSoft”, which synthesized TradSoft’s strategy and was
presented to all employees (Figure 13 in chapter five). At the end of 1990, the firm had grown to 34 employees, and had generated revenues of about $3 million.

In 1992, TradSoft moved into newly built headquarters with a large sports gym and an interior parking for every employee. The choice to move in the suburbs was made on the basis that, although not as prestigious as a downtown location, commute would be shorter for workers and that it provided for less expensive growth options. In that year, the firm landed the most important contract of its 12 years history with a large Canadian multinational firm. The contract staffed most of TradSoft’s workforce. At the end of the year, TradSoft had 47 employees and labeled itself as a “software counsel” firm. Although working on such large contracts was somehow against their managerial philosophy, the founders nevertheless embraced such work:

“We were in the mode of one customer at a time; a very risky thing to do. But we knew that. We were somehow victims of our own success in the sense that we began with small contracts and then we began to get larger and much larger contracts. We couldn’t grow quickly enough to supply the very large contracts” (Interview with James Lewis, March 18, 2008).

1.1.2 1993: Downsizing and strategy change

In April 1993, the large Canadian multinational firm a project for which TradSoft was developing a customized system and went under corporate restructuring that involved massive layoffs. At the time, the project was generating most of TradSoft’s revenues. About this difficult period, James Lewis declared:

“It was the period when [large Canadian multinational firm] was losing $100 million per month. One day, the board said ‘freeze all projects’ and they hired a new CEO. They gave him a personal bonus of $10 million if he got the company out of the red by the end of 1993. Obviously, he did what any managers do in those circumstances […] there was a bloodbath and he took write-offs on anything he could find, any projects that could generate future amortization […]. He got his bonus and then got out! At that time, we had just moved in our new offices, a brand new building. And we found ourselves with no customers” (Interview with James Lewis, March 18, 2008).
This loss caused a difficult dilemma for the founders. They decided to lay off employees for the first time in its history:

“We had to make a decision. We could have closed the business and all go on a fishing trip. We had the financial resources to do so. We decided not to do so. […] We evaluated the group we had to have at a minimum. We cut 14 people in the days that followed.” (Interview with James Lewis, March 18, 2008).

To avoid such dependence in the future, TradSoft changed its business model from a provider of systems development services to a developer and vendor of integrated software package. The firm already had some expertise in systems development, having delivered such systems on numerous occasions in the past.

The objective underlying this change in business model was to develop a flexible generic version of the system (named ABC – a pseudonym), which would then be customized according to each customer’s specific requirements. TradSoft would take responsibilities for customizations made to the generic software product during the implementation and ensure that these customizations are ported to new product versions when they are released. Beneficial customizations made at one customer’s site would be also transferred from one customer to the other, if no legal hurdles prevented the transfers. Specific developments for future versions could also be sponsored by customers, which would in return receive free enhancements in other areas of the software. Furthermore, to speed up and to simplify customization work during customer implementation, a number of rapid-application development (RAD) tools were developed.

Overall, revenues would be generated from licensing fees, implementation fees, and for the most part, maintenance fees. The business model’s rationale was to generate recurrent revenues and to make the firm perennial. TradSoft’s marketing material explained how the firm’s approach differed from other large integrated software vendors:

“All very large corporation that implement […] systems have a certain number of specific requirements that necessitate customizations of the software. TradSoft has chosen to recognize this reality in its software product […] and the accompanying
services. TradSoft will deliver adapted versions of ABC and above anything else, TradSoft will support these adaptations based on a maintenance contract, ensure that basic functionalities continue to evolve and that the specific part of the customer remains synchronized with the rest. Too good to be true? What is the compromise? The compromise is on TradSoft’s side. With its personalized approach, TradSoft cannot simply mail you a new software CD every day with a good luck postcard. And that is OK. We have chosen quality before quantity, an intimate customer base rather than a voluminous one. Less customers, but happier customers.” (TradSoft, Official marketing material, 1994).

On December 23, 1993, TradSoft was short-listed to implement its new generic software product in a 8 000 employees multinational. This contract saved the firm from bankruptcy when it got officialized 4 months later, since liquidities were decreasing rapidly. The founders also learnt a lesson:

“For about a year and a half we were without any customers, coding what became our product. […] It cost a lot more than we thought. It took more time and burnt all our cash reserves. We took mortgages on our houses, sold our toys, there is nothing we didn’t do. […] This episode made us become an extremely prudent firm on financial matters; we could go through the whole adventure again today very easily, we have enough cash reserves to do so” (Interview with James Lewis, March 18, 2008).

1.1.3 1994-1999: Y2K and Growth

TradSoft secured 6 new contracts in 1994 and 9 new contracts in 1995, all for firms that had between 1 000 and 25 000 employees. In a 1995 newsletter to customers, the firm reluctantly acknowledged the growth the following way: “Much as we hate to admit it, TradSoft is growing. Now 50.” (TradSoft, Newsletter to customers, 1995).

In 1996, TradSoft implemented the first US version of its software product. It was also during that year that James Lewis’ son, 24 years old at the time, joined the firm as an analyst. At the end of 1996, the firm had 55 employees and generated about $5.2 million in revenues, doubling the revenues it had generated in 1994 ($2.57 million).

In 1997, James Lewis and Ronald Bray shared 10% of the firm’s total equity with employees. The shares would only come into play if one of the founders dies or leaves the firm.
In 1998, the firm had about 50 customers and was growing quickly. At a period of great enthusiasm for IT firms on the stock market, the founders drafted plans to raise $8 million on the Nasdaq, to add 100 employees and to open an office in the Northeastern US. In October 1998, the firm secured a $1.7M private placement from a government-owned financial institution to finance growth. New plans to grow the firm to $41 million in revenues and to add 144 employees were announced. The firm also announced that it would reinvest $6.6 million for training and $15 million to triple the size of its offices. At the end of the year, the expansion of the firm’s headquarters was completed and included a second fully equipped sports gym. TradSoft had generated about $11 million in revenues, a record year bolstered in a large part by the Y2K problem.

In retrospect, these decisions toward high-speed growth seem somewhat at odds with the founders’ managerial philosophy that was enunciated implicitly at the beginnings of the firm and explicitly in 1990. Apart from the expansion of its offices, these growth plans never materialized however. James Lewis reverted to a conservative discourse about growth since, both in interviews with the press and with me. The plans to take the firm public appear even more puzzling when considering the comments of James Lewis’ daughter, who works as the firm’s marketing manager: “It is clear that TradSoft will never become a public company, because it would mean that stockholders expectations would be the priority over those of the employees.” (James Lewis’ daughter, Newspaper interview, March 22, 2003).

In 1999, in response to what it perceived as unfair competition by competing vendors, TradSoft made the license for its product free. Customers only paid for analysis, implementation and maintenance fees: “Our competitors do not hesitate to exploit their advantages, their size, and their presence everywhere in the world, their corporate jets, and all kinds of fantasies for which they can assume the cost. We can’t afford these fantasies. But because we’re so efficient, we can however afford to give the licenses” (James Lewis, Newspaper interview, December 18, 1999).
The amount forfeited on license fees varied between $175,000 to $4 million depending on the size of the customer.

**Figure 1.** Employees and revenues of TradSoft (1980-2008)

### 1.1.4 2000-2008: Recognition and succession plans

In 2000, TradSoft was rewarded for “excellence in management” in a popular national business contest. The firm would go on to win this specific award 6 years in a row, until 2005 when it was be put in a “hall of fame” category to leave space for other firms to get rewarded. TradSoft had grown to 92 employees and had generated about $14 million in revenues. However, the end of the Y2K episode signaled the end of TradSoft growing spurt.

In the fall of 2001, Ronald Bray, only in his fifties at the time, passed away following a serious illness. Ronald Bray had been the core architect behind TradSoft’s product and his death was a shock for the firm. This loss forced James Lewis to put greater emphasis on drafting a solid succession plan: “Nobody is indispensable, starting with me” (James Lewis, Magazine interview, October 2005). James Lewis began to groom his son to take over the firm when he would retire.
In 2002, TradSoft was awarded the prize of “best company to work for” from a national contest for the first time. It won the prize each year until 2005, when the firm was again put in a “hall of fame” category because the contest wanted to provide publicity to other firms. In an interview about the prize, James Lewis further made explicit his managerial philosophy:

“To manage well a company means to assure the stability of its mission and its customer base, as well as a low personnel turnover rate. Evolution by adjustments rather than by tumultuous reorganizations is also part of good management. Excellence in products and services is also important. Good financial results are a consequence of all the elements of good management mentionned previously.” (James Lewis, Newspaper interview, December 14, 2002).

James Lewis considered these prizes both as a recognition of the firm’s culture and as a marketing tactic: “Our size is our principal handicap. Large companies like to do business with other large companies. We need to distinguish ourselves differently” (James Lewis, Magazine interview, October 2003). He later added that “Our customers are happy to know that their supplier is well managed, because they invest a lot of money in our products.” (James Lewis, Newspaper interview, February 4, 2006).

In 2007, James Lewis’ son left the firm. He had until then worked as General Manager since Ronald Bray’s passing away. James Lewis described the departure in these words:

“I had a [succession] plan that revolved around only one person, my son. He decided to do something else2. I believe that any person has the right to pursue their dreams and he wanted to pursue his owns. I wasn’t yet ready to let him free rains to manage here. And… we decided it was for the best for everybody if he could go and launch his own venture. He will have great success, I am not worried. However, it made me realize that I had spent a lot of time to train him to the detriment of anybody else.” (Interview with James Lewis, March 18, 2008).

This departure jeopardized James Lewis’ succession plan. His new plan consisted of transferring the reins to a committee of 4 senior people where each member has an equal veto on

2 James Lewis’ son went on to launch a venture in an unrelated industry to TradSoft’s.
decisions. The committee will have a person responsible for public relations and that role will be rotated every 3 years:

“People here are not ‘business people’; they are people from the [...] industry, from computer science. They have great talent on the content side of the business, but they are not the most well trained in the financial side of the business even if we have a very simple environment on that aspect. [...] I am now setting up a committee of four people that will succeed me. [...] We won’t employ the word ‘president’, because it is a word that is loaded with meaning for many people. Executive power will lay in the hands of this committee, called ‘Upscom’ [...], where all decisions are currently taken [...]. The power of the president will be shared by the four people on this committee. We will call the equivalent of the president an ‘executive secretary’, but it will mainly be a P.R. role: get the trophies, give conferences [...]. They will rotate the role among themselves every 3 years, but maybe somebody will emerge has having a better talent for these things. And I will retire quietly in the background [...]. I believe it is a better organization when I am there, but it will stay an excellent organization when I will be gone. And... one day, it could even become a better organization because I’ll be gone” (Interview with James Lewis, March 18, 2008).

In December 2007, an interesting offer to buy TradSoft was made from a “strategic acquirer” – “everybody knows who their strategic acquirer is” (Interview with James Lewis, March 18, 2008). But the ‘Upscom’ committee, as well as other senior employees, declined the offer:

“The problem was put on the table for key personel. We can sell, we can stay as we are, we can go public. We debated. People decided to stay the way we are. It wasn’t my decision. I presented the options the best I could. [...] People decided to protect the culture” (Interview with James Lewis, March 18, 2008).

In the press, James Lewis declared about the offer:

“We refused to sell the company for a colossal sum of money. My employees, that would have participated in the windfalls of such a sale, preferred to preserve the culture and their work environment. I told them: this is what you want to do, then this is what we are going to do. It really touched me. They want us to build this thing together. Identification with the company is very
strong at TradSoft” (James Lewis, Newspaper interview, February 16, 2008).

