Virtual Worlds for Business Communication and Collaboration

Master Thesis Business Informatics

in collaboration with

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# Virtual Worlds for Business Communication and Collaboration

*(Report of a graduation project, conducted from May 2007 to December 2007)*

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*in collaboration with*

![Logica CMG Logo](image-url)
“The most exciting phrase to hear in science, the one that heralds new discoveries, is not
‘Eureka!, but ‘That’s funny...’ “

(Isaac Asimov, 1920 – 1999)
PREFACE

This report represents the results of my final thesis project that I have conducted at LogicaCMG Netherlands, as the last part of the Business Informatics program at Utrecht University. For the past 8 months, I have been working at LogicaCMG in Nieuwegein, specifically at the graduate division Working Tomorrow. I am thankful for the opportunity that LogicaCMG has given me for conducting this research and writing my final master thesis under their supervision.

In January 2007, I applied for the Working Tomorrow program at LogicaCMG. This is where I got in contact with the Working Tomorrow supervisor in Nieuwegein, Raph Bode. We talked about the Second Life hype and he offered me to conduct research on the topic of virtual worlds. I got instantly enthusiastic about this particular research, and contacted the staff members of my faculty. Fortunately, they shared my enthusiasm, and in May 2007, I started my internship at LogicaCMG. During this internship, I worked on my research with a great deal of pleasure. Nevertheless, many students will agree with me that the process of conducting research is sometimes a difficult one, especially in the beginning, where it can be frustrating that the scope of research is vague and broad, where progress seems to be slow, and where the finish line seems to be miles and miles ahead. But in the end, things actually worked out quite well.

At this place, I would like to express my thanks to a number of people. First, I thank Lidwien van de Wijngaert for her true enthusiastic, professional and critical approach in assisting me. I got specifically charmed by her snail-mail approach of replying my e-mail from Canada, and her confession of not really understanding how to use a contact list on a mobile phone (that was a joke, wasn’t it?). Also, I thank Eva Baaren and Ronald Batenburg for their valuable contributions and suggestions. Many thanks also go to my external supervisors, Erik Grandiek and Raph Bode. Erik was very helpful during the whole period; he assisted me with feedback, came up with useful ideas, and helped me with finding the right people within the organization. In addition, he helped me to get to know LogicaCMG better. Thanks, Erik; I personally could not have had a better company supervisor, and I really look forward to join your team in February 2008. I also thank Raph for his dedication into the Working Tomorrow program. He is the personification of a true mobile worker, considering his daily pursuits on the Dutch highways. I thank Marcel Creemers for his professional view on “bridging imperfections” during a valuable brainstorm session about the application of new technologies. He once gave an interview on BNR Nieuwsradio, where he predicted that Second Life would in time be a useful technology for teleworking activities. This interview acted as a lead for this topic of research. Special thanks to all the respondents, who provided me the valuable data that was needed to perform this study in the first place. Thanks to all my EUT colleagues in Nieuwegein, with a special mentioning for my Working Tomorrow co-students and my competence manager, Eric de Jong. Finally I thank my family and friends, and especially my girlfriend Astrid, for their love and support throughout this period.

Utrecht, 6 December 2007
Eka Tirtadji
EXECUTIVE SUMMARY

Communication has always been central to organizational action. Communication forms the binding force that permits the coordination and collaboration, and thus the organizing among people. In today’s modern world, where the industrial society has entered the final stage of its transformation into the information society, organizations face three important developments that force them to focus increasingly on its communication processes. First, organizations have to operate in an increasingly complex environment, partly caused by the continuing rise of globalization and all its implications. Second, there is an increasing trend towards a distributed work environment. Third, there is a global shift towards a knowledge economy where knowledge and information are getting the primary sources of value creation.

In response to these developments, organizations are persistently investing in new ways to support and improve their communication processes. This report represents a study that is performed to investigate the effectiveness of virtual world technology on internal communication processes within knowledge-intensive organizations. As it happens, the recent developments on virtual world technology have gained the attention of organizations, and both practitioners and academics are looking for new and useful concepts that exploit the potential of virtual worlds on a variety of purposes. The focus of this thesis is based on the connection of technology characteristics of virtual worlds and the task characteristics of employees working in an IT services organization. This twofold approach is derived from the central premise of media richness theory: a certain task must fit with a certain technology in order to be effective. This study takes a qualitative research approach, containing two case studies: Second Life as a prominent virtual world technology and LogicaCMG as a typical organization that is required to deal with the identified organizational developments. The Second Life case study was firstly conducted to identify the characteristics of this particular technology. Then, the LogicaCMG user interviews were conducted to identify task characteristics of a group of particular knowledge workers, using the identified categories of the first case study in order to enable and assure that the context of both case studies lie within the same scope of research. After these case studies, a task-technology comparison of the various characteristics took place.

Results of this particular study show that Second Life seems to offer an environment that fosters the combining elements of 1) new ways of communication and collaboration in a realistic real world setting, 2) an environment in which informal communication processes are encouraged, and 3) a setting in which the preconditions for community building is promoted. These are derived from the identified categories. Thus, from a task-technology perspective of media richness theory, the results show that virtual worlds can indeed be effective for business communication and collaboration. However, one should keep in mind that theory often differs considerably from practice. This translation from theoretical effectiveness to a more practical and true degree of effectiveness is a rather complicated one. The latter requires more than only a theoretical task-technology perspective, and depends on a great deal of variables that are not taken into account with the former due to the limited scope of this conducted research. Thus, in order to measure the practical effectiveness, one should include such conditions in future research.
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1. INTRODUCTION

1.1. RESEARCH BACKGROUND

"Virtual worlds are in the same position right now that personal computers were in the 1970s."

This quote is from Mitchell David Kapor, born 1950, founder of Lotus Development Corporation and currently Chair of the Board of Directors of Linden Lab, the company that created the virtual world Second life. In the early 1980s, he designed the killer application Lotus 1-2-3 and has been intensely involved in the information technology revolution ever since. Many people consider him as a visionary IT entrepreneur. With respect to the emerging interest in virtual worlds, he recognizes a similar pattern of the evolution of personal computers that took place decades ago. He compares virtual worlds today with the early days of the PC, an era in which many people predicted it would be nothing more than a toy, by arguing that “virtual worlds are at the tipping point from margin to mainstream which ultimately sweeps skepticism aside, just as the PC launched in 1978 and got to its mature form with Windows 95” (Seiler, 2007).

Many practitioners are currently debating and exploring the subject of virtual worlds and its implications for all kinds of reasons. An interesting and currently much highlighted prospect for virtual worlds is to support and foster organizational communication purposes. Independent technology and market research companies Forrester and Gartner expect virtual worlds, in five to ten years indeed, to have large potential and transformational benefit for business purposes such as communication, training and productivity tools (Fenn, 2007; Jackson, 2007). The media hype around the virtual world of Second Life has brought the discussion about virtual worlds as a new communication technology even further into the light of businesses and its strategy professionals. Some companies are already exploring the potential of virtual worlds and its technologies, trying to find new and useful concepts that exploit the potential of it on a variety of purposes, such as holding meetings, collaborating and sharing information (Jackson, 2007).

By capitalizing on such new communication technologies, organizations should be able to realize a competitive advantage in its performances (Tucker, Meyer, & Westerman, 1996). But are virtual worlds really a breakthrough technology that will reshape internal communication and collaboration efforts in businesses? The purpose of this research is to investigate this issue.

1.2. PROBLEM DEFINITION

Three developments fundamentally challenge organizations to focus on alternative and new ways to handle these trends. First, organizations have to operate in a highly turbulent and increasingly complex environment, partly caused by the continuing rise of globalization. Competitive pressure is therefore increasing, work is becoming more complex and requires greater coordination and interaction (Daft, 2004; Jones, Watson, Gardner, & Gallois, 2004). Second, there is an increasing trend towards a distributed work environment (Dennis & Kinney, 1998; Kakihara & Sorenson, 2002; Perry, O’Hara, Sellen, Brown, & Harper, 2001), meaning
that organizational activities are no longer tied to physical resources or locations. Third, there is a shift towards a knowledge economy where knowledge and information are getting increasingly critical to an organization’s competitive advantage (Grant, 1996; Jashapara, 2004; Nurmi, 1998). These three organizational developments enforce organizations to focus increasingly on its communication processes.

In response, organizations are continually investing in information technology in order to support and improve these communication processes. In this respect, the theory of organizational communication emphasizes the understanding of new communication technologies and capabilities that can help realize new and more effective organizational forms and processes (Tucker, Meyer, & Westerman, 1996). After all, information technology (IT) refers to the means that facilitate the handling of information, by providing all sorts of mechanisms to store, retrieve, sort and analyze relevant information to those who are in need of it. As a result, much research has been performed on communication technologies that are commonly available in organizations. However, there is less focus on the study of newer and less obvious communication technologies such as the developments on virtual worlds. Given the rapid pace in which information and communication technologies are advancing, and given the opportunities for organizations to adopt such technologies in order to gain competitive advantage, the study of such mostly innovative technologies should be at least a reason for more in-depth research.

1.3. MEDIA RICHNESS THEORY

Media choice theories are used to examine the effectiveness of communication media technologies within organizations. A core assumption of these theories is that there must be a fit between a certain task and technology, in order to be effective. One of the most prominent theories within this domain is media richness theory. This theory states that face-to-face communication is characterized as a rich medium, while “modern” information technologies such as e-mail or fax are classified as lean media. However, “modern” information technologies in the 1980s are evolved into more “traditional” information technologies of today. The problem is that the foundations of media richness theory do not include this evolvement (Dennis & Kinney, 1998). As such, they state that media richness theory often fails to work adequately in relation to modern communication technologies by arguing that “media richness theory is not a useful theory for explaining the effects of the use of the new media on task performance” (Dennis & Kinney, 1998, p. 270). As of today, studies are only recently in a position to expose the media richness theory in continuing development of new and modern organizational communication technologies. By carefully applying the fundamentals of media choice theories and media richness in particular and by attempting to reinterpret some characteristics in a way to make it more appropriate for modern communication technologies, these theories should enable us to gain more insight in the effectiveness of the technology of virtual worlds on certain organizational tasks.

1.4. SCOPE AND OBJECTIVES

This focus of this study is shaped by its scope and objectives. Combined with the problem definition, this eventually leads to the central research question.
1.4.1. **Scope of Research**

Taking the problem definition and the application of media richness theory in consideration, the focus and scope of this research is enforced within and shaped by the technology and task perspective of the assumptions of media choice theories. This thesis has a case-study approach by specifically focusing on the virtual world Second Life and the specific tasks of consultants at a knowledge-intensive organization such as LogicaCMG.

**Technology: Second Life**

Second Life is an Internet-based virtual world created in 2003 by Linden Lab. It enables users, called residents, to interact with each other through motional avatars. Second Life is a free-form virtual world based on a user-generated environment, where everything is created, owned and maintained by its users (Jackson, 2007). As of August 2007, there are approximately 9 million users worldwide, and 1.6 million unique users who logged in during the last 60 days. There is an average of approximately 25,000 concurrent users. It has its own controlled economy, enabling users to trade products and services.

On an average day, one million US dollars are spent within the virtual boundaries of Second Life. Linden Lab introduced its own Second Life currency to facilitate these economic activities. The current ongoing backlash after a full year of considerable public and media hype makes Second Life one of the most controversial Internet technologies as of today. Despite this, Second Life may at this time be considered as the largest and most prominent virtual world available (Cascio, Paffendorf, & Smart, 2007; Jackson, 2007).

**Task: LogicaCMG**

LogicaCMG is a large international IT services organization that focuses mainly on business consulting, systems integration, IT, and business process outsourcing solutions. LogicaCMG can be considered as a typical knowledge-intensive organization, with knowledge as its core asset and with geographical dispersed activities on multiple domains (Nurmi, 1998), and where employees are often employed by external customers and thus often on the move. As such, LogicaCMG is a typical organization that faces the organizational developments that are described in the problem definition of this thesis. Chapter 7.3 elaborates more on this organization.
1.4.2. Research Objective

The focus of this thesis is based on addressing the central issue of improving organizational communication and collaboration in knowledge-intensive organizations using virtual worlds, using a twofold approach that concentrates on the connection between technical characteristics on the one hand and task characteristics on the other hand. Central issue in this thesis is one central premise of media choice theories: a certain task must fit with a certain technology in order to be effective. This thesis investigates these premises in the context of virtual worlds as a potential supporting communication tool within organizations.

1.4.3. Research Question

Based on the problem definition and the research objective, and based on a generalization of the chosen technology and task, that is Second Life as a virtual world and LogicaCMG as an IT services organization, the central research question that this thesis tries to answer is:

“From a task-technology perspective of media choice theories, can virtual worlds effectively support communication and collaboration processes within IT services organizations?”

In order to address this problem correctly, eight sub-questions are required to answer. These are formulated in Figure 1-1.

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<td>1. Which theories have been developed on the study of organizational communication?</td>
<td>To gain more insight in the fundamentals of organizations and communication.</td>
<td>Chapter 2</td>
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<td>2. Which organizational developments can be identified that affect knowledge-intensive organizations such as LogicaCMG?</td>
<td>To identify and elaborate the trends that together form the problem definition of this study.</td>
<td>Chapter 3</td>
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<td>3. What are virtual worlds and how can its current developments best be described?</td>
<td>To gain more insight in the specific technology that is studied as a potential response for the identified organizational developments.</td>
<td>Chapter 4</td>
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<td>4. Which theories have been developed on media choice theories, and how can the relationship between technological and task characteristics be explained?</td>
<td>To address the rationale of the theory that forms the fundamentals of the task-technology fit assumptions and thus the focus and scope of this study.</td>
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<td>Chapter 8</td>
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<tr>
<td>6. What are the task characteristics, and users experience and knowledge of business and management consultants at LogicaCMG?</td>
<td>To gain more insight in the task characteristics and the employee’s experiences of consultants at LogicaCMG.</td>
<td>Chapter 9</td>
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7. Is there a task-technology fit between Second Life and LogicaCMG, and if so, to what extent can these matches be identified? To identify potential matches of characteristics and ultimately to address the central research question. Chapter 10 & Chapter 11

8. What is the effect of the application of media choice theories on modern communication technologies such as Second Life? To place the theory in the light of modern communication technologies, and to test the applicability of this theory in this particular setting. Chapter 10 & Chapter 11

FIGURE 1-1 OVERVIEW OF SUB-QUESTIONS THAT ARE ADDRESSED DURING THIS RESEARCH

These questions are in line with the structure of this study from the literature overview, to the results and analyses, and finally to the conclusions of this study.

1.4.4. RESEARCH METHOD

The goal of this research is to gain understanding in virtual worlds and its potential for business communication purposes. This research takes an exploratory and qualitative research approach. It has two major areas of attention: Second Life as a prominent virtual world application and LogicaCMG as a typical organization that is required to deal with global trends as described in the problem definition. Therefore, two case studies will be conducted. A case study research is a research method that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not evident and in which multiple sources of evidence are used (Yin, 2003). Thus, such a method enables us to gain understanding complex issues. Thus, two cases are investigated based on interviewing techniques for collecting the required empirical data. These case studies examine:

1. The medium characteristics, and experience and knowledge of Second Life users, in order to identify the characteristics of this technology;
2. The task characteristics, and experience and knowledge of LogicaCMG employees, in order to research the applicability of these characteristics on the activities within the consultancy domain.

The starting point of this study focuses on the potential that virtual worlds may bring to organizations. This clarifies the rationale for the abovementioned sequence in conducting the case studies. Thus, the center of attention is shaped by the identified categories of the first case study.

The conclusions of each of the cases are used as input to the main research question and thus to this whole study. Moreover, both cases can be used as cross-case examinations in order to gain validity, along with the initial literature review (Soy, 1997).

1.4.5. CONTEXT OF RESEARCH PROJECT

This research project is conducted at the division Energy, Utilities & Telecom of LogicaCMG in the Netherlands. Specifically, this research project is conducted inside the Working Tomorrow program of LogicaCMG. Within this program, graduate students can analyze new and innovative technological developments for their graduation task or their master theses. An important criterion to join this program is to conduct innovative research with respect to technology, concept, or methodology.
1.5. **SCIENTIFIC AND PRACTICAL RELEVANCE**

An investigation of this kind provides both scientific and practical relevance.

1.5.1. **SCIENTIFIC RELEVANCE**

Scientifically, this research provides new insights in the task characteristics, technology characteristics and the fit between these characteristics from a media choice point of view, in the context of virtual worlds as a potential communication tool in organizational settings. First, these insights include the notion of a multi-dimensional approach of both task and technology characteristics, based on the task-technology assumptions of media richness theory. Second, this study provides insight on the theoretical effectiveness of virtual worlds in an organizational setting. The focus on this research may thus act as an incubator for further research on virtual world platforms. Third, this research stimulates the ongoing discussions on the topics of virtual worlds, organizational communication and communication technologies within organizations in general.

1.5.2. **PRACTICAL RELEVANCE**

From a practical perspective, this research provides support for the practical utilization of virtual worlds in a business environment. The knowledge that will be gained during this research, offers organizations an incentive to decide whether it is useful to invest in a relatively new and unmapped technology such as virtual worlds. In addition, organizations can obtain a better understanding in the complexity of organizational communication, in the support that computer-mediated tools can provide, and in the interconnection between task and technology characteristics and thus the effectiveness of these communication tools.

1.6. **THESIS OVERVIEW**

This thesis is constructed as follows. Part One contains the backgrounds of the problem definition by the means of an extensive literature overview. Part Two describes the various elements of the applied research methodology. Part Three describes the results, analyses and validation of the conducted research, and Part Four is the concluding component of this thesis including conclusion, discussion and recommendations for further research.

1.6.1. **PART ONE: LITERATURE OVERVIEW**

The first part of this study covers an extensive literature study. A literature review is an account of what has been published on a topic by accredited scholars and researchers. In this case, it must cover the existing theories that are needed to address the central research question. Thus, more insight is required in the theory of organizational communication, current organizational developments, virtual worlds and media richness theory. Ultimately, the review and the syntheses of insights that can be extracted from these theories lead to the conceptual context in which the research can further be based on.
1.6.1.1 Part Two: Research Methodology

The second part of the study contains the applied research methodology. First, the research approach will be discussed, including the rationales for this thesis’ qualitative approach, the choice for applying interviewing methods and its design and implementation. Second, the actual interviews with several expert users of Second Life are discussed. Goal of these interviews is to gain insight in the capabilities of this technology and to gain insight in which way such a medium is used. Third, the actual interviews with LogicaCMG employees are discussed, in order to gain insight about their work activities and their tasks.

1.6.2. Part Three: Results and Analyses

After having collected the required qualitative data elements, analysis takes place. Having gathered the required information of both case studies, we analyze the interconnection between the task and technology, which is mainly based on an approach that builds upon and extends media richness theory (Daft & Lengel, 1986; Daft, Lengel, & Trevino, 1987). By doing so, more insight is expected to be obtained in the relationship between technical and task characteristics, in such a way that it ultimately can support and address the central research question.

1.6.3. Part Four: Conclusion and Discussion

The last part of this research document discusses the outcomes of the study. It first starts with a concluding chapter, containing a review of the background and objectives of this study, analyses of the identified results, some general syntheses that can be linked with the central research question, and the application of media choice theories. At last, a number of discussion points are discussed, such as the scope and limitations of this conducted study, the scientific and practical relevance of the outcomes, and a number of recommendations for future research. This study ends with some concluding thoughts about the topic of research.
PART ONE: LITERATURE OVERVIEW

The first part of this study covers an extensive literature study. A literature review is an account of what has been published on a topic by accredited scholars and researchers. In this particular study, it must cover the existing theories that are needed to address the central research question. Thus, more insight is required in the theory of organizational communication, the current organizational developments, virtual worlds and media richness theory. Ultimately, the review and the syntheses of insights that can be extracted from these theories lead to the conceptual context in which the research can further be based on.
2. **ORGANIZATION AND COMMUNICATION**

2.1. **INTRODUCTION**

Communication has always been central to organizational action. It is the binding force that permits coordination and collaboration among people (Myers & Myers, 1982), which is a precondition for organizing. The construction of the Egyptian pyramids around 4,500 years ago, one of the most advanced buildings created at that time and still one of the most impressive buildings ever created by human beings, could not have come into existence without extensive coordination and collaboration of multiple individuals as well as multiple organizations, each one of them which specialized on specific functions.

