HELSINKI UNIVERSITY OF TECHNOLOGY
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SOCIAL SOFTWARE – LEVERAGING VIRTUAL NETWORK ORGANIZATION

Thesis submitted in partial fulfilment of the requirements
for the degree of Master of Science in Engineering

Espoo, 5.6.2007

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“Perhaps remote, asynchronous, and anonymous communication will produce a different society. If so, that society will look so unlike the one we inhabit today that we will probably need an entirely new sociology of organizations."

– Nohria & Eccles (1992)

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ABSTRACT OF THE MASTER´S THESIS

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Motivation for this research derives from recognition that social software and other "Web 2.0" applications are being introduced and adopted in organizations in increasing numbers. However, very little academic research has been done in reference to the phenomenon and its implications for organizations.

The phenomenon under study in this thesis is social software usage in organizations. The objective of this thesis is to describe and explore social software, its potential areas of application in an established organization, and key issues that relate to introducing and adopting it successfully. Empirically the objects of the study are three cases of social software usage in established organizations.

In the literature study part of the thesis, answers to the research questions are searched from social software literature, organization theory literature, and change management literature. The concepts of social software, organizations, and change are presented alongside with other closely related phenomena.

In the empirical part of the thesis, one primary case and two supporting cases are presented. The within-case analyses of the primary case and the supporting cases consist of an internal development project in which several social software applications were tested and of "CEO blog" application usage respectively. After the within-case analyses a cross-case analysis is conducted. Lastly, synthesis of the cases and literature studies is presented.

In the concluding remarks, the results of the thesis and their implications for both managers and academics are discussed. In addition, the study is evaluated and suggestions for future research are given.

The main contribution of the thesis is an understanding of social software and its implications for organizations. On the whole, social software enables an established organization to transform into and enact a virtual network organization. Furthermore, it helps to leverage the benefits of a virtual network organization providing that the introduction and adoption of social software is done successfully.

KEYWORDS: social software, Web 2.0, blog, wiki, virtual organization, network organization, change management	**PUBLISHING LANGUAGE**: English

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Sosiaalisten ohjelmistojen ja muiden web 2.0 sovellusten käyttöönotto ja hyödyntäminen on lisääntynyt organisaatioissa huomattavasti. Siitä huolimatta ilmiötä ja sen seurauksia organisaatioille on tutkittu hyvin vähän.

Tässä tutkimuksessa tutkitaan sosiaalisten ohjelmistojen käyttöä organisaatioissa. Tutkimuksen tarkoituksena on kuvailla ja ymmärtää sosiaalisia ohjelmistoja, niiden potentiaalisia soveltamisalueita organisaatioissa, sekä keskeisiä tekijöitä niiden onnistuneen käyttöönoton osalta. Empiirisesti tutkimuksen kohteena on kolme tapausta, joissa sosiaalisia ohjelmistoja on käytetty organisaatiossa.

Tutkimuksen kirjallisuusosiossa vastauksia tutkimuskysymyksiin etsitään sosiaalisia ohjelmistoja, organisaatioteoriaa ja muutosjohtamista koskevasta kirjallisuudesta. Esiteltäviä aiheita ovat sosiaaliset ohjelmistot, organisaatiot ja muutos sekä niihin läheisesti liittyvät ilmiöt.

Tutkimuksen empiirisessä osiossa esitellään yksi ensisijainen tapaus ja kaksi toissijaista tapausta. Ensisijaisessa tapauksessa analysoidaan sosiaalisten ohjelmistojen testausta sisäisen kehitysprojektin puitteissa; molemmissa toissijaisissa tapauksissa vuorostaan analysoidaan “toimitusjohtajan blogin” käyttöä. Tämän jälkeen tapaukset analysoidaan suhteessa toisiinsa. Lopuksi esitellään synteesi tapauksien ja kirjallisuustutkimuksen osalta.

Johtopäätöksissä pohditaan tutkimuksen tuloksia ja niiden implikaatioita yritysjohdon ja akateemisen tutkmuksen suhteen. Lisäksi arvioidaan tutkimusta ja esitetään suosituksia jatkotukimuksen osalta.

Tutkimuksen merkittävin anti on ymmärrys sosiaalisista ohjelmistoista ja niiden implikaatioista organisaatioiden kannalta. Kokonaisuudessaan sosiaaliset ohjelmistot mahdollistavat organisaation muuntumisen virtuaaliseksi verkosto-organisaatioksi sekä sen toteuttamisen käytännössä. Lisäksi sosiaaliset ohjelmistot auttavat hyödyntämään virtuaalisen verkosto-organisaation tuomia hyötyjä edellyttäen että sosiaalisten ohjelmistojen käyttöönotto on totetutettu onnistuneesti.

AVAINSANAT:	**JULKAISUKIELI**:
sosiaaliset ohjelmistot, web 2.0, blogit, wikit, virtuaalinen organisaatio, verkosto-organisaatio, muutosjohtaminen	englanti

FOREWORD

I remember when I started working on my thesis. It was February 2006 and the plan was to finish the thesis by the end September. The topic of the thesis had nothing to do with social software. Actually, I hadn't even heard of social software at that time. It's funny how things change.

But here I am today. The thesis is now done. Next week I will graduate as a Master of Science in engineering. Yet I didn't do it all by myself. A great number of people have helped me on my way to get here. I want to thank you all:

I want to thank my former colleagues at MSD Finland for believing and trusting me. I want to thank Otto Mattsson, Mikael Pentikäinen and Christer Haglund for taking their time to answer my questions. I want to thank my colleagues at Dicole for their input and support. I want to thank Leenamaija Otala and Matti Vartiainen for their advice on my thesis. Especially I want to thank Jouni Virtaharju for the support and encouragement he gave me. I don't know how I could have managed all this without your help.

Of course, there numerous other people who have helped aswell. My friends, family, relatives, associates, acquintances, etc. have all been there to lend their hand when I have needed it. Thank you all.

It's always hard to give up something, to let go. But the time has come to let go of my thesis and to move on. I don't what the future holds for me. But one thing I have learned: life is an adventure.

Espoo, June 5th 2007

Tommi Ryyppö

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1 INTRODUCTION

The purpose of this chapter is to outline the framework of the thesis. It begins with explaining the motivation for the study. Thereafter, the research objectives, scope and context, and an overview of the thesis are presented.

1.1 MOTIVATION

Use of information technology in organizations is self-evident these days. E-mail and instant messaging, for instance, have been used in organizations to connect people for over a decade already (Wellman & Hampton 1999). E-mail and instant messaging, however, are no longer the only forms of computer aided communication used as new forms of social communicating and interacting are also being introduced and adopted in organizations. For instance, several major companies, including Disney, Hewlett-Packard, General Motors, and Nokia, have introduced a new breed of collaboration tools, i.e. blogs and wikis, in their organizations (Delio 2005).

Blogs, wikis, and several other "social software" technologies have emerged to support knowledge and information sharing with increased capabilities (Wagner 2005). Their foundation lies in convergence of several technologies and recognition that the internet is most useful for connecting people who already know each other (Davies 2003). Furthermore, social networking, tagging systems, and other "Web 2.0" applications are proliferating everywhere along side with continued use of newsgroups, bulletin boards, instant messaging, and other existing socially-oriented software systems (Counts et al. 2006).

Although the use of these social software applications has seen a tremendous jump over the past few years and have changed the way people communicate online and share media (Farnham et al. 2004), very little academic research has been done with reference to them. Nevertheless, these social software applications are introduced and adopted in increasing numbers in established organizations. The rationale for and implications of social software usage in the organizations, however, are still fairly ambiguous.

1.2 RESEARCH OBJECTIVES

The research objectives of this study are summarized in the following three research questions:

1. What is social software?
2. What are potential application areas for social software in an established organization?
3. What are key issues to consider if social software is to be successfully introduced and adopted in an established organization?

Where the first research question draws from an attempt to make sense of social software and the added value it brings compared to other existing information technologies, the second research question derives from an attempt to elaborate potential areas of social software usage. The third research question, on the other hand, draws from the recognition that the number of established organizations adopting social software appers to increase rapidly. Therefore, some guidelines in terms of its introduction and adoption are needed.

1.3 SCOPE AND CONTEXT

The scope and context of the study is defined through an explorative macro-level approach to social software usage in established business organizations. In other words, the focus is on scanning for existing and possible areas of social software usage on group and organization level although individual level is also considered. Furthermore, the focus on established business organizations leaves out, for instance, start-ups, non-profit organizations, schools and universities, and other similar institutions.

1.4 OVERVIEW OF THE THESIS

This thesis consists of three theoretical chapters (Chapters 2 to 4), a chapter on the research approach chosen (Chapter 5), a chapter describing the empirical part of the research (Chapter 6), and finally a chapter in which conclusions and recommendations for future research are provided (Chapter 7). A more detailed description of the chapters is given in the following:

- **Chapter 2** focuses on social software; its definition and similar conceptual frameworks. In addition, social software applications and their present use in organizations are discussed.
- **Chapter 3** concerns potential areas of application within organizations. These areas are scanned for through the concept of virtual network organization, a novel organizational metaphor. Additionally, organizational phenomena such as human networks and communities, communication and interaction, and knowledge are covered.
- **Chapter 4** is about key issues as regards introduction and adoption of social software in organizations. Such topics as change, change management, and guidelines for project management are discussed.
- **Chapter 5** covers the research method used in the study. Among other things, the research approach used and the research process carried out are presented.
- **Chapter 6** presents the case studies of social software usage in organizations researched in the study. One primary case and two supporting cases are discussed in addition to analyzing their results.
- **Chapter 7** concludes the thesis with conclusions, and managerial and theoretical implications of the study. Furthermore, evaluation of the study and suggestions for future research are also discussed.

2 SOCIAL SOFTWARE

The purpose of this study is to form an understanding of social software. Hence, social software is discussed alongside with other similar conceptual frameworks. In addition, social software applications and their present-day use in organizations are covered.

2.1 WHAT IS SOCIAL SOFTWARE?

Social software is a concept which has emerged alongside with "Web 2.0" technologies. However, where Web 2.0 refers to "*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*" (O'Reilly 2006), social software is the concept through which its implications for organizational behaviour are discussed.

2.1.1 DEFINITION

According to Green & Pearson (2005), social software can be understood followingly:

> *"Social software refers to various, loosely connected types of application that allow individuals to communicate with one another, and to track discussion across the Web as they happen."*

As this and every other existing definition of the term 'social software' is not unambiguous, most users of the term restrict its meaning to more recent software genres such as blogs and wikis. Still others suggest that the term is best used not to refer to a single type of software, but rather to the use of two or more modes of computer-mediated communication that result in formation of a community, be it online or "real". (Wikipedia 2007) Wikipedia, social software itself, emphasizes the perspective that term social software may be better understood as a set of debates or design choices than any particular list of tools. The reason is that many older media such as mailing lists and Usenet qualify as "social" if broadly conceived. This approach is also in line with seeing social software as any software that supports group communication (Green & Pearson 2005).

The most popular social software applications on the web currently are YouTube, MySpace, Orkut.com and Wikipedia, all of which rank among the ten most popular sites on the web (Alexa 2007). These applications help their thousands of users to communicate and share resources such as video, photos, journals and/or information (See Table 1). Other similar and highly popular social software applications on the web are Megaupload (file sharing), Blogger.com (free, automated weblog publishing tool), Ebay (person to person auction site), and Hi5 (media sharing, affinity groups, and messaging).

Table 1 - Popular social software applications

APPLICATION	DESCRIPTION
YouTube	YouTube allows people to upload and share video clips across the Internet through websites, mobile devices, blogs, and email.
MySpace	MySpace is an online community that lets people to meet their friends' friends. By creating a private community on MySpace people can share photos, journals and interests with other people.
Orkut.com	Orkut is an online community that connects people through a network of trusted friends. It is an online meeting place for people to socialise, make new acquaintances and find others who share their interests.
Wikipedia	Wikipedia is a multilingual, web-based, free content encyclopedia project. Wikipedia is written collaboratively by volunteers from all around the world.