Between 2000 and 2008, TradSoft added on average less than one employee per year to its staff, growing from 92 to 97 employees. However, during the same period, revenues increased from $14 million to $17 million. In April 2008, after I had conducted interviews and spent time with the firm’s employees, the firm got ranked as Canada’s #1 “greatest place work” by a country-wide contest.

1.2 History of EdgeSoft

1.2.1 The beginnings

EdgeSoft was officially incorporated in February of 2000 by Brian Miller and Paul Mitchell. The company was a joint-venture between two Eastern Canada organizations: a technology incubator headed by Paul Mitchell and an IT consulting firm headed by Brian Miller. The objective of the EdgeSoft was commercializing a promising new technology that summarized the content of texts and categorized these while preserving their original meaning through linguistic analysis. The basic elements of this technology was developed in the late 90’s by the R&D department of the IT consulting firm as well as by researchers at a large university; $3M was invested to develop the technology at the beginning of 1996.

Brian Miller, having already led a few successful ventures, identified himself as a true “entrepreneur”. He stated in a 2007 newspaper interview that, “it is true that my passion is to launch companies, to generate employment” (Brian Miller, Newspaper interview, June 9, 2007). It is thus not surprising to learn he felt scrutiny now being at the head of a newly public firm was difficult to cope with: “Before, we took a decision, and then go, we went. Now, we need to think longer about the consequences and explain carefully what we do” (Brian Miller, Newspaper interview, September 29, 2000). He also had the reputation of espousing progressive HR policies in the firms he managed. For instance, at his former IT consulting services firm, employees owned about 26% of the firm’s shares through a co-op and they had veto power on whether the
other shareholders of the firm could sell their shares to outside investors (Newspaper article, February 22, 2002). He also espoused the practice of “open book” management and explained his beliefs about the practice in the following way:

“To make a partnership with an employee co-op work, it is essential to exercise transparent management; if not, it will be a sure failure […] I was already sold to the idea of the participation of employees formula. I had created committees to develop mechanisms to generate employees’ interests in the firm. I was very open in providing information about the situation of the firm. I held many meetings with employees. […] I always said that 10% of employees do not want to know anything; 40% don’t give a [expletive]; another 40% are interested and drag along the former 40%; and the last 10% believe that it is not sufficient to interest them and that they need more incentives” (Brian Miller, Newspaper interview, February 22, 2002).

Paul Mitchell, the other co-founder of EdgeSoft, had obtained a degree in literature and philosophy and at 22 years old, started an advertising services firm in the mid 1980’s. He then founded an incubator of new Internet technologies in the mid 1990’s that launched a number of ventures and also funded itself by developing promotional and corporate web sites for local firms; this second company in association with Brian Miller’s, became EdgeSoft’s parent company. Paul Mitchell describes himself as “an ‘ideator’, a person who thinks and that sees the potential of novel technologies” (Paul Mitchell, Newspaper interview, October 24, 2004). Mitchell had lofty goals for EdgeSoft; following an agreement for a reverse takeover that would take the company public, he commented that: “We are highly confident in our product and we are now able to invade the planet” (Paul Mitchell, Newspaper interview, December 8, 1999). After serving as interim CEO of EdgeSoft from February 2000 to May 2000, Paul Mitchell remained as “special advisor to the President” and as a member of the board of directors until leaving in 2001 to initiate a new venture in the health care sector.

Brian Miller and Paul Mitchell were able to secure a highly prestigious board of directors from the local business community to advise them. The board included the former CEO of a large power utility firm, the CEO of a successful local steel manufacturer, a former federal
Foreign Affairs minister, as well as a popular investment banker whose opinion and financial moves are frequently reported in the provincial media. It is noteworthy that none of these original outside directors had experience in the business software industry. This lack of expertise is addressed in 2001 when Paul Mitchell left the board to create a seat for a retired successful entrepreneur in the IT consulting services industry. The seventh member of the board of directors was EdgeSoft’s Chief Technology Officer (CTO), Rob White, who held an important amount of EdgeSoft’s shares. These prestigious directors provided EdgeSoft with strong external ties to high status corporations and financial institutions.

1.2.2 Initial strategy

EdgeSoft originally labeled itself as “an Internet company” and contended that “the practical applications of this technology are numerous and varied” (EdgeSoft, News release, June 13, 2000). In another press release, Brian Miller stated that, “In the future, we will, among other things, be able to provide summarizations for large documents such as books” (News release, October 4, 2000). The firm also perceived opportunities for its technology as a component of wireless applications: “Due to our technology, which integrates perfectly into WAP technology, we will become a global pillar in Wireless [sic]” (Brian Miller, News release, March 22, 2000). The founders also intended to grow the firm through alliances and acquisitions: “Uniting the major players in the area of linguistic intelligence is an important strategy in EdgeSoft’s objectives” (EdgeSoft, News release, October 4, 2000). Signing partnerships with large and established software vendors that could sell EdgeSoft’s technology as part of their solutions was also a goal.

The company’s technology was, at first, principally marketed to consumers. From June 1999 until March 2001, the technology was marketed as two separate products for consumers: (a) as a competitive intelligence tool which scanned over 4000 magazines and newspapers published on the web for topics of interests to a user and produced summaries that were sent by email to the users. This service was offered both on a free basis and sold through a subscription basis (39.95$
US/month); (b) as a service through which people could automatically translate and summarize texts by uploading their documents to a website (an additional 29.95$ US/month). At that time, the company was projecting that it would be able to attract about 150 000 paid subscribers before 2002 and generate revenues of $120 million. A major advertising campaign of these services had been undertaken in France in early 2000.

1.2.3 2000: A successful IPO

In December 1999, at the height of the Internet stocks bubble, local newspapers published on their front page a rumor that the joint-venture, as well as its two parent firms that had 250 employees in total at the time, was about to be acquired by a large American Internet firm for $200 million (Newspaper article, December 2, 1999). The rumors about the potential acquisition of EdgeSoft by an American firm were later confirmed by Paul Mitchell (Newspaper article, December 8, 1999), but the price of the acquisition ($200 million) seemed quite exaggerated, especially since the American Internet firm had just itself been acquired a few months earlier for only $10 million.

A few days later a reverse takeover of a mining prospection company was announced. The reverse takeover would allow for the spin-off of technology assets and the ability to raise capital for its commercialization3; the process enabled EdgeSoft to raise about $10 million from about 40 individuals. The original founders of both parent companies, Brian Miller and Paul Mitchell, kept a control of 60% of the shares of the new company (Newspaper article, June 28, 2000).

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3 A reverse takeover consists of a strategic finance process whereby a privately-held company conducts a private placement of its common stock and then immediately combines with an existing public company in a transaction where the shareholders of the privately-held company exchange their private company shares for newly issued stock of the public company. The privately-held company becomes a publicly-held company without going the traditional route of filing a prospectus and undertaking an initial public offering (IPO). At the height of the stock market bubble in the late 1990’s, such a financing strategy was a highly popular practice by high-tech firms to get quick access to financial capital since no prospectus and fewer regulatory filings were required. Access to financial markets can thus be accomplished within a few months instead of the average length of a year (Newspaper article, June 6, 2000). No less than 17 startups were taken public in the first half of 2000 on a local Canadian Stock Exchange through such practice (Newspaper article, June 28, 2000). CasualGames, the firm analyzed in Chapter 6, also attempted to secure funding through this process in 2000 but did not succeed.
2000) while the 250 employees of both parent companies were also shareholders. Brian Miller commented that raising capital through a public offering is “the only way to give birth to locomotives, to giants, which could themselves spun numerous smaller organizations” (Brian Miller, Newspaper interview, September 29, 2000). On the first day of trading in June 2000, the stock price of the company closed at $2.65 per share, after initially being priced at $1; it later attained a high of $4.50 with over a million transactions executed. The market capitalization of the company instantly went from $80 million to $220 million, making the company’s founders overnight millionaires. Additional funding was secured later in the year to bring the total capital raised during 2000 to $17 million, all of it in equity. With this success in the financial markets, the firm was named one of five “superstars” and “definite trailblazers on the Internet” from the Eastern Canadian high-tech industry by a popular local business magazine in the fall of 2000 (EdgeSoft, News release, October 12, 2000). Despite these promising beginnings though, difficulties soon appeared in the months that followed.

1.2.4 2000-2001: Searching for a strategy

Many changes occurred in the EdgeSoft executive team during the first year of operations. At first, co-founder Paul Mitchell was CEO of the company on an interim basis and co-founder Brian Miller was Chairman of the Board. Before the IPO of June 2000, EdgeSoft hired Neil Abbott a CEO that had worked in various executive positions in the US IT industry, as well as in government. According to Brian Miller, Abbott was hired because of his work experience as well as “his network of relations in the USA” (Brian Miller, Magazine interview, October 2000). In August 2000, the newly hired CEO commented about his move to Canada: “It’s true that I accept to make sacrifices in the short term because of the tax regime, but I do not regret the move. I wanted to realize this ambitious challenge: an emerging company where everything has to be done; the technology has to get better; and we have to develop markets. I am here to stay” (Neil Abbott, Magazine interview, August 2000).

4 Brian Miller and Paul Mitchell also kept their position as CEOs of EdgeSoft’s parent companies.
EdgeSoft’s founders had great faith in the superior capabilities of their technology and succeeded in raising an important amount of capital before the Internet stock market bubble crashed; nevertheless, they had difficulties making their business model and strategy clear to customers and investors. Shortly after his appointment, Neil Abbott attempted to change the firm’s target market from the consumers market to the business market: “Neil Abbott has announced that his company, which specializes in linguistic intelligence, will move to tackle the rapidly growing user license market sooner than originally planned […]. Starting this fall, we will target the key players in these sectors in order to standardize use of our technology as quickly as possible in the text mining and Internet space” (Neil Abbott, News release, August 3, 2000). A third-party technology forecasting and analysis firm was recruited by Neil Abbott to conduct an assessment of EdgeSoft’s business model and help give sense to its product. The report became the basis of EdgeSoft’s marketing material for the next few years and it signaled a strategic change from the “B2C” market to the “B2B” market:

“Positioning for the vertical or portal markets is ideal. EdgeSoft develops and provides the technology enabling the transformation of eText to eKnowledge […]. Each day over 10 billion emails are sent out on the Internet with over 7 million documents attached […]. [EdgeSoft’s] product is designed to solve the information overload problems by quickly and efficiently extracting knowledge from a mass of documents […]. It offers many solutions to end-user by processing information more readily resulting in better performance in the workplace” (EdgeSoft, News release, October 10, 2000).

In September 2000, Neil Abbott suddenly left the firm. The departure was so sudden that an interview with Brian Miller boasting about the skills that the (now ex-) CEO brought to EdgeSoft was published one month after the departure. These comments were in sharp contrast with the tone of Brian Miller’s comments in the press release that announced Neil Abbott’s departure: “we concluded that such a change at the head of the organization was in the best interest of EdgeSoft and its shareholders” (Brian Miller, News release, September 22, 2000).
To fill the void, Brian Miller, now 40, assumed the CEO position. Paul Mitchell, who had left the executive team when Neil Abbott was appointed earlier in the year but whose firm still had a 25% controlling stake in EdgeSoft, returned as the President’s special adviser: “We co-founded this company and together we will see it become a great success. I am confident that the new business model adopted by Mr. Brian Miller and his team will generate sustained growth over the next years and that it will allow us to position EdgeSoft as a worldwide leader in eKnowledge” (Paul Mitchell, News release, October 27, 2000).