Given the rapid advances in information and communication technologies nowadays, it is a challenge to develop theories and methods to handle the implications on organizations and its organizational structures (Jones, Watson, Gardner, & Gallois, 2004; Rice & Gattiker, 2001). The study of organizational communication covers the subject of these issues by offering a broad and mix of approaches, theories and methodologies. The goal of this chapter is to gain more insight in the key functions and key distinctions of this discipline, and to elaborate on the concepts of organizations, communication and the linkage between organization and communication.

2.2. **DEFINITIONS**

Before elaborating further on the concepts of organization and communication, one must first consider the fundamental definitions of each of these concepts.

2.2.1. **ON ORGANIZATIONS**

Organizations have been around for millennia, and most people are confronted with them in their daily lives. Think about authorities, corporations, companies, unions, and clubs, but a household can also be considered as an organization. But what are organizations exactly and why do they exist? Let us search for common characteristics that organizations have. A query into WordNet, an online lexical database for the English language, delivers the following results for “organization” (Miller, 2006):

- A group of people who work together.
- Arrangement: an organized structure for arranging or classifying; "he changed the arrangement of the topics"; "the facts were familiar but it was in the organization of them that he was original"; "he tried to understand their system of classification".
- Administration: the persons (or committees or departments etc.) who make up a body for the purpose of administering something; "he claims that the present administration is corrupt"; "the governance of an association is responsible to its members"; "he quickly became recognized as a member of the establishment".
• Constitution: the act of forming something; "the constitution of a PTA group last year"; "it was the establishment of his reputation"; "he still remembers the organization of the club".

• The act of organizing a business or an activity related to a business; "he was brought in to supervise the organization of a new department".

• The activity or result of distributing or disposing persons or things properly or methodically; "his organization of the work force was very efficient".

• An ordered manner; orderliness by virtue of being methodical and well organized; "his compulsive organization was not an endearing quality"; "we can't do it unless we establish some system around here".

Three important characteristics can be distinguished from this list. First, an organization is a group of people who work together. Second, it refers to as an arrangement; an organized structure for arranging or classifying. Third, an organization is an administration, containing the persons who make up a body for the purpose of administering something. These three characteristics imply that organizations are social arrangements consisting of human individuals, who work together in a structured arrangement in order to achieve some goal. Daft (2004) combines these characteristics into the following definition:

“Organizations are structured and coordinated arrangements containing social entities that pursues collective goals, and exist as individuals group together in order to achieve collective goals that could otherwise not be achieved.”

In this line, Daft (2004) addresses a number of reasons that demonstrates the significance of organizations:

• Organizations bring resources together to achieve desired goals and outcomes.
• Organizations efficiently produce outputs such as goods or services.
• Organizations facilitate innovation.
• Organizations use modern technologies.
• Organizations adapt themselves to and influence a dynamic environment.
• Organizations create value for its owners, customers and employees.
• Organizations enable employees to pursue challenges on diversity, ethics, career, motivation and coordination.

In sum, the definition of an organization also addresses yet another important reason of the existence of organizations, that is, organizations can achieve goals that otherwise could not be achieved. In order to achieve these corporate goals, organizations must perform specific tasks. And for these tasks to be executed successfully, information is required to be gathered and processed to reduce uncertainty (Daft & Lengel, 1986). These processes are also referred to the processes of communication (D'Ambra, 1995). In other words, “organizations are established to coordinate the activities of a number of people in order to accomplish common work and attain organizational goals” (Fritz, Narasimhan, & Rhee, 1998, p. 9).
2.2.2. On Communication

There are many definitions of communication. This is caused by the fact that the concept of communication can be placed in a broad sense. Rosengren (2000, p. 36) takes an approach by first reducing the definition of communication to an absolute minimum, allowing to extend elements to the concept when required: “some of A’s processes (including behavior) change as a result of some of B’s processes (including behavior), and vice versa, in at least one – and often more than one – full cycle”. This broad and rather abstract definition of communication as interaction, is then gradually extended with a number of conditions that are necessary to establish full human communication, which is the kind of communication we are experiencing in our daily lives: Communication is interaction, which is both intersubjective and intentional, and which is carried out by means of a system of signs, mostly building on a system of verbal symbols, characterized by double articulation, and in its turn building on fully developed systems of phonology, syntax, semantics and pragmatics (Rosengren, 2000, p. 38). Thus, the definition of communication from this perspective is:

“An intersubjective, purposive interaction by means of doubly articulated human language based on symbols”

This definition extends properly to the meaning of organizations, as proposed by Daft (2004). That is, in his definition of organizations, he incorporates the importance of interconnection between people in these entities. This interconnection between human beings is in short what communication means, and in this extent, “organizations can be viewed as communication systems in which networks of nodes are linked with one another in a variety of ways” (D’Ambra, 1995, p. 15).

2.2.3. On Organizational Communication

Organizational communication often refers to the theory of organizational communication, which addresses the crossroads of organization theory and communication theory in a broad range of approaches, theories and methodologies (Jones, Watson, Gardner, & Gallois, 2004). Organizational communication is also a discipline that is subject to an ongoing evolution of complex organizations in an equally complex global environment (Jablin & Putnam, 2001). Therefore, scholars are continually redefining the focus of this field of literature. However, what is the definition of organizational communication? Let us first recall the definitions of organizations and communication:

“Organizations are structured and coordinated arrangements containing social entities that pursues collective goals, and exist as individuals group together in order to achieve collective goals that could otherwise not be achieved”, and “communication is an intersubjective, purposive interaction by means of doubly articulated human language based on symbols”.

Organizational communication must thus somehow contain a combination of these two definitions. But how exactly could the definitions of the concepts of organizations (Daft, 2004) and the concepts of communication (Rosengren, 2000) be linked together, and how are they interrelated to each other? Communication can be regarded as the tool that enables organizations to achieve their collective goals. After all, “communication is the core process of organizing” (Jones, Watson, Garder, & Gallois, 2004, p. 1), and “organizations are created
and recreated in the acts of communication between members” (Ledema & Wodak, 1999, p. 7). Both statements suggest that communication is the central means for individuals to pursue organizational goals. People exchange information and coordinate work activities to achieve organizational goals, and a great deal of work within organizations is therefore accomplished by some form of communication between people (Daft & Lengel, 1986; Fritz, Narasimhan, & Rhee, 1998; Kraut, Fish, Root, & Chalfonte, 1992). Miller (2002) summarizes these findings and defines organizational communication and its key function as:

“The process in which activities of an organization are coordinated to achieve certain goals”.

2.3. LEVELS AND PURPOSES

Communication in organizations can be seen in terms of levels (D’Ambra, 1995; Rosengren, 2000). In the theory of communication, a number of levels can be distinguished. In the context of organizational communication, the following levels are important to take into consideration:

- Interpersonal communication
- Group level communication
- Organizational level communication

Interpersonal communication refers to the primeval form of human communication. It is the process of sending and receiving information between two or more people. Group level communication is a similar communication process, but between two and a dozen individuals. In this line, the organizational level of communication resides at the highest level of communication. This level of communication refers to all the communication processes taking place within organizational contexts. Indeed, the levels that reside at a lower level are also focus within the organizational level of communication.

Communication can also be seen in terms of purposes (organizational, task-oriented and social) (D’Ambra, 1995). In the light of communication, D’Ambra (1995, p. 15) states that “organizations can be viewed as communication systems in which networks of nodes are linked with one another in a variety of ways”. This is essentially a referent to all sorts of internal business groups and structures that share a specific type of interest, often referred to as communities. According to Rosengren (2000), communities are groups of individuals characterized by a relatively loose hierarchy that maintain a high degree of intra-communication.

Taking these spectrums of levels and purposes in consideration, one can argue that communication is of significant importance and thus as a major and critical activity within organizations. Numerous studies over the years have indeed shown that organizational members spend the majority of their times communicating, stressing its importance for organizational effectiveness (D’Ambra, 1995).

2.4. FORMAL AND INFORMAL COMMUNICATION PROCESSES

Organizational communication deals with at least two forms of existence: formal and informal communication. Rosengren (2000, p. 116) distinguishes these two forms of existence as follows: Formal communication defines
communication between individual incumbents of different positions, and informal communication defines communication between individuals qua individuals.

Formal communication derives from the imposed relationships where people are formally organized and where structures are put in place to define regulations, guidelines, rules, policies and directions with respect to organizational work processes (Fritz, Narasimhan, & Rhee, 1998). Informal communication however deals with the interaction among organizational members that supports the social functions of groups (Kraut, Fish, Root, & Chalfonte, 1992). It is often referred to as the grapevine, an organizational equivalent to the spread of rumors (Rosengren, 2000). Mishra (1990) states that while the formal network is highly documented and as such has very little chance for change, almost all of the information within the grapevine is undocumented and is thereby open to change and interpretation. Also, since this kind of information is primarily unstructured and not under control of management, it moves through the organization in every direction.

Kraut et al. (1992, p. 4) elaborate that this difference can be explained in the degree of the coordination mechanisms that is used by organizations. Coordination is the activity of integrating together different parts of an organization to accomplish this mutual understanding, and thus to accomplish a collective set of tasks (Ven, Delbecq, & Koenig, 1976). Figure 2-1 illustrates the variables that distinguish formal from informal communication (Kraut, Fish, Root, & Chalfonte, 1992).

![Formal vs. Informal Communication](image)

**FIGURE 2-1 THE FORMALITY DIMENSION OF COMMUNICATION (KRAUT, FISH, ROOT, & CHALFONTE, 1992)**

It shows that the degree of scheduling, spontaneity, pre-specification, conventionality and rule-boundedness determine the degree of formality. Kraut et al. (1992) also state that there are both structural and functional characteristics of communication occasions that cause the communication to be more or less formal. Structural characteristics include:

- The nature of the relationship among the participants. Conversation among strangers will likely to have a more formal nature than conversations among close friends or colleagues.
- Frequency of communication. Communication is likely to be more formal when people do not have the ability to communicate on a frequent base.
- Communication setting. A conversation in a meeting room is likely to be more formal than a conversation at the coffee machine.
• Communication channel. A static computer generated report is likely to be more formal than an interactive face-to-face discussion.

In terms of functional characteristics, one could best think in terms of types of activities. Formal communication is tend to be used at coordinating planned and relatively routine procedures, while informal communication is more likely to be used at unplanned and uncertain events. In sum, on the one hand, there are certain variables that distinguish formal communication from informal communication, and on the other hand, there are certain characteristics of communication occasions that influence the degree of formality.

Within organizations, both formal and informal boundaries can be distinguished, depending on the type of activity.

2.5. FORMALITY, INFORMALITY, AND COLLABORATION

In the past, the focus of organizational communication literature was based on formal and top-down communication. Formal communication processes seemed to dominate internal processes, such as attending scheduled meetings, following official office procedures and writing reports according to established procedures. Informal communication was seen as a potential obstruction to effective organizational performance. Today, informal communication is recognized as an important aspect of organizational communication. This is mostly due to the ongoing changes and developments that modern organization face, including unexpectedness, uncertainty and equivocality in work processes (Daft, Lengel, & Trevino, 1987; Kraut, Fish, Root, & Chalfonte, 1992).

Within these conditions, close collaborative effort is required. Collaboration is “the act of working jointly” (Miller G., 2006), or the process in which people work together, share knowledge and creatively brainstorm toward a common goal, through the means of an ongoing communicative process (Hardy, Phillips, & Lawrence, 2003). Roschelle and Teasley (1995) identify the difference between cooperation and collaboration, by stating that cooperative work is accomplished by the division of labor among participants, as an activity where each person is responsible for a portion of the

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**The Grapevine**

“The first practical public demonstration of the telegraph was given in 1844, when Samuel Morse sent a message from Washington to Baltimore. The invention was widely welcomed as a means of rapidly communicating news. It soon became clear though that close communities already had effective word-of-mouth communications. Soon after the telegraph was invented the term 'grapevine telegraph' was coined - first recorded in a US dictionary in 1852. This distinguished the new direct 'down-the-wire' telegraph from the earlier method, which was likened to the coiling tendrils of a vine. It's clear that the allusion was to interactions amongst people who could be expected to be found amongst grapevines, i.e. the rural poor. Of course, 'I Heard It through the Grapevine' is best known to us as the Motown song, recorded by Gladys Knight & the Pips in 1967 and by Marvin Gaye in 1968. It's salutary that, whilst the telegraph is long gone, the person-to-person communication that preceded it is still going strong” (Martin).

(Source: www.phrases.org.uk)
problem solving, whereas collaboration involves the mutual engagement of participants in a coordinated effort to solve the problem together.

Informal communication supports the social processes that are required to sustain such a degree of collaboration (Sallnäs, 1999). Without proper informal communication processes, close collaboration will thus be nearly impossible. In addition, informal communication is useful in supporting social functions of groups. This function is less supported and regulated by organizations, since “organizations are less explicit in regulating social relationships than they are in regulating other aspects of work procedures” (Kraut, Fish, Root, & Chalfonte, 1992, p. 7).

2.6. THE IMPACT OF INFORMATION TECHNOLOGY

For many years, organizations have been using a great deal of communication technologies. Think about the traditional memos, notes, newsletters, and the electronic means such as e-mail, discussion forums, and intranet. The purpose of these technologies is to communicate, to share relevant information to those who are in need of it in order to achieve a degree of synchronization in work processes, thoughts and directions. After all, organizations rely on these forms of coordination in order to pursue their organizational goals, and as stated earlier, the statement that “organizations can be viewed as communication systems in which networks of nodes are linked with one another in a variety of ways” (D'Ambra, 1995, p. 15). These connections are facilitated through a variety of artificial communication channels. Over the years, the advances in technology has facilitated and changed the way humans communicate. This also accounts for organizations, in the way that organizational members communicate with each other and how they perform their work activities (Daft, 2004; Fritz, Narasimhan, & Rhee, 1998). Daft (2004, p. 307) even states that these advances “are having a tremendous impact on all organizations in every industry”, and sketches a number of possible implications of these advances for organization design, including decentralized structures and improved internal and external coordination. It is a challenge to develop theories and methods to handle the implications of these rapid advances in information and communication technologies for organizations and organizational structures (Jones, Watson, Gardner, & Gallois, 2004; Rice & Gattiker, 2001), but one of the intended gains is a better application of these technologies in order to make it easier and faster to communicate and collaborate.

2.7. CONCLUSION

In this chapter, the main premises of the theory of organizational communication were discussed firstly, primarily in the context of the ongoing evolution of organizations and the important role of communication. Then, a number of key distinctions with respect to organizational communication were discussed, involving levels, purposes, and the degree of formality and its implications for collaboration. At last, the impact of information technology on organizational communication has been discussed, emphasizing the major and deterministic role of IT within the developments of organizational communication. Together, the processes, activities, and developments regarding the theory of organizational communication are central for the understanding of the significance of communication and collaboration within organizations.
3. ORGANIZATIONAL DEVELOPMENTS

3.1. INTRODUCTION

Ever since organized activities have existed, organizing and communicating involve ongoing changes (Harris, 2002). This means that organizations have to adapt to and deal with all kinds of changes in order to continue pursuing its collective goals effectively. This specifically counts for organizations operating in the modern world of today. The fast pace of today’s dynamic environment forces organizations to adapt to these changes by reconsidering its internal structures, processes and relationships to its markets. These changes mean that organizing and communicating processes are also to be changed, in order to reflect these new structures, processes and relationships effectively (Jones, Watson, Gardner, & Gallois, 2004). Today’s environment thus forces organizations to call for dramatically different responses from organizations, including its employees and its organizational structures.

This chapter shapes the context of this research by elaborating the organizational developments that are stated in the problem definition:

- Organizations have to operate in an increasingly complex environment, partly caused by the continuing rise of globalization and global competition (Daft, 2004).
- There is an increasing trend towards a distributed work environment (Dennis & Kinney, 1998; Kakihara & Sorenson, 2002; Perry, O’Hara, Sellen, Brown, & Harper, 2001).
- There is a shift towards a knowledge economy where knowledge and information are getting the primary sources of value creation (Jashapara, 2004; Nurmi, 1998).

These developments are important forces for organizations to continually adapt their organizational structuring in terms of coordination and communication. On the one hand, there is an increasing demand for close communication within organizations, caused by issues of globalization. On the other hand, however, there is an increasing demand for organizations for distributed work. This rather paradoxical trend may cause disruptions in the required intensification of communication. Moreover, these developments occur in a period in which we witness a shift to knowledge and information as organizations’ most important form of capital.

3.2. WORK IS GETTING MORE COMPLEX

The globalization of the world and the advances in IT has brought organizations many advantages such as being able to serve their products and services to one global market, the emergence of worldwide financial markets with corresponding access to external financing and the allocation and relocation of resources and various value chain activities to places that are cheaper and qualitative superior. “Think globally” has become an important slogan for modern firms. However, these developments also mean that the environment for organizations has become increasingly complex and extremely competitive. Work is therefore becoming more complex and requires greater coordination and interaction (Jones, Watson, Gardner, & Gallois, 2004). As such,
companies are searching for the right structures and processes that can help them gaining maximum advantage while minimizing the disadvantages (Daft, 2004).

3.2.1. POSTMODERN ORGANIZATIONS

Postmodernism is applied to a wide-ranging set of developments, and is as a rule used to describe developments in reaction to a preceding era. This ranges from art to architecture and to organization theory as well. In organization theory, postmodernism is a term often used as a reaction to modernism. According to Boje and Dennehy (1993), the postmodern organization may be defined as that comprising a networked set of diverse, self-managed, self-controlled teams with many decentralized centers of coordination that fold and unfold according to the requirements of the tasks. These centers or teams are organized in flat design and consist of employees that are highly empowered and involved in the job. As a result, postmodern organizations are typical organizations that are affected by the increasing complexities that take place in today’s work environment.

3.3. DISTRIBUTION OF WORK

Due to the developments on globalization and the advances in information and communication technologies, the ability, willingness and the necessity to move has become extremely important for both individuals and organizations. Wiesenfeld, Raghuram, and Garud (1999, p. 777) state that the advent of information and communication technologies has enabled organizations and its organizational members to “work together while being spatially and temporally decoupled from one another”, creating a counter-pressure on the cost and environmental impact of travel. According to Kakihara and Sorenson (2002), the trend towards this mobility is a transforming development that influences not only organizations but also our society as a whole. Despite the many potential advantages of these developments, this dispersion of work activities may weaken the ties that bind organizations and their members (Hinds & Kiesler, 1995; Wiesenfeld, Raghuram, & Garud, 1999). After all, these developments may cause disruptions to traditional formal and informal communication channels that depend on physical proximity such as communication in attended meetings, communication conversed in the hallway, and interactions with coworkers sharing the same office space (Fritz, Narasimhan, & Rhee, 1998). As a result, an increasingly common form of work structure nowadays consists of geographically dispersed members that tend to use electronic media to communicate much more than face-to-face communication.

Mobility: Boon or Bane?

“Gone are the days when your organization’s employees had fixed working hours and where office resources were required only inside the office and during the day. Times are changing and organizations are developing a 24x7-work culture. Employees no longer work from nine to five. They can work at any time and from anywhere, and therefore, need the right set of IT resources to help them. This obviously adds a new set of challenges for the IT department, which till now was comfortable with the traditional network infrastructure and its well-established management processes” (Roy, 2007).

(source: www.pcquest.com)
This dispersion and need for mobility may cause interference in terms of the organization’s requirement to maintain a high level of communication (Nurmi, 1998).

3.4. KNOWLEDGE-BASED ECONOMY

The development in computer-, telecom- and Internet technologies has taken a huge leap. The digitization of information and the introduction of revolutionary communication technologies have led to a numerous amount of changes in the way which knowledge is captured, organized, stored, shared and evaluated. Moreover, during the 1980s and 1990s, the ever increasing competition on the global market required firms to adapt knowledge, also referred as “resources and organizational capabilities” in their long-term strategies (Grant, 1996). As such, we are witnessing a shift from the post-industrial economy to a New Economy that is largely based on information and knowledge, and in which knowledge is beginning to be accepted as the capital of the industrial economy of the 19th and early 20th century. This kind of economy is also referred to as a knowledge-based economy (Drucker, 1992). In this economy, knowledge-intensive organizations emerged, in which knowledge is considered as an increasingly important source of wealth creation and competitive advantage for organizations (Donaldson, 2001).