The crucial characteristic of these social software applications is that they help people to communicate and share resources across the web. Although communication and sharing takes place across the web, most social software applications promote the view that online social interaction is not a substitute for traditional face-to-face interaction but can only potentially enhance it (Davies 2003; Green & Pearson 2005). In other words, social software is essentially not about bridging huge distances or creating connections, although it can be used for that purpose as well (e.g. online dating services). In fact, it appears that people generally e-mail people they already know or maintain blogs for their friends, families and associates to read. (Green & Pearson 2005)

Even though the term social software, and the technologies or tools that go with it, are still very much ambiguous and debated, the following principles concerning it appear to be fundamental:

- As opposed to groupware and other project- or organization-oriented collaboration tools which place people into groups defined organizationally or functionally, social software is based on supporting the desire of individuals to be pulled into groups to achieve personal goals (Green & Pearson 2005).
- A main purpose of social software is to enable people to quickly and easily publish their knowledge so that it can be effectively and securely shared with other members of the community (Wagner 2005).

These principles draw attention to two crucial aspects concerning social software: Firstly, the emergent, bottom-up dynamics is significantly different from traditional interactions. This emergent behaviour controls the content of the information created; for instance, as individuals create the content, other individuals read that content and look for information about particular topics. (Green & Pearson 2005) Secondly, much of the knowledge creation and sharing in the community is carried out through the use of "conversational" technologies, i.e. blogs, wikis, and discussion forums (Wagner 2005).

Social software appears to have a lot of potential to offer to organizations. For instance, it might help build connections between workers and their business contacts and customers (Gillmor 2004). As a consequence, the concept of 'Enterprise 2.0' has emerged. The concept refers to *"the use of emergent social software platforms within companies, or between companies and their partners or customers"* (McAfee 2006a). This definition breaks down followingly:

- *"Social software enables people to rendezvous, connect or collaborate through computer-mediated communication and to form online communities. (Wikipedia's definition)*
- *Platforms are digital environments in which contributions and interactions are globally visible and persistent over time.*
- *Emergent means that the software is freeform, and that it contains mechanisms to let the patterns and structure inherent in people's interactions become visible over time.*
- *Freeform means that the software is most or all of the following: optional, free of up-front workflow, egalitarian or indifferent to formal*

organizational identities, and accepting of many types of data." (McAfee 2006a)

The definition of Enterprise 2.0 clearly highlights the aforementioned fundamental principles of social software as it brings forth the emergent bottom-up dynamics of social software and the signifigance of visibility in terms of communication and interaction. Furthermore, this definition underscores many other central aspects of social software in terms of organizational behaviour: Enterprise 2.0 approach is lightweight (i.e. not hard to deploy or learn), initially freeform and unstructured, eventually emergent and self-organizing, and largely dependent on human issues - not technical ones. (McAfee 2006b)

2.1.2 Other Conceptual Frameworks

Even though the hype surrounding social software is strong, it is still unclear what the actual value that it brings to organizations is. After all, there have already been a number of other conceptual frameworks during the last decade which have related to very much the same ideas as social software. One such example is open system approaches (See Table 2) which considered the nexus of work group performance and information technology through a 'groupware approach' emphasizing self-directedness of the work group on the use of information technology, and a 'collaborativeware approach' which promoted a perspective emphasizing empowerment (Shulman 1997).

Table 2 - Open system approaches (Shulman 1997)

APPROACH	EMPHASIS	FACILITATOR	EFFECTS OF IT	VIEW ON IT
Groupware	Self-directedness	Availability of empowering information exchanges within the group	Not limited to actual use of IT; include the effects associated with symbolic presence or absence	Provide opportunities for group members to increase their capacity to be more self-directed and actively create and change themselves within the group
Collabora-tiveware	Empower-ment	Electronically mediated exchanges with others outside of the group	Not limited to actual use of IT; include the effects associated with symbolic presence or absence	Flexible means of creating new relationships within a dynamic context which they are both affecting and being affected by, particularly with person outside of the work.

Other examples of similar conceptual frameworks are 'groupware technologies' (e.g. Orlikowski & Hofman 1997), 'collaboration technology' (Andriessen 2003), and 'networked collaborative e-learning' (McConnell 2006) (See Table 3). Naturally, each of the frameworks differs to some extent from each other. For instance, collaboration technology places more focus on learning and/or social encounters than groupware technologies (Andriessen 2003). Networked collaborative e-learning, on the other hand, puts a lot of emphasis on the signifigance of a "learning community" and the relationships between each student, and the student and teacher (McConnell 2006).

Table 3 – Conceptual frameworks similar to social software (Adapted from Orlikowski & Hofman 1997; Andriessen 2003; McConnell 2006)

FRAMEWORK	DESCRIPTION
Groupware technologies	Electronic networks that support communication, co-ordination and collaboration through facilities (e.g. information exchange, shared repositories, discussion forums and messaging)
Collaboration technology	Information and communication technology applications that support communication, co-ordination, co-operation, and learning and/or social encounters
Networked collaborative e-learning	Bringing together of students via personal computers linked to the Internet, with a focus on them working as a "learning community"

Of the aforementioned frameworks, networked collaborative e-learning appears to be most analogous to the concept of social software. First of all, it is based on a set of beliefs (See Table 4) concerning the purposes of learning and the use of new advanced information and communication technologies which are very alike, if not identical, with the principles behind the use of social software. Secondly, it emphasizes reciprocal collaborative learning which comprises sharing resources, knowledge, experience and responsibility. And thirdly, it fosters knowledge-building through social interaction between students, and students and tutors. (McConnell 2006)

Table 4 – Beliefs concerning networked collaborative e-learning (McConnell 2006)

BELIEF	EXPLANATION
Based on principles of action learning and action research	Focus of study is largely problem-centred, arriving at the focus through discussion and negotiation.
Based on critical reflective learning in a social context	Technology supports group and community discussion and the sharing of experience in a social, conversational context; a critical perspective derives from reflection on one's own learning.
Collaborative assessment is a necessary component	Involves the student, their peers and a teacher; triangulated assessment
Involves a community of students	Students are responsible for managing their own learning and for helping others in theirs
Supports just-in-time knowledge	Other students, collaborative projects, online sources and resources, academic papers and books as sources
Collective responsibility by students and teachers	Review and modification of the design, procedures and ways of working

All things considered, it is possible that social software is perhaps less a revolution and more of an evolution, as Arnold (2003) has argued. After all, some of the differences between the older conceptual frameworks and present-day social software are not particularly immense. Nonetheless, "Enterprise 2.0" applications are seen as "*a strategic resource which is to be used now and in the future to interface with customers, suppliers and partners, and to manage collaboration internally*" (Mckinsey 2007).

2.2 SOCIAL SOFTWARE APPLICATIONS

The most prominent and best known social software applications at the moment are blogs and wikis. Not surprisingly, these two applications have also been most popular in terms of academic research during the past few years (e.g. Cohen & Krishnamurthy 2006, Wagner 2005). Blogs and wikis are also the social software applications which many major companies have started adopting (Delio 2005).

2.2.1 BLOG

Word 'blog', or 'weblog', is often used of a personal web page which is kept by the author in reverse chronological diary form (Wagner 2005). Typically, it is one long Web page, partitioned into archives, with links to other URLs on the Web (Cohen & Krishnamurthy 2006). In addition to archival features, many blogs have search and categorization features which help in content organization and retrieval (Wagner 2005).

In general, blogs consist of some text paragraphs with embedded links (either internal links to other section of the same blog or external links), perhaps a few images and pointers to older sections of the same blog, and possibly a set of reverse pointers to the blog itself made in other blogs. Blogs are basically large queues with additions appearing at the top of the page and older material scrolling down; however, unlike a moderated site, additions are immediately available to anyone accessing the URL. (Cohen & Krishnamurthy 2006)

As opposed to typical web pages, many blogs are updated with significantly higher frequency. The constant updating of content as well as links to other sites that are themselves changing provide a multi-way communication paradigm on the Web that typical Web pages do not. Additionally, while typical Web pages have a single point of entry (the URL), blogs have multiple locations of interest (the various paragraphs) which can be linked to. This makes navigation through and refering to a specific aspect that is covered in a blog easier. The quality and richness of the blog (i.e. nature, number, and quality of links from it) normally improve over time because blogs are frequently written to be read by many people, some of whom correspond with the blog author(s) to point out errors or related links. (Cohen & Krishnamurthy 2006)

Providing there is web access, blog is an any-time and any-place information and knowledge site which is normally maintained by one individual, although it can be a multi-person collaboration facility as well. It is a medium for people who wish to broadcast their expertise to a large following through a process of "story telling". (Wagner 2005) Thus, metaphorically blog can be understood as a presentation where a single person is speaking to an audience who can comment on, but not change, the content (Delio 2005). Yet, blogs can also be used by bloggers who wish to converse with a small group of others by each

telling their stories through the weblog, and possibly linking to each other. (Wagner 2005) If a significant fraction of the linking between blogs is reciprocal, the blogs construct a close-knit community, or a blog space, which is often described as blogistan (Cohen & Krishnamurthy 2006).

Blogs offer a window into what many readers find interesting especially when new issues emerge. Additionally, it helps in finding out new stories that are related to stories readers were previously interested in, blogs that are related to their blog, or people that have commented on or linked to their blog. (Cohen & Krishnamurthy 2006) This sort of "one-to-many" form of communication characteristically allows people to communicate in a lightweight, freeform manner, frequently with a stream-of-consciousness quality (Farnham et al. 2004).

2.2.2 WIKI

The WikiWikiWeb server concept, or simply 'a wiki', refers to a freely expandable collection of interlinked Web pages which are used for storing and modifying information; it is a database where each page is easily editable by any user with a forms-capable Web browser client. Although all users are invited to edit any pages or to create new pages within the wiki Web site, wiki is not a carefully crafted site for casual visitors. In contrast, it seeks to involve the visitor in an ongoing process of creation and collaboration that constantly changes the Web site landscape. By means of making page link creation effortless and by showing whether an intended target page exists or not, the technology promotes "meaningful topic associations" between different pages. Hence, no wiki is more than a few clicks away from any other hypothetically (so called "small Wiki hypothesis"). (Leuf & Cunningham 2001)

Individual wiki pages resemble regular web pages. They are created incrementally by a group of collaborating users in plain text or with a simplified mark-up language (Wagner 2005). Thus, a wiki requires no technical expertise, making it possible for anyone to create and edit a page (Fichter 2005). In order to avoid effects of undesired modifications, however, wikis keep extensive web page histories, and permit viewing and roll-back of earlier versions. Due to this type of "open source" technology for knowledge content, the focus is on

incremental knowledge creation and enhancement, version management, and multi-user participation (Wagner 2005).

In theory, wikis are good for collaboration and sharing content. They are ideally suited to creating a shared knowledge base that aggregates and distills information from a variety of people. (Fichter 2005) For instance, by creating hyperlinks to non-existing pages users can "ask questions" of other users (Wagner 2005). Furthermore, the fact that wikis record and keep track of revisions and permit browsing the revision history makes them a useful for documentation or customer support. Collaboratively writing and editing also makes wikis a useful tool for collaborative discovery; individuals can contribute what they know, link to outside content, and summarize comments on a particular point. (Fichter 2005) By permitting and encouraging the editing of other users' pages, wiki users can and should incrementally improve each others' contributions (Wagner 2005).

As every wiki user typically has exactly the same capabilities as any other user, wiki is inherently democratic (Leuf & Cunningham 2001). Metaphorically it can be seen as a huge whiteboard, one where everyone has a marker and is welcome to scribble. Thus, it can also be described as a 'many-to-many' collaborative tool. (Delio 2005) In order to work well, however, wikis need constant care and pruning. Hence, members of a wiki community are expected voluntarily to take on the role of regularly cleaning up the wiki, adding new links, connecting revised and new content, and helping preserve the continuity over time. (Fichter 2005) In some cases deliberate structuring might also give a framework that complements and guides the natural evolution of content. For instance, in a corporate setting explicit structure is sometimes required by the nature of the content and how the wiki is used. (Leuf & Cunningham 2001) If wikis are used to share important information, such as security data, stressing user accountability and regular review of postings becomes especially critical (Delio 2005).

Wikis are to a great extent about collaboration space, be it an unusual one. Moreover, they appear to be a good way to organize and cross-link knowledge. (Leuf & Cunningham 2001) However, because of total freedom, ease of access and use, simple and uniform navigational conventions, and apparent lack of formal structure, wikis work best in organizational cultures in which there is

trust and control can be delegated to the users of the system (Fichter 2005). Conversely, there are situations that don't benefit from becoming an open discussion or collaboration forum (e.g. when dealing with restricted and confidential information) and hence the use of a wiki. Accordingly, not everyone needs or wants a wiki. (Leuf & Cunningham 2001)

2.2.3 OTHER APPLICATIONS

In addition to blogs and wikis, there are a number of other social software applications. Discussion forum (also discussion/bulletin board), for instance, is an application that allows people to post messages and share information, and thus take part in a process of discussion with questions and answers (Wagner 2005). It is text based conferencing where individuals can share knowledge and information on a multitude of topics by posting messages for other to read (Jashapara 2004). Discussions forums track who said what and when, which characteristically helps foster the exchange of ideas, connections, and linkages among people who join in the conversation (Fichter 2005).