Despite these executive changes, the new direction set out by Neil Abbott remained effective: “EdgeSoft’s recent business plan strategy is to target Fortune 1000 organizations with the eText to eKnowledge technologies” (EdgeSoft, News release, October 27, 2000). This change was again confirmed in November 2000 by Brian Miller when he announced that “instead of pursuing a B2C strategy where many products are offered, we decided to go for the B2B market by offering licenses, it’s a niche which will be more profitable for us” (Brian Miller, Newspaper interview, November 2000). In March 2001, the firm divested its email news service which was at the core of its “B2C” strategy.

Even after the sale of its consumer product, the strategy of the firm still remained vague, as can be seen by the following excerpt from the firm’s first annual report to shareholders:

“the products developed by EdgeSoft respond to an urgent need of organizations that must rapidly process large volume of information (...) E-mail messages are piling up, frustration is on the increase, the meaning of words is becoming lost, chaos reigns, and the victims are many. EdgeSoft produces and sells unique solutions that make sense of the chaos [...] this product has no competitor as effective” (EdgeSoft’s Annual Report to Shareholders, 2000, p.11-13).

It is not surprising that Brian Miller later commented about this early period of EdgeSoft in this way: “what we were doing was somewhat considered as witchcraft” (Brian Miller, Magazine interview, October 1st, 2005).
At the end of the year 2000, EdgeSoft had 35 employees and even though it had generated $6 million in expenses, it had not generated any revenues (see Figure 2). Amidst the burst of Internet stock bubble, the price of EdgeSoft’s shares plummeted to a low of $0.38 during the month of December 2000, down from a high of $4.50 on the day of its IPO in June, only six months earlier.

![Figure 2. Employees and revenues of EdgeSoft (2000-2008)](image)

Source: EdgeSoft, Annual reports (2000-2008)

In 2001, CEO Brian Miller sold his IT consulting services company to a large telecom firm so as to commit himself full-time to EdgeSoft which moved its offices to a large metropolitan center in Eastern Canada in order to benefit from the provincial government’s tax credits for the digital media and IT industry. The firm expanded its commercialization efforts to the USA by opening sales offices in Chicago, Washington DC, and San Francisco. It was not until April 2001 that EdgeSoft’s first ever sales contract, worth $220 000, was announced. Later in August 2001, the first US sales contract worth $1.2 million to be paid over the next 5 years was announced. The company then announced its second US sales contract, worth $450 000, in September 2001. At the end of 2001, EdgeSoft has 43 employees and had generated $1.35 million
in revenue but also expenses of $5.7 million. Due to the slow growth of sales and because it had secured little financing during the year, EdgeSoft was quickly running short of liquidities.

1.2.5 2002-2003: Ron Thomas’ tenure as COO

In January 2002, EdgeSoft hired a new President and COO, Ron Thomas, to take daily managerial responsibilities from Brian Miller who remained CEO and Chairman of the Board. Like Brian Miller, Ron Thomas was also an entrepreneur who had founded a number of ventures in the search and document management sector of business software. Ron Thomas had been a consultant that EdgeSoft’s first customer hired to benchmark bidders on a contract EdgeSoft was competing for (Ron Thomas, Magazine interview, April 2002). One of the reasons Thomas was hired was because of his relationships with many firms in the scientific and business publishing industry (EdgeSoft, News release, January 23, 2002).

One of Thomas’ first priorities was to secure new funding; in his opinion, potential customers were holding back or dismissing EdgeSoft because they didn’t consider it was financially solid enough (Ron Thomas, Magazine interview, April 2002). Indeed, in early 2002, the rate at which EdgeSoft consumed resources made it quite certain that it would not have enough cash to pay off its due debts for the year (Ron Thomas, Newspaper interview, March 7, 2002).

In March 2002, a labor fund committed to a $10 million investment in equity, with $6 million being disbursed on the day of the transaction and the remaining $4 million being conditional to the attainment of certain financial objectives (EdgeSoft, News release, March 7, 2002). In exchange, the labor fund received a 19% controlling stake in the company and the right to appoint two individuals to the board of directors.

Despite this new injection of capital, closing sales was still a difficult area for EdgeSoft. The firm’s 4th sales contract ever was announced in March 2002 and, at the time, just two customers represented 46% of the firm’s total revenue during two years of existence. In October 2002, Brian Miller’s, tone in a news release announcing the firm’s third quarter results, hints that
institutional investors and analysts were getting impatient with the firm’s lack of sales growth and declining liquidities:

> “Throughout the third quarter, EdgeSoft has continued to pursue its marketing and sales efforts targeted towards the e-publishing industry. We have pursued this market aggressively, turning every page towards our goal to realize successful sales with our potential customers (...) EdgeSoft is confident that delays in purchase decision-making are not a reflection of the company’s strategy, since competitors are showing slowed sales as well” (Brian Miller, News release, October 29, 2002).

In the fall of 2002, a “rationalization plan” was enacted by EdgeSoft’s management to reduce expenses by half. The plan included closing the Chicago’s sales office and the dismissal of about a dozen employees in the following months (EdgeSoft, News release, February 5, 2003). At the end of 2002, EdgeSoft had about 60 employees and also had generated $1.4 million in revenues but, nevertheless, had experienced a $4.7 million loss.

In January 2003, the CFO left EdgeSoft to join another IT firm, but stayed as a member of the board of director. The year was difficult for EdgeSoft, as closing sales still remained laborious. EdgeSoft’s management widely diversified the markets targeted beyond the publishing industry to include “the law enforcement, legal, pharmaceutical, government and health markets” (EdgeSoft’s 3rd Quarterly report to shareholders, September 30, 2003, p.2) and to planned to form partnerships with resellers and large IT vendors (EdgeSoft’s 1st Quarterly report to shareholders, March 31, 2003), but without much success. The team also attempted to accelerate the sales cycle of its product (a cycle can last between 6 to 12 months) by attempting to sell “pilot projects that are expected to lead to full-scale implementations” (EdgeSoft’s 3rd Quarterly report to shareholders, September 30, 2003, p.2). EdgeSoft also opened new sales offices in New York, Boston and Philadelphia.

In February 2003, EdgeSoft’s stock price plummeted to a new low of $0.07 after the departure of a prominent board member who also had liquidated all of his shares. The board member was (and still is) a local investment banker whose opinion is much reported in the media.
and who sat on boards of prestigious local firms and philanthropic organizations. As such, EdgeSoft lost an important external business tie and it certainly decreased its legitimacy in the financial and business community.

In August 2003, EdgeSoft only had about $1.1 million left in cash equivalents when a private placement of $2 million from EdgeSoft’s main institutional investor (the labor fund) was announced, conditional to a concurrent bank loan of $2.25 million (EdgeSoft, News release, August 28, 2003; EdgeSoft, News release, November 28, 2003). This investment increased the labor fund’s control of EdgeSoft from 19% to 38% of its total shares.

On December 1, 2003, Ron Thomas, EdgeSoft’s President and COO, left the company in order to set up his own consulting services firm. He was named “President Emeritus” of EdgeSoft while Brian Miller filled Ron Thomas’ position and assumed daily managerial responsibilities. It was also announced that Ron Thomas’ new firm would provide complementary services to EdgeSoft’s potential customers:

“In my two years at EdgeSoft, it has become very clear that there is a strong need for consultative assistance as customers consider automated indexing and the implementation of linguistic tools as the solution to countless Knowledge Management [sic] problems. [My firm] will focus on providing much needed professional services that will provide the vision, business objectives, and indexing strategy needed, while EdgeSoft will focus on its core business – developing and marketing automated indexing products and services that are needed to fulfill these business objectives” (EdgeSoft, News release, December 1st, 2003).

At the end of 2003, EdgeSoft had about 50 employees, down from 60 the year before. It had also grown in revenues to $1.8 million and reduced its losses to $2.4 million.

1.2.6 2004-2005: Survival

In 2004, after describing itself as “an industry leader in providing innovative content management software solutions” (EdgeSoft, News release, May 22, 2003) and as a “knowledge management” firm during former COO Ron Thomas’ tenure, EdgeSoft began to describe itself as
“an emerging leader in new Business Intelligence (BI) solutions” (EdgeSoft, News release, April 29, 2004). Despite slumping sales, Brian Miller still believed in the uniqueness of EdgeSoft’s technology: “Other firms offer similar solutions, but they are unable to produce results equivalent to ours. In some way, we could say that we don’t have any competitors” (Brian Miller, Newspaper interview, March 20, 2004). Instead of being a “text analysis” technology, as in 2000 to 2001 or a “content indexing technology”, as in 2002 to 2003, the firm’s technology was now described in the following terms:

[Edgesoft] “offers unique BI solutions for the discovery, organization, analysis (text mining), dissemination and now, sharing, of all information crucial to corporate operational and decision-making processes. One example of what EdgeSoft will be able to offer is a collaborative dashboard driven by EdgeSoft’s powerful unstructured data exploration solutions that will provide previously-inaccessible critical indicators of particular interest to senior executives” (EdgeSoft, News release, April 29, 2004).

This change in labeling and positioning was also motivated by a desire, ironically, to go back to the original application that had been envisioned for the technology in 1999:

“We are currently evaluating other uses for our technological platform that would shorten sales cycles. These would involve online solutions based on recurring revenue models. The Corporate Intelligence [sic] sector – for example, bringing companies real time data on clients’ opinions and information circulating about them and their competitors in the press, newsgroups, blogs, etc. – is the one we are focusing on now.” (EdgeSoft’s Annual report to shareholders, April 20, 2004, p.3).

2004 was also a year of growth through acquisitions in order to “broaden the potential client base and contact network, and provide access to additional funds for further commercialization of the Company’s solutions” (EdgeSoft’s Annual report to shareholders, April 20, 2004, p.1). In June, a content management and collaboration software vendor was acquired and in September, two additional acquisitions occurred; a translation software provider was first acquired, which provided a 20% controlling stake to its former owner in EdgeSoft’s total shares and, a few weeks later, a consulting services firm was acquired. The three acquisitions increased
EdgeSoft’s total assets from $5 million to $15 million. Brian Miller, whose controlling stake in the firm had shrunk to 17.8%, commented on the acquisitions in the following manner: “Thanks to the acquisitions realized in 2004 […] EdgeSoft now regards itself as one of the only companies offering comprehensive solutions for the management of unstructured multilingual information to major organizations, worldwide” (EdgeSoft’s Annual report to shareholders, April 20, 2004, p.1).

Following these acquisitions, EdgeSoft had about 70 employees at the end 2004 and the acquisitions boosted EdgeSoft’s revenues to $4.8 million but its loss worsened to $3.2 million.

In May of 2005, Larry Brooks, a member of the board of directors who represented EdgeSoft’s main institutional investor (the labor fund), was appointed Executive Vice-President and CFO\(^5\) of the company. At that time, EdgeSoft was again running low on liquidities; as of September 2005, the company had less than $1 million left in cash reserve. In October 2005, bankruptcy was avoided when EdgeSoft issued $4 million in debentures to private American institutional investors but this investment had the most restrictive covenants in the firm’s history. The debentures were secured against all of the company’s assets and had to be fully repaid within two years. Research and development tax credit refunds, which could be as high as 40% of EdgeSoft’s labor expenses, were to be deposited in a separate bank account and EdgeSoft’s management could not use these funds without the permission of the debenture holders. Furthermore, half of the value of the investment ($2 million) was conditional upon EdgeSoft obtaining a positive EBITDA for the first quarter of 2006, a feat that the firm had yet to accomplish since its founding (see Figure 3).