3.4.1. WHAT IS KNOWLEDGE?

Despite many debates ever since the classical Greek era, there is still no single agreed definition of knowledge. From an IT literature and organizational theory literature perspective, some authors address the question of defining knowledge by distinguishing it among a hierarchical view of three definitions: knowledge, information and data (Alavi & Leidner, 2001). Knowledge is not the same thing as data or information, but uses both. Data are simple and absolute facts, figures and raw numbers, information is processed data that have been linked with other data and converted into a useful context for specific use, and knowledge goes a step further as it is a conclusion drawn from the information after it is linked with other information and compared to what is already known.

3.4.2. KNOWLEDGE-BASED THEORY OF THE FIRM

A theory of the firm explains the existence or nature of firms from a certain point of view. In the last two decades of the 20th century, the resource-based theory of the firm has received much attention as an alternative to the traditional market-based perspective of Porter (1980). This resource-based view is an attempt to shift the balance back to the internal aspects of a firm, and promises to explain and understand firms that are dependent on intangible resources. The developments and changes in the accelerated accumulation and availability of knowledge have been closely linked to the emergence of the interest in a knowledge-based approach to the theory of the firm. The assumption of the knowledge-based theory of the firm is that knowledge is the most important resource for realizing competitive advantage (Grant, 1996).
3.4.3. Knowledge-Intensive Organizations

Knowledge-intensive organizations are organizations that claim to produce qualified products and services, where most work is of a complex nature and conducted by a workforce that has a majority of high-educated and qualified workers and where the quality of human capital is the source of competitive advantage (Alvesson, 2001; Bontis, 1998; Starbuck, 1992). More specifically, Swart and Kinnie (2003, p. 62) define a knowledge-intensive firm with an emphasis on:

- The nature and quality of their highly skilled human capital;
- The work processes that create market value through knowledge;
- The deployment of the knowledge involving innovation, initiative and competence building in the provision of modified services.

Starbuck (1992) formally defines knowledge-intensive organizations as organizations in which knowledge has more importance than other inputs. In these organizations, well-educated and qualified employees form a major part of the workforce, and they engage mainly in intellectual work activities (Starbuck, 1992). Examples of knowledge-intensive organizations are law and accounting firms, management, engineering and IT consultancy companies, advertising agencies, R&D units and high-tech companies (Alvesson, 2001; Sveiby, 1992), but even other sectors such as the industrial manufacturing sector has become increasingly steeped in knowledge (Nurmi, 1998). These kinds of organizations create competitive advantage from their human and social capital, and are often characterized by a workforce that has a high degree of empowerment (Lee, 1999).

3.4.4. Particular Implications for Knowledge-Intensive Organizations

In terms of organizational communication implications, knowledge-intensive organizations are organizations that are being affected more than traditional organizations. The nature of its knowledge-based activities requires knowledge-intensive organizations to rely even more on processes of communication than other organizations (Nurmi, 1998; Starbuck, 1992). This is especially the case with informal communication processes (Hinds & Kiesler, 1995). Subsequently, Nurmi (1998, p. 29) argues that, for a knowledge-intensive organization, “a very high level of communication is required to ensure a minimum amount of coordination that will maintain the firm as an integrated entity”. Thus, knowledge-intensive organizations are constantly looking for different ways to communicate within their enterprises.

Communities of practices also play an important role in these informal structures of organizations. A community of practice is a group of people who share information, insights, experiences, and tools about an area of common interest (Wenger & Snyder, 1998). According to Mc Dermott (2000, p. 5), communities of practice are “ideal vehicles for leveraging tacit knowledge because they enable person-to-person interaction and engage a whole group in advancing their field of practice”.

3.5. CONCLUSION

In this chapter, a number of trends are discussed that impair the traditional rules of communication and collaboration. Since coordination of work activities eventually determine the success of an organization, organizations need to accommodate the increasing need of close communicative and collaborative efforts more and more quickly than ever. Searching for and capitalizing on proper and useful IT oriented communication solutions may help organizations to provide such required measures.
4. VIRTUAL WORLDS

4.1. INTRODUCTION

Virtual worlds are getting increasing attention because they characterize the second generation of the World Wide Web, also referred to as Web 2.0. Despite the lack of set standards as to what Web 2.0 exactly means, the phrase Web 2.0 imply a significant change in web usage. According to O’Reilly (2006), “Web 2.0 is the business revolution in the computer industry caused by the move to the Internet as platform, and an attempt to understand the rules for success on that new platform”. Web 2.0 characterizes the shift towards user-generated content and user participation, using the converging technologies of broadband, wireless, computing, video and sound (O’Reilly, 2006). An increasing number of people are exploring the potential of virtual worlds for a variety of applications, most specifically for social networking. The emergence of these social networks in particular enables organizations and its organizational members new ways to communicate and collaborate (Manchester, 2007).

The main purpose of this chapter is to explore the origins, potential and drawbacks of virtual worlds in the light of a potential tool for organizational purposes. However, the chapter starts with an elaboration on new media and communication technologies in general, as an attempt to link the theory of organizational communication to the current rapid developments of organizational communication tools.

4.2. NEW MEDIA AND COMMUNICATION TECHNOLOGIES

Communication is the fundamental process for people to interact. The progress with respect to interactive communication technologies has enabled “individuals, groups, communities, organizations and societies, among other, to exchange information, conduct business, participate in newsgroup discussions, and publish information electronically” (Igbaria, 1999, p. 67). Recent advances in information and communication technologies have provided organizations and in particular its employees the freedom to work from any place and at any time, creating a temporal and spatial dispersion of work activities. The potential of computer-supported social networks, computer-supported cooperative work and other computer-mediated communication technologies such as e-mail and multimedia applications as organizational communication purposes has been discussed many times by academics (Igbaria, 1999; Wellman, Salaff, Dimitrova, Garton, Gulia, & Haythornwaite, 1996; Wiesenfeld, Raghuram, & Garud, 1999). It is thus unimaginable to ignore the complete arsenal of organizational communication technologies nowadays.

4.2.1. MULTIDIMENSIONAL APPROACH

The way in which people interact and communicate within and across organizations is continually changing. All media and communication technologies contain a wide and overlapping range of technical and social capabilities and constraints, and should be considered as ambiguous as they can be interpreted in multiple and possibly conflicting ways in terms of dimensions and attributes (Rice & Gattiker, 2001). Rice and Gattiker (2001, p. 546) also stress the importance of emphasizing new media technologies as multidimensional
typologies, meaning that these kind of technologies may be “perceived, constrained, adopted, used and evaluated in different ways within social and technological constraints, and meaning that “overemphasis or idealization of some characteristics of one medium can de-emphasize and limit perceived as well as actual characteristics of other media”.

### 4.2.2. CHARACTERISTICS

New media and communication technologies consist of four major components (Rice, 1987):

- Computing: allows processing of content and the structuring of communication participation
- Telecommunication networks: allows access and connectivity to many others and to varieties of information across space and time
- Information or communication resources: range from databases to communities of potential participants
- Digitization of content: allows the integration and exchange of multiple communication modes across multiple media and distribution networks

Together, these four components form the basis for communication technologies also referred to as computer-mediated communication (CMC) systems. CMC systems use computers to structure and process information and use telecommunications networks to facilitate its exchange (Rice, 1987).

### 4.3. EVOLUTION TOWARDS VIRTUAL WORLDS

In 1965, Intel co-founder Gordon E. Moore predicted that the number of transistors on a chip would double about every two years, meaning that a doubling of real computing power would occur every two years on average. Up until now, this prediction has been correct. The growth of technology capacity and performance, backed by the assumptions of Moore (also referred to as Moore’s Law), has been one of the main foundations for the developments of new media and communication technologies. This also accounts for the development of virtual worlds. Igbaria (1999, p. 66) defines this evolution as “the advance in technology and the emergence of multimedia standards and the shift to distributed computing and Internetworking providing the raw power for the digital convergence”. In this paragraph, a number of developments are discussed that are considered key developments that contributed to the evolution of virtual worlds. These developments include the early advents of massively multiplayer online role-playing games (MMORPGs) and the more recent developments with respect to Web 2.0.

#### 4.3.1. MASSIVELY MULTIPLAYER ONLINE ROLE-PLAYING GAMES

A MMORPG is a genre of online role-playing video games in which a large number of players interact with one another in a virtual world. The first virtual worlds were text-based, meaning that environments and corresponding events occurring within them were described using words. The introduction of computer graphics enabled virtual worlds to change its main data source into images rather than words. Early MMORPGs include Mazewar (1974) and Habitat (1986). More recently, the popular World of Warcraft (more than 9
million registered users) characterizes the modern MMORPG popularity. In these kinds of games, the concepts of interaction, user participation, communities and economies have begun to emerge as a predecessor for other kinds of virtual worlds.

4.3.2. WEB 2.0 AND THE RISE OF SOCIAL MEDIA

In the line of new media and communication media, an important development is the emergence of social networks. The last few years we are witnessing a shift from the sole use of these traditional communication methods towards a new approach of communication and collaboration using social media (Manchester, 2007; Fetscherin & Latteman, 2007). This development towards Web 2.0 is about combining content, collaboration and rich user experiences that are transforming the Internet from static web pages into a platform for social interaction, creating a new stage of communication and collaboration. This development also underpins the rise of virtual worlds. Virtual worlds support and extend the new stages of communication and collaboration, by providing even higher interaction opportunities. Some people even argue that virtual worlds characterize a post Web 2.0 period, also referred to Web 3D or Web 3.0 (Cascio, Paffendorf, & Smart, 2007; Fetscherin & Latteman, 2007).

4.4. VIRTUAL WORLDS

Virtual worlds have always been closely related to the concept of virtual reality. Virtual reality is a technology that allows a user to interact with a computer-simulated environment. The earliest virtual worlds were not games but generic virtual reality simulators. A key characteristic of virtual reality is the notion of imitating reality.

Benford, Greenhalgh, Reynard, Brown, and Koleva (1998) propose a taxonomy that characterized shared spaces. This is based on the following dimensions:

- **Transportation** refers to the extent to which a group of users and objects leave behind their local space and enter into some virtual space in order to meet with others, or vice versa.
- **Artificiality** concerns the extent to which a space is either virtual-synthetic or real-physical
- **Spatiality** concerns the level of support for fundamental physical spatial properties such as containment, topology, distance, orientation and movement.

Figure 4-1 depicts these relationships. It shows that the degree of spatiality of virtual reality is based on a remote dimension of transportation and a synthetic dimension of artificiality. This means that virtual reality can best be described as a shared space where one leaves the physical world (dimension of transportation) and where in which the environment is generated from computer data (dimension of artificiality). More generally, Figure 4-1 shows the relationship and distinction between reality and virtual reality.
4.4.1. Definition

Virtual worlds come and go and can be interpreted in a great number of ways. But what exactly is a virtual world? There are many definitions available. These include:

- Virtual worlds are computer-generated worlds where people participate using avatars (Jackson, 2007).
- A virtual world is a place where people co-inhabit with other people simultaneously, in which individuals communicate, cooperate and collaborate (Fetscherin & Latteman, 2007).
- A virtual world is a connected community that has game-like immersion and social media functionality without game-like goals. At its heart is a sense of presence with others at the same time and place” (Greenberg, 2007).
- A virtual world is a computer-based simulated environment intended for its users to inhabit and interact via avatars. This habitation usually is represented in the form of two or three-dimensional graphical representations of humanoids (or other graphical or text-based avatars). Some, but not all, virtual worlds allow for multiple users (Unknown, 2007).

All definitions that are mentioned above include some basic elements that are needed to correctly define the concept of a virtual world. The italicized terms above together form the following definition:

“Virtual worlds are computer-generated and connected communities where individuals communicate, cooperate and collaborate via avatars with a sense of presence to be at the same time and place”.

FIGURE 4-1 BROAD CLASSIFICATION OF SPATIAL TECHNOLOGIES (BENFORD, GREENHALGH, REYNARD, BROWN, & KOLEVA, 1998)
There are many different types of virtual worlds, as virtual worlds have been created for many different purposes. As mentioned earlier a common type of a virtual world is the MMORPG. However, virtual worlds have also been built for purposes other than gaming. These purposes include socializing, online community building, education and training (Book, 2004).

Jackson (2007) maps the landscape of virtual worlds into four categories: online game worlds, social network worlds, traditional MMORPGs worlds and free-form virtual worlds. Figure 4-2 depicts this landscaping. The two differentiators between the current differences in virtual worlds are how much time and dedication they require from the user or participant and whether they are recognizable as a game in the traditional sense (i.e. with goals, endpoints, and a winner).

4.4.2. COMMON FEATURES

There are a number of features all virtual worlds have in common. Based on Book and Jackson (2004; 2007), the following characteristics can be distinguished:

- Shared space. Virtual worlds allow many users to participate at once.
- Free-form representation. Virtual worlds allow users to participate using customizable avatars.
- Interactivity. Virtual worlds allow users to alter, develop, build or submit customized content.
• 3D world graphical user interface. Virtual worlds depict space graphically in its own way, and ranging in style. It may simulate real world’s phenomena such as gravity, day/night cycles, travel distances, and picking up objects, wearing clothes, etc.
• Immediacy. Interaction takes place in real-time, using communication mechanisms such as voice, text assembly via menus, and free-text entry.
• Persistence. The existence of virtual worlds continues regardless of whether users are logged in.
• Socialization / community. Virtual worlds allow and encourage the formation of in-world social groups like guilds, clubs, cliques, housemates, neighbors, etc.

4.4.3. Metaverse
In 2007, The Metaverse Roadmap Summit published a report “Metaverse Roadmap: Pathways to the 3D Web. A Cross-Industry Public Foresight Project”, describing their foresight on 3D web development (Cascio, Paffendorf, & Smart, 2007). The term metaverse stems from Neal Stephenson’s 1992 novel Snow Crash. In this novel, Stephenson described the existence of a Metaverse, a user-defined world of general use in which people can interact, play, do business, and otherwise communicate, and where the term avatar was used to describe the virtual simulation of the human form. Cascio, Paffendorf, and Smart (2007, p. 4) define the metaverse as follows: “The metaverse is the convergence of 1) virtually-enhanced physical reality and 2) physically persistent virtual space. It is a fusion of both, while allowing users to experience it as either”.

The concept of the metaverse essentially refers to the embedment of virtualization and 3D tools in our daily lives in all sorts of ways. These technologies will eventually “emerge contingent upon potential benefits, investments, and customer interest, and will be subject to drawbacks and unintended consequences” (Cascio, Paffendorf, & Smart, 2007, p. 4). In their report, they identify four of metaverse scenarios that explore possible future developments, trends and implications in the context of the metaverse: Virtual worlds, mirror worlds, augmented reality and life logging. Of all scenarios, participants in the Metaverse Roadmap report talked most about virtual worlds.

4.5. Second Life
Second Life is an Internet-based virtual world, created by Linden Lab and launched in 2003. Second Life has been inspired by the cyberpunk literary movement, particularly by Neal Stephenson’s novel Snow Crash, which envisioned a future broadly reshaped by virtual and 3D technologies. Second Life enables users to interact with each other through customizable avatars, and provides an advanced level of social networking and interaction. Second Life is often considered as a social networking medium or social virtual world. Social virtual worlds distinguish themselves by presenting a more open-ended experience. Users are not necessarily there to win or play a game, but rather to socialize with other users. Thus, social virtual worlds tend to be less structured by providing some basic building tools, and the ability to host activities and events that revolve around a wide variety of topics. Social worlds really function more as online community centers that use elements of gaming in the service of a larger goal of developing a community (Book, 2004). However, Second Life is not solely a
social network world. Despite the importance of its social aspect, Second Life is more than that. Jackson (2007) refers Second Life to as a free-form virtual world, a platform in which anything imaginable is possible (see Figure 4-2). Everything in Second Life is created and owned by its users, called Residents. Linden Lab provides the necessary preconditions to fulfill these requirements by providing virtual land and by maintaining the world, which is in fact close to what a hosting business does.

As of August 2007, there are approximately 8.5 million users worldwide, and half a million of them logging in weekly. There is an average of approximately 25000 concurrent users that are online anytime. Therefore, Second Life is currently considered to be the flag-bearer of virtual worlds (Cascio, Paffendorf, & Smart, 2007; Jackson, 2007). Nevertheless, it has some notable competitors, including Active Worlds, There, and Habbo Hotel, and to a less extent Entropia Universe, Dot Soul Cyberpark, Weblo.com, Red Light Center and Kaneva. Nevertheless, its main competitors Active Worlds and There.com, which are also well-known and well-established virtual worlds, are still considered to provide less features and functions than Second Life (Fetscherin & Latteman, 2007).

In the following paragraphs, a number of features of Second Life are discussed: Residents and avatars, communication, navigation, economy, real estate, content creation, businesses and organizations and communities.

4.5.1. Residents and avatars

Registered Second Life users are referred to as Residents (a Resident is a uniquely named avatar with the right to log into Second Life, trade Linden Dollars and visit the Community pages), and their appearance is their avatar. This avatar is highly customizable, and may resemble a wide range of characteristics, varying from the person whom they present to something completely creative which does not look humanoid at all.

4.5.2. Communication

Within Second Life, the main method of communication is based on text-based communication. There are two forms of text communication: local chat and instant messaging. Local chatting is mostly used for public conversations between two or more avatars. Local chat is based on proximity, meaning that texts can be “heard” within a certain distance, depending on the degree of loudness one chooses to use (whisper, talk or
shout). Instant messaging is used for private conversations, also between two or more avatars, or between members of a group, and does not depend on participants being within a certain distance of each other. As of August 2007, Linden Lab released its newest version of Second Life including in-world voice capabilities. This type of communication allows avatars to communicate with each other using voice, creating an alternative way for its users to communicate with each other.

4.5.3. Navigation

In Second Life, the basic controls of the avatar are similar to first-person games. The most basic method of moving around is by foot. In order to travel greater distances, avatars can also fly without requiring any special equipment. Subsequently, avatars can use all kinds of transporting vehicles (freely available and for sale), including cars, helicopters, motorbikes and hot-air balloons. Avatars can also teleport directly to a specific location.

4.5.4. Economy

One much-spoken feature of Second Life is its own economy. Second Life is designed to support individuals wanting to buy and sell any product or service imaginable. There are as many opportunities for innovation and profit in Second Life as in the real world. On an average day, one million US dollars are spent within the virtual boundaries of Second Life. Linden Lab introduced a special currency to facilitate these economic activities. This currency is referred to as Linden Dollars (L$). Several online resources allow residents to convert Linden Dollars into US Dollars and vice-versa. Rates fluctuate based on supply and demand, but over the last few years they have remained fairly stable at approximately 250 to 270 Linden Dollars (L$) to the US Dollar.

4.5.5. Real Estate

One key feature of Second Life is the ability to own land. Owning land allow users to build, display, and store any virtual creations. It also allows users to host events and businesses. Linden Lab acts as a landlord by collecting monthly rent (Land Use Fee) for the amount of land one owns. There are many different constructions for buying land, including land auctions and land rental. Subsequently, there are many different sorts of land, including small virtual land parcels on mainland or private islands, entire regions of land and group-owned lands.

4.5.6. Creation and Copyright

One of the most distinguishing characteristics of Second Life is that its users create most of the content. The users represented by their customizable avatars are just one example of such content. Second Life's advanced 3D modeling tool allows users to create anything imaginable to use, trade or sell. That means residents can build anything they can imagine. This is the primary source of activity in this virtual economy. Moreover, users can use various tool outside Second Life and upload them into world when ready. All creations in Second Life are protected by exclusive rights over the content creator (intellectual property). The content creator can mark an object as “no copy”, which means that no copies of it may be made by others, “no mod”, which means that others may not modify the items' characteristics, and “no trans”, which means that the current owner may not
give it to another. Second Life also includes a scripting language called Linden Scripting Language (LSL). This tool is used to add advanced characteristics to many objects within Second Life ranging from rules of physics to autonomous running ecologies.