Discussion forums, blogs, and wikis share a number of characteristics. For instance, they all create a non-volatile, shared record of expressed knowledge, are relatively light-weight, support the collaboration of people in different-time, different-place environments, and support forms of knowledge organization (e.g. threading or hyperlinking). However, discussion forums, blogs, and wikis also have their differences (See Table 5). For instance, blogs allow a single user to post his or her knowledge to the community whether the community wants it or not, whereas discussion forums and wikis share and distribute knowledge through questions and answers between community members. (Wagner 2005)

Table 5 - Comparison of blogs, wikis, and discussion forums (Adapted from Wagner 2005)

	BLOG	WIKI	DISCUSSION FORUM
Speed of publication	Single-click publication possible with many implementations. Results reflected instantaneously on the server ("web speed")		
Ease of publication	Single-click publication possible with many implementations, indexing and formatting large handled by software. Users may have access to a simplified mark-up language		
Elementary information unit	Comment-on-topic-at-time	Comment-on-topic	Comment-by-participant-on-topic-at-time
Knowledge representation and organization	Chronological organization less useful than topical organization. Workaround through indices and access to archives.	Topical organization as well as bi-directional indexing, as well as chronology of changes.	Chronological organization less useful than topical organization, workaround "sticky" messages.
Content indexing	Time-indexed (topic-based exist too)	Topic-based	Time-indexed (topic-based exist too)
Team support	Meant for individual publishing; most tools offer team support as well.	Inherently open to public for contributions editing; most tools facilitate restricting wikis to a closed group of users.	Provided in the form of open or closed set of members; some of the members may be designated as moderators.
Mode of conversation	Broadcasting; one-to-many communication tool	Dialog; many-to-many communication tool	Dialog; many-to-many communication tool
Version management	Not provided; although blog posts may be edited by the contributor(s)	Versions and history of changes are provided; facilities are available for rollback	Not provided; messages posted are not expected to be modified (exceptions)
Community of practice fit	Innovation	Best practice	Help
Security	Security measures such as access rights, administrative permissions are normally provided.		

Naturally, other social software applications exist as well. RSS aggregator, for instance, is an application which periodically queries sites of interest in order to notify the user when new content of interest appears (McAfee 2006c). Hence, RSS aggregator provides a powerful management tool, for example, for

routing data across workgroups and external partners (Gillmor 2004). Although perhaps more of a technology than application, social bookmarking ("tagging") is also a form of social software. It refers to categorization of content by users who attach tags - simple, one-word descriptions. The main advantage of this type of content categorization is that it creates information structures and relationships which reflect people's actual use as opposed to ones that were planned for them in advance (McAfee 2006c).

Naturally, the list of social software applications does not end here. For instance, e-mail, instant messaging (IM) or chat, and networking websites can also be regarded as social software applications (Wagner 2005). And of course, new social software applications and technologies emerge frequently. These applications and technologies, however, are not be covered in this research.

2.3 SOCIAL SOFTWARE IN ORGANIZATIONS

Academic research on the use of social software in organizations is practically non-existent. This, however, has not stopped organizations from adopting them; for instance, approximately 30 % of companies worldwide are already using or planning to use blogs and/or wikis at the moment (Mckinsey 2007). Included are such companies as Cisco, IBM, Intel, and Microsoft (Delio 2005). On the other hand, approximately 40 % of companies worldwide haven't yet even considered the possibility of adopting social software (Mckinsey 2007).

2.3.1 BLOG

Most well-known corporate blogs are aimed at the public. For instance, Maytag, Microsoft, and Macromedia each have several employees writing blogs. The employees' corporate blogs are used to improve or develop new products by communicating more effectively with the customers. The biggest realized benefits of this type of external corporate blogging have been thought to be leadership and idea sharing although customers' ideas and feedback have posed the greatest opportunity. (Backbonemedia 2005)

When it comes to internal blogging in organizations, there is not much information available. Be it as it may, a few public examples of internal blog usage exist. For instance, IBM has thousands of internal blogs which the employees can use to blog on any aspect of their work. The only requirement is

that they follow the company's business code of ethics and that everyone can see what others are blogging about. (Ives & Gilroy 2006) Another example of a company using internal blogs is Sun Microsystems. Sun launched it corporate blogging site in mid-2004 and has today over 3 000 employees writing their blogs (BCOM 522 2007).

Most of the information concerning the way organizations are using internal blogs is accessible as customer case descriptions provided by companies promoting their own social software applications. One such example is a European pharmaceutical group which used blogs to create a competitive intelligence knowledge base to replace their previous platforms and static websites in 2004 (Corante Research 2005). Another example is a global consulting firm which has decided to link its 100 000 consultants through a series of five blogs types so that information entered into one blog is automatically replicated in other blogs. The idea is to make the system's decentralized structure powerful and effective through linking and interrelationships of the five blog types, and hence help the consultants have access to more up-to-date information on clients and increase innovation throughout the company. (Ives & Gilroy 2006)

2.3.2 WIKI

Wikis have been implemented in both large and small organizations. Nokia, for instance, is using both open-source and proprietary wiki platforms at its Corporate Strategy department. Smaller wiki using organizations are, for example, Angel.com and Canadian Meteorological Centre. (InternetWeek 2006) Various technology-oriented interest groups are also using wikis (Aronsson 2002). One such example is Maemo (www.maemo.org) which provides an open source development platform for Nokia Internet Tablets and other Linux-based devices.

Wikis are used for many purposes in organizations. The intelligence community of the United States, for instance, is using an "intellipedia" for information sharing between different agencies (National Defense 2006). Wikis are also used as central repositories for project information. At IBM, for instance, team members maintain a common view of a project through group editing. Furthermore, IBM uses wikis during live events so that participants can add

notes, information about other participants, and links to related documents. (Ives & Gilroy 2006)

Technology-oriented organizations are not the only ones using wikis, though. One such example is Dresdner Kleinwert Wasserstein (DrKW), an investment bank with 6 000 employees. At DrKW popular uses of wiki include, for instance, managing meetings, brainstorming and publishing, and creating presentations. Even though several thousand employees at the company are using wiki for the aforementioned purposes, the usage is highly polarized as a large number of employees still do not know what a wiki is. (Socialtext 2006)

2.3.3 Other Applications

Forums are used by millions of communities worldwide (Wagner 2005). However, when it comes to other social software applications besides blogs, wikis, and forums, not much is known concerning their usage in organizations. Fortunately, some bits of information do exist. For instance, social bookmarking, i.e. tagging, is used among IBM's employees to build communities of common interest. What's more, at Siemens USA RSS feeds from the content of the company intranet are offered to the employees. Furthermore, a global financial services firm is using a learning network to link with some of its stakeholders. Their learning network consists of blogs, RSS aggregators and podcasts. (Ives & Gilroy 2006)

3 VIRTUAL NETWORK ORGANIZATION

The purpose of this chapter is to explore potential areas of application for using social software in organizations. These areas are explored through the concept of virtual network organization, a framework combining network organization and virtual organization metaphors. In addition, organizational phenomena such as human networks and communities, communication and interaction, and knowledge are discussed.

3.1 ORGANIZATIONS

Organizations are studied for many purposes and from many perspectives. Variation among types of organizations, differences in disciplinary background of the investigators, and whether research is addressed to more immediate and applied problems or whether it seeks long-term basic understanding, are some of the important bases of divergence (Scott 2003). The consequences of this kind divergence are very significant in terms of understanding organizations. After all, the way in which a phenomenon is defined also determines the ways of looking and studying it. (Huczynski & Buchanan 2001)

3.1.1 ENACTMENT AND METAPHORS

Organizations can be conceptualized as sensemaking systems in which people enact, or create, the object to be seen and inspected. This "sensemaking" happens as people make retrospective interpretations of the situations in which they find themselves. Over time these interpretations become objectified, diffused, and widely internalized into a consensus on what the organization is. As a consequence, people enact and find what they expect to find. Enactment, in other words, means that the organization in which people work is created by the people when they say or do something. (Weick 1995) Consequently, enactment is the core process which projects, defines, and produces a particular way of existing in an organization (Morgan 1998).

Enactment can perhaps best be comprehended through the concepts of discourse and metaphors. There are two reasons for this: One, it is through discourse (i.e the way people communicate in speech or writing) that the basic

assumptions about organizing are created, sustained and transformed in organizations (Barrett et al. 1995). And two, metaphors shape how people see and make sense of the world by orienting their perceptions, conceptualizing, and understanding of one thing in the light of another. In other words, metaphors facilitate the creation and interpretation of social reality. (Putnam et al. 1997)

The advantage of metaphors is that they imply a way of thinking and a way of seeing that pervades the way people understand the world. Hence, metaphors are used whenever people attempt to understand one element of experience in terms of another. (Morgan 1998) For instance, if it is said that "an organization is like an iceberg", it means that the organization has an apparent side to it which everyone can see but also a side which is hidden "below the surface". However, it does not mean that an organization floats on water nor is cold and made of water. Metaphors, in other words, invite people to see the similarities, but also invite to ignore the differences (Morgan 1998).

All the same, metaphors are very useful for understanding organizations. For instance, using a metaphor of a living, learning brain helps to represent organization in a knowledge-based economy where information, knowledge, and learning are key resources (See Table 6). Additionally, it gives an easily approachable perspective to many contemporary organizational issues, such as learning abilities, information technology, and networked intelligence. (Morgan 1998) On the contrary, if an organization is approached as a machine, or as flux and transformation, the interpretations and connotations are different.

Table 6 - Some root metaphors of organizations (Adapted from Morgan 1998)

METAPHOR	FOCUS	STRENGTH	LIMITATION
Machine	Management and design of interlocking parts that each play a clearly defined role in the functioning of the whole	Efficient performance and control of routinized tasks in stable times	Difficulty to adapt to changing circumstances
Brain	Information processing, learning, and intelligence; 'learning organization'	Identification of learning processes and specification of necessary organizational designs	Overlooks realities of power and control; generates resistance to status quo
Flux and transformation	Logics of change shaping social life; systems, chaos and complexity	Offers a powerful mindset for managing change	Order becomes apparent only with hindsight

On the whole, enactment and organizational metaphors are of paramount importance in terms of understanding organizational behaviour. After all, the material world may come together in a different way than before if people in organizations take their interpretations of the organization seriously and act on them. Consequently, if the material world does change, other may notice these changes, interpret them in ways that are at least equivalent to those of the original actor, and then act on these new interpretations in ways that verify the original interpretation. (Weick 1995) Hence, understanding contemporary and influential metaphors, such as network organization and virtual organization, becomes critical in terms of making sense of organizations and the way people act in them.

3.1.2 NETWORK ORGANIZATION

"Network organization" is a metaphor used of numerous modern-day organizations. The term is frequently used of organizations in which project teams come together to perform a task and disappear when the task is over, with members regrouping in other teams devoted to other projects. The term "network organization" is particularly accurate if teams and team members are spread geographically, use electronic technology, and occasional face-to-face meetings to integrate their activities. (Morgan 1998)

Although the term network is often used as a general metaphor for dispersed, complex, and adhocratic multi-actor social systems, it has other connotations aswell. It is used, for instance, as an objective parameter in scientific research, and as an analytical concept for considering relations between actors (e.g. people, organizations, states), events (e.g. wars, meetings) or other phenomena of interest (e.g. law proposals, politicians' public image) (Johanson et al. 1995). The most general use of the term is, nevertheless, for the structure of ties among the actors in a social system in which the ties may be based on anything that forms the basis of a relation (e.g. conversation, affection, friendship, kinship) (Nohria & Eccles 1992).