\(^5\) Larry Brooks left his CFO position in December 2006 after EdgeSoft’s financial situation improved. He remained as a member of the board of directors.
Meanwhile, another new strategic positioning in the “search and information access” sector was put forward for the firm’s technology (EdgeSoft’s Annual report to shareholders, April 28, 2006, p.1):

“Classic searches by keyword no longer meet the needs of companies coping with so much structured and unstructured information. For companies to be agile and grow successfully, they need to be able to rely on intelligent search solutions. EdgeSoft’s solutions are designed for precisely that niche.” (EdgeSoft’s Annual report to shareholders, April 28, 2006, p.1)

“Within the next 3 or 5 years, software such as EdgeSoft’s should be found on every personal computer […]. By necessity, search engines are starting to take a look at technologies such as ours. They cannot miss this opportunity. Search engines, in the next 5 years, cannot afford to be as stupid as what is offered today, which is nothing else, in the end, than plain text research that does not take into account context […] we are actually only 2 firms in the whole world to obtain such results” (Brian Miller, Newspaper interview, June 8, 2005).

It is not known whether Brian Miller was referring to Google as the second firm “in the whole world” of search technology that took into account context at that time. As a matter of fact,
Google actually did. Brian Miller mentioned that EdgeSoft’s technology was a “Google that thinks” a year later (Brian Miller, Newspaper interview, May 31, 2006).

At the end of 2005, despite these difficulties in financing and strategic positioning, EdgeSoft had grown to 95 employees and to $9 million in revenues; however, its losses had worsened from $3.2 million to $6.8 million. The firm’s fourth quarter, from September to December, was the worse since beginning, with a loss of $3.9 million.

1.2.7 2006: The beginning of the turnaround

In March 2006, EdgeSoft was again on the brink of bankruptcy, with only about $500 000 left in liquidities. Commenting on the financial difficulties EdgeSoft struggled with since its inception, Brian Miller said:

“I only have two direct competitors in Europe and in America. What distinguishes me from them: money. While my American competitor may be able to obtain $100 million to finance the perfecting of its products and to commercialize these, I can only obtain a fifth of this amount” (Brian Miller, Newspaper interview, March 11, 2006).

Miller further lamented the difficulties in obtaining financing from the local financial institutions and suggested that EdgeSoft was somehow unique in comparison to other firms of the high-tech industry:

“First, there are the firms that compose the category ‘low risks, low rewards’. Those firms offer pure services. Then there are those firms in the ‘middle risks, middle rewards’ category. Those are firms in a specific niche, but that whose technologies go under the radar of large service vendors. And finally, there are those firms, such as EdgeSoft, in the ‘high risks, high rewards’ category. Unfortunately, in [Eastern Canada], there are too much firms of the first two categories, and not enough in the last one.” (Brian Miller, Newspaper interview, May 31, 2006).

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6 A broad overview of Google’s technology can be found on the firm’s corporate web site as it existed on June 8, 2005:
Brian Miller’s search for justifications about the sluggish growth of sales led him to suggest that EdgeSoft’s customers might be the source of the problem rather than EdgeSoft’s technology or choice of target market:

“Last, although the added value of our solutions is undeniable and their benefits obvious, it’s never easy to radically and quickly transform organizations’ business processes. It’s clear, however, that applications with the capability to understand content and context will be at the heart of corporate strategies in the coming years, and EdgeSoft intends to take full advantage of this trend” (Brian Miller, EdgeSoft’s 1st Quarterly report to shareholders, May 23, 2006, p.2).

In May 2006, EdgeSoft announced a planned private placement worth $10 million with the labor fund and with a Canadian venture fund. In the news release announcing the investment, EdgeSoft seemed more resolute than ever in its strategic orientation “to become the leader in the emerging text mining market” (EdgeSoft, News release, May 1st, 2006). The investment would be used to fund a novel strategic initiative based on EdgeSoft technology:

“[EdgeSoft] plans to invest a portion of this sum in developing a new platform that will offer its powerful technology via an Internet subscription model (ASP model). EdgeSoft’s initial focus will be the financial services market, providing analysts with an early warning threat analysis system they can use to monitor and analyze comments (made in financial forums, reports and analyses, blogs and newswires) about the companies that make up their investment portfolios” (EdgeSoft, News release, May 1st, 2006).

In June 2006, Brian Miller was named personality of the year by an important local business association at about the same time as EdgeSoft officially avoided bankruptcy by concluding the $10 million private placement that had been announced the previous month. To raise the status and the legitimacy of the firm which had become a “penny stock”, a stock consolidation plan with a ratio of 10 to 1 was initiated as part of the private placement deal:

“[EdgeSoft]’s management judges that the consolidation will allow it to better align its equity structure with other senior corporations in its sector. The consolidation will increase the visibility of EdgeSoft’s securities with potential investors and
institutional accounts, and attain greater recognition for them in North American financial markets” (EdgeSoft, News release, June 13, 2006).

The private placement further diluted Brian Miller’s control on EdgeSoft’s shares to 13%. By contrast, the private placement increased the labor fund’s control on EdgeSoft’s shares to 34.6% and provided the venture fund with an 18.9% controlling stake. The investment involved major changes to some executive and director positions.

The first important changes were made to the board of directors. Rob White, EdgeSoft’s CTO and early investor, left his position as member of the board of directors in favor of Jeffrey Clark, the CEO of the venture fund. Jeffrey Clark’s venture fund had a successful history of investing in small high-tech companies and bringing them either to IPO or selling them to large firms to realize a capital gain. Jeffrey Clark’s investment signaled major changes in the way EdgeSoft was to be managed since his venture fund was now going to have an input in the firm’s day-to-day decisions. Clark’s venture fund officially described this input in the following words:

“[Venture Fund] does not seek control, but rather seeks to make a significant contribution in areas that are essential to instilling, maintaining, and managing dynamic growth. Involvement is predicated on strong working relationships with company principals and management, mutually shared objectives and a thorough working knowledge of the business” (Venture Fund, News release, June 21, 2006).

Two other directors were also replaced; one outside investor was replaced by an executive coach, and the retired IT entrepreneur was replaced by the CEO of a local accounting firm. After these changes, only Brian Miller, EdgeSoft’s CEO, remained as an inside director on the board. In total, five out of eight seats were now represented by institutional investors: the labor fund (2), the venture fund (2), and a private partnership (1).
The second important change was that Charles Parker replaced Steven Campbell as VP Sales and Business Development and Steven Campbell was made VP Technology Solutions. Charles Parker was previously VP Sales and Marketing for a local content management software developer in the publishing industry from 2000 until his appointment at EdgeSoft. Charles Parker was appointed at the request of venture fund CEO Jeffrey Clark, who had been an early investor in Parker’s former firm: “I was brought in by Jeffrey Clark’s venture fund because I had worked with him in the past” (Interview with Charles Parker, February 7, 2008). Brian Miller didn’t like the way Charles Parker suddenly landed on his management team and it seems that they had a tense relationship: “The more difficult period I had to go through is when I arrived. […] At first he accepted me because he thought it wouldn’t work. […] When he saw that the [new strategy] began to snowball, he tried to keep the snowball for himself […] the previous CEO tried everything to get me fired. Everything.” (Interview with Charles Parker, February 7, 2008).

The executive changes and the private placement did not seem to instill confidence from the financial community concerning the firm. EdgeSoft’s stock price drifted as low as $0.33 during the next few weeks, which would have been equivalent to a $0.03 price before the stock consolidation, a historic low.

In EdgeSoft’s 3rd quarterly financial report (published on November 9, 2006) no mention is made of the new product for financial analysts that EdgeSoft previously announced on May 1st (see above). A major shift in strategy is thus manifest. The arrival of Charles Parker and Jeffrey Clark appeared to have great influence on the definition of the firm’s new orientation toward the media and publishing industry:

“According to analysts, publishers are seeing a rapid shift of their advertising revenues from print to digital media, with online advertising budgets set to hit about $25.9 billion by 2011

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Steven Campbell had been previously hired in November 2003 at the end of Ron Thomas’ tenure as CEO. Before joining EdgeSoft, he had worked as an executive and a project manager in a number of high-growth IT firms in the USA. He was still a member of the executive team when I conducted the case study in early 2008.
[…]. EdgeSoft plans to further develop and market its XYZ suite towards e-publishing enterprises from the media and entertainment industry. EdgeSoft also plans to offer the same innovative solution to organizations that need to manage and publish large volumes of content more efficiently to the benefit of their clients and users, whether it is on their own websites, intranets, extranets or portals” (Brian Miller, EdgeSoft’s 3rd Quarterly report to shareholders, November 9, 2006, p.2).

In concordance with this new positioning, and following Charles Parker’s influence, EdgeSoft acquired ePub, a small France-based online content management software developer, for $1.4 million in December 2006. Since June 2002, ePub had been a major customer of Charles Parker’s former firm: “I was in charge of the committee that led the acquisition of ePub; Roy Peterson [ePub’s founder and CEO] is someone I had worked with since a long while ago” (Interview with Charles Parker, February 7, 2008). ePub already had established a customer base among the major media and publishing firms of France. Roy Peterson, founder and CEO of ePub, moved to Canada after the acquisition to become EdgeSoft’s VP R&D, while early investor and long-time executive team member Rob White remained as “Chief Technology Officer”. Roy Peterson was the only ePub employee to make the move to Canada, the dozen other employees remaining in France. EdgeSoft’s main product then underwent a major overhaul; its text analytics technology became a peripheral feature while content management technology, acquired from ePub, became a core feature. In EdgeSoft’s 2006 annual report, the buzzword “Web 2.0” appears for the first time in its official discourse:

“Press and media organizations are increasingly facing a shift of their advertising revenue from print to digital. EdgeSoft’s product, which is based on open Web 2.0 technologies, helps companies tap into this reality by enabling cross media publishing and multichannel delivery from a range of sources to various output formats (Web, RSS feeds, podcasts, etc.).” (Brian Miller, EdgeSoft’s Annual report to shareholders, May 1st, 2006, p.1).
Brian Miller’s appeared to persist in diversifying markets for EdgeSoft’s products, despite the major shift toward focusing exclusively on the media and publishing industry brought by Charles Parker and Jeffrey Clark:

“EdgeSoft’s product is powered by sophisticated text mining tools that can be used to help large organizations in almost any sector better centralize and locate information and effectively disseminate it to employees, clients and partners […] [EdgeSoft’s product] will be fully optimized for the online participatory communication tools brought by the new Web 2.0 reality” (Brian Miller, EdgeSoft’s Annual report to shareholders, May 1st, 2006, p.2).

The strategic contradiction is better understood when considering Charles Parker’s comments about this period: “there was one part of the company that realized that [the new strategy] was working and there was the other part […] that tried everything for it to fail” (Interview with Charles Parker, February 7, 2008).

At the end of 2006, EdgeSoft had about the same number of employees as in 2005: 96. Revenues had grown to $10.7 million and losses had been reduced to $4.8 million.

1.2.8 2007: The completion of the turnaround and Sean Davis’s appointment as CEO

In February 2007, a major transformation of EdgeSoft’s corporate image took place with the new image reinforcing EdgeSoft as a vendor for the media and publishing industry. It had new slogan of “Designed for and by media specialists” combined with such rhetoric as:

“We have helped the world’s largest media organizations to generate new online revenue streams, accelerate their time-to-market and reduce their operational costs […] EdgeSoft’s products enable a rich media experience, targeted content, and interactive tools that ensure your online properties are more attractive for your consumers and advertisers” (EdgeSoft website, February 2007, Retrieved from Archive.org on May 6, 2008).