### 4.5.7. Communities

The advent of information and communication technologies have enabled people to communicate with each other about any topic they like. More easily than ever before, anyone of us with a specific interest in a particular topic, can find his/her way on the Internet to find fellow people sharing the same interests, ideas, tasks or goals on a range of platforms, such as discussion boards, social networking sites and other types of platforms. Each platform allows its own level of interaction and participation. In this context, Second Life is just another medium on the medium spectrum that allows groups of people with similar interest to interact with each other, but by using the specific characteristics that Second Life has to offer as a medium. Linden Lab indeed considers Second Life as a global community (Linden Lab, 2007): “We are a global community working together to build a new online space for creativity, collaboration, commerce, and entertainment. We strive to bridge cultures and welcome diversity. We believe in free expression, compassion and tolerance as the foundation for community in this new world.”

One particular feature of Second Life is its accessible ability to host an event. A dedicated events calendar is available, containing hundreds of daily events. These events range from small social events such as a birthday party to large corporate events where new products or strategies are revealed. For example, there is a fast growing community of educators that conduct a wide variety of educational activities and initiatives. Many universities, colleges, high schools and other educational institutions are exploring new ways to use Second Life as a platform for teaching, learning and researching. Many active educators on Second Life claim that the environment of such a virtual world platform are suited to act as a virtual classroom, a laboratory, a library or a simulator in the context of all kinds of educational purposes.

### 4.6. Business Potential

The features and characteristics of Second Life, as mentioned in the previous paragraph, may foster businesses activity and business impact. New opportunities drive interest in such virtual worlds, and strategy professionals from all areas of real life businesses have recently been brainstorming about bringing their market to Second Life, yet they are still investigating how to gain business value out of it (Jackson, 2007). In 2007, Forrester published a market overview called “The Real Business of Virtual Worlds”, in which they recommend businesses and organizations to keep a close watch on the ongoing development of virtual worlds (Jackson, 2007, p. 9): “Start building a framework for assessing business value. Strategy professionals should view virtual worlds as one of the applications that will fit into a future business toolkit for communications (both internal and external), media ecosystem support, and perhaps direct revenue generation. Knowing when the tipping point between novelty and viable platform occurs will be of key importance. Start assessing what
virtual worlds could do for your business and create a framework to help evaluate emerging opportunities in this space”.

As of today, Second Life has encouraged the creation of extensive business activities that often cross the boundaries between real life and virtual life business activities. These include the creation of Second Life in-worlds businesses, the creation of legally registered companies that were previously solely in world, and vice versa, in-world participation of real life companies and organizations. The focus of this study lies on the last aspect, which focuses on the potential of the corporate usage of virtual worlds.

4.7. CONCLUSION

This chapter described the developments of virtual worlds from a number of perspectives, ranging from new media and communication technologies to its evolution over the past years. In addition, it described the characteristics that virtual worlds in general have, and the characteristics that Second Life has as a specific virtual world technology. Based on these developments and characteristics, a synthesis about the potential of virtual worlds for corporate usage is described. In the end, the potential of the technology of virtual worlds, and particularly its potential impact for organizational purposes such as communication and collaboration, forms one of the enabling triggers for this research.
5. MEDIA RICHNESS THEORY

5.1. INTRODUCTION

Organizations are faced with a great deal of existing and emerging communication technologies, leaving them anxious about the numerous choices on the one hand and desirous about the potential benefits of all these advanced technologies on the other hand. The choice of a specific medium affects the process of communication and collaboration between people (Sällnäs, 1999). Media choice theories are theories that explain the effectiveness and appropriateness of a particular technology within the context of a particular task environment (Dennis & Kinney, 1998; King & Xia, 1997), by postulating that media differ in their capacity to carry data that is rich in information (Daft & Lengel, 1986; Short, Williams, & Christie, 1976). The purpose of this chapter is to explain and review one widely known and widely used theory: media richness theory. (Daft & Lengel, 1986; Daft, Lengel, & Trevino, 1987). More specifically, this chapter focuses on the identification of its advantages as well as its deficiencies.

5.2. RATIONAL CHOICE PERSPECTIVE

The research with respect to media choice theories has been dominated by a rational choice perspective that focuses on task-technology interaction, meaning that “media choice is objectively determined by the congruence between the inherent characteristics of the media and the requirement of the tasks” (King & Xia, 1997, p. 878). The rational choice perspective is represented by two theories: social presence theory (Short, Williams, & Christie, 1976) and media richness theory (Daft & Lengel, 1986; Daft, Lengel, & Trevino, 1987). Social presence theory established the foundations of many media choice theories. The main idea is that the social effects of a particular medium are primarily caused by the degree of social presence. Social presence is the sense of awareness of the presence of an interaction partner. This theory emphasizes on the psychological aspect of the usage of communication media: the choice of a particular technology depends upon the ability of the media to convey the nature of the relationship between the communicators (Yu, 1997).

5.3. THEORY ASSUMPTIONS

Media richness theory takes a similar but extending rational approach of social presence theory. Over the years, it has become one of the most widely known and widely used media choice theories. The fundamental idea of media richness theory is that a specific task has to fit with a specific technology (task-technology fit). This is based on two main premises: Media differ in “richness” and performance improves when managers use richer media for equivocal tasks (Daft & Lengel, 1986). In short, media richness theory attempts to model media use, by arguing under what conditions each media would be most effective (Dennis & Kinney, 1998). In other words, the central proposition for media richness theory as proposed by Daft and Lengel (1986) is: Does the use of richer rather than leaner media leads to better performance on high equivocality tasks?
5.3.1. Original Formulation

Media richness theory states that media vary in their capacity to convey information cues, (Daft, Lengel, & Trevino, 1987), and that media choice therefore depends on the matching of media richness to the characteristics of task analyzability (King & Xia, 1997). This means that a particular technology has to fit with a particular organizational task, in order to be effective. As such, the media richness theory is mainly based on two aspects: information task and media richness.

Information Task

Daft and Lengel (1984; 1987) postulate that organizations carry out two particular information tasks: the interpretation of the external environment and the coordination of internal organizational activities. By recognizing the complexity of the social system of an organization, both aspects are argued to be required in an information processing structure. In this way, reduction of ambiguity is considered as a defining characteristic of a media with a high degree of media richness. Daft and Lengel (1984; 1987) categorized information tasks based on uncertainty and equivocality. “Tasks of uncertainty lack sufficient information and could be executed by obtaining and sharing the needed information”, while “equivocal tasks are those which has multiple and possibly conflicting interpretations of the available information” (Dennis & Kinney, 1998, p. 257). Elaborating on the concept of equivocality, Daft and Lengel (1984; 1987) state that a particular information processing system is required to reduce ambiguity. The degree of equivocality is thus best to be defined as the extent in which there is confusion, disagreement and lack of mutual understanding, causing multiple interpretations about matters. Thus, the degree of performance is determined by the correct usage of richer media for equivocal task and leaner media for non-equivocal tasks.

Media Richness

Media richness theory consists of a framework that ranks communication media in terms of their "richness". In this context, "richness" refers to a medium’s material capability to convey certain types of information. More specifically, media richness refers to the ability of the media to change human understanding, overcome different conceptual frames of reference, or clarify ambiguous issues in a timely manner (Daft & Lengel, 1986; Daft, Lengel, & Trevino, 1987). Therefore, where the mode of communication provides significant understanding it is considered "rich"; otherwise, it is considered "lean". Daft, Lengel, and Trevino (1984; 1987) distinguishes four different criteria to classify the degree of media richness of communication media. These are depicted in Figure 5-1.

<table>
<thead>
<tr>
<th>CHARACTERISTIC</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immediacy</td>
<td>The opportunity to provide timely feedback.</td>
</tr>
<tr>
<td>Multiple cues</td>
<td>The capability to convey meanings through cues like body language, voice and tones.</td>
</tr>
<tr>
<td>Language variety</td>
<td>The capability to tailor the message by using different words to increase understanding.</td>
</tr>
<tr>
<td>Personal source</td>
<td>The extent that a person can convey their feelings.</td>
</tr>
</tbody>
</table>

*FIGURE 5-1 DETERMINANTS OF MEDIA CHOICE (DAFT & LENGEL, 1984; DAFT, LENGEL, & TREVINO, 1987)*
Communication media possessing more features of the criteria that are mentioned above would rank higher on the media richness scale compared to one possessing less. As such, face-to-face communication is believed to be rich, while electronic mail is considered lean. Rich media are supposed to better facilitate understanding ambiguous and equivocal messages, while leaner media are better for low equivocality tasks.

**Relationship between media richness and information task**

If rich media are supposed to better facilitate understanding rather than lean media, rich media should better be able to handle equivocal tasks. In other words, if there is a greater the equivocality in a communication task, the richer the media that is required. The media richness theory can therefore be used to explain the selection of communication media within organizations. Thus, organizations can benefit when employees recognize the purpose of a particular technology and evaluate the appropriateness of a technology within the context of the organizational task environment. Figure 5-2 depicts this task-technology relationship and thus the basic proposal of media richness theory: the nature of the information task (x-axis) and the characteristics of communication media as represented by the degree of media richness (y-axis) (Daft & Lengel, 1984).

![Figure 5-2 Relationship Between Media Richness and Task Equivocality (Daft & Lengel, 1984)](image)

Fundamentally, the media richness theory provides a useful framework for the effectiveness of certain media types by matching media characteristics to the needs of organizational information processing tasks (Dennis & Kinney, 1998). However, there are a number of inconsistencies and flaws regarding the theory of media richness theory. The next paragraph elaborates a number of these issues.
5.4. SHORTCOMINGS

Despite its widely name among academics, media richness theory has also been criticized widely. These critics include the inconsistent empirical findings, missing characteristics, lack of adaptability to modern communication technologies and the lack of attention to the experience of users.

Over the years, numerous studies have been performed testing media richness theory. King and Xia, and Yu (1997; 1997) accumulated a great deal of cases that either show some support or fail to meet the prediction of the media richness theory. Together, these cases fail to provide consistent and convincing empirical support for the media richness theory.

The basic proposal of media richness, which comprises a relationship between information task and media richness, is a good starting point for one who is willing to study media choice in organizational settings. However, media richness theory defines both information task and media richness from a rather limited point of view. As such, task characteristics are primarily based on the notion of equivocality, implicating that a task is mainly based within a range between simple and complex. Furthermore, technological characteristics are primarily based on the degree of richness that a certain technology has to offer with a limited distinction between rich and lean.

The assumptions of media richness theory offer a starting place for additional research to “determine if the relationship between equivocality and media richness holds in settings where new media are implemented” (Daft, Lengel, & Trevino, 1987, p. 364). One has to recognize that the concept of media richness was developed at a stage when modern communication technologies were not such popular means of communication as they are nowadays. In the original media richness theory, characteristics are largely based on a rather biased and limited perspective of face-to-face communication. Thus, it is clear that the original conceptions of media richness theory are not able to adequately convey the changing forms of organizational communication processes and the use of modern information technology of today.

In one of their papers, King and Xia (1997) investigate the effects of the individuals’ experience on one’s evaluations of the appropriateness of a medium in a particular organizational context. They state that “understanding the relationship between technology experience and technology appropriateness can be significant to effective management of emerging information technologies” (King & Xia, 1997, p. 877). One of their conclusions is that an individual’s media experience is an important but underemphasized factor in understanding and studying technology choice and use (King & Xia, 1997).

5.5. TASK-TECHNOLOGY FIT

Up until now, this chapter discussed the main premises of media richness theory. After that, a number of shortcomings of this theory were discussed. In the line of these shortcomings, Dennis and Kinney (1998, p. 258) added, “Media richness theory argues how managers should use media and not how managers actually chose media”. With this statement, they criticize that the central proposition of the theory is not met, due to
the emphasis on media use rather than media choice. For this particular study however, the approach of examining media usage is exactly what needs to be researched. After all, the central research question of this study includes the research in the effectiveness of a particular technology, and in this way, one basic premise of media richness theory that can be applied is its rational perspective on a task-technology fit. This essentially means that individuals make a rational choice of the media that best fulfill their task requirement (King & Xia, 1997).

5.6. CONCLUSION

Media choice theories, and more specifically media richness theory, can help organizations to gain insight in 1) determining the choice for a particular medium and 2) determining the effectiveness of a particular medium. The significance of these potential insights become visible by acknowledging the rapid emergence of advanced information technologies combined with the growing organizational dependence on such technologies. However, taking the inconsistent empirical evidence, the missing characteristics for media richness and task equivocality and the bias against modern communication technologies, one could question the limited dimensionality of the media richness theory, particularly for modern communication technologies.

At the same time, capitalization on the application and use of new communication technologies is not longer for the privileged few. Instead, all modern organizations have to deal with these technologies, as organizations are increasingly facing demands for improved communication processes (Dennis & Kinney, 1998; Tucker, Meyer, & Westerman, 1996). As such, media richness theory should mature and adapt to these developments in order to be applicable in organizational media choice issues. Using the fundamental premise of media richness theory, which comprises its perspective on the fit between task and technology as a starting point, is a sound initiative to apply media richness theory in a modern setting. Building upon this initiative may help placing media choice theories into the light of new communication media technologies.
The second part of the study contains the applied research methodology. First, the research approach will be discussed, including the rationales for this thesis’ qualitative approach, the choice for applying interviewing methods and its design and implementation. Second, the actual interviews with several expert users of Second Life are discussed. Goal of these interviews is to gain insight in the capabilities of this technology and to gain insight in which way such a medium is used. Third, the actual interview with LogicaCMG employees are discussed, in order to gain insight about their work activities, their tasks, and the problems that they face.
6. **RESEARCH APPROACH**

6.1. **INTRODUCTION**

The goal of this thesis is to seek answers regarding the effectiveness of virtual worlds in a corporate context, by studying its potential and effectiveness for communication and collaboration purposes in a corporate setting. In this context, effectiveness is measured theoretically by the means of task-technology theories and its assumptions with respect to the fit between task and technology. Thus, the research question essentially refers to the task-technology fit that is decomposed in the medium characteristics of Second Life on the one hand and the task characteristics of a particular group of LogicaCMG employees on the other hand. Moreover, the experience and knowledge of both groups are also important issues (King & Xia, 1997; Yu, 1997), and thus taken into account of the research design.

This chapter elaborates on the actual research methodology of this research. First, it starts by explaining the reasoning for a qualitative approach and the focus on case study research. Second, the design and development of qualitative interviewing methods are discussed. Third, the design of two specific case studies are discussed, containing data collection and measurement approach.

6.2. **QUALITATIVE RESEARCH APPROACH**

Scientific research can roughly be divided into two types of research: quantitative and qualitative research. Quantitative research focuses on a systematic scientific investigation of phenomena. The objective of quantitative research is to develop mathematical models, theories, and hypotheses. This type of research often involves analyses of numerical data. Qualitative research on the other hand involves the use of qualitative data, such as interviews, documents, and participant observation data, to understand and explain phenomena (Myers M., 1997). Neill (2007) summarizes the characteristics of qualitative and quantitative research. This summary is depicted in Figure 6-1.

<table>
<thead>
<tr>
<th>QUALITATIVE RESEARCH</th>
<th>QUANTITATIVE RESEARCH</th>
</tr>
</thead>
<tbody>
<tr>
<td>The aim is a complete, detailed description.</td>
<td>The aim is to classify features, count them, and construct statistical models in an attempt to explain what is observed.</td>
</tr>
<tr>
<td>Researcher may only know roughly in advance what he/she is looking for.</td>
<td>Researcher knows clearly in advance what he/she is looking for.</td>
</tr>
<tr>
<td>Recommended during earlier phases of research projects.</td>
<td>Recommended during latter phases of research projects.</td>
</tr>
<tr>
<td>The design emerges as the study unfolds.</td>
<td>All aspects of the study are carefully designed before data is collected.</td>
</tr>
<tr>
<td>Researcher is the data-gathering instrument.</td>
<td>Researcher uses tools, such as questionnaires or equipment to collect numerical data.</td>
</tr>
<tr>
<td>Data is in the form of words, pictures or objects.</td>
<td>Data is in the form of numbers and statistics.</td>
</tr>
<tr>
<td>Subjective: Individuals’ interpretation of events is important, e.g. uses participant observation, in-depth interviews.</td>
<td>Objective: Seeks precise measurement and analysis of target concepts, e.g. uses surveys, questionnaires.</td>
</tr>
</tbody>
</table>
Qualitative data is more 'rich', time consuming, and less able to be generalized. Quantitative data is more efficient, able to test hypotheses, but may miss contextual detail.

Researcher tends to become subjectively immersed in the subject matter. Researcher tends to remain objectively separated from the subject matter.

FIGURE 6-1 FEATURES OF QUALITATIVE AND QUANTITATIVE RESEARCH (NEILL, 2007)

In Information Systems (IS) research, there has been a general shift away from technological to managerial and organizational issues, creating an increasing interest in the application of qualitative research methods (Benbasat, Goldstein, & Mead, 1987; Myers M., 1997). In the case of this research, such a qualitative approach is taken, due to the explorative nature of the study and the corresponding and matching features of qualitative research, as stated by Neill (2007).

6.3. CASE STUDY RESEARCH

A case study research method is used in this study. This method enables us to gain understanding complex issues, by enabling an emphasized analysis of a number of cases and the relationship between these cases (Soy, 1997). Moreover, case study research allows addressing qualitative data that is collected in this explorative study (Yin, 2003). Two cases are investigated based on interviewing techniques for collecting the required data: 1) The medium characteristics, and experience and knowledge of Second Life users and 2) the task characteristics, and experience and knowledge of LogicaCMG employees. The focus will be on the comparing and interpreting of results by the means of cross-comparing and cross-interpreting the results of both case studies. According to Verschuren and Doorewaard (2000), case study research is particularly beneficial for practice-oriented research like this research.

FIGURE 6-2 FRAMEWORK OF APPLIED RESEARCH DESIGN AND METHODOLOGY
The main deliverable of the first case study is to identify the characteristics with respect to Second Life, derived from expert Second Life users (see Chapter 8), and the main deliverable of the second case study is to apply the characteristics with respect to mobile workers at a particular IT services organization, derived from LogicaCMG employees (see Chapter 9).

In the end, an investigation of this kind eventually has two main deliverables that form a theoretical basis for further research: 1) possible insight in theoretical effectiveness of Second life for business communication purposes and 2) possible insight in the application of media choice premises on modern communication technologies. The research design including its separate variables is illustrated in Figure 6-2. More generally, this figure visualizes the research methodology for this study as a whole.

6.4. INTERVIEWING: DESIGN AND DEVELOPMENT

One particular method for collecting qualitative empirical data is by the means of research interviews. Interviews are structured conversations between a researcher and a subject who is identified as a potential source of information that are held to understand the world from the subjects’ point of view, to unfold the meaning to peoples’ experiences and to uncover their lived world prior to scientific explanations (Kvale, 1996; Verschuren & Doorewaard, 2000). During such an interview, the interviewer initiates and controls the conversation to obtain the information that is relevant to a particular research question.

6.4.1. RATIONALE FOR INTERVIEWING

The explorative nature of this research requires the collection of consequently rich and ambiguous data. Interviews provide this kind of in-depth information; interviews gather a broad range of information from a few numbers of subjects (whereas quantitative research methods gather the opposite: a small amount of information from many subjects). The purpose of such a research method is to explore the knowledge, opinions and beliefs of the respondents, in order to gain more insight and to gather a ‘large picture’ of a certain topic. Moreover, the interviews can also be used as a validation tool. Both case studies can be used to validate the literature overview, and both case studies can be used as a cross-examination tool (Soy, 1997).

6.4.2. SAMPLING

Sample sizes can be justified based on the aims of the study, the specific methodological approach and the claims that one wishes to make about his or her findings. It may be too small to support certain claims, or it may be too large to permit sufficient in-depth analysis that is required in qualitative studies. In the context of an explorative and qualitative based study, a sample of interviewees does not necessarily need to be representative or random. However, a clear justification is needed for the choices that are made. Determining an adequate sample size in qualitative research is ultimately a matter of judgment and experience, meaning that an appropriate sample size for a qualitative study is one that adequately answers the research question (Marshall, 2006). In practice, the number of required subjects usually becomes clear as new categories, themes or explanations stop emerging from the data, also referred to data saturation (Marshall, 2006; Thomson, 2007).
In this case, sample size depends heavily on the rigid time schedule of this particular graduation project. The consequence of this dependence is a relatively low sample size. Therefore, this requires an attentive approach on the processes of data collection, data analysis, and data interpretation, as a compensation for the low sample size.