Generally speaking, the structure of any social organization can be thought of as a network (Nohria & Eccles 1992). Hence, it is possible to postulate that all organizations are networks, i.e. patterns of roles and relationships, whether or not they fit the network organization image. For instance, a bureaucracy is a network characterized by a rigid hierarchical subdivision of tasks and roles, vertical relationships, and an administrative apparatus separated from production. In contrast, a network characterized by flexibility, decentralized planning and control, and lateral ties is closer to the "network organization" type. (Baker 1992)

All things considered, the network organization is a powerful and influential metaphor. Because its most important structural characteristic is the high degree of integration across formal boundaries, it is useful when in comes to tackling tasks and environments that demand flexibility and adaptability. Furthermore, it helps to understand a market mechanism that allocates people and resources to problems and projects in a decentralized manner. (Baker 1992)

3.1.3 VIRTUAL ORGANIZATION

"Virtual organization" is another metaphor through which many contemporay organizations are appreciated. The term is mainly used to refer to an organization where a large number of the organization members use electronic channels as their main (or even only) medium of contact with each other, and with the rest of the organization (Huczynski & Buchanan 2001). However, it can

also be used for any organization which is continually evolving, redefining and reinventing itself for practical business purposes (Hale & Whitlam 1997).

"Virtuality" is perhaps best characterized as a management paradigm or set of principles consistent with a variety of organizational forms (Mowshowitz 2002). Nonetheless, the virtual organization model of today would be inconceivable and impractical without advanced information technology (Huzcynski & Buchanan 2001). This is because the realization of a virtual organization in practice is dependent on computer networks which provide access to information stored on computers and support the exchange of messages between actors (e.g. devices, software, and people) (Mowshowitz 2002).

What makes virtual organization an appealing metaphor, is that they appear to have many advantages. For one, they have the capacity to form and reform, develop dynamic communication, and create cultures which support continuous organizational adaptation (Buchanan & Huczynski 2004; Hale & Whitlam 1997). Moreover, their form of organizing seems to contribute to improved organizational performance by facilitating efficient use of resources, enhancing organizational responsiveness, and promoting organizational reflection (Mowshowitz 2002). Therefore, it is not surprising that virtual organization is seen by many as a panacea for current organizational problems (Buchanan & Huczynski 2004). However, it has inherent challenges as well. For instance, when people work at a distance they are expected to use initiative which can lead to freedom and release; on the other hand, it can also lead to disenfranchisement, isolation and confusion (Hale & Whitlam 1997).

All things considered, the virtual organization metaphor depicts well in situations where organization needs to disperse its operations through information technology in order to be better able to adapt and reconfigure itself. The rationale is plain: the virtual organization metaphor makes it easier to make sense of operations performed in a non-synchronized, non-linear fashion while effectively integrating and controlling them. (Huczynski & Buchanan 2001)

3.2 WHAT IS VIRTUAL NETWORK ORGANIZATION

Virtual network organization is a framework for making sense of potential areas of application for social software in an established organization. Furthermore,

it helps to understand some conceivable implications of its use in terms of various organizational phenomena that relate to both virtual organization and network organization metaphors.

3.2.1 Human Networks and Communities

In essence, whole organizations can be regarded as networks although there are also smaller networks of various types (e.g. workflow, communications, authority, and information exchange) that exist within organizations (Brass & Burkhardt 1992; Nohria & Eccles 1992). Irrespective of size, however, collections of individuals who are willing and able to communicate and cooperate with each other can be referred to as human networks. These networks are typically relied on by individual actors, for instance, to support relationships and joint activities in organizations. (Mowshowitz 2002; Nohria 1992)

Networks have many benefits for individual actors, especially when it comes to accessing, timing, and referring information (See Table 7). For instance, by being part of a network through which information flows, a person gains access to valuable information and opportunities. Furthermore, the network can make sure that the person is informed on time and that the information is legitimate. (Burt 1992) Hence, bringing social software into such a network poses an interesting area of application, especially because all actors in a network are typically overwhelmed by the flow of information. The rationale is that networks often become an important screening device for information as individual actors are unevenly connected with one another and are attentive to the information pertinent to themselves and their friends. And even though this second-hand information might be vague or inaccurate, it nonetheless serves to signal something to be looked into more carefully. (Burt 1992)

Table 7 – Information benefits of a network (Adapted from Burt 1992)

ASPECT	DESCRIPTION
Access	Access to a valuable piece of information or opportunities and knowing who can use it
Timing	Beyond making sure that a person is informed, personal contacts can make the person one of the people informed early
Referral	Network that filters information coming to a person also directs, concentrates, and legitimates information about the person going to others

Another potential area for applying social software in organizational networks comes from the recognition that information which indicates both where knowledge actually resides in the organization and how to gain access to it flows through groups called “informal networks” (See Table 8). These networks work through people asking each other who knows what, who knows how to do things, and who has previously provided knowledge that turned out to be reliable and useful. (Davenport & Prusak 1998) Hence, they are of especial importance in knowledge-intensive sectors, where people use personal relationships to find information and do their jobs. What's more, informal networks are also important sources of job satisfaction and retention. (Cross et al. 2002)

Table 8 - Comparison of group characteristics (Adapted from Wenger & Snyder 2000)

	PURPOSE	MEMBERS	MOTIVATION	ACTIVE
Formal work group	To deliver a product or a service	Everyone who reports to the group's manager	Job require-ments and common goals	Until the next reorganization
Project team	To accomplish a specified task	Employees assigned by senior management	The project's milestones and goals	Until the project has been completed
Community of practice	To develop members' capabilities; to build and exchange knowledge	Members who select themselves	Passion, commitment, and ideniti-fication with the group's expertise	As long as there is interest in maintaining the group
Informal network	To collect and pass on business information	Friends and business acquintances	Mutual needs	As long as people have a reason to connect

Due to the non-electronic nature (i.e. undocumented), informal networks have not been readily available earlier to all who need them (Davenport & Prusak 1998). Hence, applying social software (or other collaboration technologies) in organizations can potentially bring many improvements to this. For instance, they can make accessibility to and availability of people and information easier than before (Andriessen 2003). Furthermore, due to their electronic nature, these networks can help people to span time and space, overcome communication limitations, and extend access to people beyond their own social network (Farnham et al. 2004).

Social software has potential applications for other grouptypes aswell. Communities of practice (CoP) (See Table 8 & Table 9), for instance, are groups that characteristically self-organize if information exchange and resource sharing between actors in an informal network has proved useful over time. Hence, they are often initiated and informally bound together by co-workers who have complementary knowledge, share common work practices, interests or expertise, and contribute to joint aims (Davenport & Prusak 1998; Wenger & Snyder 2000). By sharing their experiences and knowledge in free-flowing,

creative ways, the members of communities of practice can, for instance, help foster new approaches to problems (Wenger & Snyder 2000).

Table 9 - Community types and requirements (APQC 2000; in Wagner 2005)

COMMUNITY TYPE	UNIQUE REQUIREMENTS
Help Communities to support each other on everyday problems and share ideas on an ad-hoc basis	Connect people and enable spontaneous exchange
Best Practice Communities that develop, validate and then share best practices	Process support for idea validation and refinement
Knowledge Stewarding Communities that maintain a body of knowledge for day-to-day use as well as the community around it	Document management; community management; enlisting of experts
Innovation Communities that seek breakthrough ideas	Bringing together individuals with multiple perspectives; identifying new trends

When consicering communities of practice, however, it must be remembered that they are organic, spontaneous, and informal in nature. Hence, they are also resistant to supervision and interference. (Wenger & Snyder 2000) Accordingly, if too much emphasis is placed on their efficiency, the necessary "slack" needed for such groups to function well might be driven out (Davenport & Prusak 1998). This is also one of the reasons why CoPs provide a promising area of application for social software. After all, the emergent, bottom-up dynamics of social software appears to be an appropriate fit for the creation and facilitation of such communities.

3.2.2 Interaction and Communication

Social software appears to have very interesting implications for an organization on inter-actor relationship level if applied to the area of interaction and communication. First of all, electronic networks can accelerate as well as amplify the communication flow between actors in a network (Farnham et al. 2004). Secondly, organizing and communication appear to be to a great extent reciprocally dependent (Putnam et al. 1997).

Before looking at these in more detail, there are a few important issues that need to be acknowledged. First of all, the viability and effectiveness of

communication will depend critically on the robustness of the underlying social structure which typically has been forged on the basis of face-to-face interaction (Farnham et al. 2004). By and large, this is probably not a major challenge as people tend to communicate electronically with people they already know (Green & Pearson 2005). However, as the amount of electronic interaction increases so will presumably also have to increase the amount of face-to-face interaction (though not in the same proportion). Otherwise, there is a risk of the network losing its robustness and becoming ineffective. (Nohria & Eccles 1992)

Be that as it may, there appear to be many potential application areas for social software usage in communication, especially in regard to interaction processes (See Table 10). For one, communication (i.e. using communication tools and exchanging signals) has a special status as it is basic to the other task and group oriented processes (Andriessen 2003). Furthermore, information sharing and learning appears to be an easy fit for social software. After all, information sharing and learning focuses on exchanging and developing information, views, and knowledge which can be enhanced by enabling people to quickly and easily publish their knowledge so that it can be effectively and securely shared with other members of the community.

Table 10 – Types of interaction processes (Adapted from Andriessen 2003)

TYPE	CATEGORY	DESCRIPTION
Communication	Interpersonal exchange process	Using communication tools and exchanging signals.
Co-operation	Task-oriented process	Working together, decision making, co-editing etc.
Co-ordination	Task-oriented process	Adjusting the work of the group members; includes leadership.
Information sharing and learning	Task-oriented process	Exchanging (sharing) and developing information, views, knowledge.
Social interaction	Group-oriented processes	Group maintenance activities, developing trust, cohesion, conflict handling, reflection.

Another aspect which increases the appeal of using social software to support information sharing and learning is the recognition that it has broad

implications on many levels. For instance, for individuals information sharing and learning means that learning is an issue of engaging in and contributing to the practices of their communities (e.g. blog writing and wiki editing). For communities, on the other hand, it means that learning is an issue of refining their practice (e.g. collaborating on wikis) and ensuring new generations of members (e.g. emergent group formation). Equally, for organizations it means that learning is an issue of sustaining the interconnected communities of practice (e.g. by providing social software for communication and resource sharing) through which an organization knows what it knows and thus becomes effective and valuable as an organization. (Wenger & Snyder 2000)

Although all interaction processes provide many promising opportunities for using social software, communication appears to be most interesting area of application. In order to understand the rationale for this, the relationship between communication and organization needs to be looked into in depth. This is accomplished by considering linkage and performance metaphors of communication and organization (See Table 11).

Table 11 - Metaphors of communication and organization (Adapted from Putnam et al. 1997)

METAPHOR	FOCUS	COMMUNICATION	ORGANIZATION
Linkage	Connection	Connector that links people	Multiple, overlapping networks of relationships with permeable boundaries
Performance	Social interaction	Outgrowth of a collaborative process in which social and symbolic interaction is dynamic, interconnected, reflexive, and simultaneous	Coordinated actions, i.e., organizations enact their own rules, structures, and environments through social interaction

The linkage metaphor is interesting in terms of social software because communication is viewed as the connector that links people together and constitutes organizations as networks of relationships. Communication contacts, i.e. linkages, are the building blocks which form the web or structural framework of the organization. In other words, organizations are not entities with fixed structures and boundaries but networks of relationships defined through the presence or absence of interlocked activities. Communications among people, hence, imply collaboration and interdependence in which

linkages promote coordinated action and extend webs of social influence. Since communication alters networks patterns, linkages shift with issues, topics, and context, creating network roles and patterns which are fluid and dynamic. (Putnam et al. 1997)

The linkage metaphor is as much interesting in terms of social software because it focuses on social interaction and provides an interactive view on organizational communication. Social interaction, through this metaphor, is seen to be rooted in the sequences, patterns, and meanings that stem from exchanging verbal and nonverbal messages. Organization, respectively, is seen as coordinated actions parallelling communication through social interaction. In other words, the performance metaphor supports a production relationship between communication and organizations; either communication produces organization as in enactment (Weick 1995) or the two co-produce each other. (Putnam et al. 1997)

In terms of social software, use of these different conceptions of communication and organization are practical for two reasons. For one, both the linkage and performance metaphor explain why people appear to be using technology and multi-person forms of communication not only to communicate, but also to enable increased access to and awareness of a strong community (Farnham et al. 2004). Secondly, they help to understand why sharing is the operative principle in networking (Mowshowitz 2002) and why information technology can be seen as a potential aid to different interaction processes instead of a substitute for them.