In April 2007, a direct, struggling competitor to EdgeSoft in text analytics technology was acquired by a large European news firm for $25 million (Magazine article, May 7, 2007). It is worth noting that this European news firm had previously contracted EdgeSoft in early 2000.
for financing customized solutions based on EdgeSoft’s text analytics technology but that 2000 agreement was terminated shortly after EdgeSoft pursued competitors to this European news firm as customers at the time. A second direct competitor to EdgeSoft in text analytics was acquired by a large software vendor soon after. The competitor had lost all US assets and was left with just 20 employees when the 9/11 disaster occurred in New York but at the time of the acquisition, six years later, the competitor had rebuilt into a firm of 120 employees with $25 million in revenues and a portfolio of over 450 customers (EdgeSoft Competitor, News release, May 22, 2007).

On April 4, 2007, Brian Miller resigned from his CEO and Chairman of the Board positions. Jeffrey Clark, the venture fund’s CEO, became Chairman of the Board soon after. An executive search began immediately and was quickly concluded. On April 12, it was announced that Sean Davis would become EdgeSoft’s next CEO as well as a member of the board of directors. The hiring had been facilitated by one of EdgeSoft’s director that was seated on the board of Sean Davis’ previous firm. Sean Davis, an applied physicist in his forties, had a track record of founding and successfully growing a profitable $100 million IT consulting services firm before he was 35 years old, and, also, of restructuring a troubled aviation services company. His appointment was motivated as follows:

“The qualities that have made him successful in his diverse undertaking will be invaluable to us: a sustained ability to deliver growth and profitability, a natural talent for convincing executives of well-established organizations to trust his smaller organization to deliver on mission-critical projects, and a strong ability to motivate and energize a team towards a common mission” (EdgeSoft, News release, April 12, 2007).

A clear shift from Brian Miller’s tone and managerial philosophy is perceptible in the last sentence of Sean Davis’ first letter to shareholders:

“I am very excited to be leading EdgeSoft through this new stage in the marketing of its solutions, which now includes the XYZ product, and the front-line positioning of its technology. And I am committed to ensuring that EdgeSoft’s shareholders, of
whom I am one, achieve maximum value for their investment” (Sean Davis, EdgeSoft’s 1st Quarterly report to shareholders, May 29, 2007).

Sean Davis quickly initiated a series of changes to EdgeSoft’s executive team by bringing in former colleagues. Charles Parker commented about the personnel change the following way: “We were more or less all [the executive team members] already there. Roy was there, Steven was there, I was there. It allowed to get rid of deadwood […] it was very political […] Sean arrived and he said ‘from now on, we’re playing hockey; those who want to play baseball should leave!’” (Interview with Charles Parker, February 7, 2008).

In the spring of 2007, Roy Peterson was promoted to VP and Chief Architect which made official his R&D responsibilities over Rob White who remained in the firm to focus solely on the development of the text analytics components of EdgeSoft’s product. Linda Morgan was hired as Senior VP Sales and marketing. Charles Parker remained as VP Sales (in other words, the marketing responsibilities were moved from one to the other). Linda Morgan had worked with Sean Davis on two different occasions in the past, as well as with one of the company’s EdgeSoft had acquired in 2004. Her appointment involved the departure of the VP Marketing who had previously been appointed in 2005.

In the summer of 2007, the HR manager was replaced by a former HR manager of one of Sean Davis’ former firm. George Morrison was hired as VP Customer care, which involved responsibilities for internal IT services, as well as for providing after sales services to EdgeSoft’s customers. George Morrison had previously been the founder and COO of another one of the companies EdgeSoft acquired in 2004. He then worked from April 2004 to October 2004 as Software director to integrate his former firm’s product with EdgeSoft’s. In April 2005 he joined Sean Davis’ former aviation services firm as IT director until he left for EdgeSoft in July 2007. His appointment meant that Steven Campbell, as VP Technology Solutions, was assigned to the management of the delivery of EdgeSoft’s product to customers. Later in the summer, Justin Meyer was appointed as VP Corporate development. Justin Meyer, a lawyer with a MBA had
also worked at one of Sean Davis’ former firms as a member his executive team. Justin Meyer became responsible for alliances and acquisitions that would strengthen EdgeSoft’s product portfolio for the media and publishing industry.

At the time of Brian Miller’s departure and Sean Davis’ appointment in April 2007, EdgeSoft was again running low on liquidities (~$2 million left in reserve) and also had the reimbursement of the $4 million debentures due in the next months. Hence, a series of financing activities began in May 2007 with a $1.4 million private placement by EdgeSoft’s executives and directors. From this amount, about $600 000 was funded by a set of employees and managers of EdgeSoft and $500 000 was funded by Jeffrey Clark’s venture fund and another private equity fund. In September 2007, a $2 million private placement by a large Canadian media organization and a $1 million private placement by a group of 27 employees, along with other investors, is concluded. In November 2007, an $8 million private placement deal through special warrants is announced; this third placement will be concluded in March 2008. The new executive team and a set of managers were also provided with stock options, which had an exercise price of $1 and expired within the next 2 to 3 years, as financial incentives. In total, about $1.5 million worth of stock options were issued at the exercise price of $1. Sean Davis invested approximately $1.2 million and EdgeSoft’s managers and senior employees approximately $1.6 million; these investments made Brian Miller’s stake in EdgeSoft’s total shares fall to 4.6%. It is also worth mentioning that while EdgeSoft’s two founders still held substantial equity in the firm, no members of the board of directors were original founders or employees after these financing activities.

In terms of strategy, Sean Davis reinforced the orientation toward the media and publishing industry that Charles Parker and Jeffrey Clark had set the previous year:

“EdgeSoft is stepping up the marketing of its solutions, thereby strengthening its foothold in the e-publishing industry […]

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8 During the second half of 2007, EdgeSoft’s stock price was more or less $1.
EdgeSoft is determined to continue working toward the execution of its business plan and rapidly grow its market share in the promising e-publishing niche, while maintaining sound business practices” (EdgeSoft, News release, May 3, 2007).

“Our strategy at this point is clear: to rapidly become the dominant player in powering online publishing. We will spare no efforts to accomplish this goal and will do so with a strong commitment to upholding sound business practices” (Sean Davis, EdgeSoft’s 3rd Quarterly report to shareholders, November 8, 2007).

“EdgeSoft’s goal: to become, in the next 18 months, the technological standard for online newspapers” (EdgeSoft, Investors Spec Sheet, December 2007).

With Sean Davis’ arrival, much of the development and marketing efforts that remained in the text mining market were thus shifted to the content management software market. EdgeSoft even dropped out of a text analytics summit that the firm was supposed to attend in June 2007. The firm began aggressively publicizing the conclusion of every sales contract obtained, even minor ones. In September the Toronto Stock Exchange asked for clarifications about a news release from the company about a sales contract it had announced in the preceding months. While acknowledging that the sales contract was not financially material to the affairs of the firm, EdgeSoft stated that “the disclosure of agreements by means of a press release is necessary to demonstrate the ability of [EdgeSoft]’s technology to meet the requirements of its potential clients in the publishing, media and entertainment industries” (EdgeSoft, News release, September 14, 2007).

At the end of 2007, EdgeSoft had concluded 27 sales contracts and had grown to 136 employees. The firm had its most financially successful year with its first profit ever in the 4th quarter; yearly revenues had grown to $18.2 million and its losses had been reduced to $1.8 million. It also had a historic high cash reserve of $11.7 million.

1.2.9 2008: Growing pains

In February 2008, when I was conducting interviews with EdgeSoft’s workers, the acquisition of a UK-based digital asset management software vendor was announced. The final
acquisition value was evaluated to be between $10 million and $13 million. This acquisition allowed EdgeSoft to gain a customer base of large media firms in the UK, as well as complementary technology. It also provided a much needed additional group of workers that could be allocated to the delivery and customization of its product in Europe; the workers at the Canadian and French offices were getting quickly overloaded with the sales volume generated at the time. In May 2008, Justin Meyer was appointed Managing Director of EdgeSoft in Europe, where the head office is moved from France to the UK.

1.3 History of BigGames

As many ventures in the entertainment software industry, BigGames has had a tumultuous history. Its history cannot be understood fully without first taking into account the story of SuperComics which was founded in 1992. SuperComics was one of the first successful videogame development firm in Canada. It gave rise to CasualGames in 1998 and to BigGames in 1999.

1.3.1 SuperComics: 1992-1999

In 1992, Daniel Taylor, Jacob Smith, and Anthony Wright set up a firm named SuperComics to develop interactive, cartoon-based PC videogames for kids in a mid-sized Eastern Canada city. In 1993, the firm launched its first commercial video game. It obtained good reviews in the gaming press and generated about $500K in revenues. The game was translated in 5 languages and sold 75,000 units worldwide in 1994, a small quantity by the industry standards at the time, but enough to allow the firm to grow from 5 to 18 employees and to generate revenues of $1.5M. In 1995, SuperComics had 40 employees whose average age was 23 years old, the oldest being 35 years old.

SuperComics’ founders were in their early 20’s with no management experience. Daniel Taylor, who trained in graphic design, was responsible for artistic direction, while the others were responsible for marketing and sales. Daniel Taylor was a self-described video game and cartoon
buff. With SuperComics, Daniel Taylor had the desire to create something different and new from what was currently offered in the videogame market. Before the creation of SuperComics, Daniel Taylor’s first demo game was entitled “The Future of Comic Books”. While growth was a goal of the new venture, Daniel Taylor considered that aesthetic quality was an even more desirable goal: “We certainly want to make a profit out of this, but that is not a goal by itself. We are in a hyper-stimulating market for those who do creative work. Only the fact that I created and commercialized what came out of my imagination is an accomplishment by itself. I am first and foremost an artist.” (Newspaper interview, September 11, 1994). Daniel Taylor had the vision to create its own original cartoon characters and stories, and thus make SuperComics’ games become collectibles, as comic books are nowadays.

The firm focused its activities on the creation and development of novel intellectual property, while international distribution was provided by a large retail software vendor. The firm considered itself as a film producer and was organized accordingly: conceptualization, scripting, art and illustration, animation, and post-production were the units of the organization. Games were produced as interactive episodes, a design signature that CasualGames would also pursue later on. This approach to the design of its games led the firm to begin negotiations for a potential TV spin-off in early 1994, but it did not succeed in completing a deal.

In 1993, the firm was acquired by a growing business and entertainment software producer of 175 employees. However, because of differences in strategic orientations, the original management team of Daniel Taylor, Jacob Smith, and Anthony Wright bought back their shares of SuperComics in the early months of 1994. In order to negotiate deals with potential distributors, Peter Johnson, a young local lawyer is hired.

In 1995, the firm was again acquired, this time by MoviesInc, a growing movie production and distribution company founded by a pioneer of the Canadian cultural industry (Mark Easton), for a price of $1 million that was paid half in cash and half in shares of the parent company. According to a consulting firm report, SuperComics was acquired because of its
strenght in “its capacity to create content, and which was piloted by an award-winning team of 2-D and 3-D animators” (Consulting firm report, March 1997).