6.4.3. Method of Seven Stages

Kvale (1996) introduces a method of seven stages in designing and implementing an interview study. These stages are discussed and depicted in Figure 6-3. Please note that this method can best be used as a general approach for the chosen research methodology.

<table>
<thead>
<tr>
<th>STAGE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thematizing</td>
<td>Thematizing refers to an extensive evaluation of the purpose of study, meaning that the questions of “why” and “what” need to be answered, before addressing the question of “how”. In this study, the questions of “why” and “what” are stated and elaborated in the problem definition. Subsequently, a qualitative and explorative approach including interviewing techniques is chosen to address the “how” of the problem definition.</td>
</tr>
<tr>
<td>Designing</td>
<td>The overall design for the study, including the later stages of analyzing and reporting, should be planned before the interviewing begins. The structure of this particular study is based on some general thesis guidelines (Olie, Olffen, &amp; Berends, 2004) and a particular method of seven stages in designing and implementing an interview study (Kvale, 1996).</td>
</tr>
<tr>
<td>Interviewing</td>
<td>The interviewer is the instrument in this type of evaluation. This type of “instrument” can be affected by factors like fatigue, personality, and knowledge, as well as levels of skill, training, and experience. The selection of the interviewees is primarily based on their expected knowledge, skills and experiences. Nonetheless, it has been taken into consideration that an interview session can always be affected by unforeseeable external factors.</td>
</tr>
<tr>
<td>Transcribing</td>
<td>This step prepares the material from the interview for analysis. The interviews are recorded with the use audiotapes and hand-written notes.</td>
</tr>
<tr>
<td>Analyzing</td>
<td>Analysis of the transcriptions is based on specifically finding information regarding the characteristics, and the user experience and knowledge of both case studies.</td>
</tr>
<tr>
<td>Verifying</td>
<td>In qualitative studies, an important way of verifying findings or establishing validity is to actually take transcripts or analyzed results back to some of the interview participants, and ask them if this is really what they meant. Moreover, this study also focuses on cross-comparing the individual case studies with each other, in order to validate both interview results as well as the theoretical background that form the fundament of this study.</td>
</tr>
<tr>
<td>Reporting</td>
<td>Reporting. If the evaluation report is to effectively communicate findings, it must a) be in a form that meets some accepted scientific criteria, b) meet ethical standards such as confidentiality and respect, and c) be readable and usable for its intended audiences.</td>
</tr>
</tbody>
</table>

6.5. Data Analysis

Together, both case studies should give more insight in the theoretical effectiveness of Second life for business communication purposes. Methodically, this approach is based on an analysis of the potential or opportunities of Second Life on the one hand and on the shortcomings or requirements of LogicaCMG employees on the
other, and eventually on the degree of connection between these perspectives. Later, these individual analyses are weighed against each other in a task-technology comparison (see Chapter 10).

6.6. CONCLUSION

This chapter elaborated on the applied research approach of this study. Mainly, this study is a highly qualitative and explorative one, requiring a methodologically approach that conforms to this qualitative and explorative nature. Moreover, this chapter has described the processes that are required to be executed in order to address the central research question of this research correctly, and therefore forms an important backbone of this thesis in general.
7. **METHODOLOGY OF CASE STUDIES**

7.1. **INTRODUCTION**

In the previous chapter, we discussed the rationale for the applied case study research during this study. In this chapter, we elaborate on the methodology of both case studies, with a specific emphasis on the methods of data collection, the measuring of the task and technology characteristics, and the construction of the key interviewing questions.

7.2. **CASE STUDY: SECOND LIFE**

The first part of this research is to identify the medium characteristics and individuals’ experiences and knowledge about Second Life. Second Life can currently be regarded as “the virtual world of virtual worlds”, and its generalizability to virtual worlds as such makes it a sound case study for this research. Chapter 4.5 already elaborated on some distinctive characteristics of Second Life.

7.2.1. **DATA COLLECTION**

In order to gain more insight in Second Life, a search for Second Life users has been performed. Requests for participating were sent through the means of personal contacts and through the means of posting call-ups at popular communities, blogs and forums with respect to Second Life on the Internet. 10 Second Life subjects were willing to participate (N=10). Their involvement with Second Life range from personal use to a more business-oriented usage of Second Life, and all considered themselves to have a significant degree of experience with Second Life. Seven subjects individually took part in an interview at various locations in The Netherlands. Three subjects took part in an online interview at Second Life. Each interview started with some general announcements:

- A short introduction background information of the interviewer.
- The purpose of the study, its linkage with the master program Business Informatics.
- The qualitative and explorative nature of the study.
- The applied research methodology.
- Some general announcements such as the length of the interview, the request for recording the interview (none of the interviewees declined this request) and the notion that questions can be asked anytime during and after the interview.

The format and structure of questioning was based on a semi-structured interview approach (sometimes referred to as interview guide approach), a widely used format for qualitative interviewing. In this approach, the interviewer has a general outline of topics and issues to be covered. Observation and interview data from the seven real life interviews is collected in the form of notes and audio taped interviews. The interviews were transcribed immediately after the interview, and each interview transcript contributed as a review to further refine and improve the interview questions in an iterative manner. This analysis allows the providing of a
higher quality of data (Thomson, 2007). The online interviews that took place on Second Life were recorded automatically by using the chat log function, and thus provided a detailed transcript of the interview on the fly. In general, the subjects claimed to understand the purpose of the interview, and that the questions were well understood and convenient to answer and that the questions fit their knowledge and experience. On average, a single interview took 35 minutes to complete.

7.2.2. Measuring Media Characteristics, and User’s Experience and Knowledge

The respondents were asked to talk about Second Life in the context of its characteristics and in the context of the respondents’ personal experiences and knowledge of Second Life. Figure 7-1 depicts the list of issues and questions that were used during the interview as a guideline.

<table>
<thead>
<tr>
<th>KEY QUESTIONS DURING SECOND LIFE USER INTERVIEW SESSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>What was your initial impression of Second Life?</td>
</tr>
<tr>
<td>What are the main purposes of Second Life for you?</td>
</tr>
<tr>
<td>Which activities do you perform on Second Life (describe an average visit on Second Life)?</td>
</tr>
<tr>
<td>Can you give an example of an activity in which Second Life outperforms its equivalent real life activity?</td>
</tr>
<tr>
<td>What is your experience with Second Life in comparison with other communication technologies, such as MSN and Skype?</td>
</tr>
<tr>
<td>Which features of Second Life do you consider most valuable?</td>
</tr>
<tr>
<td>What are, according to your own opinion, the most unique characteristics of Second Life?</td>
</tr>
<tr>
<td>To what extent do you agree with the statement that Second Life is often considered as a social networking medium?</td>
</tr>
<tr>
<td>Do you consider Second Life more appropriate for formal or informal communication purposes?</td>
</tr>
<tr>
<td>Does the visual 3D-aspect of Second Life give you an advantage in some way? If so, to what extent?</td>
</tr>
<tr>
<td>How do you think about social processes within Second Life in comparison with real life social processes? Think about certain rules of conduct, conveying of your feelings or etiquettes that we all know from real life experiences (hierarchy, trust, norms, etc.)</td>
</tr>
<tr>
<td>What are the differentiating characteristics of Second Life to other communication technologies?</td>
</tr>
<tr>
<td>What is your experience with one-to-many communication in Second Life, such as talking in groups or talking in events?</td>
</tr>
</tbody>
</table>

FIGURE 7-1 KEY QUESTIONS DURING SECOND LIFE USER INTERVIEW SESSIONS

The abovementioned list of key questions is derived from the performed literature overview, and especially from media richness theory and its task-technology assumption. With respect to the specific task-technology assumption of media richness theory, this case is about identifying the technical characteristics of Second Life. Thus, the questions can best be considered as a decomposition and mix of the main topics: media characteristics, user’s experience, and user’s knowledge. Hence, all questions essentially refer to one of these topics. These main topics were kept in mind during the interviews, and the interviewees were asked to constantly place each question in the light of these topics. With respect to media richness theory in general, the determinants of media choice as proposed by Daft, Lengel, and Trevino (1984; 1987) are taken into account and conveyed in the data collection process: immediacy, multiple cues, and personal source (see Figure 5-1). Note that these questions were not always asked literally. Instead, the interviewer kept track
about sticking to the outlined topics (randomly indeed) and guided the process as such. The interview took place in a conversational and rather informal manner.

7.3. **CASE STUDY: LOGICA CMG**

The second part of this research consists of gathering data concerning the task characteristics, experiences and knowledge of a relatively homogeneous group of employees within Logica CMG. Logica CMG is an international IT services organization that focuses mainly on business consulting, systems integration and IT and business process outsourcing solutions across diverse markets including telecoms and media, financial services, energy and utilities, industry, distribution and transport and the public sector. It considers itself as a prominent and advanced IT and management consulting firm, and has nearly 40,000 employees worldwide and is active in 41 countries. It offers services for a broad range of domains of industries. In 2006, reported revenues were up 45.3% against 2005 to £2,665.2 million (2005: £1,834.1 million). Operating profit increased by 29.7% to £155.8 million. Logica CMG is headquartered in the United Kingdom, and is listed on the London Stock Exchange, Euronext Amsterdam, and traded on the Xternal List of the Nordic Exchange in Stockholm. The Netherlands is one of the key markets in which Logica CMG operates. Other leading markets include the United Kingdom, France and the Nordics.

7.3.1. **LOGICA CMG IN THE NETHERLANDS**

Logica CMG in the Netherlands provides services in the following markets: Public Sector, Financial Services, Energy, Utilities & Telecom, and Industry, Distribution and Transport. Each of these divisions has its own specialized and market specific business consultancy group.
Recently, a new division Centers of Excellence has been created based on a number of special competences (also referred to as value propositions): Enterprise Resource Management, HRM & Payroll Solutions, Management Consulting and ICT Management. These competences are not limited to a specific market. Instead, they cross all divisions and can thus be regarded as interdivisional competences. Figure 7-2 depicts this elaborated organization structure of LogicaCMG in the Netherlands.

Generally, four types of employees can be distinguished. These include managers, (business and management) consultants, specialists and supporting staff. The rationale for choosing consultants during this research is that they are most confronted and affected by the organizational developments that are discussed in Chapter 2. The issue of mobility and working at geographically dispersed environments in particular form the reason for choosing this type of employees.

As a knowledge-intensive organization, LogicaCMG Netherlands has several initiatives with respect to knowledge management, quality assurance and collaboration efforts. For example, the Group Knowledge Management (KM) Program is created to encourage knowledge sharing and collaborative working within LogicaCMG. Other initiatives include the existence of various knowledge, competence centers, research centers, and special interest groups.

LogicaCMG in the Netherlands has locations in Alkmaar, Amstelveen (headquarters), Arnhem, Eindhoven, Groningen, Hoofddorp, Leeuwarden, Maastricht, Nieuwegein, Rijswijk and Rotterdam.

7.3.2. DATA COLLECTION

This research is performed at LogicaCMG. Invitations were sent through the means of a call up with the help of a principal management consultant. His senior experience in this work field, and his involvement in this research project, leads to the ability to recommend useful potential candidates among his acquaintances for this particular case study. This sample strategy is also referred to as a judgment sample or a snowball sample (Marshall, 2006), the latter example referring to the sample group appearing to grow like a rolling snowball. Using his network in the organization, six subjects were willing to participate (N=6). They are all consultants with a high level of expertise in business and management advisory issues and problems on the crossroads of business and IT.

All subjects individually took part in an interview at various office locations of LogicaCMG within The Netherlands. Each interview started with some general announcements:

- A short introduction background information of the interviewer.
- The purpose of the study, its linkage with the master program Business Informatics.
- The qualitative and explorative nature of the study.
- The applied research methodology.
• Some additional announcements such as the length of the interview, the request for recording the interview (none of the interviewees declined this request) and the notion that questions can be asked anytime during and after the interview.

The format and structure of questioning was based on a semi-structured interview approach (sometimes referred to as interview guide approach), a widely used format for qualitative interviewing. In this approach, the interviewer has a general outline of topics and issues to be covered. Observation and interview data from six interviews is collected in the form of notes and audio taped interviews. One interview was not recorded, due to technical problems with the audio recorder. Instead, the data of this interview is solely based on handwritten notes. The interviews were transcribed immediately after the interview, and each interview transcript contributed as a review to further refine and improve the interview questions in an iterative manner. In general, the subjects claimed to understand the purpose of the interview, and that the questions were well understood and convenient to answer and that the questions fit their knowledge and experience. On average, a single interview took 45 minutes to complete.

7.3.3. MEASURING TASK CHARACTERISTICS, AND EMPLOYEE’S EXPERIENCE AND KNOWLEDGE

The interviewees were asked to talk about their work activities at LogicaCMG as a business consultant or management consultant. In addition, they were asked to express their opinion about the role of communication within their daily activities. The results of the first case study are therefore taken into account as an initial approach and as a categorization of the key questions. Figure 7-3 depicts the questions that were used as a guideline. Please note that this guideline of questions is based on and extended upon the list of identified characteristics of the first case study.

<table>
<thead>
<tr>
<th>KEY QUESTIONS DURING LOGICACMG USER INTERVIEW SESSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is your job description and how would you describe your job?</td>
</tr>
<tr>
<td>Do you to a certain extent degree with the following organizational developments? (Pose three main developments)?</td>
</tr>
<tr>
<td>How important is communication within the context of your daily work activities?</td>
</tr>
<tr>
<td>Face-to-face communication is often considered as a rich form of communication. Do you agree?</td>
</tr>
<tr>
<td>Which communication forms do you use most? Please elaborate on these communication forms.</td>
</tr>
<tr>
<td>How does networking play a role in your work activities as a consultant? How do you experience these informal processes? How do you maintain your network?</td>
</tr>
<tr>
<td>What do you think about the notion of spontaneity, accessibility, serendipity and do you think LogicaCMG offers sufficient preconditions to promote these social components?</td>
</tr>
<tr>
<td>What do you think about LogicaCMG’s organization structure? To what extent does the organization promote the notions of culture/identity/unity within and between your business unit/competence?</td>
</tr>
<tr>
<td>How would you define collaboration? How does LogicaCMG define collaboration? Do the definitions between you and LogicaCMG match?</td>
</tr>
<tr>
<td>Which tools do you use to promote your collaborative efforts?</td>
</tr>
<tr>
<td>Is there a relationship between collaboration and communication, networking and socializing, and community building?</td>
</tr>
</tbody>
</table>
In the context of the knowledge-intensive characteristics that LogicaCMG is considered to possess, does LogicaCMG promote collaboration within and between its divisionalized organization structure and does LogicaCMG involve and engage their employees in these activities?

FIGURE 7-3 KEY QUESTIONS DURING LOGICACMG USER INTERVIEW SESSIONS

These questions were not always asked literally. Instead, the interviewer however kept track about sticking to the outlined topics (randomly indeed). The interview took place in a conversational and rather informal manner.
PART THREE: RESULTS AND ANALYSES

After having collected the required qualitative data elements, analysis takes place. Having gathered the required information of both case studies, we analyze the interconnection between the task and technology, which is mainly based on an approach that builds upon and extends media richness theory. By doing so, more insight is expected to be obtained in the relationship between technical and task characteristics, in such a way that it ultimately can support and address the central research question.
8. **ANALYSIS: SECOND LIFE**

8.1. **INTRODUCTION**

This chapter analyses and discusses the results of the interview sessions of Second Life users. The main deliverable of the first case study is the identification of a number of categories with corresponding characteristics of the medium. These categories and characteristics are discussed in this chapter.

8.2. **IDENTIFIED CATEGORIES**

Each of the interview transcripts was analyzed after the completion and transcription of the interviews with the Second Life users. During this analysis, the following questions were first taken in consideration:

1. Reviewing the transcript, is there any trend in a particular opinion that can be revealed?
2. Does the subject give consistent answers on the posed questions?
3. Does a particular statement of a subject correctly answer the preceding question of the interviewer?
4. Which particular statement covers which topics (the characteristics of Second Life and the respondents’ personal experiences and knowledge of Second Life) best?

After that, a search for a resemblance of statements of the interviewees was conducted. As such, certain characteristics could be discovered. After that, these characteristics were categorized into central themes that are considered suitable in the context of this research. In the end, this resulted in the differentiation of three main categories: communication, networking and socializing, and community building.

<table>
<thead>
<tr>
<th>COMMUNICATION</th>
<th>NETWORKING AND SOCIALIZING</th>
<th>COMMUNITY BUILDING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct interaction</td>
<td>Bridge geographical gaps</td>
<td>Events</td>
</tr>
<tr>
<td>High degree of social presence</td>
<td>Grapevine-like conditions</td>
<td>Personal interpretability of medium</td>
</tr>
<tr>
<td>Real life reflection</td>
<td>Spontaneity and accessibility of interaction initiatives</td>
<td>Sharing experiences</td>
</tr>
<tr>
<td>Congruence of various communication technologies</td>
<td>Easiness and randomness of meeting (new) people</td>
<td>Engagement and involvement</td>
</tr>
</tbody>
</table>

**FIGURE 8-1 IDENTIFIED TECHNOLOGY CHARACTERISTICS**

Figure 8-1 depicts the three identified categories, with their individual characteristics. These three categories form the basis for the main concepts of collaboration. In this paragraph, each of the three categories is firstly discussed in the following paragraphs. Subsequently, the concept of collaboration will be discussed as a congruence of these three categories.
8.2.1. COMMUNICATION

Second Life is a multi-interpretable medium. Some emphasize the creative capabilities of the medium, while others emphasize more on the 3D-modeling architecture of the medium. However, they all agree that Second Life is a tool that is primarily built upon communication. This is in line with the interactive and communicative character that virtual worlds are considered to have in common (Book, 2004; Cascio, Paffendorf, & Smart, 2007; Fetscherin & Latteman, 2007). As the current “virtual world of virtual worlds”, Second Life can be regarded as a platform in which communication also forms the fundamental building block. The emphasis on communication is shaped by the following characteristics: direct interaction, a high degree of social presence, identification of own avatar and the congruence of various communication technologies.

DIRECT INTERACTION

Second Life is a tool for direct and interaction and synchronicity. Since it is a real-time multi-user environment, most of the activities are conducted real-time, including its interaction initiatives. This characteristic allows people to overcome the imperfection of place (and of time, when concurrent). One subject referred to this by stating, “People are actually there when I see them. Compare this with using e-mail, where it may take hours or even days for a response, for all sorts of reasons, such as crossing geographical time zones” when asked to describe a unique feature of Second Life.

HIGH DEGREE OF SOCIAL PRESENCE

Second Life delivers a high degree of social presence. Most of the interviewees experience a degree of awareness and presence, yet they are not sure why. When asking to recall the initial impression of Second Life, one interviewee responded: “the notion of presence that can only be matched by face to face communication, it is as if people are physically together in a space watching each other into the eyes”. The visual aspect of Second Life is something all interviewees are enthusiastic about: “people tend to hang around in a physical representation of reality. Nobody stays in an empty chat box, but on an empty island on Second Life, there is still something left to explore”.

REAL LIFE REFLECTION

Richer communication and interaction is realized through the reflection of the identification of a user’s own avatar. One interviewee responded with: “I am exactly one year old at the moment”, when asked how much experience he had with Second Life. He referred to the age of his online avatar, from the perspective of his avatar, using the notion of ‘I’, instead of something like ‘my avatar’. Essentially, he identifies his avatar as being himself. In addition, issues such as trust, etiquette and norms play a role in this reflection. Interviewees recognize some social processes at Second Life being quite similar to real life social processes (“You can’t just walk away from a conversation” and “unlike instant messaging tools such as Live Messenger, one would less likely to act strange. I think this is caused by the appearance of your avatar”).
CONGRUENCE OF VARIOUS COMMUNICATION TECHNOLOGIES

Second Life offers a variety of communication methods, such as chat, instant messaging and voice chat, making this communication tool a congruence of various communication technologies. "Second Life is an integration of several media. However, it does not make these separate media obsolete. This integration of media into a new medium is an addition to the media spectrum rather than a replacement".