3.2.3 KNOWLEDGE

Where human networks and communities offered a community level approach for scanning possible areas of application for social software, images of knowledge help to make sense of similar opportunities on individual actors' level. Two images of knowledge that appear to be relevant in terms of social software are interpretive image of knowledge and strategic image of knowledge (See Table 12). Both of them help make sense of opportunities for using social software in organizations: Firstly, according to the interpretive image, knowledge is fundamentally social, linguistic, and historically constituted, i.e. it is something that is created through discourse over time (Barrett et al. 1995).

Secondly, according the the strategic image, knowledge is knowledge about knowledge; where it is located, how it is stored, how it is transferred, what type of knowledge it is, and how swiftly it changes over time. Moreover, it is developed by reflection on knowledge (e.g. blog writing). (Venzin et al. 1998)

Table 12 – Relevant images of knowledge in terms of social software (Barrett et al. 1995; Venzin et al. 1998)

IMAGE OF KNOWLEDGE	DESCRIPTION
Interpretive	Social, linguistic, and historical constitution
Strategic	Knowledge about knowledge (where, how, what, etc.)

These images of knowledge help to see potential implications of social software usage in organizations for several reasons. For one, they help to see knowledge dynamically; knowledge is something that is frequently produced and shared as a byproduct of daily interactions with customers, vendors, alliance partners and even competitors (Zack 2003). Secondly, they help to understand why the basis for achieving competitive advantage from knowledge-based assets is less dependent on the knowledge existing at any given time per se than an organization's ability to effectively apply the existing knowledge to create new knowledge and to take action (Alavi & Leidner 2001). Thirdly, they help to comprehend why it is via continued interaction that a collection of people and supporting resources create and apply knowledge in a knowledge-based organization (Zack 2003). In addtion, they help to see knowledge as a collective achievement (Blackler et al. 1998).

All in all, the long-term effectiveness of organizations that compete through knowledge can be seen to depend crucially upon the speed and effectiveness with which people can mobilize their established and emerging knowledge bases in the organization. In other words, a rapid mobilization of knowledge by reviewing and sharing lessons from key past developments within the organization is required (Blackler et al. 1998). As one way to accomplish this is to embed information (e.g. through writing) in linked computer-based network systems which can be accessed from remote locations and allow for distributing or sharing information with interested parties (Mowshowitz 2002), social software appears to be the perfect solution.

4 EMBRACING SOCIAL SOFTWARE

The purpose of this chapter is to look at some key issues to consider after the decision to introduce and adopt social software in an established organization has been made. Topics such as change and change management are covered. In addition, some guidelines concerning project management are explored.

4.1 MAKING SENSE OF CHANGE

Conventional wisdom claims that organizations must be able to respond rapidly to external changes if they are to survive, and that the necessary internal restructuring is at times likely to be strategic or 'mould-breaking'. At the present time, this typically means moving away from a rigid, autocratic, bureaucratic approach to organization and moving towards an organizational framework which emphasizes flexibility, creativity and participation. (Huczynski & Buchanan 2001)

4.1.1 WHAT IS CHANGE

Change is an ambiguous term in the context of organizations. For one, there are basic and profound inconsistencies between the literature on organizational change written for practitioners and that based on the empirical and theoretical discoveries of academic researchers (Miller & Greenwood 1997). For instance, implied metaphors of organizing, analytic frameworks, ideal organizations, intervention theories, and roles of change agents are contrasted depending on whether change is viewed as episodic or continuous (Weick & Quinn 1999).

The inherent challenge with change is that it can only be understood fully in relation to continuity, i.e. with respect to what has not changed (Huczynski & Buchanan 2001). Because of that, change is typically viewed as departure from the status quo; it is movement away from present conditions, beliefs, or attitudes toward a goal, an idealized state, or a vision of what should be (Rothwell et al. 1995). Consequently, a journey metaphor is characteristically used to provide rationale for the change process. Among many things, the journey metaphor offers a positive perspective and focuses on arrival at a goal.

Furthermore, participants in organizational change effort are offered reassurence that the road to organizational improvement may be long but arrival at the desired destination will be worth the effort. (Inns 1996)

The depth of change can vary from shallow fine tuning (e.g. focus on efficiency) to a deep paradigm shift. A paradigm shift means a change in the way people think, solve problems and define boundaries, i.e. the way business is done (Huczynski & Buchanan 2001). Hence, change is as much concerned with changing the world view or the organizational view (e.g. metaphor of organizing) of those involved, as it is with changing, for instance, decision-making processes, technologies or organization structures. It also means that change involves challenging, questioning and breaking down the existing shared assumptions held by the organization's members in order to change attitudes and behaviour. (Buchanan & Boddy 1992)

Discourse is the core of a change process through which the basic assumptions about organizing are created, sustained, and transformed. Hence, large-scale changes in organizations characteristically involve a conflict between a well-entrenched discourse and a proposal of an alternative discourse. Through the proposal and introduction of the novel discourse transformation to new behaviours and routines are reinforced. Accordingly, change happens when a new way of talking replaces an old way of talking. (Barrett et al. 1995)

Responsibility for beginning and maintaining an organizational transformation effort is typically given to a person or team called a change agent. They may come from inside an organization ('internal consultants') or from outside an organization ('external consultants'). (Rothwell et al. 1995) In reality, any member of an organization seeking to promote, further, support, sponsor, initiate, implement or deliver change can be seen as a change agent (Huczynski & Buchanan 2001).

4.1.2 MANAGING CHANGE

In addition to introducing a novel discourse, change management approaches to planned organizational change emphasize the importance of inducing changes in both structure/systems and human processes (Worren et al. 1999). One of the many existing ways for a change agent to approach this is through three parallel agendas of change; content, control and process (See Table 13). The

context in which the change agent addresses these demands, however, varies depending on four components: the ways in which goals and priorities change through time, organizational interdepencies, responsibility for change and its outcomes, and the postures adopted by top management. (Buchanan & Boddy 1992)

Table 13 - Agendas and demands for change agent (Adapted from Buchanan & Boddy 1992)

AGENDA	DEMAND
Content	Technical competence and experience with respect to the substances of changes being implemented (e.g. software capabilities and limitations)
Control	Familiarity and competence in project management (e.g. planning, scheduling, budgeting, etc.)
Process	Skills in communication and consultation, team building, influencing and negotiation, and management of enthusiasm and resistance

There are several basic principles concerning change management interventions when inducing changes in organizations. For one, by recruiting people in ad-hoc teams aimed at solving real business problems, the change agent can induce new behaviours and attitudes rather than educate people about them (Worren et al. 1999). Furthermore, in the recruitment and maintenance of support and in seeking and blocking resistance, the change agent has to play two roles: One role focuses on supporting the "public performance" of rationally considered, logically phased and visibly participative change, while the other role focuses on "backstage activity" (politicking, wheeler-dealing, fixing and negotiating, coalition building and trade-offs). Moreover, the change agent has manage the parallel unfolding of project management, participative management and political variant approaches to change (See Table 14) in a manner appropriate in the organizational context (Buchanan & Boddy 1992)

Table 14 - Approaches to managing change (Adapted from Buchanan & Boddy 1992)

APPROACH	LOGIC	EMPHASIS	DESCRIPTION
Project management	Problem solving	Phasing of diagnosis Identification of solutions Implementation	Problems have to be seen to be solved in a suitable fashion
Participative management	Ownership	Communication Participation Commitment	People affected have to be seen to be involved in the process
Political variant	Legitimacy	Selling and convincing Team building Blocking resistance	Change and change agent have to be seen to be credible and legitimate

All in all, changes in formal structure and systems can only take place after commitment and competence have been developed by widespread involvement in the change process (Worren et al. 1999). Furthermore, depending on the organizational and change process context, the logics of change will assume different relative priorities. Hence, efficient change management necessitates successful integration of three things: Firstly, the logic of problem solving must be seen, in most organizations, to unfold in the expected and acceptable manner. Secondly, the public performance has to be supported by backstaging which typically cannot be openly discussed in the organization without damaging individual credibility or the legitimacy of the change attempt. And thirdly, the logics of ownership and legitimacy must also unfold in their own time and in their own respective ways. (Buchanan & Boddy 1992)

4.2 PROJECT MANAGEMENT GUIDELINES

When a new process-enabling technology is being implemented in organizations, managers typically follow a "universal checklist" which is supposed to be appropriate for all situations (McAfee 2003). This is not surprising since the methods of project management are popular, influential and conventional in terms of change implementation. Furthermore, the project management approach revolves around the concept of a phased project "life cycle" which makes the change process sound like a neat, tidy, rational, and

logical sequence of discrete and identifiable steps. (Huczynski & Buchanan 2001)

4.2.1 PITFALLS AND CHALLENGES

"The conquests of technology are limited by the ability of social institutions and individuals to adapt to change" (Mowshowitz 2002). In fact, this appears to be true as the prime determinants of underperformance and failure when IT fails to deliver are human and organizational considerations. These considerations are typically sustained by the behavioral patterns of polarized occupational groups with vested, but divergent, interests in exploiting IT. (McDonagh 2001) In other words, the importance of the political variant and participative management approaches to managing change (See Table 14) are not to be taken lightly.

There are five pitfalls that characteristically appear when implementing IT (See Table 15). These five pitfalls don't usually occur individually in the real world, however, but as a mix of problems. Also, where inertia, resistance, and misspecification mostly occur before the system is operational, the last two (i.e. misuse and nonuse) surface typically afterwards. (McAfee 2003)

Table 15 - Five pitfalls of IT implementation (Adapted from McAfee 2003)

PITFALL	DESCRIPTION
Inertia	Failure to act with necessary dispatch even when there is agreement about the need to act, lack of progress over time
Resistance	Lack of progress over time, arguments, overt and covert hostility, extensive political maneuvering, turf battles
Misspecification	Organization ends up with a system that works in a technical sense but does not improve the execution of business processes
Misuse	Incorrect or incomplete data entry
Nonuse	System is not used

Reasons for the appearance of these pitfalls are various. Inertia, for instance, may appear due to introduction of many new processes all at once, complexity of processes, or because multiple groups are affected by the new processes and fear that the core of their efforts (i.e., their mission at the company) could be compromised. Resistance, on the other hand, can surface if there is ambiguity

about how or whether the implementation should proceed, the business processes to be implemented are novel (i.e., far from the current way of doing business), or incentives are misaligned. Consequently, if the degree of complexity is high, misspecification is also a considerable risk. (McAfee 2003)

Challenges do not end once the new system is operational either as there are still risks of misuse and nonuse. The former can happen if users are unsophisticated about the technology, process itself is a new one, or if the system spans several parts of an organization. (McAfee 2003) As a matter of fact, this type of integration and alignment between strategic, social, and technical components that require collaboration between people is difficult in general (Worren et al. 1999). Furthermore, if failure to use the new technology does not automatically compromise the execution of other tasks or processes (i.e., employment of the new technology is discretionary), there is risk of nonuse. This also applies if people who are supposed to use the technology are unsophisticated about it. Nevertheless, it is not usually any single pitfall that undermines the success of the implementation but a "death spiral" brought on by interactions between two or more of the pitfalls. (McAfee 2003)

In terms of social software applications, there are various additional challenges that need to be met. For one, when people share their knowledge, multiple points of view will be presented, which in turn can invite critique. Consequently, people might seek to change others' ideas. If this type of behaviour is in conflict with the organization culture, it might turn out to be a potential hindrance to the adoption of social software. (Wagner 2005) Hence, wikis, for instance, work best in organizational cultures in which there is trust and control that can be delegated to the users of the system (Fichter 2005).

The social software applications and their use have other challenges as well. For instance, wikis are obviously not suitable for all types of information because most organizations have confidential or financial information that by law has to be restricted. The open-editing capability of wikis can also raise concerns about misuse, abuse, and reliability of the information. (Fichter 2005) When it comes to blogs, in contrast, a major challenge concerns how much autonomy is allowed (Delio 2005). In other words, what is allowed to be discussed in blogs and what is not allowed. One of the risks is in entering the

realm of political correctness in which no one can say what he or she is thinking (Argyris 1998).

Yet another challenge concerns the use of metaphors in the organizational change management context. For one, metaphors can be used "inappropriately" (i.e. overextended or lack sufficient fit/familiarity). Secondly, they can carry ambiguous meanings in the organization that are not recognized by the change agent. And thirdly, organizational metaphors can not typically be changed at will but people will need to buy into them. (Akin & Palmer 2000)

4.2.2 Choices and Success Factors

Although there are numerous challenges when inducing new behaviours and attitudes concerning new technology, some key principles exist. For instance, McAfee (2003) has identified five primary areas in which managers face choices when implementing new technology. The choices concern the level of project leadership (i.e. how high in the organization), management style (i.e. top-down or bottom-up), project scope (i.e. limited or comprehensive), project timing (i.e. in phases or through a "big bang") and organizational preparation (i.e. basic or extensive) (See Table 16).