While Anthony Wright left the firm, Daniel Taylor and Jacob Smith retained part of their shares and stayed within the firm’s management. According to a newspaper article published in 2001, it is said that MoviesInc provided full artistic freedom and autonomy to the two original founders (Newspaper interview, January 8, 2001). SuperComics kept its name and separate headquarters. According to MoviesInc’s 1996 annual report, SuperComics had almost as much debt ($1.78 million) as assets ($2.1 million) at the time of the acquisition, and $281 000 in bank indebtedness, which suggests that SuperComics was short on cash when the acquisition occurred. This contention was confirmed in a consulting firm’s report published in March 1997: “the business was at a stage where it needed additional capital to grow” (Consulting firm report, March 1997). The acquisition of SuperComics provided resources for the development of 3 games for the new generation of consoles deployed on the market at the time, such as the Ultra 64 of Nintendo, the Saturn of Sega, and the PlayStation of Sony (Newspaper interview, May 6, 1995). Kevin Brown, who will become SuperComics’ general manager in early 1997, commented about the state of SuperComics at that time, saying that “it was a small company that didn’t really have revenues, that struggled along, but that nevertheless had talent” (Magazine interview, January 2008).

In October 1995, the firm opened an internet service provider division headed by Jacob Smith. At the dawn of commercial home internet service, it quickly became the most important provider in the Quebec City area. In April 1996, Jacob Smith, then 24 years old, left the firm with 3 other key employees due to opinion divergences.

In May 1996, MoviesInc, the new parent company of SuperComics, is acquired by NewMediaInc, a firm that specializes in movie and new media production. NewMediaInc is funded by a local high tech entrepreneur that was highly successful in the 80’s and the early 90’s. The goal of NewMediaInc was to provide a “target audience of young design conscious and
technologically aware consumers” with “new media or moving picture content from Web sites to interactive games to television and theatrical products” (NewMediaInc Annual Report, 1997, p.1). In other words, the goal of NewMediaInc was to position itself as a vertically integrated publisher, which controlled the creation, publication, and distribution of content across media types. The acquisition meant the departure of founder Mark Easton, who has generally been known to be sympathetic to artistic freedom (Newspaper article, April 8, 2006), and his replacement by George Carter, a tax lawyer who worked previously for a large law cabinet.

In July 1996, NewMediaInc acquired CD-RomsInc, a Canadian producer of educational and reference CD-Roms for a $1.3M price tag, of which $728K was paid cash and $591K was paid in shares (NewMediaInc Annual Report, 1997). CD-RomsInc had $462K in assets and $280 in debt at the time of the acquisition; hence it was a very small firm. While the acquisition allowed NewMediaInc to obtain licenses, the acquisition also allowed NewMediaInc to “acquire the management and financial experience it needed” to complement its acquisition of SuperComics (Consulting firm report, March 1997).

CD-RomsInc was headed at the time of its acquisition by Kevin Brown, who would later become BigGames’ CEO. Kevin Brown, born in 1964, earned an undergraduate degree in finance in the mid 80’s and then worked in construction and real estate before founding CD-RomsInc in 1994 in a mid-sized Eastern Canada city.

In September 1996, NewMediaInc acquired CanadianGames, a videogame development firm located in a large Canadian city, which had about $6M in revenues at the time. The acquisition of TorontoGames was “guided primarily by the quality of its distribution network, and by its many contacts on the US market”, which were assets that SuperComics and CD-RomsInc didn’t have (Consulting firm report, March 1997). In September 1996, SuperComics, CD-RomsInc and CanadianGames had a total of seven projects under development, three games for the console market and four games for the PC market.
In early 1997, Kevin Brown was appointed general manager of SuperComics (which now operated under a different name). The new division, composed of SuperComics, CD-RomsInc, and CanadianGames, was reorganized “to maximize benefits from the economies of scale and to make best use of the specific competence of the various groups” (Consulting firm report, March 1997). The change in organizational structure meant that Kevin Brown, then 33 years old, was now Daniel Taylor’s superior, who at 32 years old had been appointed VP of Creative Services.

The change also meant that SuperComics’ activities were geographically distributed among three sites. Game design, artistic production and development activities were concentrated in SuperComics’s offices in Eastern Canada, a group of 33 people headed by Daniel Taylor, who had been named VP of Creative Services. Testing, post-production, technical services, sales and relations with distributors were concentrated in CanadianGames’s offices where a group of 18 people worked. Marketing, public relations, promotion, general management and financial operations were concentrated in CD-RomsInc offices in a large Eastern Canada city where a group of 17 people worked, headed by Kevin Brown. SuperComics operated as an independent entity in NewMediaInc’s organizational structure: “None of the [NewMediaInc] staff members comes from another sector of the organization, even at management level” (Consulting firm report, March 1997).

The change in organizational structure was a particularly difficult period. In addition to deal “with a number of departures when the various businesses were acquired” (Consulting firm report, March 1997), the integration of the three newly acquired organizations appeared to have been difficult. It was described in these somber terms by a consulting firm report about the company:

“The fact that [NewMediaInc] has acquired a number of businesses during a relatively short period of time has resulted in some problems getting the staff members to work as a unit. When a self-contained small-scale business is transformed into a bigger business, equipped with established management systems and having to meet the demands of public shareholders and a
Board of Directors, then changes and adaptations will inevitably be necessary. Such changes and adaptations can result in obstacles for some individuals.” (Consulting firm report, March 1997).

In the end, SuperComics new parent company, NewMediaInc, never became profitable. Not long after these organizational changes, in the spring of 1997, NewMediaInc experienced major financial distress where 60 employees were fired, which consisted about a third of its overall workforce of 180. CD-RomsInc and CanadianGames’ operations were shut down, while some of the key employees of both firms were transferred to SuperComics in the mid-sized Canadian city. In a later interview, Daniel Taylor described this period as “traumatizing” (Newspaper interview, August 26, 2005). In the fall of 1997, Daniel Taylor and Peter Johnson left the firm. Daniel Taylor started CasualGames with the former lead animator of SuperComics in February 1998, while Peter Johnson started another venture in the educational video games sector. CasualGames is the focus of the next chapter of this dissertation.

In the spring of 1998, despite these financial troubles and after much delay, the first game of SuperComics for the PlayStation console is launched and becomes one of the first games produced in Canada for a major game console. The project that was initiated by Daniel Taylor cost $1.5 million to produce in total and had to be kept alive by the efforts of Kevin Brown, who defended the project from termination threats by NewMediaInc’s executive management. The game was almost completed when a major publisher agreed to distribute it for about $3 million (Magazine article, September 2000). About 400 000 units of the game were sold worldwide in 1998 and made it a moderate commercial success (Newspaper interview, June 15, 2002). The game provided credibility to the firm and facilitated the signature of a licensing agreement with a major American publisher. Following this deal, a second game for the PlayStation console was launched in June 1999 and sold about 800 000 units, another success at the time (Newspaper article, February 12, 2001).
These commercial successes meant that SuperComics was the only financial successful unit within NewMediaInc by the summer of 1999. In August 1999, key debt holders did not extend credit to NewMediaInc, which left the firm on the brink of bankruptcy; the firm had recently announced $18 million losses out of $83.8 million in revenues. NewMediaInc then downsized and divested many units, with the intent of refocusing its operations on movie production and international movie distribution. In November 1999, Kevin Brown and Mark Easton, the original founder of MoviesInc, as well as additional private investors acquired SuperComics for $2.3M and renamed the firm “BigGames”. SuperComics had 35 employees at the time, down from the high of 68 in early 1997. By mid-2000, NewMediaInc had relocated to Los Angeles and was recognized as a fallen star of the Canadian stock market, its stock price having experienced a downfall from $9.13 in 1995 to $0.06 in 2000.

1.3.2 BigGames: 2000-2008

In September 2000, BigGames moved its headquarters from the mid-sized Eastern Canada city to a large Eastern Canada city. The firm had 57 employees at that time, and 41 employees made the move. Among those who left the company are the four future founders of ConvertGames, which became a major competitor to BigGames within the next few years. The move to the large Eastern Canada city was motivated by a desire to attract highly qualified international workers, which was difficult to do in the mid-sized Eastern Canada city. The large Eastern Canada city’s video game industry was booming due to the arrival of a large French producer and publisher, in 1997: “I wanted to do the best games in the world by attracting external talents from England, America, to train local people, and I didn’t fear to compete with [large French producer and publisher].” (Kevin Brown, Magazine interview, January 2008). At the end of 2000, BigGames had 81 employees due a hiring spree after its relocation.

At the end of 2000, the firm launched a game which became a North American hit. The game’s content was based on licensed intellectual property tied to a Hollywood blockbuster
which had a great box office success. Despite this early success, the years of 2000 to 2003 were
difficult for BigGames: “It was difficult at first [after the relocation], because we lost some
contracts and we found the transition to the PlayStation 2 difficult until we produced [BigGames’
second original intellectual property] in 2003.” (Kevin Brown, Magazine interview, January
2008).

In January 2003, a financing round for a total of $6 million was concluded to which
Kevin Brown and key managers participated. The shares of the original founder of MoviesInc
who participated in Kevin Brown’s acquisition of BigGames from NewMediaInc in 1999 are
bought back at that time. BigGames now had a low debt ratio and a generous amount of free cash
flow.

In May 2003, the second original intellectual property\(^9\) of the firm was launched after 3
years of development. The game was published by a medium-sized Californian publisher. It sold
only between 400K and 500K and was not profitable. However, because of its innovative
gameplay and artistic design, it allowed BigGames to attract licensing contracts with major
publishers: “We were at the time, a hundred employees. It is true that it did not sell very well,
400 000 to 500 000 copies at a discount price, but the publishers loved the game, the technology,
the creativity, the colors, and the artistic side of it. Then, the phone started to ring.” (Magazine
interview, January 2008). The game provided BigGames with its first successful commercial
venture since the transition to the new generation of consoles in 2000.

In May 2004, BigGames launched its third original intellectual property, which also
attracted licensing agreements from publishers for similar games based on the same underlying
technology and gameplay. Starting in 2005, BigGames now had to refuse licensing projects from
publishers due to labor constraints.

In March 2005, BigGames standardized its development platform on Maya, a high-end
3D computer graphics and 3D modeling software package that it had been using since 2000. The

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\(^9\) The first original intellectual property was the one launched in 1997 during the SuperComics era.
standardization was done to prepare the firm for the technological requirements involved with developing games for the next generation of consoles (PlayStation 3, Xbox360, Wii) that began to appear on the market in the fall of 2005. These consoles highly increased the cost of developing games, which meant increased emphasis was put on formalization and routinization of development processes. This upgrade to the next generation platforms might have break or brake consequences for independent videogames developers such as BigGames: “Our next challenge will be to make the upgrade to the next generation of consoles. The first upgrade [in 2000] was painful, but this one seems easier to do. The goal is to position ourselves right from the start as being able to produce exceptional products at remarkable costs for the industry.” (Kevin Brown, Newspaper interview, May 19, 2006). According to Kevin Brown, the increasing complexity of developing games for the next generation of consoles eliminated the developers that weren’t organized well enough:

“There will be less SKU’s¹⁰ on the market; I think that on next-gen consoles you’ll see less projects. I think the barrier of entry is higher, so there are going to be better games. You won’t be able to throw out very bad games at very low budgets - that doesn’t make any sense for the market. You were much more able to do that in the past. […] We’ve done games on PlayStation 1 with ten people, 12 people, and we’re doing next-gen games with a hundred people... Even on current gen, we’ve signed budgets that are double what we did in the past. We’re probably going to do next-gen for two and a half times the regular kids and family stuff on current gen, so in terms of managing, I think it’s a challenge.” (Kevin Brown, Magazine interview, November 13, 2006).