8.2.2. NETWORKING AND SOCIALIZING

Networking and socializing initially refer to the communication and interaction capabilities that are discussed in the previous paragraph. This category is enforced by a number of characteristics that help promote networking and socializing initiatives. These include bridging geographical gaps, grapevine-like conditions, spontaneity and accessibility of interaction, and the easiness and randomness of meeting (new) people. By comparing these characteristics in the formality dimension of communication (Kraut, Fish, Root, & Chalfonte, 1992), one should find that the degree of scheduling, spontaneity, pre-specification, conventionality and rule-boundedness corresponds best with the informal side of the formality dimension. Thus, the emphasis of the notion of communication and interaction lies on its informal characteristics. According to the interviewees, Second Life is indeed more a social communication tool rather than a communication tool in general.

BRIDGING GEOGRAPHICAL GAP

Second Life is a tool that can bridge the imperfections of the dimension of place. When asked to give an example of a particular situation in which Second Life outperforms its equivalent real life activity, one interviewee stated that “one of my friends on Second Life lives on the other side of the world, too far for me to visit him on a regular basis; using this medium is a good alternative to keep in touch”. Bridging geographical gaps is related to direct interaction; it is a function from direct interaction.

GRAPEVINE-LIKE CONDITIONS

Second Life is a place where communication and interaction occur on a regular basis. Like in real life, most of these communication processes are informal (Kraut, Fish, Root, & Chalfonte, 1992). One interviewee, active in the IT-services domain and with knowledge of a great variety of organizations, made a distinction in grapevine communication between small organizations and larger organizations: “in small organizations, there is no shortage in informal communication as employees see and know each other anyhow. At larger organizations, employees sometimes do not speak and sometimes do not even know with one another. For these organizations, it might be helpful to compensate this shortage by meeting each other virtually, for example, something that ABN AMRO is doing at the moment”.

SPONTANEITY AND ACCESSIBILITY OF INTERACTION

Responding to the question “do you consider Second Life as a social networking medium?”, one interviewee reflected this and also the other interviewees thoughts by answering: “yes of course, take the people out of Second Life, and keep nothing left, no concept, no game play, no script, no scenario, nothing. It’s all about the people, and that particularly makes Second Life a social environment”. Other interviewees generally stated
that Second Life gives a reason to communicate and offers the required preconditions in that line to simplify these social processes.

EASINESS AND RANDOMNESS OF MEETING (NEW) PEOPLE
According to most of the interviewees, Second Life is a place where meeting people is much easier than meeting people using other communication technologies. Some interviewees even argued that Second Life offers even better preconditions for this randomness in comparison with real life. Hierarchical rules tend to be less important in Second Life. Moreover, the factor of coincidence in randomly meet new people plays an important role. Thus, this notion is considered an important characteristic of Second Life in comparison with other communication tools.

8.2.3. COMMUNITY BUILDING
Humans participate in a large number of different social and networks ranging from personal to work-related group structures. It often consists of individuals that share something common, such as a specific competence or interest. Such gatherings of individuals are sometimes called communities. The maintenance and enhancement of such communities is also referred to as community building. The advances of information and communication technologies have enabled people to build and maintain community relations more easily than before. More specifically, Book (2004) identifies community building as one distinguishing purpose of virtual worlds. The interviews revealed a number of topics that together facilitate and ultimately form this category. These include events, personal interpretability of medium, sharing experiences, and engagement and involvement.

EVENTS
On Second Life, anyone could host an event quite easily. At the same time, anyone could join an event quite easily as well. When the interviewees were asked what they think about events, and how they experience these events, they all agreed more or less that events play an important factor in Second Life for community building, and that events support the social characteristics of the medium in the sense that events facilitate people to come together, also meaning that events can help popularize the usage of Second Life. One interviewee, who runs a business for marketing and business development on the crossroads of real world and virtual worlds, considers events as a good opportunity to bring together people with similar interests and to overcome the imperfection of place and thus save travel costs. Another interviewee underlined the importance of events: “Second Life is a 24/7 economy with many concurrent users. There are hotspots that have a lot of traffic, but due to the vastness of the grid, there are also many empty places on the grid. Like in real world, people tend to cluster in groups. Therefore, events are terribly important”.

PERSONAL INTERPRETABILITY OF MEDIUM
Second Life is often considered as a social networking medium. Nevertheless, many tend to have their own interpretation of this medium, according to an individual’s specification of interest. Some indeed use Second Life primarily as a social communication tool, while others regard Second Life to be “a platform for doing
business” or as a “developer platform”. One interviewee even noted that Second Life is a concept without goals, while another took a rather objective view by stating that Second life is a congruence of different aspects that includes all interpretations of its users, and as such forming a true “second life”.

**Sharing Experiences**

Community building is about creating and maintaining certain relationships. The ability to share experiences is an important aspect in order to align ideas, skills, practices and visions between members of a community. Directly or indirectly, almost every interviewee referred to some degree of sharing experiences. For example, one said: “the ability to talk about your work at a place that actually is your work is an ideal situation”. Another interview noted the willingness of people on Second Life to support each other: “people tend to help each other out because Second Life is a rather new medium”.

**Engagement and Involvement**

Building and maintaining a community is all about the ideal of democracy and the empowerment between groups of individuals. Active engagement and involvement are critical preconditions to facilitate community development and to achieve a synergy between individuals within a certain community. This is in line with the upcoming rise of social media within organizations, a development in which employees are becoming more and more empowered into all sorts of next-generation collaboration activities (Manchester, 2007). One example that an interviewee posed in one of the interviews, was his enthusiasm about the ability to instantly change the environment on Second Life. This subject has conducted research in conducting virtual meetings on Second Life, and argued that the ability to instantly change a meeting room based on the goal of a meeting can be very useful. For example, he stated, “a creative brainstorm session requires a different entourage than a formal business meeting”.

**8.3. Collaboration**

In the context of the analysis of the interview results, collaboration can be regarded as a congruence of communication, networking and socializing, and community building. The rationale for this particular approach is as follows.

First, communication in general is the fundamental activity that enables collaboration. Second, networking and socializing are important enablers for collaboration. Although Kraut et al. (1992) state the importance of communication for collaboration; they also state that informal communication processes in particular are important. Without communication, they state, collaboration would undoubtedly not occur. Informal communication such as networking and socializing builds relationships among people, and form the basis of trust that is required for people to collaborate with each other. Third, community building is related with collaboration in a way that the goal of both community building and collaboration is to achieve a common goal. In this context, collaboration is the process that enables community building. If collaboration is a congruence of communication, networking and socializing, and community building, it can also be regarded as
a congruence of (some of) its characteristics. Figure 8-2 depicts this relationship between the three identified categories and between the concepts of collaboration.

8.4. CONCLUSION

In this chapter, we identified and discussed three main categories: communication, networking and socializing, and community building. With respect to communication, Second Life offers new ways to communicate in an environment with characteristics that can be reflected to the real world. With respect to networking and socializing, Second Life offers distinguishing informal characteristics. With respect to community building, virtual worlds in general offer preconditions that can help people to build and maintain community relations. At last, the concept of collaboration is elaborated in this chapter, as a congruence of the three identified categories.
9. **ANALYSIS: LOGICACMG**

9.1. **INTRODUCTION**

This chapter analyses and discusses the results of the interview sessions of LogicaCMG employees. The main deliverable of this case study is to apply the identified categories of the first case study in the context of the task characteristics of LogicaCMG consultants, and to identify corresponding characteristics. These characteristics are discussed in this chapter.

9.2. **APPLIED CATEGORIES**

Similar to the first case study, each of the interview transcripts were analyzed after the completion of the interviews. Like the first case study, the following general questions were taken in consideration during this analysis:

1. Reviewing the transcript, is there any trend in a particular opinion that can be revealed?
2. Does the subject give consistent answers on the posed questions?
3. Does a particular statement of a subject correctly answer the preceding question of the interviewer?
4. Which particular statement covers which topics (the task characteristics of LogicaCMG employees and the respondents’ personal experiences and knowledge of their work processes) best?

The analysis of this particular case study is based on the deliverables of the first case. The reason for this is that the first case study is performed in order to identify characteristics that virtual worlds such as Second Life may offer, whereas the second case study is performed in order to analyze to what extent the characteristics of this technology might offer in the context of the potential shortcomings of daily work activities of consultants at LogicaCMG. As such, the emphasis during the interviews with the consultants lies on the identification of challenges they may face within their daily work activities.

<table>
<thead>
<tr>
<th>COMMUNICATION</th>
<th>NETWORKING AND SOCIALIZING</th>
<th>COMMUNITY BUILDING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultancy is ‘People work’</td>
<td>Consultancy is networking</td>
<td>Scope and bordering</td>
</tr>
<tr>
<td>Traditional communication methods</td>
<td>Serendipity</td>
<td>Identity and culture</td>
</tr>
<tr>
<td>Emphasis on face-to-face communication</td>
<td>Dispersed work activities</td>
<td>Knowledge sharing</td>
</tr>
</tbody>
</table>

**FIGURE 9-1 IDENTIFIED TASK CHARACTERISTICS**

Figure 9-1 depicts these categories and their corresponding characteristics. These characteristics form the main task characteristics of LogicaCMG consultants, and are thus applied during this part of research.
9.2.1. COMMUNICATION

Human and social capitals form the core of knowledge-intensive activities such as consultancy work (Swart & Kinnie, 2003). In these environments, communication is considered important to ensure that organizational activities can be executed efficiently (Nurmi, 1998). LogicaCMG is such an organization.

CONSULTANCY IS PEOPLE WORK

Consultancy is people work. It is about “identifying customer needs by talking to people”, about “advising on complex organizational issues” and about “finding solutions to organizational processes”. It is also about organizational transitions, also referred to as change management. When asked to describe their function as a business or management consultant, most interviewees indeed included the notion of “working with people”. Two interviewees added the current issues around communicative issues that might influence their performances. One noted that “having to deal with two separate environments, one at the customer and one at LogicaCMG, makes communication a critical issue”, while another stated that “at the moment, the aspect of communication is one of the bottlenecks within the organization. There is a lot of unnecessary miscommunication due to the decentralized and divisionalized organization structure”. Clearly, communication is such an important aspect that any issue of miscommunication may result in dissatisfaction among employees as well as a loss in competitive advantage.

TRADITIONAL COMMUNICATION METHODS

At LogicaCMG, three main communication methods are used in daily work activities: face-to-face communication, telephone and e-mail. Each of these methods has its own characteristics. To a lesser extent, the interviewees use other available communication tools such as Office Communicator, conference calls and Microsoft Live Meeting. One interviewee acknowledged a trend towards an increasing use of Office Communicator: “when working at home or another location, Office Communicator is really valuable for me. Taking a required relationship between sender and receiver into consideration, it is a fantastic tool to use in my work activities”. When asked about their preferred choice of communication tool, most interviewees responded that this choice depends on various situational aspects such as task complexity. When one interviewee was asked to give his opinion on the consensus that face-to-face communication is a very rich form of communication, he responded: “I disagree. While face-to-face surely is rich in communication, it greatly depends on the type of conversation, with whom and how this conversation takes place. The situation determines the usefulness”.

EMPHASIS ON FACE-TO-FACE COMMUNICATION

Despite their array of available communication methods, face-to-face communication is considered the most fundamental one. The same interviewee who acknowledged the trend towards increasing use of Office Communicator, also noted on the precondition that initial contact should be established: “…taking a required relationship between sender and receiver into consideration…” This is also backed by another subject, who pointed the importance of face-to-face communication as a required initial contact to generate a basis of trust and synchronization. When asked about face-to-face communication in the context of its accessibility, one
subject noted: “I agree that a face-to-face conversation is the best form of communication. However, it is often not an option due to the travel distances that I have to overcome. There are some substitutions such as conference calls, but they simply don’t conform to face-to-face communication”.

9.2.2. NETWORKING AND SOCIALIZING

In an organizational environment, one has to rely on his or her colleagues. Networking and socializing form fundamental aspects of informal communication processes, and informal communication processes are at the same time fundamental processes in modern organizational environments such as LogicaCMG (Kraut, Fish, Root, & Chalfonte, 1992; Daft, Lengel, & Trevino, 1987).

CONSULTANCY IS NETWORKING

According to the interviewees, the role of networking is important for various reasons. One interviewee argued, “LogicaCMG is an organization where one needs to know one another in order to get things done”. Another subject said, “While networking is not present in the formal processes, it is nevertheless extremely important to function within the organization and to achieve organizational goals”. When asked how they maintain their (colleague-to-colleague) networks, most interviewees referred immediately to a set of arrangements such as business unit meetings, division meetings, location meetings, special interest groups and monthly birthday dinner events. While these events are mainly considered as valuable moments, some interviewees identified a downward trend on these arrangements. Two senior business consultants stressed the importance of the social aspects of these arrangements, but at the same time one recognized that “this social component has been decreasing lately, I remember times where there was much more participation in for example special interest groups”, while another experiences colleagues not attending meetings due to high travel distances.

SERENDIPITY

Another discussed phenomenon is the power of serendipity. Serendipity is the effect by which one coincidentally discovers something fortunate, especially while looking for something entirely else. In an organizational setting, this can be promoted or facilitated by creating the preconditions for spontaneous and random encounters between people, through the means of events and other (social) activities. Most interviewees agreed that serendipity is an important phenomenon for expanding their networks and for creating new business opportunities. One consultant even came up with the notion of serendipity itself: “it is important to create preconditions that facilitate moments of serendipity”. This same person continued: “unfortunately, these moments are insufficiently facilitated by LogicaCMG”. In this line, another interviewee noted: “the work environment of LogicaCMG doesn’t sufficiently offer reasons to generate ideas. My ideas come from the outside of the organization”. This person considered this lack of facilitation as “a missed opportunity for LogicaCMG”.
**Dispersed Work Activities**

The divisionalized and decentralized organization structure of LogicaCMG combined with its mobile workforce has a number of implications on networking and socializing initiatives. One consultant compared his previous employer with LogicaCMG: “at my previous employer, I worked at the same office with the same people, day in and day out. There, it was easy to find and to address a colleague when required. At LogicaCMG however, things are completely different. My direct colleagues from my business unit are located at Location X. I live in Location Y and therefore I usually work at that particular location. Here, it is far more difficult to find and address a colleague when required”. Later, he stressed, “The informal or social component drops out due to the dispersed work activities at the organization”. Other interviewees also regarded the dispersed work activities and the divisionalized and decentralized organization structure as a cause that prevents one colleague to bump on one another.

**9.2.3. Community Building**

LogicaCMG is an organization that provides IT services and solutions in a number of industries. These industries are subdivided as follows: Public Sector, Financial Services, Energy, Utilities & Telecom, and Industry, Distribution, Transport. Each division has its own organization structure. Recently, a new division Centers of Excellence has been created based on a number of special competences (also referred to as value propositions): Enterprise Resource Management, HRM & Payroll Solutions, Consulting and ICT Management (see Figure 7-2). Apart from these formal organization structures, there are more informal organization structures, also referred to as communities of practices. These knowledge structures are influential arrangements and allow organizations to learn and to use their available knowledge effectively (Wenger & Snyder, 1998).

**Scope and Bordering**

People tend to be mostly involved in the proximity of their direct work environment and corresponding work activities. As such, a specialist within the domain of HRM & Payroll Solutions will probably be most involved with the people, the culture and the identity within that particular domain. The interviewees confirmed this rationale by stating, “I know these people best” and “based on my work I am to a certain extent involved outside of my business unit, but to be honest, this is not significant, not much is done to bring together these different groups of people”. And despite the notion of many initiatives such as business unit meetings, division meetings, location meetings, special interest groups and monthly birthday dinner events, one consultant still sensed a lack of interdivisional initiatives that can promote contacts outside the direct scope and borders of one’s daily activities and processes.

**Identity and Culture**

To clarify this lack of involvement, the interviewees brought up the notions of identity and culture. One interviewee complained about the lack of identity within LogicaCMG. “Many people internally and externally tend to ask questions concerning the identity of LogicaCMG. The problem is that competences and divisions are unstructured. There is no community based on competences or divisions whatsoever”. When asked to
what extent LogicaCMG promotes the notions of culture and identity within and between the various business units and competences, one consultant noted, “Culture and identity is inadequately present at LogicaCMG. You hear people complaining that they are always on the same projects and that they have been doing this or that project for more than two years”.

**Knowledge Sharing**

Community building is about sharing knowledge and skills. At LogicaCMG, knowledge sharing is facing the forces of dispersed work activities and the intra-divisional scope of the divisions within LogicaCMG. While most interviewees noted the importance of knowledge sharing, they also realized the difficulties of this, taking the organization structure of LogicaCMG in consideration. One consultant specifically noted, “Knowledge at LogicaCMG is present in the heads of the individual employees, and is not being shared”. When talking about the intranet as a knowledge-sharing technology, another complained: “to be honest, LogicaCMG has disappointed me a little bit in this. I expected much more professionalism at an organization such as LogicaCMG”, in which he referred to the bad performance of the organizational intranet. In terms of methods to improve knowledge sharing initiatives, one interviewee noted the lack of innovative efforts that promote knowledge sharing and self-initiated the notion of communities: “LogicaCMG is having a conservative vision, a narrow focus, with respect to innovative concepts such as communities. Using communities in a corporate context might improve things”. In the light of personal initiatives into communities as a valuable addition to one of his hobbies, one consultant noted, “In my business unit, there are no initiatives concerning community initiatives. This negatively affects the business and the motivation of employees. Why allowing communities in my personal life, but not having this in corporate context?”

**9.3. Collaboration**

In the previous chapter, collaboration is discussed as congruence from communication, networking and socializing, and community building. During the LogicaCMG user interviews, the consultants were asked to shed their light about this relationship. This approach is not only used to gain more insight in the issues around collaboration in the specific organizational context of LogicaCMG, it also functions as an expert validation of the relationship between these characteristics. When asked to define collaboration, all interviewees more or less agreed on the following definition: “collaboration is working together to achieve common goals”. This corresponds with the formal definition that is formulated by Hardy, Phillips, and Lawrence (2003), earlier in this study (Chapter 2.5).

Subsequently, the interviewees were asked to place collaboration in the context of communication, networking and socializing, and community building. First, the interviewees considered communication to be the basic fundamental block for collaboration. After all, collaboration is conducted through the means of communicative processes (Hardy, Phillips, & Lawrence, 2003). Without communication, collaboration will be impossible. Second, one subject stressed the importance of “knowing you informal network”, meaning that the knowledge of the competences of people within your network determines the fundamentals of collaborative
efforts. Having this knowledge, one is able to collaborate with the right person when required. In other words, a network is a precondition for successful collaboration. Third, some interviewees referred to the concept of communities when asked to talk about collaboration. Communities are regarded as groups of people who share similar ideas and interests. In these special interest groups, collaboration is encouraged in order to gain more knowledge about a particular interest. Thus, they indirectly signify the importance of actively participating in communities in order to promote collaborative efforts. At the same time, when asked if LogicaCMG adequately supports and promotes collaboration, the interviewer sensed a feeling that much more can and must be done to promote collaboration initiatives.

9.4. CONCLUSION

The investigation of the interview transcripts with respect to LogicaCMG employees, as discussed in this chapter, is based on the main outcomes of the first case. The analysis focused on the possible shortcomings that employees within a knowledge-intensive environment might perceive. By comparing such an analysis with the characteristics that virtual worlds might offer, one could match both analyses in order to address the central research question of this study. This task-technology comparison takes place in the next chapter.
10. TASK-TECHNOLOGY COMPARISON

10.1. INTRODUCTION

In this chapter, the individual analyses of both Second Life and LogicaCMG user interviews are compared and brought together. Based on a task-technology comparison, more insight is expected to be gained in terms of the theoretical effectiveness of Second Life on LogicaCMG. Eventually, these results can be generalized into “the effectiveness of virtual worlds on knowledge-intensive organizations”, which in essence comprises the central research question of this study.

The individual analyses are discussed based on the categorization of communication, networking and socializing, and community building. However, this chapter starts with an explanation of the applied method of comparison.

10.2. METHOD OF COMPARISON

As stated earlier, the interviews of both case studies were conducted from different perspectives. In the context of organizational communication, Second Life can be regarded as one of the many enabling technologies that have certain capabilities that may potentially help organization to perform better, whereas LogicaCMG is one of the many knowledge-intensive organizations that are in constant search for technologies that may help streamline their organizational processes (Tucker, Meyer, & Westerman, 1996).

Consequently, the Second Life user interviews were firstly conducted to identify the characteristics of this particular technology. Together, these characteristics produced a set of three main categories. Then, the LogicaCMG user interviews were conducted to identify task characteristics of a group of particular knowledge workers, using the identified categories of the first case study in order to enable and assure that the context of both case studies lie within the same scope of research.