Table 16 - Five areas of managerial choices in new technology implementation (Adapted from McAfee 2003)

AREA	CHOICE	ADVICE
Level of project leadership	How high in the organization	Must be guided by people who have the authority to make difficult decisions When many groups are involved but the project is uncontroversial, high-level managers don't need to step in
Management style	Top-down or bottom-up	Each style is appropriate in some circumstances and inappropriate in others Consensus is not always essential
Project scope	Limited or comprehensive	When inertia, resistance and misspecification are likely pitfalls, implementation leaders should consider throttling back on scope
Project timing	Phased or "big bang"	Phasing if positive momentum to overcome nonuse and ability to combat misspecification exist Big bang if misspecification, misuse and nonuse are not serious threats
Organizational preparation	Basic or extensive	People need to know that a new system is coming and how to use it Main pitfalls requiring extensive preparation are nonuse and misuse Some level of training is always necessary

These five areas have several implications depending on the context in which the change agent addresses the parallel content, control and process agendas of change (See Table 13). For instance, in new technology implementation the management style is typically a blend of top-down and bottom-up styles as participation, inclusion and consensus building become essential. However, if the new business processes are complex and misspecification is a likely pitfall, a directive style is a bad idea. The directive style should neither be used if use of the new technology is not mandatory. Hence, the leaders of the implementation typically have to bring its intended users along with them by moving more slowly and seeking their input and ratification of the choices made. On the other hand, if inertia, resistance and misspecification are likely pitfalls in the implementation, leaders should consider throttling back on the scope. Hence, implementation is faster, there is less in-fighting, and fewer opportunities to configure a technology incorrectly exist. Conversely, in terms

of organizational preparation, the main pitfalls requiring extensive preparation are nonuse and misuse. Hence, communications before and during the implementation about why it is necessary is essential. User training on the new technologies after they are up and running, and help desks and other support during the post-cutover period should also be attended to. (McAfee 2003)

Other success factors in a new technology implementation can be seen to include cultural and organizational change (Davenport & Prusak 2000), in-firm collaboration (Bartlett & Ghoshal 2002), user involvement (Alavi & Leidner 1999), a receptive culture, a common platform, an informal rollout, managerial support (McAfee 2006c), and innovative people (Andriessen 2003). Furthermore, a participative way of design, careful analysis of the situation of the users and the context, and a careful introduction of the system (See Table 17) are also worth acknowledging (Andriessen 2003).

Table 17 - Guidelines for developing a co-operative setting (Adopted from Andriessen 2003)

GUIDELINE	RATIONALE
Design in a participative way	Users and possibly other stakeholders should be part of the design process from the beginning.
Analyse carefully the situation of the users	Introduction should match users' skills and abilities, and also their attitudes. Otherwise resistance is inevitable
Analyse carefully the context	The more a new setting deviates from the existing one, the more time, energy, and other resources should be mobilized to make it a success
Introduce the system carefully	Apply proper project management, find a champion, try a pilot, inform people extensively

Generally speaking, adoption, use and the success or failure of collaboration technology can be seen to depend largely on three main groups of factors: (1) whether it is accepted by the users, and is suitable for their task, (2) whether it fits and supports the social context, and (3) whether it is introduced in a proper way and is tailorable to changing demands. In other words, success of the collaboration technology depends on the use and the users, not on the technology. It should also be taken into account that collaboration technology is not a quick fix. Hence, a long process of introduction, incorporation, evaluation and adaption should be planned for. Options should also be kept

open for new ways of working with the technology as collaboration technology can be appropriated and adapted in unforeseen ways resulting in creative and innovative processes. (Andriessen 2003)

5 RESEARCH METHOD

The purpose of this chapter is to present the research method used in the thesis. Hence, case study research and research process are discussed. Topics covered also include research approach, case setting and order, data collection, and analysis.

5.1 CASE STUDY RESEARCH

The research method used in this research was case study. The method was chosen for several reasons. For one, the case study method was appropriate as the investigator's desire was to (a) define topics broadly and not narrowly, (b) cover contextual conditions and not just the phenomenon of study, and (c) rely on multiple and not singular sources of evidence. (Yin 1993) Secondly, case study method was well-suited as existing theory for the research areas seemed inadequate. And thirdly, the case study method allowed for frequent overlap of data analysis with data collection. (Eisenhardt 1989)

5.1.1 RESEARCH APPROACH

The research approach taken was exploratory case study with multiple cases. The exploratory approach chosen allowed fieldwork to be undertaken prior to the final definition of study questions and the research to follow intuitive paths. The multiple cases, on the other hand, were selected so that they would replicate each other. (Yin 1993) In terms of theory building, a narrative strategy (Langley 1999) for description and analysis of process data was used.

5.1.2 CASE SETTING AND ORDER

The case setting consisted of one primary case and two supporting cases. In the primary case, an introduction and testing of a social software application in an organization was studied. The aim of this case was to study potential benefits of using social software in an organization and to identify key elements of a successful social software adoption process. This part of the research took place between April and September 2006.

The supporting cases comprised two cases of blog usage in organizations. The main purpose of these cases was to get supporting data for the primary case.

Furthermore, the supporting cases provided data of real use of social software for business purposes in an organization. This part of the reseach took place in October 2006, i.e. after the data collection for the primary case had ended.

5.2 RESEARCH PROCESS

The research process undertaken had many elements of action research to it in terms of data collection and analysis, especially in the primary case. Most prominently, the researcher worked in the organization and with its members. In addition, the matter under research in the primary case was of genuine concern to the organization and there was intent by the organization members to take action based on the intervention. (Eden & Huxham 1997)

5.2.1 DATA COLLECTION

In order to provide a strong substantiation of constructs, several data collection methods were used (See Table 18). To begin with, the social software application introduced and tested in the primary case provided many possibilities in terms of quantitative and qualitative data collection. For instance, all blog entries, and any comments to them, were monitored. In addition, any wiki pages and discussion forum posts created, posted, edited or deleted were tracked.

Table 18 - Data collection methods

CASE	DATA COLLECTION METHOD
Primary case	Action research process Internet survey
Supporting cases	Phone interview E-mail correspondence

In addition to the action research process, an internet survey was carried out in the primary case. It provided both quantitative and qualitative data on the use of the social software application. When it comes to the supporting cases, phone interview was the method used for data collection. Two phone interviews were carried out in total, one for each case. In addition, a serendipitous e-mail correspondence took place in the latter case. Hence, all data collected in the supporting cases was in qualitative form.

5.2.2 ANALYSIS

Analysis consisted of within-case and cross-case analyses. The strategy chosen for analysis was narrative strategy which involved construction of a detailed story from the raw data. Furthermore, the strategy was deemed appropriate as its key anchor point is time and its focus is on contextual detail. (Langley 1999) As a consequence, the approach was seen to fit well with the ambigous theoretical boundaries and the multiple cases chosen.

In within-case analysis the idea was to become intimately familiar with each case as a stand alone entity. This type of approach allowed the unique patterns of each case to emerge before patterns across cases were generalized (Eisenhardt 1989). In practice this meant analysing the user data of the social software application and the internet survey used in the primary case as if trying to answer the research questions. In a similar way, the phone interviews and the e-mail correspondence were analyzed in the supporting cases.

The tactic chosen in cross-case analysis was to select dimensions for which within-group similarities coupled with intergroup differences could be found. The dimensions were derived from research questions and existing literature. The idea was to go beyond initial impressions in order to increase the likelihood of accurate and reliable theory, and enhance the probability of capturing novel findings that may exist in the data (Eisenhardt 1989). In practice this meant analyzing the conclusions of the within-case analyses with the intention of finding common nominators and differing aspects. To finish, the results of both the within-case and the cross-case analysis were used to answer the research questions and derive recommendations for future research.

6 SOCIAL SOFTWARE IN ORGANIZATIONS – CASE RESULTS

The purpose of this chapter is to present case examples of present-day social software usage in organization. One case of introduction and testing of several social software applications and two cases of blog usage are covered respectively. In addition, a cross-case analysis based on the examples is presented.

6.1 CASE 1: INTRODUCTION AND TESTING OF SOCIAL SOFTWARE

Description of the introduction and testing of social software is based to a considerable extent on the researcher's retrospective reflection of the project undertaken. Additionally, qualitative and quantitative data collected during the project is also used.

6.1.1 THE ORGANIZATION

MSD Finland is the Finnish subsidiary of pharmaceutical company Merck & Co., Ltd. Merck & Co., Ltd. discovers, develops, manufactures and markets vaccines and medicines worldwide. Of its 60 000 employees, approximately 200 are working at the Finnish subsidiary.

6.1.2 INTRODUCING SOCIAL SOFTWARE

In February 2006 an internal development project was started at MSD Finland. The purpose of the internal development project was to explore new ways to improve information sharing within the company. The main focus was on developing individual employees' attitudes and behaviour in terms of acquiring, organizing and distributing information in the company. The researcher, who worked at that time in the organization, was appointed as the project manager of the project.

In March 2006 the concept of social software was introduced to the CEO and a few other members of MSD Finland's management team. The concept was found very promising and an idea of introducing and testing social software in the organization was greeted with interest. The main reason was that social software was considered promising in terms of the aims of the internal

development project. Accordingly, it was decided that social software would be tried out in the company as a sub-project of the internal development project.

The approach of the project involving social software was decided to be the following: The purpose would be to gain experience of using social software, estimate its usefulness in terms of acquiring, organizing and distributing information, and to find out whether it should be promoted on a wider scale in the company in the future. The responsibility for planning and implementing the project was carried by a four person team including the project manager (researcher) for the internal development project, two specialty product managers, and a member of the management team. It was also decided that the social software application to be introduced and tested would be provided by an application service provider (ASP). The application they offered included blogs, wikis, discussion forums, aggregators, and other functionalities. In the application it was also possible to create separate work areas, of which visibility and accessibility could be controlled. However, as the application was used as a web service, its use required logging into the service provider's server with a password using a web browser.

After several discussions within the team responsible for the project and the representatives of the ASP providing the social software application, the following principles and approaches in terms of introducing and testing the application were decided:

- One work area within the application would be created in order to test blogging for enhancing communication and interaction within and between the management team and the project manager of the internal development project. The purpose would be to advance the development project by giving the management team a chance to comment on the blog entries of the project manager and to promote idea exchange within the management team through reading other members' comments. Blogging would also help to document the project.
- Although everyone involved in the project would gain access to the work area for the internal development project, a second work area would also be created in order to test the social software application on a wider scale. The testing would be done on a voluntary basis, i.e. only those employees who would express their willingness to participate in the sub-

project would take part in it. The purpose would be to familiarize with social software and gain experience of using the application. The main focus would be on blogs although other technologies could be introduced and used aswell if necessary.

It was acknowledged that both of the approaches meant extra work for the participating parties as no trade-offs between everyday activities and chores would be made. In regard to the management team the extra work meant logging in to the social software application to see whether a blog posting had been made and commenting on the posting if necessary. In the latter case the extra work meant time spent to learn to use the application and the actual time that would be taken in using it.

Other challenges were recognized aswell. To begin with, a worldwide re-organization within the company had started in 2006 and it affected the Finnish subsidiary aswell. Furthermore, the social software application was to be introduced in late May/early June which was an especially busy time for the people at the company. Additionally, most of the people at the company typically have their holidays between late June and early August. In other words, this meant that there was a great risk of people forgetting what they had learned in regard to social software just before their holidays. Although starting the project in August was also considered, it was decided that it would leave too little time for the actual testing as the results of the project would need to be reported by the end of September 2006.

6.1.3 SETTING UP THE STAGE

The introduction and testing began with a presentation at the end of May. It was targeted at the management team and specially selected product managers of MSD Finland. In total ten people were present in the audience, four of which were members of the management team. The presentation was given by the project manager of the internal development project and a representative of the ASP. The purpose of the presentation was to familiarize the people with some of the concepts behind social software, introduce blogging, and recruit volunteers for the testing of the social software application.