In January 2006, BigGames initiates the development of an action-adventure game targeting mature players older than 13 years old, a market for which it has never produced games yet:

“We recruited people that had experience in this market and we signed contracts for projects that are now under development. […] It is a great challenge that we try to overcome by targeting

⁰SKU: Stock-keeping unit, a term employed by the video game industry that denotes distinct products on the market
this market and all our energies are presently focused on this project” (Kevin Brown, Newspaper interview, June 6, 2007).

The company recruited an art director and a game designer from a key competitor where they worked on best-selling franchises of the same genre. “If we ‘score’, it will guarantee us to work on this franchise for many years to come. It would also provide us with a greater credibility to work on larger games, with larger budgets.” (Kevin Brown, Newspaper interview, November 26, 2007). The project was initially planned to be launched in the fall of 2008 through a Californian publisher, but was finally launched in the fall of 2009. The development of this intellectual property allowed BigGames to obtain further contracts for other movie-based licenses.

In the fall of 2007, in the wake of major acquisitions in the industry, rumors that BigGames was to be acquired by a major publisher abound. But the company was not for sale, reassured Kevin Brown at the time:

“...I still believe [we can make it]. Each time an independent developer gets acquired, it creates more space and I receive phone calls. I believe it will to be more costly for publishers to develop games internally than to do business with us. However, independent developers will become larger and larger because projects are larger and larger.” (Kevin Brown, Newspaper interview, November 26, 2007).

This confidence is reinforced by what Kevin Brown perceived as opportunities in this quickly consolidating industry: “In the late nineties, we had about a hundred competitors. Today, there are only about 20.” (Kevin Brown, Newspaper interview, July 1, 2005). At the end of 2007, BigGames was ranked within the top 20 studios in the world based on the revenues their products sold at UK retail stores in 2007 by a British magazine (Magazine article, 2007).
1.4 History of CasualGames

The history of CasualGames cannot be understood without first taking into account the story of SuperComics. To summarize the narrative that was written in the previous section, SuperComics was founded in 1992 by Daniel Taylor and two friends in a mid-sized Eastern Canada city. Daniel Taylor, then in his early 20’s, was the main creative force behind this venture. He had been trained as a graphic designer, had a passion for children’s comics and cartoons and considered SuperComics a vehicle for developing and publishing his creations: “Only the fact that I created and commercialized what came out of my imagination is an accomplishment by itself. I am first and foremost an artist” (Newspaper interview, September 11, 1994). By launching SuperComics, he wanted to redefine videogames as a form of art and entertainment. SuperComics products had some success but not enough to prevent the company from running out of financial resources in the mid 1990’s. The firm was first acquired by a large movie production company (MoviesInc) in 1995, which in turn was acquired by a conglomerate dedicated to new media in 1996 (NewMediaInc). In 1997, around the time Kevin Brown had
been appointed general manager of SuperComics, Daniel Taylor left the firm with other key employees. Kevin Brown is now CEO of BigGames, after having acquired the assets of SuperComics from NewMediaInc during its downfall in November 1999.

In February of 1998, Daniel Taylor, now 33, and Jeffrey Ross, 29 and a former lead animator at SuperComics, launched CasualGames in a 300 square foot studio located in the suburbs of Quebec City. Jeffrey Ross was trained in movie direction and animation and taught these crafts as a lecturer in a local college. He worked for a number of animation studios in North America and Europe before and after his tenure at SuperComics. On the company’s website at the time, he described his specialties as game producer, creative director, and storyboard artist.

The initial objective pursued by the young founders was to develop novel intellectual properties through online, internet casual games based on flash technology, which could afterward be spun unto other media, such as television and movies:

“For us, the Web is a testing ground for new ideas and properties. It’s also the quickest way to promote new characters and stories to an international audience. On-line games are, in a way, the “incubation stage” of our animated properties. Since our games are in an episodic format, we can fine-tune them to our audience’s tastes. When the game has achieved some degree of on-line success, we translate the concept to a television format. Once this property is widely known in the television market, we proceed to secure partnerships, which will enable us to create and launch licensed products inspired by our characters and stories.” (Daniel Taylor, Newspaper interview, November 27, 2003).

Both founders shared the dream of developing original intellectual property and of revolutionizing the genre of video games as a form of art:

“It’s because we wanted to create our own characters and stories that we started this business” (Jeffrey Ross, Newspaper interview, December 15, 2003).

“We soon envisioned that it would be possible, sometime soon, to produce high quality cartoons with Flash. Since the Web is, by nature, interactive, we concluded that if we were to tell stories, they needed to be interactive. The episodic online adventure
game was born” (Daniel Taylor, Magazine interview, July 18, 2002).

“I believe it is sad that the majority of local firms satisfy themselves with the adaptation of European or popular American cartoons. Furthermore, our local multimedia industry seems inclined to position itself on the international market as discount work-for-hire. We have the talent and the potential necessary to create original histories and characters for cartoons, and that is precisely what CasualGames attempts to do through the new media” (Daniel Taylor, Newspaper interview, May 6, 1999).

The firm’s initial web sites (in 1999 and 2000) and press releases clearly attempted to define its identity as a creator of original intellectual property:

“Boldly creative and technologically knowledgeable, CasualGames has for main ambition to define today tomorrow’s new online entertainment standards. Thanks to our World-Class production studio, we are capable of extending the limits of the web, namely by developing streaming animation contents that are visually stunning, faster, richer and even more interactive!” (CasualGames web site, 1999, retrieved from Archive.org on March 2, 2008).

"What sets apart CasualGames from the competition is its management’s firm commitment to pushing the creative envelope further and further. Their philosophy: the best way to prepare the future is to invent it!” (CasualGames web site, 2000, retrieved from Archive.org on March 2, 2008).

“CasualGames’ core business is the creation of original intellectual property. Through the development of online games and entertainment products, this property can quickly acquire international notoriety; it will then be possible to exploit it in other media, such as television, cinema, computer and video games, print and interactive TV” (News release, February 18, 2000).

It made clear that superior aesthetics was what made the firm’s offerings different from other online content producers at the time:

“CasualGames offers products of high quality because our team is composed of artists and professional animators, and because we master perfectly the newest multimedia technologies. This combination distinguishes us for our competition which, most often, priories technology and does not exploit the artistic potential of animation and illustration” (CasualGames web site, 1999, Retrieved from Archive.org on March 2, 2008).
"Unlike the manufacturing industry, which values productivity, the content industry is focused on innovation and creativity - a business value to which the entire CasualGames team adheres" (CasualGames web site, 2000, Retrieved from Archive.org on March 2, 2008).

The term “casual games” was also not yet in vogue at the time and many emerging actors in the industry were still wondering whether the internet would be a viable platform to publish and to distribute video games. Daniel Taylor and Jeffrey Ross believed that a market existed for consumers who wanted to be entertained through video games but did not want to invest too much time in this leisure activity:

“People have always loved good stories. What we try to do here is tell riveting stories. Adventure gaming is the best format to write rich and multi-layered tales featuring characters that have some depth to them. Furthermore, adventure games can reach a much wider audience than titles solely geared toward the “hardcore” gamers. Casual gamers have been a little bit neglected by the industry. We think there is more to gaming crowd than the usual Bridge, Mine Sweeper or Tetris. We want to offer an interesting alternative to people who want to be entertained and have fun without having to invest themselves in a complex game demanding that they digest an overlong game manual or that they become an armchair general. Ultimately, we’re trying to make the genre evolve toward a kind of product that will please to the mass of players. We’re betting that this goal will translate into a big payoff for CasualGames when online games will be the norm” (Daniel Taylor, Newspaper interview, November 27, 2003).

Episodic games, the new genre of casual video games that CasualGames pioneered, can be described as a cross between cartoon comics and PC video games of the late 1980’s that involved puzzle-solving. In contrast to the design of conventional console video games, such as those developed by BigGames, an episodic game is divided into small story segments (“episodes”) that are linked together by an underlying plot (Sanchez, 2006). Episodes are delivered on a regular schedule over a defined period of time. The difference with episodic games is not only aesthetic; it has consequences on the production process and on the relationships with publishers:
“Each episode requires about six weeks of production work. Working this way has several advantages for both us and our clients. For the latter, it means a lower investment cost as they will first license a three- to eight-episode bundle - enough to test the waters - with an option to buy some more episodes. If the game is a hit, our client can then exercise his option and have us produce more episodes. That's exactly how things happened with XYZ, a game we sold to [...] We first sold them four episodes and - over a period of two years - we then supplied them with 24 more of them.” (Daniel Taylor, Newspaper interview, November 27, 2003).

Another initial strategic orientation was to develop products principally for online distribution, purposefully avoiding the home and mobile console market. In 1998, Flash technology wasn’t yet a standard technology for web publishing; it was intended by Macromedia (its inventor) to be a web publishing platform for web sites that needed to add graphic and visual capabilities: “At the time we had this idea, Macromedia Flash was used mainly to produce web sites and animated logos” (Daniel Taylor, Magazine interview, July, 2002). As such, the platform was not initially a perfect vehicle for developing interactive entertainment software.

While Daniel Taylor and Jeffrey Ross emphasized on the creation of original animated intellectual properties and new genres of entertainment software while decrying the tendency of other developers to engage in outsourcing work, they, nevertheless, engaged in just such work-for-hire very early in the history of the firm. CasualGames was not strongly financed by venture funds or institutional investors and needed to engage work-for-hire in order to make the firm viable. The development of games based on original intellectual property was a highly risky endeavor because it involved high fixed costs but uncertain revenues. By offering creative development services and online animation services for publishers of licensed intellectual properties, CasualGames succeeded in generating its first sales.

At the end of its first year of operation, 1998, CasualGames had eight employees (including the two co-founders). The company’s first major sales based on its own original intellectual properties occurred in the spring of 1999 and by the end of 1999, the number of employees had almost doubled to 15 and the company generated about $400 000 in revenue.
The year 2000 was a year of growth and lofty goals for CasualGames. Daniel Taylor and Jeffrey Ross had the explicit objectives to open a second production studio in a large Eastern Canada city, a sales office in Santa Monica, and to generate over $6 million in revenue within the next few years (Newspaper interview, February 27, 2000). The studio in the large Eastern Canada city was never opened, but CasualGames did retain the services of a Los Angeles-based agency for screenwriters to movie production companies in Hollywood. At the time, the agency represented about half a dozen online casual games developers and animation studios similar to CasualGames. The agency was instrumental in negotiating one of CasualGames early major sales of its original animated intellectual properties to a large, multinational publisher in late 2000. It is interesting to note that the agency left the entertainment software industry in 2001 to concentrate itself on solely representing screenwriters.

In February 2000, at the peak of the internet stock bubble, CasualGames entered into an agreement for a reverse takeover with a small exploration mining company that operated tourist facilities (Newspaper interview, February 27, 2000). Part of the agreement was that the management of the mining company was to stay on as directors in the new company even though none had experience in the entertainment or cultural industries, according to Daniel Taylor’s comments. These directors would have kept between 40 to 49 percent of the shares of the new company in exchange for an infusion of about $1 million in cash but in April 2000, the reverse takeover agreement was cancelled following the first signs of the burst of the stock market bubble. Despite these difficulties, a financing of $630 000 was later secured from a private venture fund in October 2000.