This comparison focuses neither on a pure task-oriented or technology-oriented approach. By taking an exclusive task-oriented approach, one neglects the applied methodology in case study sequence. Conversely, by taking an exclusive technology-oriented approach, one neglects the common problem of overlooking the needs and preferences from a users’ point of view. Instead, the comparison is a process that progresses outward from a central point to a twofold task and technology perspective. This central point is shaped by the identified categories. In essence, these categories form the starting point of this comparison, as these categories ultimately shape the domain of this particular research.

10.3. TASK-TECHNOLOGY FIT FOR COMMUNICATION

Communication is an important and a fundament aspect for consultancy work (Nurmi, 1998; Swart & Kinnie, 2003). At the same time, communication forms the backbone of social media tools such as Second Life. Hence, the combined characteristics with regard to communication form an important evaluation for the final task-
technology comparison. Figure 10-1 depicts this comparison. It shows an overlap of all task and technology characteristics.

<table>
<thead>
<tr>
<th>Technology Comparison Based on Communication</th>
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<tbody>
<tr>
<td>Task</td>
</tr>
<tr>
<td>Consultancy is ‘People Work’</td>
</tr>
<tr>
<td>Traditional Communication Methods</td>
</tr>
<tr>
<td>Emphasis on Face-to-Face Communication</td>
</tr>
<tr>
<td>Direct Interaction</td>
</tr>
<tr>
<td>High Degree of Social Presence</td>
</tr>
<tr>
<td>Real-life Reflection</td>
</tr>
<tr>
<td>Congruence of Various Communication</td>
</tr>
<tr>
<td>Technologies</td>
</tr>
</tbody>
</table>

- Consultancy is ‘people work’. This task characteristic refers to the importance of communication in consultancy work. Consultancy is about interacting and tuning with people. The degree of interaction directness, physical presence, and the notions of trust and identification that are strongly interconnected with (initial) real-life arrangements are crucial preconditions for effective and efficient communication processes. Second Life offers such an environment, respectively by the characteristics of direct interaction, high degree of social presence and real-life reflection.

- Second Life offers characteristics of communication technologies that correspond with the mostly applied communication methods within LogicaCMG. The integration of these individual communication technologies sustain familiarity, the ability to switch quickly between the different communication methods might improve adaptability in different situations, and might add synergetic value due to its integration of methods.

- One important and distinguishing characteristic of face-to-face communication is its high degree of directness and social presence. While it does certainly not meet the face-to-face standards as of yet, Second Life does offer an environment (with combined aspects of direct interaction, high degree of social presence and real-life reflection) that supports this better than other technologies.

The task-technology analysis based on communication emphasizes an important premise of virtual worlds. This includes the simulation of the real world as realistic as possible. All task activities are characterized by a high degree of social interaction processes. Second Life offers characteristics that can together address these important social aspects of consultancy work, whilst allowing one to be physically decoupled from one another.

Furthermore, Second Life offers a congruence of communication tools that are used separately otherwise. Integrating these individual but familiar methods might increase effectiveness (i.e. the ability to switch instantly to another communication method) and add synergetic value (i.e. the application of a new communication technology next to the other used types of technologies). In this respect, it increases the choice of communication tools. On the other hand, there is no guarantee that a congruence of various communication methods integrated in one communication platform actually helps improve overall effectiveness and increase synergetic value. For example, this technology has steep system requirements and has a steep learning curve. The motives for choosing between face-to-face, e-mail, and telephone may differ completely from the motives for choosing Second Life as a substitute for these methods. In other words, text chat, instant messaging and voice chat (respectively substituting face-to-face, e-mail and telephone) do not have the similar characteristics that are important for media choice, and more importantly, these communication methods do not approach the same quality of their counterparts. Yet, like other social media communication tools, Second Life concentrates on ways of communicating that is fundamentally different to
traditional methods of communication (Manchester, 2007). This enables the experimenting with different ways of how people communicate, and the creation of new opportunities for internal communication. Considering this, one could argue that a virtual world such as Second Life is indeed more than ‘just’ another communication technology in the media spectrum.

10.4. Task-Technology Fit for Networking and Socializing

Communication is a basic process of consultancy work. Most communication processes are related to informal communication processes such as networking and socializing (Kraut, Fish, Root, & Chalfonte, 1992). Figure 10-2 depicts the task-technology comparison based on the category of networking and socializing.

<table>
<thead>
<tr>
<th>Task</th>
<th>Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultancy is Networking</td>
<td>Bridge Geographical Gaps</td>
</tr>
<tr>
<td>Serendipity</td>
<td>• Networking is an activity that is present in a variety of arrangements, meetings and gatherings of all kinds. The art of networking is primarily characterized by its informal interactions. Second Life is a place where such informal communication and interaction activities can occur on a regular basis. These grapevine-like conditions might therefore help improve network related actions. Furthermore, networking is an important business skill that depends on one’s skill and ability to act well in social interactions. Due to the combination of its networking and socializing characteristics and its basic communication characteristics, Second Life offers network-friendly environment in which people can easily engage in interactions and in which people easily can meet new people.</td>
</tr>
<tr>
<td>Dispersed Work Activities</td>
<td>• Unforeseeable opportunities often originate from informal and unexpected social interactions. These interactions are promoted and facilitated by all technology characteristics that are related to networking and socializing. In other words, these characteristics can be regarded as an incubator for creating opportunities that may eventually lead to coincidentally discover something fortunate (serendipity). As such, there is a close connection with the abovementioned networking characteristics.</td>
</tr>
<tr>
<td></td>
<td>• LogicaCMG is characterized by its dispersed work activities. From this perspective, Second Life is a tool that can bridge such geographical gaps, by enabling employees to interact remotely and thus creating the preconditions for an occasional sense of bumping on one another.</td>
</tr>
</tbody>
</table>

The results show that the most important idea in this category include networking and its enabling preconditions for serendipity. The ingredients for successful networking activities depend greatly on social aspects, and it seems that virtual worlds are capable of providing a broad pallet of these social preconditions. These are significant results of this study that concerns the topic of networking and socializing. These results may not be that unsurprisingly after all, considering the social genre that Second Life is often categorized in. It seems that these task requirements correspond well with the technological characteristics of Second Life. Conducting tasks that are related to the creation of new ideas are specifically necessary in knowledge-intensive environments, in which knowledge is the core asset of an organization. The individual task-aspects with respect to networking and socializing influence each other in a way that facilitates new and unexpected relationships and ideas, and vice versa, placing the emphasis on the dynamics that take place in informal communication processes.
From a task point of view, another important characteristic of Second Life in the context of corporate usage is its ability to bridge geographical gaps. A note should be taken into consideration that is that certainly not all work activities can be supported by Second Life. Instead, this is limited to the informal aspects of tasks. From a technology point of view, this aspect can help promoting the other characteristics: the ability to bridge physical distances facilitates grapevine communication, and these informal communication processes are promoted through the means of the degree of spontaneity and accessibility of interaction initiatives, and in the end, all these characteristics support the process of meeting new people. Thus, the task-technology perspective with respect to bridging dispersed work activities is a prominent aspect that may act as a building block for the other task categories.

10.5. TASK-TECHNOLOGY FIT FOR COMMUNITY BUILDING

Within knowledge-intensive organizations, communities of practice play an important role. After all, communities of practice maintain and develop the social capital of an organizational, in terms of creating new knowledge, leveraging tacit knowledge, and sharing tacit and explicit knowledge (Wenger & Snyder, 1998).

Three characteristics that shape the guidelines for community building include scope and bordering, identity and culture, and knowledge sharing. Figure 10-3 depicts the task-technology comparison based on the aspects of community building.

<table>
<thead>
<tr>
<th>Task</th>
<th>Technology</th>
<th>Events</th>
<th>Personal Interpretability of Medium</th>
<th>Sharing Experiences</th>
<th>Engagement and Involvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope and Bordering</td>
<td>● Second Life can help support and promote the effectiveness of organizational communities through the means of events. Events at Second Life enable the virtual gathering of people on a particular topic. The environment of Second Life where anyone could easily host an event can be used to promote collaboration between scoped and bordered (divisionalized) organization structures, to promote identity and culture according to the specific needs of a particular community, and to promote all kinds of knowledge sharing initiatives.</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Identity and Culture</td>
<td>● Second Life can improve knowledge and information sharing practices by offering empowering preconditions that allow people to exchange and derive knowledge in very different contexts. This aspect of placing people on an equal footing is a distinguishing characteristic of Second Life and social media tools in general.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Knowledge Sharing</td>
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</tbody>
</table>

FIGURE 10-3 TASK-TECHNOLOGY COMPARISON BASED ON COMMUNITY BUILDING

One negative implication of people that are primarily performing work activities within the proximity of their direct work activities is that these people might sometimes get rather rigid perspectives on how things are being done. Other consequences include lack of development in identity and culture, and knowledge sharing initiatives. Especially for knowledge-intensive organization, where much knowledge is available across the whole line of organization, this limits out of the box thinking. The task-technology comparison, depicted by Figure 10-3, shows that Second Life can help support community building through the means of events. Like real-life events, events at Second Life can be hosted on all kinds of topics for all kinds of reasons, without forcing people to physically come together. All tasks with regard to community building can be promoted by
events. Events trigger and allow people to participate actively in the development of particular topics of interests, shape the preconditions for people to come together, and allow people to interact and share ideas within (and between) the boundaries of their preferred topics of interests. These processes eventually contribute to the development of communities.

Furthermore, one of the challenges within knowledge-intensive organizations is that of getting people to share their knowledge. Second Life offers enabling characteristics that can foster these kinds of initiatives. However, partly due to its tacit characteristics, knowledge sharing is still considered as a very difficult process to grasp.

10.6. Collaboration

A task-technology comparison for the concept of collaboration requires a different approach. As stated earlier, some preconditions for collaboration originate from the three main characteristics that are identified during this study: communication, networking and socializing, and community building. These characteristics were indentified during the task-analysis of Second Life users. After that, the opinions of consultants gathered during the technology-analysis were used to validate the relationship between collaboration and the identified characteristics. Hence, a task-technology comparison as conducted earlier is not possible for the concept of collaboration. Fortunately, it does not make any sense to apply this approach, due to the differences in the degree of concepts of communication, networking and socializing, and community building on the one hand, and collaboration on the other hand.

Instead, it has been validated that collaboration has a relationship with the abovementioned characteristics. In other words, the concept of collaboration is (partly) shaped by the sum of these characteristics. Taking the goal of a task-technology comparison in consideration, which is to measure the effectiveness of a certain technology based on certain tasks, one could take such an approach in order to measure collaboration. Collaboration is the concept that comes from its individual technological characteristics. In this way, measuring the effectiveness of collaboration within IT services organizations can also be regarded as the equivalent of measuring the effectiveness of virtual worlds within IT services organizations, which essentially comprises the central research question of this research.

10.7. Conclusion

Based on the central research question, the literature overview and the analysis of the two separate use cases, task-technology comparisons were performed. This chapter discussed these comparisons based on the three categories that were identified earlier in this study. More specifically, each category was analyzed based on its specific characteristics. It seems that the best-identified matches are related to social and informal communication processes, identified in the task-technology comparison of the networking and socializing category. In other words, the emphasis on these informal sides of communication activities and processes correspond well with the characteristics of Second Life. One reason for this emphasis may be that Second Life
is considered as a social networking tool, and thus it is one of the main features of such social networking tools to support these social and informal communication processes.
PART FOUR: CONCLUSION AND DISCUSSION

The last part of this research document discusses the outcomes of the study. It first starts with a concluding chapter, containing a review of the background and objectives of this study, analyses of the identified results, some general syntheses that can be linked with the central research question, and the application of media choice theories. At last, a number of discussion points are discussed, such as the scope and limitations of this conducted study, the scientific and practical relevance of the outcomes, and a number of recommendations for future research. This study ends with some final thoughts about the topic of research.
11. CONCLUSION

11.1. INTRODUCTION

In this chapter, the original aims of this thesis are resumed. In addition, the results and analysis based on the conducted case studies are summed up. All these partial conclusions are drawn up to the formulation of some general conclusions that should at last address the central research question of this thesis.

11.2. REVIEW OF BACKGROUND AND OBJECTIVES

At this point of the research, all necessary data has been gathered. However, before drawing conclusions, the objectives and the background of the research will be discussed in this section, combined with the information that has been obtained during the results and analyses of this study.

The ongoing organizational trends toward the growing need for close communication and collaboration on the one hand, and the growing mobility that disrupts these required intensification of communication and collaboration processes on the other, impair traditional rules of communication within organizations. As a result, many organizations and knowledge-intensive organizations in particular are required to reconsider their internal organizing and communicating processes.

In response, the development of new communication technologies can help realize new and more effective organizational forms and processes. The development of virtual worlds and Second Life in particular received international attention via mainstream news media in 2006 and 2007 as a characterization of the Web 2.0 developments that combine content, collaboration and rich user experiences and thus transforming the Internet from static web pages into a dynamic platform for social interaction. Strategy professionals expected virtual worlds to have a particular potential for business purposes such as communication and collaboration intentions.

The main objective of this research was to address the potential of improving organizational communication and collaboration in knowledge-intensive organizations through the means of virtual worlds. In order to contribute to this objective, the topic of this research (expressed by the central research question) was to research and measure the degree of positive effects that virtual worlds may have on business communication and collaboration processes, based on the task-technology premises of media choice theories, and media richness theory in particular.

11.3. REVIEW OF RESULTS

The analyses of the results are based on the identified technology-related characteristics during the Second Life user interviews, the identified task-related characteristics during the LogicaCMG user interviews and the task-technology comparison based on these results. These analyses, described in Chapter 10, are summed up and reviewed in this paragraph.
11.3.1. IDENTIFIED CHARACTERISTICS

We have identified a list of distinguishing characteristics concerning both task and technology characteristics of respectively Second Life user interviews and LogicaCMG user interviews. These characteristics were identified during the first case study that is conducted with expert Second Life users, and applied during the second case study that is conducted with LogicaCMG employees. This sequential procedure is also used as a validation process of the identified categories.

<table>
<thead>
<tr>
<th>TASK CHARACTERISTICS</th>
<th>COMMUNICATION</th>
<th>TECHNOLOGY CHARACTERISTICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultancy is ‘People work’</td>
<td>Direct interaction</td>
<td></td>
</tr>
<tr>
<td>Traditional communication methods</td>
<td>High degree of social presence</td>
<td></td>
</tr>
<tr>
<td>Emphasis on face-to-face communication</td>
<td>Real life reflection</td>
<td></td>
</tr>
<tr>
<td>Congruence of technologies</td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>NETWORKING AND SOCIALIZING</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultancy is networking</td>
<td>Bridge geographical gaps</td>
<td></td>
</tr>
<tr>
<td>Serendipity</td>
<td>Grapevine-like conditions</td>
<td></td>
</tr>
<tr>
<td>Dispersed work activities</td>
<td>Spontaneity of interaction initiatives</td>
<td></td>
</tr>
<tr>
<td>Easiness and randomness of meeting people</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>COMMUNITY BUILDING</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope and bordering</td>
<td>Events</td>
<td></td>
</tr>
<tr>
<td>Identity and culture</td>
<td>Personal interpretability of medium</td>
<td></td>
</tr>
<tr>
<td>Knowledge sharing</td>
<td>Sharing experiences</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Engagement and involvement</td>
<td></td>
</tr>
</tbody>
</table>

**FIGURE 11-1 COMBINED TABLE OF TASK AND TECHNOLOGY CHARACTERISTICS**

Figure 11-1 depicts the overview of these characteristics, itemized in three categories communication, networking and socializing, and community building. Together, these characteristics fill the task and technology axes of media richness theory in a multi-dimensional way.

11.3.2. TASK-TECHNOLOGY COMPARISON

We have committed ourselves to measure the effectiveness of virtual worlds in the support of communication and collaboration processes. Effectiveness refers to the capability of producing an effect, which in this research is an effect in the processes of communication and collaboration, preferably positive. In the end, true effectiveness cannot be measured with these results; it requires a more empirical approach. Instead, this study has focused on the theoretical effectiveness based on the assumptions of media choice theories. A corresponding task-technology perspective allows us to measure effectiveness by identifying and decomposing relevant categories on the crossroads of task and technology and to measure them individually as well. Having performed such an approach in Chapter 10, more insight is gained of Second Life and its potential effectiveness for business communication purposes from a decomposed point of view. This is based on a particular methodology of effectiveness measurement, and on particular characteristics and categories that are identified and applied.
11.4. Analyzes of Results

Based on the gathered data during this research, let us get back to the central research question of this research that is posed in Chapter 1: “from a task-technology perspective of media choice theories, can virtual worlds effectively support communication and collaboration within IT services organizations?” From a task-technology perspective, a positive match can indeed be identified on a number of characteristics, based on some distinguishing capabilities that traditional communication technologies do not offer. From this perspective, can someone argue that virtual worlds indeed can indeed promote a positive effect on communication and collaboration? Perhaps. However, there are also a number of questionable and clearly unmatchable task-technology comparisons identified during this research. Taking these imperfections in consideration, can someone argue that virtual worlds cannot promote a positive effect on communication and collaboration? Perhaps. Clearly, it is hard to interpret a rather abstract definition of effectiveness, even considering it from a task-technology perspective.

Yet, despite the presence of some unmatchable characteristics with respect to task and technology, a preliminary and cautious answer on this research question would still be a ‘yes’. After all, there are indeed some characteristics that positively match. Thus, according to the results of this study, virtual worlds are certainly able to support communication and collaboration effectively, albeit to some degree. The next question then arises: to what extent can virtual worlds effectively support communication and collaboration? This question can best be addressed by reviewing the identified categories of communication, networking and socializing, and community building individually. By decomposing these elements, one can get a better view of the effectiveness in the context of this study. Based on the individual task-technology comparisons of communication, networking and socializing, and community building, one could conclude that all task requirements correspond on some aspects with the technological chances that virtual worlds can offer. After all, Second Life offers an environment that fosters the combining elements of 1) new ways of communication and collaboration in a realistic real world setting, 2) an environment in which informal communication processes are encouraged, and 3) a setting in which the preconditions for community building is promoted.

11.5. Application of Media Choice Theories

Over the past years, there has been a lot of ongoing discussion around media choice theories. A number of shortcomings of this theory are already discussed earlier. Nonetheless, few people argue about the basic premise that focuses on the linkage between the interaction of media and task. During this study, we have stripped the theory to this core element, and applied these core characteristic on two case studies. The task-technology approach finally allowed us to design the applied research methodology (as visualized in Figure 6-2), and allowed us to find answers on the central research question of this study. Thus, by taking a customized approach of selecting appropriate theoretical elements of media choice theories, we were enabled to conduct research on the theoretical effectiveness of virtual worlds on business communication. As such, media choice theories can help addressing similar issues of measuring effectiveness from a particular perspective.
12. DISCUSSION

12.1. INTRODUCTION

This final chapter reflects on the conducted work of study, including its research approach and the provided results. It starts with a discussion of the scope and limitations of this study, including issues such as necessary but neglected background conditions, privacy and technology issues, the single use of media richness theory, and the applied research methodology. Then, the relevance for science as well as the relevance in a more practical setting is discussed. After that, a number of suggestions are made for further research on this field of topic. At last, some final thoughts about virtual worlds and its current developments are discussed.

12.2. SCOPE AND LIMITATIONS

From a theoretical perspective of media choice theories, this thesis showed that virtual worlds could contribute a positive effect to some aspects of tasks with respect to communication, networking and socializing, and community building, within the domain of knowledge-intensive organizations. However, one should keep in mind that theory often differs from practice. From this view, the translation from theoretical effectiveness to a more practical and thus more true degree of effectiveness is a rather complicated one. After all, practice depends on a numerous variables that are not taken in account due to the limited scope of this conducted research. Thus, in order to measure the true effectiveness, one should consider such conditions more thoroughly. A number of these issues are discussed in this paragraph.

12.2.1. BACKGROUND CONDITIONS

Yu (1997) distinguishes a number of background conditions that he considers important for media choice decisions. These are depicted in Figure 12-1.