After the presentation seven people (two members of the management team and 5 product managers) expressed their willingness to take part in the testing of the social software application. For this group of people (later referred to as 'project team') a half-day workshop was arranged in mid-June. The purpose of the workshop was to set-up, to demonstrate and to gain hands-on experience of using the application for blogging between the members of the project team. Hence, the main focus was on blog writing, reading, and commenting. However, the use of the aggregator was also demonstrated and tested. Wikis and forums were covered very shortly aswell.

In order for the management team to be able to read and comment on the blog entries of the project manager in regard to the internal development project, a set-up and testing of the social software application was also required. The set-up and testing was carried out by the project manager by showing each member of the management team how to log in into the application, read a blog entry, and comment on it. This way everyone got hands-on experience of using the application. The set-up and testing was done in June, which in some cases was just before the person was leaving for his/her holiday.

6.1.4 TESTING AND BACKSTAGING

The project manager had used the social software application since late April for project management purposes. In addition, he had created wiki pages in which instructions (e.g. how to use blog and wiki), links to other resources, and articles on social software were provided. This was done in preparation for the actual testing phase during which the project team members would be using the application. The project manager had also used the application in a similar way for the internal development project in its separate work area.

The actual usage of the social software application in the project team was almost non-existent on the team members' behalf in the work area created for testing the application. After the workshop, there was only one blog post written by other than the project manager. Nonetheless, even though it was posted when most people had already left for their holidays, it received two comments (the project manager's 48 blog entries received one comment in total). Despite the project manager's attempts to encourage people to write their blog, the situation remained the same after the holidays.

In terms of the internal development project, things were somewhat different. Two blog entries were written by the project manager for the management team in June before the actual holiday season. The first one received 4 comments from the people involved. The latter one received 1 comment aswell but it was written after most of the management team had already left for their holiday.

During the holiday season the project manager created a conceptual approach to improving information acquiring, organizing and distributing within the company. It was documented in the wiki of the work area for the internal development project. After most of the management team had returned from their holiday in the beginning of August, a blog entry was posted with links to the wiki pages in which the conceptual approach was found. This posting, however, received no comments although many people reported having familiarized with the documentation.

In the beginning of August, two more product managers joined in the testing of the social software application. Both were given hands-on instructions on the use of the application by the project manager. Activity in regard to blogs in either of the work areas, however, did not change with their appearance. For instance, of the 20 posts written by the project manager within the work area for the internal development project (i.e. the members of the management team could not see them unless they were in the project team), only 2 were commented in total (one comment each).

In terms of wiki usage, creating and editing of wiki pages in either work area was not done by any other than the project manager. On the other hand, discussion forums were a relatively popular media in both work areas even though they had not been introduced. For instance, in the case of the project team there were 14 posts in total, of which 2 were written by other than the project manager or the representative of the ASP. On the contrary, within the internal development project there were 9 posts in total, of which 7 were written by other than the project manager or the representative of the ASP.

6.1.5 Results and Recommendations

The introduction and testing phase of the social software application ended with a web questionnaire (See Appendix I) at the end of September 2006. The

questionnaire was sent to 15 people all of whom had participated in the project. Ten people answered it.

According to the results of the internet survey, familiariarity with the concepts surrounding social software (blog, wiki, discussion forum, and aggregator) increased considerably with the project (See Appendix II/Figure 3 & Figure 4). Even though discussion forum remained the most familiar concept, there were no respondents who were not at least somewhat familiar with blog and wiki after the 4 month testing period. The increase in awareness was not due to extensive use of the application, however, as 50 % of respondents had logged in less than once a month if at all (See Figure 1). Even if the respondents had logged in, they had mostly focused on reading blogs and wikis (See Appendix II/Figure 5-Figure 8) which also explains the increase in their familiarity.

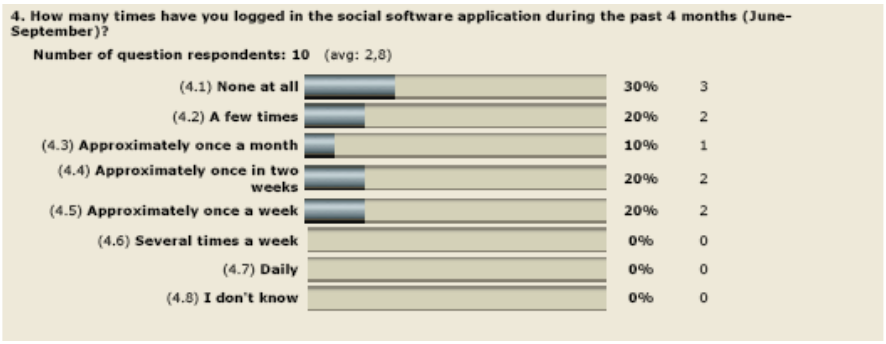

Figure 1 - Answers regarding logging in the social software application during the testing period

Even though awareness of and familiarity with the different tools utilized during the project increased, the tools were not seen as particularly useful in regard to present work of the respondents (See Appendix II/Figure 9). Furthermore, the application itself was seen as difficult to use, logging into to it was extra work and required remembering yet another password, and it was seen as separate from the existing ICT tools used in the company. Nevertheless, 90 % of respondents perceived social software to be significant in regard to the future activities at the company (See Figure 2).

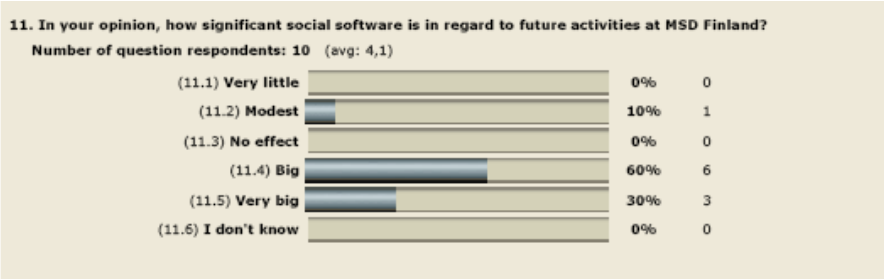

Figure 2 - Signifigance of social software in regard to the future activities at the company

In addition to seeing application of social software positively in the future, the respondents had many views on why and how to promote its use in the company. Many of them related to concrete problems in terms of information sharing within the company. Therefore, as a result of the project, a recommendation to promote the use of social software in the organization in the future was given to the management team.

6.1.6 CONCLUSIONS

Evidently, the introduction and testing of the social software application was not a success in terms of actual usage. However, considering the challenges that had to be faced in the adoption and the increase in the level of familiarity in terms of social software, a lot was accomplished. This is especially true in terms of the internal development project, the purpose of which was to develop the attitudes and behaviour of individual employees in regard to acquiring, organizing and distributing information within the company. Furthermore, the introduction and testing of social software gave new insights and ideas in terms of its applicability in the organization that had not been recognized earlier but were now considered worth pursuing on a wider scale.

6.2 CASE 2: CEO BLOG 1

Description of the first supporting case is based on a phone interview with Senior Vice President of Corporate Communication of Finnair Group (See Appendix III).

6.2.1 THE ORGANIZATION

Finnair Group is a Finnish airline company operating in scheduled passenger traffic and leisure traffic, technical and ground handling operations, catering, travel agencies, travel information, and reservation services. It has approximately 9 700 employees in tota l.

6.2.2 CASE DESCRIPTION

A blog written by the CEO had been regarded as an interesting media for quite some time before its introduction at Finnair. After all, it was considered a well-known and interesting phenomenon, and it appeared to fit well in the existing interactive communication systems of the company. Hence, as a new CEO suggested starting to write a blog alongside with the beginning of his tenure in the beginning of the year 2006, a CEO blog was introduced.

In the beginning, the main business application of the blog was to help the new CEO to communicate his first impression of the company and his vision for it to the employees through the company intranet. Hence, during the first two months of the new CEO's tenure ("trainee period"), the blog was written on a weekly basis. Later on, as the content of the blog postings concerned mostly events that had taken place in the company and its competitive environment, it was agreed that it would be written on a monthly basis. The rationale behind setting a monthly blogging pace was that typically during such a time period "a convenient amount of things" took place, although the blog could be used more often aswell if deemed necessary.

The CEO blog was seen as a part of internal communication system in the company. Its purpose was to support company strategy and increase the likelyhood of succesful communication on the CEO's part by adding another channel through which to communicate to the employees. In order to increase the likelyhood of successful communication the blog postings were also

published in the next monthly newsletter. The rationale was that as the employees have different preferences over communication media used in the company (e.g. internal weekly and monthly newsletters, intranet, etc.), employees who had not read the blog in the intranet could still get the information.

The interest towards and feedback of the CEO blog from the employees of the company since its introduction had been very positive. The informal and casual style of blog postings had not only made it easier for the CEO to give both positive and negative feedback and express his feelings, but had also made it more interesting reading for the employees than formal communication and encouraged them to interact. For instance, after the first three postings approximately 200 feedback messages had been received. The employees had also understood the informal nature of the CEO blog, and hence had been more "forgiving" towards the content of it. However, although blogging was considered such a success in the company, plans for a more widespread adoption of social software had not been made.

6.2.3 CONCLUSIONS

In sum, the CEO blog appears to have been a success at Finnair. First of all, its adoption had gone smoothly without resistance. Furthermore, it had helped the new CEO to make him known to the employees and to communicate his vision throughout the company. All in all, both the management and the employees had experienced that it had brought something new to the company and increased the level of communication.

6.3 CASE 3: CEO BLOG 2

Description of the second supporting case is based on a phone interview with Business Development Manager of Sanoma Corporation (See Appendix III) and on an e-mail correspondence with the CEO of the company (See Appendix IV).

6.3.1 THE ORGANIZATION

Sanoma Corporation is the leading newspaper publisher in Finland. It publishes national and regional newspapers, local papers, free sheets, and provides digital services. Sanoma Corporation also provides corporate costomers with

business information, photo agency, and news analysis and summary services. The company has appoximately 2 600 employees.

6.3.2 CASE DESCRIPTION

The CEO blog was introduced in the beginning of the year 2006 and it coincided with the employment of a new CEO. The idea came from the new CEO who was aware of similar attempts being implemented elsewhere. It took half a year of consideration and a testing phase with a small number of critical readers (who gave positive feedback), however, before the CEO decided to publish his blog to the whole organization.

The CEO blog was written on a regular basis (3-4 times a month). In the beginning, the blog postings were relatively short and the content focused on current events. After a while, however, the postings became longer and more story-like, focusing on the CEO's personal viewpoints. Symbolically this was seen as an expression of the CEO's willingness to be more approachable.

Blogging was seen to have many purposes in the organization. For one, it brought the new CEO as a person closer to the employees and made his way of thinking visible. Furthermore, it gave an opportunity to the CEO to interact with employees in a new way; people could ask questions (i.e. comment on the blog) on which the CEO could answer later in his blog. In other words, it was seen as a "soft" media to communicate strategy and give appraisal to people. As it supported the existing communication systems in the company, it was regarded as an addition to the leadership communication "toolbox". The blog was also seen as a leadership and management tool because it was believed to increase the level of trust in the management and enhance the development of organizational culture.

The feedback on the CEO blog since its publication had mostly been very positive and spontaneous, although a few employees had expressed opposite viewpoints aswell. Overall, blogging had been experienced as a good, quick, appropriately "soft", interactive, and modern communication tool. Nonetheless, there were no official plans to implement social software on a wider scale in the organization in the near future.

6.3.3 CONCLUSIONS

The CEO blog appears to have been very succesful at Sanoma Corporation. For one, the adoption of the blog had been a successful one, even though some people had expressed opposing viewpoints in terms of its applicability. Secondly, it had made the new CEO more approachable and brought him closer the employees. Thirdly, the blog was viewed as complementary to the existing communication channels and supporting the existing leadership and management practices. On the whole, all levels in the organization, i.e. the CEO, the management and (most of) the employees, thought very positively of it.