In the spring of 2000 the CasualGames headquarters was moved from the suburbs to a 4000 square foot office in the downtown area of a mid-sized Eastern Canada city. In July 2000, a dithyrambic review of one of CasualGames’ early products appeared in a major national US daily newspaper: “one of the precious few whose entertainment value rivals those of commercial games […] The most striking thing about XYZ, and about CasualGames’ other game, the
excellent adventure game ABC, is how ambitious they are. […] It would be nice if more Flash designers chose to create games of the caliber of CasualGames’ offerings” (Newspaper article, July 27, 2000). At the end of 2000, CasualGames had doubled in size, growing from 15 to 29 employees, and earning about $1 million in revenue.

While the year 2000 was a year of great growth, the years 2001 to 2002 were more difficult for CasualGames. Daniel Taylor and Jeffrey Ross were still looking for additional sources of funding, as shown by rumors of an IPO in January 2001, but they abandoned the idea soon after because of difficult financial markets condition: “After the euphoria, some of our customers, dotcoms that had big visions, crashed, leaving us with bad debts. The years 2001-2002 were difficult years for us, especially since we had decided to stop seeking a second round of funding because the venture capital market was scared” (Daniel Taylor, Newspaper interview, May 10, 2004). While the production of original animated intellectual properties was still ongoing, selling these to publishers remained difficult amid a consolidating market: “Naysayers may call them the walking dead, but at least 40 individual entertainment sites are still alive and well, continuing to post short films, animated Webisodes and interactive games on the Internet. No, online entertainment is far from dead. The question of whether anybody is watching is another story” (Magazine article, April 6, 2001). According to Daniel Taylor, CasualGames survived these difficult market conditions during this period because, “in contrast to other firms that wanted to replace the “majors”, we instead decided to work in partnership with them, and that helped” (Daniel Taylor, Magazine interview, February 2004). In other words, CasualGames had to put more emphasis on delivering licensed content for publishers rather than developing its own original intellectual property because it was less risky financially. Even though work on licensed properties is generally regarded as less motivating and rewarding for artists and developers than work on original intellectual properties (Tschang, 2007), Daniel Taylor embraced this type of work enthusiastically:
“We are very happy to have worked with very famous characters such as [...] and others I'm not at liberty to talk about ... Let's just say that we have many American majors as clients ... Each franchise we have worked on has its own challenges and specificities. It is very exciting to work with the hottest new properties of the cartoon world, but it’s something of a dream to be able to produce the adventures of classic characters that used to entertain us when we were kids. Each time a franchise owner entrusts us with their most popular characters, we feel very much honored.” (Daniel Taylor, Newspaper interview, November 27, 2003).

Despite having troubles financing and commercializing their original intellectual properties, the founders still had a strong faith in the potential of episodic games. The emergence of novel genres of online games in what was already a highly fragmented market did not shake Daniel Taylor’s confidence in CasualGames’ strategy:

“We believe that multi-player games will remain very popular, whether it be on PC or on consoles. However, we also believe that the market will not be able to support all of the massive multiplayer online games (MMPOGs), such as EverQuest, and others in development. But we believe that a second phase of online games, delivered episodically and having strong production value, will be highly popular among casual gamers. And that is where we are going” (Daniel Taylor, Magazine interview, July 18, 2002).

In hindsight, this contention might have been a misestimating. While the market for massive multiplayer online games has grown exponentially since (Alexander, 2008; Yee, 2006), some industry analysts believe that the future for the market for casual, episodic games is not very promising: “Once hailed as the ‘next great thing’ in video games because of how neatly it piggybacks on the growth of digital distribution, suddenly outspoken games industry figures seem to scorn the idea of games developed and sold in scheduled, bite-size chunks” (Hollywood Reporter, 2007, p. 1).

Thus, the years 2001 to 2002 were years of slower growth for CasualGames. The number of employees increased from 29 to 33 in 2001, and from 33 to 38 in 2002. In 2003, CasualGames lost two key employees that started their own casual games development firm,
which will become a key direct competitor both in the labor and the product market. Both 
employees were among the first that Daniel Taylor and Jeffrey Ross hired in 1998. One of these 
employees commented about his departure: “I stayed as their employee for 5 years, but I already 
knew that I wouldn’t be able to stay eternally as a salaried employee without living through much 
frustrations” (Ex-CasualGames lead programmer and actual CEO of a CasualGames’ competitor, 
Newspaper interview, March 31, 2007). At the end of 2003, CasualGames had 42 employees, up 
four from 2002. It is noteworthy also that, excluding the two co-founders, out of the 31 
employees that CasualGames had on its payroll in 2001, only 7 were still employed by the 
company when the case study was conducted in early 2008.

After succeeding in remaining profitable from 2001 to 2003 despite adverse market 
conditions, 2004 is a year of strong growth for CasualGames: “We are in a large period of 
creation right now. While in 2003 we only had one original property to develop, we project to 
enrich our portfolio of original property of four new creations this year” (Daniel Taylor, 
Newspaper interview, May 10, 2004). These properties, of which two were episodic, were 
intended for the trial-to-purchase casual game segment market, as well as for the interactive TV 
market. Daniel Taylor was optimistic about the potential of the trial-to-purchase business model: 
“The conversion rate to buyers from those who downloaded our free games should be between 
3% or 4% and it should be growing” (Daniel Taylor, Newspaper interview, May 10, 2004), 
figures that are quite higher than what many industry analysts report to be around 1%, or at most 
2% (Kumar, 2007; Tams, 2006; Wallace & Robbins, 2006). Despite these creative efforts, the 
role of work-for-hire takes an increasing importance for generating revenues: “We principally 
generate our revenues from the creation of Internet games based on the catalogs of animated 
characters that large studios such as […] provide us. Also, the creation of original properties 
offered freely generates visibility which will have benefits in other channels. That is the case of 
the game […] which main character may have its own TV show” (Daniel Taylor, Newspaper 
interview, May 10, 2004). One original property that was based on an innovative 3D game
engine and that offered freely became the “most successful original title” in CasualGames history (CasualGames web site, 2008, retrieved on July 25, 2008). At the end of 2004, CasualGames had 50 employees and generated $4 million in revenues.

In 2005, additional key employee departure occurs. One of the very first employees of the firm, the VP for business development, left the firm for an American publisher in March 2005. In 2007, he will be hired by the firm that had been founded by the two ex-employees of CasualGames. In April 2005, a large French home and mobile console video games developer and publisher, opens a local studio. The French publisher’s objective is to grow the studio to 75 employees within its first year of operation, and to 200 employees in the next few years after. While the French publisher did not compete with CasualGames in the product market, it did compete with CasualGames in the labor market. CasualGames lost 5 experienced employees between April and August 2005 to Ubisoft according to Daniel Taylor (Daniel Taylor, Newspaper Interview, August 1, 2005).

In August 2005, the firm moved into a newly built 10 000 square feet office and announced a $500,000 investment, which should lead to a $3 million investment over 5 years (Daniel Taylor, Newspaper Interview, August 1, 2005). No external investors were announced and the funds originated from the retained benefits of the firm. At the end of 2005, CasualGames had 70 employees, an increase of 20 from the year before.

The year 2006 was a year of important changes for CasualGames. In February, due to the increasing proportion of work-for-hire revenues in its portfolio, a new “advergaming” division is launched. The division was dedicated to serving sponsors to produce a game based on their own intellectual property in order to build brand awareness and to support a broader marketing campaign. CasualGames also began to label itself as a “digital creative services studio” (News release, April 6, 2006; CasualGames web site, 2006, Retrieved from Archive.org on March 2, 2008), which clearly puts the emphasis on its work-for-hire capabilities instead of its original intellectual property development capabilities.

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In April 2006, Mark Roberts, 32 years old, is named general manager. Mark Roberts joined CasualGames in 2003 as finance director, after launching his career at a Big Four accounting firm after completing his accounting degree. Mark Roberts was put in charge of “controllership, treasury, tax, auditing, planning, productivity and corporate administrative functions” (News release, April 6, 2006). This appointment allowed Daniel Taylor and Jeffrey Ross to focus on “leading and managing the company's R & D efforts” and on “developing the studio's strategic vision” (News release, April 6, 2006). In June 2006, another change occurred in the executive team of the firm when William Nelson was hired as VP Sales and marketing. Before joining CasualGames, he served as national sales manager in the health care industry.

Following the appointment of Mark Roberts, a large organizational change effort was put under way (Interview with Mark Roberts, January 23, 2008). Up until 2006, the firm had grown with a simple organizational structure that regrouped employees according to their occupational communities; the firm was initially organized into small groups of game designers, artists, and technologists, and management and within each group there would be a “lead”, as well as “seniors”. When a development contract was obtained, a team was set-up ad-hoc with the available workers within the firm. The organizational change, which involved the services of a management consulting firm, reorganized the firm as multiple, independent “cells” (a word employed by CasualGames’ employees to label their teams). In the new structure of cells, CasualGames’ workers are staffed into semi-autonomous and multi-skilled teams and are responsible for the production of games. Each cell is headed by a producer and has its own team of game designers, artists, and technologists. This new organizational structure has its origin in the idea of cellular manufacturing, popular in just-in-time and lean manufacturing managerial approaches, where “a cluster of dissimilar machines or processes located in close proximity and dedicated to the manufacture of a family of parts […] similar in their processing requirements” (Wemmerlov & Hyer, 1989, p. 1511).
At the end of 2006, CasualGames had increased its total of employees to 91, and had $4.5 million in revenues (Newspaper article, July 12, 2007). This growth continued in 2007, when the firm added 9 employees to raise its total to 100 by year’s end. However, the rise of the Canadian dollar against the US dollar is putting pressure on CasualGames’ margins. This leads Daniel Taylor to declare in a newspaper interview that he is “exploring the idea of outsourcing low value-added work to Asia” (Daniel Taylor, Newspaper interview, November 5, 2007). The firm is also diversifying the technological platforms upon which it develops its products by beginning the development of original properties in the casual games genre targeted to the mobile console video games market (Daniel Taylor, Newspaper interview, November 5, 2007).

In February 2008, not long after the firm’s 10th anniversary, Jeffrey Ros’s, the firm’s co-founder and VP Creation left the firm. A hint about the reasons behind his departure was provided on the web site of his new company, where it was stated that its mission was “animation and intellectual property creation, and not losing the fun factor along the way, this is what […] is all about” (Jeffrey Ross’s new company web site, 2008, Retrieved July 25, 2008). Thus, and in concordance with the other interviews I conducted with employees of CasualGames, it seems that CasualGames ever increasing focus on providing work-for-hire services to the entertainment industry to the detriment of developing and commercializing novel intellectual properties might have been a reason for Jeffrey Ross’ departure.

This departure implied a major strategic and corporate branding change. In June 2008, the firm opened a second studio in the Eastern Townships of the province of Quebec. The studio was initially staffed with four employees, but is planned to grow to 20 employees in the next two years. In July 2008, CasualGames unveiled a new corporate identity and branding which attempts to disassociate itself from the label “casual”, which has become criticized in the market (Kumar, 2007), by putting forward the pitch line “There’s nothing casual about us” (CasualGames web site, 2008, Retrieved July 25, 2008). Based on its new web site and its new marketing material, the firm abandoned the development of episodic games to instead focus
mostly on developing custom games and “advergames”. In August 2008, its first product for the mobile console market is published. At that time, the firm had 114 employees whose average age was 26 years old according to the firm’s data.

![Graph: Employees and revenues of CasualGames (1998-2008)](image)

Source: Newspaper and magazine articles; Annual reports; Consulting firm report

Figure 5. Employees and revenues of CasualGames (1998-2008)

1.5 References in this appendix