<table>
<thead>
<tr>
<th>IMPORTANT BACKGROUND CONDITIONS FOR MEDIA CHOICE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Information technology maturity</strong></td>
</tr>
<tr>
<td><strong>Standard operating procedures</strong></td>
</tr>
<tr>
<td><strong>Critical mass</strong></td>
</tr>
<tr>
<td><strong>Organization structure</strong></td>
</tr>
<tr>
<td><strong>Culture and social</strong></td>
</tr>
</tbody>
</table>
norms are done. They predetermine how people perceive modern communication and information technology, and as a result, they have great influence in steering one’s perception of media choice.

Demographics refer to a person’s age, gender, job experience and educational background. These characteristics may also influence the selection of a particular communication channel.

**Figure 12-1** Important background conditions for media choice, according to Yu (1997)

With the exception of organization structure and to a less extent culture and social norms, little attention was paid to the background conditions (as depicted in Figure 12-1) during this research, due to the limited scope of this research. Yet, these conditions are crucial factors in measuring the effectiveness of a specific communication technology in terms of the acceptance and willingness to adopt a particular technology.

12.2.2. Privacy and Technology Issues

Other issues that have also not been taken into account but which are from great importance for a proper judgment about the effectiveness of a technology includes the problems with regard to privacy and security, and technology and stability issues. This specifically counts for corporate environments in which privacy and security issues are key factors of importance and forthcoming acceptance. As of today, Second Life is not an environment in which these issues are incorporated sufficiently. Second Life is therefore often blocked for user access from their corporate PCs by their organizational IT departments. With respect to technology and stability, some issues should be taken into account: the technology is still too complex, the learning curve is still too high, the technology is still too unstable, and finally virtual worlds still has steep system requirements in order to give good performance.

12.2.3. Theory Application

In this study, media richness theory has been used extensively, mainly due to its particular rational choice perspective and its corresponding assumptions of a task-technology fit. However, some notable limitations should be taken into account. First, the sole application of media richness theory creates a rather tunnel visional approach of the problem definition of this research. This may result in a subjective and rather biased dependency of this theory and its main assumptions. Second, while media richness theory is a prominent media choice theory, it has some significant shortcomings. These shortcomings are already discussed.

Virtual World Security Fears...

“Companies need to think about security and risk management before they get too excited about virtual worlds, according to analyst group Gartner. The risks businesses face as a result of getting involved in virtual worlds can be significant, according to Gartner vice-president Steve Prentice. These risks shouldn’t be ignored, he said -- but neither should the potential opportunities and benefits that arise from using these new environments for corporate collaboration and communications. Gartner said the issues facing corporations fall into five categories: IT risks, identity and access management, confidentiality, brand and reputation and productivity” (Ranger, 2007).

(source: www.news.com)


12.2.4. Research Methodology and Validation

The rationale for a chosen research methodology relies on a number of factors, such as the topic of research (i.e. the appropriateness of qualitative versus quantitative research), and the scope and bordering of that topic (i.e. the constraints that come with each type of research such as the specific requirements of research stakeholders). Forcing someone to choose one thing often implies that someone also has to choose one other thing not to do. Eventually, each choice has its own strengths and weaknesses.

With respect to this research and corresponding research methodology, the following limitations can be distinguished:

- Low sample size. Qualitative interviewing is a sound instrument to collect rich and ambiguous data. However, it is often a time-consuming activity and conflicts with the time restrictions during this research project. Therefore, sample size depends largely on the amount of time for conducting the interviews in this case. The short period of time in which this research is conducted, requires a rigid planning scheme. Unfortunately, this planning requires and restricts us to plan and conduct the data-gathering interview sessions during the midst of the summer period of 2007, a period in which it is generally hard to find people due to their absences as part of their holidays. Despite the broad range of information that has ultimately been collected, more input can always be potentially useful, especially for improving reliability and strengthening the validation of the gathered data.

- Lack of firm research triangulation. Method triangulation is a process of using different methods to research the same issue with the same unit of analysis. This allows one to crosscheck one result against another, and allows one to increase the reliability of the result. Contradictory results often bring up important problems with regard to the research question and its corresponding methodology (Verschuren & Doorewaard, 2000). While this research certainly contains a number of data triangulation elements, it lacks the incorporation of quantitative research designs in order to make findings more robust.

12.3. Relevance

In the end of every conducted research, one should pose itself to what extent something is learned during that particular research that may be useful in the scientific world as well as in practical settings. This is discussed in this section. At last, the specific relevance for LogicaCMG is discussed.

12.3.1. Scientific Relevance

Scientifically, this research provided new insights in the application of media choice theories and more specifically, media richness theory. Dennis and Kinney (1998, p. 270) believe that “media richness theory is not a useful theory for explaining the effects of the use of the new media on task performance”. By focusing on task performance, they surely have a point. However, by focusing on the task-technology proposition of media richness theory, we were able to create a multi-dimensional list of both task and technology characteristics. Hence, we were able to gain more insight in the specific task and technology characteristics in the context of
virtual worlds and its potential for IT services organizations. Furthermore, we were able to gain more insight in the match between task and technology as a starting point for assessing other degrees of effectiveness.

12.3.2. PRACTICAL RELEVANCE

From the perspective of (the theory of) organizational communication and its forthcoming assumptions that organizations are required to find new ways to support and improve their communication processes, this study has showed one way to evaluate the effectiveness of a particular technology by performing a task-technology study. After all, such a methodology can be used to 1) identify the technology characteristics of a particular technology, and to 2) match them to the task requirements of a particular organization. Many of us implicitly understand the significance of a task-technology perspective, but at the same time many of us do not explicitly and methodologically assess a task-technology comparison when evaluating a particular technology. A study of this kind can further be developed into a standard approach, in which organizations can methodologically assess the effectiveness and value of a particular technology.

From the perspective of virtual worlds and the developments of this kind of technology, this study has showed proof that the utilization of virtual worlds in a corporate context can be useful, due to its distinctive characteristics, especially with respect to communication and its corresponding networking and socializing characteristics. In this way, it supports the ongoing debate around virtual worlds and its link with business usage with respect to communication and collaboration, and offers a starting point for further research of this emerging technology.

At last, this study has not only placed the specific platform of virtual worlds into the light of businesses, but has signified and emphasized the importance of internal and informal communication as well as the role of social media tools in this context.

12.3.3. SPECIFIC RELEVANCE FOR LOGICACMG

As a knowledge-intensive organization, LogicaCMG is subject to change in several ways that have been discussed extensively during this study. So, what is the implication of the results of this study for LogicaCMG specifically?

This study has brought a number of shortcomings to the foreground. These are primarily related with internal communication processes. The focus on improving these issues can be one area of attention. Theoretically, and thus according to the results of this research, virtual worlds should be capable in addressing these issues. However, there are numerous variables that are not taken into account (as discussed earlier in this chapter), and these variables may prevent the measuring of virtual worlds from a more practical point of view.

This does not mean that virtual world technology should be dismissed from corporate usage out of hand. LogicaCMG should keep a close watch on these kinds of developments. After all, enterprises like LogicaCMG can obtain a key competitive advantage by looking for new ways in social and business interactions. Therefore, they should stay in touch with the developments, by experimenting, exploring and learning how to use this
new technology in order to gain more insight in the potential business value of virtual world technology. The theoretical task-technology results of this study may justify the attention on this development from a scientific perspective, as a fundament and extension of 1) the risen attention of social media within organizations (Manchester, 2007), and 2) the anticipated developments of virtual worlds for business communication in general (Fenn, 2007; Jackson, 2007).

12.4. RECOMMENDATIONS FOR FURTHER RESEARCH

Based on the findings in this chapter, this section provides a number of suggestions for further research. First, there is need for further research on this topic with the inclusion of important background conditions with respect to media choice, and privacy and technology issues. These conditions are imperative factors and are to be taken into account in order to bridge the gap between theory and practice. Second, future research on this topic should include other media choice theories rather than the single use of media richness theory. This makes potential findings more reliable and valid, and gives more insight in the effectiveness of the individual media choice theories. Thus, such an inclusion is useful for both science and practice. Third, further research should take a more triangulated perspective with respect to the applied research methodology. Especially in qualitative and explorative studies like this study, checking and establishing validity of the data is highly important to uncover the real truth of data: The qualitative nature of this study has uncovered new insights, and future quantitative research can help testing these new insights. In this way, qualitative and quantitative methods complement each other.

12.5. FINAL THOUGHTS

Melcrum, a global institute for research and training internal communicators, has published a report on the use of social media to engage employees (Manchester, 2007). In a global survey that is conducted in 2007, Melcrum heard from a large group of executives about how social media technologies such as blogs, podcasts, wikis, and virtual worlds are being used to communicate with employees and customers. These perceived benefits that organizations can get from the use of social media tools include improved employee engagement, improved internal collaboration, improved communities development, and the creation of a two-way dialogue with senior executives and cultural development. This is

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**Second Life 2.0**

“Things are changing in Second Life. The period of glee abandon in which companies joined Second Life, built giant edifices to their offline brands which no one visited, then ran away has passed. We are now seeing those who survived and new players in Linden Lab’s online world build something new, something perhaps more sustainable and in tune to user needs. On the surface it appears that Second Life is repeating the internet development cycle, but at an accelerated rate. The scandals and useless attempts at bringing offline brands to Second Life parallel the first web boom. After the crash of 2000, many fled the web, whilst a core few remained and over time, along with new players, started to build interfaces that were useful. Second Life today is like 2001-2002, the dawn on a new age; Second Life 2.0” (Riley, 2007).

(Source: www.techcrunch.com)
one of their reports that mark the trend towards the increasing awareness of the key value of internal communication. Thus, from this perspective, the potential of virtual worlds, backed by its enabling developments on Web 2.0 and social media can be a significant one.

Another institute that has been researching the developments on virtual worlds is Gartner. Every year, Gartner publishes a report on the hype cycle of upcoming and emerging technologies. A hype cycle is a graphic representation of the maturity, adoption and business application of specific technologies. Adopted by Gartner, this model places technologies and their enabling strategies into a recurring life cycle, and characterizes the over-enthusiasm or "hype" and subsequent disappointment that typically happen with the introduction of new technologies (Gartner, 2007). In 2007, Gartner published their annual report on emerging technologies “Hype Cycle for Emerging Technologies 2007”. According to this report, ten of the 36 key emerging technologies examined in this year’s hype cycle have been designated as having a transformational business impact, including virtual worlds (Fenn, 2007). With regard to the scope of this research, the report analyses specifically on the position, adoption speed justification and business impact of virtual worlds. In sum, they predict that “the technology will further mature, and that the pace of adoption of this technology will quicken and that the number of applications, businesses and users in those virtual worlds will eventually increase” (Fenn, 2007, p. 36).

Despite the current controversial debates about Second Life being dismissed and overhyped after a short but intensive hype, the abovementioned reports show that such a social communication tool is in the midst of serious developments. However, we have to remind ourselves that this development is still in its early stage. Practitioners and academics are in the process of trying to learn and to understand if and how virtual worlds can foster new and innovative ways of working and doing business by studying how virtual worlds really work, and how virtual worlds can effectively be used in practice. These fundamental questions are not answered as of yet. Nevertheless, the results of this study are one of these scientific contributions for the further development of virtual worlds, and its purpose for organizations.
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APPENDIX 1: E-MAIL INVITATION BUSINESS INFORMATICS STUDENTS

Dear fellow MBI students,

I am currently writing my master thesis about virtual worlds (such as Second Life) and its potential for business communication purposes. I try to discover a task-technology fit based on media choice theories, in particular the media richness theory of Daft et al. By doing so, I hope to find evidence for virtual worlds in organizational settings. I also hope to gain more insight in the usefulness of the rather old-fashioned media choice theories on new communication technologies.

I will take a qualitative approach by conducting interviews of two particular groups. The first group are (experienced) Second Life users, in order to gain knowledge about their activities at SL, and the capabilities of Second Life as a technology platform. Then, I am planning to conduct interviews with a specific group of employees at LogicaCMG (the organization where I perform my research), hoping to gain knowledge about their specific tasks and the characteristics of these tasks (which tasks are performed, what is going well, what are the bottlenecks, all in terms of communication effectiveness). Finally, I hope to find some interesting connections between the gathered information of both groups.

I am looking for Second Life users, so I kindly invite those of you with any Second Life experience to join an interview session as input for my research. Please contact me if you (or family/friends) have any interest in participating. If you just want to share some ideas feel also free to contact me!

Kind regards,
Eka Tirtadji

--
Eka Tirtadji
E-mail: estirtad.cs.uu.nl or eka.tirtadji@logicacmg.com
Mobile: +31 6 48769508
APPENDIX 2: REQUEST AT SECONDLIFE.BLOGO.NL (IN DUTCH)

Verzoek om hulp bij Second Life onderzoek

Vandaag kreeg ik een verzoekje van Eka, student Business Informatics aan de Universiteit Utrecht, die zich een scriptie schrijft over "Virtual worlds as a supporting tool for business communication and collaboration".

Het verzoek:

"Voor mijn afstudeeronderzoek over het nut van Second Life als communicatietool binnen organisaties ben ik op zoek naar enthousiaste Second-Life gebruikers voor een kort en informeel interview. Lijkt het je leuk (of ken je iemand die het leuk vindt) om een leuke en waardevolle bijdrage te leveren aan de wetenschap, laat het me dan weten! Ik ben te bereiken via estirtad@cs.uu.nl.

Eka (SL IM: Haak McMillan)"

Lijkt me dat we hier allemaal aan mee doen, toch? Kennis opbouwen over virtuele werelden in relatie tot de echte wereld is zeker nu erg belangrijk!

(source: http://www.secondlife.blogo.nl/blogo.asp?comments/1178/29937/)
APPENDIX 3: INTERVIEW PROTOCOL (SECOND LIFE)

OBJECTIVE OF THE INTERVIEWS

The primary goal of the interviews is to retrieve information from Second Life users in the context of medium characteristics, and user’s experience and knowledge.

INTERVIEW CHARACTERISTICS

- The format and structure of questioning is based on a semi-structured interview approach.
- The interviews are recorded in the form of notes and audiotaped interviews.
- The design and implementation of these interviews are based on the method of seven stages of Kvale (1996).

KEY QUESTIONS

<table>
<thead>
<tr>
<th>KEY QUESTIONS DURING SECOND LIFE USER INTERVIEW SESSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>What was your initial impression of Second Life?</td>
</tr>
<tr>
<td>What are the main purposes of Second Life for you?</td>
</tr>
<tr>
<td>Which activities do you perform on Second Life (describe an average visit on Second Life)?</td>
</tr>
<tr>
<td>Can you give an example of an activity in which Second Life outperforms its equivalent real life activity?</td>
</tr>
<tr>
<td>What is your experience with Second Life in comparison with other communication technologies, such as MSN and Skype?</td>
</tr>
<tr>
<td>Which features of Second Life do you consider most valuable?</td>
</tr>
<tr>
<td>What are, according to your own opinion, the most unique characteristics of Second Life?</td>
</tr>
<tr>
<td>To what extent do you agree with the statement that Second Life is often considered as a social networking medium?</td>
</tr>
<tr>
<td>Do you consider Second Life more appropriate for formal or informal communication purposes?</td>
</tr>
<tr>
<td>Does the visual 3D-aspect of Second Life give you an advantage in some way? If so, to what extent?</td>
</tr>
<tr>
<td>How do you think about social processes within Second Life in comparison with real life social processes? Think about certain rules of conduct, conveying of your feelings or etiquettes that we all know from real life experiences (hierarchy, trust, norms, etc.)</td>
</tr>
<tr>
<td>What are the differentiating characteristics of Second Life to other communication technologies?</td>
</tr>
<tr>
<td>What is your experience with one-to-many communication in Second Life, such as talking in groups or talking in events?</td>
</tr>
</tbody>
</table>

INTERVIEWEES

Available upon request.
Beste collega's,

Sinds een aantal maanden begeleid ik Eka Tirtadji (Universiteit Utrecht) bij zijn afstudeerstage die hij uitvoert bij LogicaCMG Working Tomorrow. Eka onderzoekt de zakelijke meerwaarde van Second Life, en dan met name collaboration. Ik zou jullie willen vragen of jullie in september een uurtje zouden willen besteden aan een interview met Eka. Zie onderaan deze mail voor meer informatie. Eka zal zelf contact met jullie opnemen om het interview in te plannen.

Groet,

Erik Grandiek

Management consultant

LogicaCMG

Collaboration afstudeeropdracht

"Er is veel ophef in de media over de virtuele wereld van Second Life. Eerst was iedereen nog vol bewondering over dit nieuw fenomeen; Second Life zou de oplossing zijn voor alles! Deze bewondering heeft echter plaats voor teleurstelling, omdat de hoge verwachtingen op korte termijn toch niet zijn vruchten zou hebben afgeworpen. Deze trend doet denken aan de ontwikkelingen die het internet in de jaren negentig kreeg toegedicht. Ook toen uitte men kritiek omdat men nog niet precies wist wat de mogelijkheden waren. Inmiddels kunnen we ons geen leven meer voorstellen zonder het internet."

Als student Business Informatics aan de Universiteit Utrecht onderzoek ik welke mogelijkheden virtuele werelden zouden kunnen bieden voor organisaties. Ik kijk met name naar de communicatie en collaboration mogelijkheden van virtuele werelden. In mijn onderzoek maak ik gebruik van mediakeuze theorieën, waarin wordt gesteld dat een bepaald communicatiemedium moet passen bij een bepaalde taak. Voor het eerste gedeelte van mijn onderzoek ben ik op zoek gegaan naar Second Life gebruikers.

Voor het tweede gedeelte van mijn onderzoek ben ik op zoek naar enthousiaste, innovatieve en open-minded LogicaCMG'ers die wel een gaatje in hun agenda willen vrijmaken om een afstuderende collega te helpen met zijn onderzoek en om tegelijkertijd een waardevolle bijdrage te kunnen leveren aan de wetenschap. Volgens mijn begeleider Erik Grandiek ben jij zo'n collega. Ik zal daarom binnenkort contact met jou opnemen zodat ik mijn onderzoek nader kan toelichten, en om hopelijk een afspraak voor een interview in te plannen.

Met vriendelijke groet,

Eka Tirtadji

Stagiair Working Tomorrow

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M: +31 (0) 6 48769508
E: eka.tirtadji@logicacmg.com
www.logicacmg.com
APPENDIX 5: INTERVIEW PROTOCOL (LOGICA CMG)

OBJECTIVE OF THE INTERVIEWS
The primary goal of the interviews is to retrieve information from LogicaCMG employees in the context of task characteristics, and employee’s experience and knowledge.

INTERVIEW CHARACTERISTICS
- The format and structure of questioning is based on a semi-structured interview approach.
- The interviews are recorded in the form of notes and audiotaped interviews.
- The design and implementation of these interviews are based on the method of seven stages of Kvale (1996).

KEY QUESTIONS

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<tr>
<th>KEY QUESTIONS DURING LOGICA CMG USER INTERVIEW SESSION</th>
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<tr>
<td>What is your job description and how would you describe your job?</td>
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<td>Do you to a certain extent degree with the following organizational developments? (Pose three main developments)?</td>
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<tr>
<td>How important is communication within the context of your daily work activities?</td>
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<td>Face-to-face communication is often considered as a rich form of communication. Do you agree?</td>
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<tr>
<td>Which communication forms do you use most? Please elaborate on these communication forms.</td>
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<tr>
<td>How does networking play a role in your work activities as a consultant? How do you experience these informal processes? How do you maintain your network?</td>
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<td>What do you think about the notion of spontaneity, accessibility, serendipity and do you think LogicaCMG offers sufficient preconditions to promote these social components?</td>
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<td>What do you think about LogicaCMG’s organization structure? To what extent does the organization promote the notions of culture/identity/unity within and between your business unit/competence?</td>
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<td>How would you define collaboration? How does LogicaCMG define collaboration? Is there a match between you and LogicaCMG?</td>
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<td>Which tools do you use to promote your collaborative efforts?</td>
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<td>Is there a relationship between collaboration and communication, networking and socializing, and community building?</td>
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<tr>
<td>In the context of the knowledge-intensive characteristics that LogicaCMG is considered to possess, does LogicaCMG promote collaboration within and between its divisionalized organization structure and does LogicaCMG involve and engage their employees in these activities?</td>
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</table>

INTERVIEWEES
Available upon request.
Appendix 6: Interview Transcripts

Available upon request.