6.4 CROSS-CASE ANALYSIS

In the cross-case analysis the above described cases were analyzed for within-case similarities and intercase differences in terms of five dimensions. These dimensions were: business need/problem/challenge, social software (i.e. what it was), potential areas of applications in organization, implications of social software usage, and issues to consider in introduction and adoption. The findings are summarized in the following table (See Table 19):

Table 19 - Results of the cross-case analysis

	CASE 1	CASE 2	CASE 3
Business need/problem/ challenge	Gain experience of social software Increase interaction between the project manager and the management team	Make the new CEO familiar Support existing interactive communication strategy	Make the new CEO familiar Support existing communication strategy
Social software	Blogs (one-to-many), wikis (many-to-many), forums, aggregator	Blog (one-to-many)	Blog (one-to-many)
Potential areas of application in organization	Knowledge management (documentation) Change management tool	Interactive feedback tool in communication strategy	Interactive leadership and management communication tool
Implications of social software usage	Improved information sharing Increased openness Lowered change resistance	Increased openness and information sharing Flattened hierarchy	Increased openness and information sharing Flattened hierarchy
Issues to consider in introduction and adoption	Immediate business need Integration with existing IT systems and work routines Slow “ramp-up” and “backstaging” (e.g. supportive discourse) Critical user “mass”	Timing with other events (new CEO) Active use in the beginning	Timing with other events (new CEO) “Acclimatization”/ testing phase Active use in the beginning

Unsurprisingly, the business need/problem/challenge that inititated the use of social software in the two latter cases is similar. After all, in both organizations the introduction and adoption of social software concerned the same application, i.e. a CEO blog. Moreover, the change of the company CEO in both organizations gave a good opportunity to introduce changes in the communication strategy. In contrast, in case 1 there was no immediate business

need/problem/challenge and social software consisted of more than just a blog.

In cases 2 and 3 the social software application used was a blog. In other words, the focus was on one person using a one-to-many form of communication. In case 1, on the contrary, the center of attention was on multiple users of both one-to-many (e.g. blogs) and many-to-many (e.g. wiki) forms of communication.

When it comes to the potential areas of applications for social software and its implications in organizations, cases 2 and 3 were again very alike. For instance, the use of a CEO blog can be used to increase interaction between the management and the rest of the organization. Hence, it might help to flatten hierarchy and increase openness and information sharing in the organization. In case 1, on the other hand, the most potential areas of application related to "knowledge management" (i.e. documentation) and change management. Thus, implications of the use of social software include improved information sharing, increased openness, and lowered resistance to change.

In terms of introducing and adopting social software in organizations, case 1 presented four issues to consider: One, there must be an immediate business need which is tackled with social software. Two, the use of social software has to be integrated with the existing IT systems and work routines. Three, as novel concepts and applications are introduced, a slow "ramp-up" and "backstaging" are needed in order to make the new discourse (i.e. terms and concepts) familiar. And four, the number of users has to be high enough in order for the low proportion of active users (i.e. "content creators") to succeed a sustaining "critical mass". On top of this, cases 2 and 3 presented three additional issues to be considered: One, an "acclimatisation"/testing phase before introducing and adopting social software on a wider scale can prove to be useful if there is uncertainty about its appropriateness for the situation. Two, taking advantage of organizational changes that coincide with the introduction and adoption of social software, and linking them together, appears to give good leverage. Three, the likelyhood of a successful introduction and adoption might increase if special attention is given to active use of the social software in its early days.

7 DISCUSSION AND CONCLUSIONS

The main purpose of this chapter is to present the main content of the thesis and to discuss the conclusions that can be made based on the research done. Additionally, theoretical and managerial implications, evaluation of the study, and suggestions for future research are presented.

7.1 MAIN CONTENT

The purpose of this study was to answer the following research questions:

1. What is social software?
2. What are potential application areas for social software in an established organization?
3. What are key issues to consider if social software is to be successfully introduced and adopted in an established organization?

In order to find answers to these questionts, a literature review and three empirical case studies (one primary case and two supporting cases) were conducted. The primary case study consisted of an internal development project in which social software applications were introduced and tested in an established organization; the two supporting cases concerned social software application ("CEO blog") usage in an established organization each.

7.1.1 SOCIAL SOFTWARE

Looking at the results of the empirical part of the study, it is evident that "social software" is considered to substantial extent as an emerging information technology used for communicative purposes across the web. In other words, it is seen as a new, "add-on tool" to the existing communication systems through which strategy is implemented. The rationale for its use ("added value") relates to an increased possibility for interaction and feedback within the organization, which in turn is seen to enhance openness and information sharing.

Where the results of the empirical part of the study give a rather narrow perspective on social software, the theoretical part of the study leaves many

unanswered questions. This is not surprising because the concept of social software is still very ambiguous. Hence, from the theoretical perspective, the best way to approach social software is to think of it rather as a set of debates or design choices than any particular list of tools or applications. Although blogs (i.e. personal web pages that can be commented on) and wikis (i.e. modifiable interlinked web pages) are the most prominent social software applications in organizations at the present, social software is best conceived as any software that supports group communication and interaction across the web. Social software also appears to have two fundamental characteristics:

1. Social software applications help people quickly and easily communicate, interact, and share resources with other members of the community across the web (Wagner 2005).
2. Social software applications are based on supporting emergent, bottom-up dynamics in behaviour and the desire of individuals to be pulled into groups (or communities) to achieve personal goals (Green & Pearson 2005).

Although there are other very similar conceptual frameworks to social software (e.g. networked collaborative e-learning), the distinctive feature of social software is the support for emergent, bottom-up dynamics in behaviour. Additionally, it is lightweight and relatively inexpensive. Hence, at least theoretically, social software amplifies knowledge sharing and search, harnesses the communal knowledge and social capital of groups, supports the natural process of conversation, and documents its results without extensive investments.

7.1.2 AREAS OF APPLICATIONS

Areas of application for using social software are quite few if looking at the results of the empirical part of the study. After all, deriving from the empirical cases, potential areas of application include interactive leadership and management communication, knowledge management, and change management (See Table 20). Implications of social software usage, on the other hand, cover issues such as increased openness and information sharing, flattened hiearchy, and lowered resistance to change.

Table 20 - Areas of application and implications for using social software in an established organization based on empirical research

AREA OF APPLICATION	IMPLICATIONS
Interactive leadership and management communication	Increased opennes and information sharing Flattened hierarchy
Knowledge management	Documentation
Change management	Lowered resistance to change

Once again the potential areas of application for using social software are much vaster from the theoretical perspective, especially through the virtual network organization metaphor. After all, scanning for possibilities for the use of social software in an organization which is both “virtual” and “networked”, requires only some imagination. All the same, there are some very promising implications and areas of application when considering the fundamental characteristics of social software (e.g. interaction across the web, and emergent, bottom-up dynamics) (See Table 21). For instance, social software can enhance information sharing if leveraged in the area of human networks and communities. Furthermore, if social software is applied in the area of communication and interaction, likely implications include, for example, accelerated and amplified communication flow, and support for interaction processes.

Table 21 – Areas of application and implications for using social software in an established organization based on theoretical research

AREA OF APPLICATION	IMPLICATIONS
Human networks and Communities	Better support for relationships and joint activities Improved information sharing Increased accessibility to and availability of people Support and facilitation of informal networks and communities of practice (CoP)
Communication and Interaction	Accelerated and amplified communication flow Support for interaction processes Improved information sharing and learning Increased access to and awareness of a strong community Increased awareness and understanding of the importance of sharing in networking Increased understanding of use of information technology for interaction
Knowledge	Increased ability to effectively apply existing knowledge to create new knowledge and to take action Rapid mobilization of knowledge

All in all, social software appears to enable and enact "virtual network organization" and the benefits that go together with it. The exact way this happens is nonetheless very vague. Most likely the real value of leveraging "intangible assets" (i.e. knowledge) through social software comes from its ability to help the organization implement its strategy, albeit through complicated and ambiguous chains of cause-and-effect relationships.

7.1.3 INTRODUCTION AND ADOPTION

Based on the empirical part of the study, key issues to consider when introducing and adopting social software in an established organization are numerous. Most important of them appears to be an immediate business need to which social software is applied. Other highly important key issues to consider include integrating social software with existing IT systems and work routines, following a slow "ramp-up", and "backstaging" (e.g. supportive discourse). Furthermore, timing with other organizational events, having an "acclimatization"/testing phase before introduction if needed, and paying

attention to active use of social software in the beginning of adoption are also key issues to be taken into account.

From the theoretical perspective, the number of issues to consider in the introduction and adoption of social software appears overwhelming. Although there are numerous pitfalls and challenges to be aware of and many choices and success factors to consider on a detail level, the number of fundamental principles to bear in mind in terms of a successful introduction and adoption is still relatively small: For one, social software has to be suitable for the task it is used for. Two, social software has to fit and support the social context. Three, immediate business problems through which teams can familiarize themselves with the concept of social software (i.e. change in attitude) and learn how to use the applications (i.e. change in behaviour) are crucial. And four, the change agent has to support the "public performance" of change but also focus on "backstage activity".

In addition to abovementioned issues, a key issue to consider in terms of introduction and adoption of social software relates to organization culture. After all, if the behaviour induced by the use of social software (e.g. openness and information sharing) is in conflict with the organization culture, it might turn out to be a potential hindrance to a succesful introduction and adoption of social software. In a similar way, the bottom-up emergent dynamics of social software necessitates that trust and control are delegated to the users. However, it must also be ensured that access to confidential and financial information is restricted in order to avoid concerns about misuse, abuse, and reliability.

Ultimately, the key issue to consider when introducing and adopting social software in an established organization is the proposal and introduction of a supporting discourse through which transformation to new behaviours and routines is reinforced. There are several reasons for this: Firstly, discourse not only creates, sustaines, and transforms the basic assumptions about organizing but also creates new areas of application for social software in the organizations. Secondly, discourse upholds organizational metaphors which facilitate the creation and interpretation of social reality, and thus established behaviour in organizations.

7.2 CONTRIBUTIONS OF THE THESIS

Contributions of the thesis have both managerial and theoretical implications. When it comes to assessing their validity, however, there are several challenges. For one, any prediction about the meaning and impact of new technology such as social software is likely to be inaccurate and soon forgotten. For instance, the telegraph, radio, movies, and television did create revolutions, but not the ones that were expected (Kollock & Smith 1999). Another challenge derives from academic uncertainty. After all, from an academic perspective there is never certainty of what to do because there are numerous ways to approach it; furthermore, many of these ways raise questions of about how and, indeed, whether something should be done or not (Clegg & Hardy 1997).

7.2.1 MANAGERIAL IMPLICATIONS

From the point of view of the management, the first issue to consider is whether or not to introduce and adopt social software in the organization. Although social software appears to be "the way of the future", there may well be reasons for not leveraging it. For one, there might be no immediate business need to which social software could be used for. Secondly, the present organization culture might not support openness and information sharing, and emergent, bottom-up behaviour of social software usage.

Once the decision to introduce and adopt social software has been made, there are several issues to consider. For one, the content, control and process agendas of change (See 4.1.2 Managing Change/Table 13) have to be managed in a manner appropriate for the organizational context. Hence, establishing user teams which can measure up to the demands of these agends appears to be an appropriate way to proceed. Considering the characteristics of social software, these teams could, for example, be formed out of informal networks and/or communities of practice that exist in the organization.

Secondly, facilitating a succesful introduction and adoption means generating and managing expectations that are based on a realistic conception of the inherently problematic nature of communication process. After all, technology can be both an enabling and a constraining device, depending on how well it is designed, implemented and used. Furthermore, if misunderstandings are to be

taken as the norm rather than the exception, it is possible to be more alert for the challenges and hence be more able to manage them. (Shulman 1997)

In addition, two "strategic level" managerial implications need to be acknowledged if the change triggered by the introduction and adoption of social software in the organization is more of a "paradigm shift" than shallow fine tuning. For one, the change might not only concern changing the world view or the organizational view (e.g. metaphor of organizing) of people involved, but also organizational decision-making processes, technologies and structures. Secondly, in order to reinforce transformation to new behaviours and routines, the conflict between the well-entrenched discourse and the proposal of the alternative discourse needs to be managed appropriately.

Once social software has been introduced and adopted in the organization, the number of active users needs some consideration. As the primary case of the study made apparent, not all social software users are active creators of content. Because the proportion of content creators is most likely rather low for each user group, the number of users has to be high enough from the start to exceed a sustaining "critical mass". After all, if there are not enough content creators, other users have nothing to take hold of, which in turn can lead to almost non-existent use of the social software.

All things considered, change of attitudes and behaviour is not "enduring" until the new discourse has replaced the old one and new behaviour has been integrated into work routines. Hence, a long process of introduction and adaption of social software should be planned for. Furthermore, options should be kept open for new ways of working with social software as it can be appropriated and adapted in unforeseen ways, hence resulting in creative and innovative processes.

7.2.2 Theoretical Implications

From the theoretical perspective, the main implications of the thesis relates to making sense of social software in terms of contemporary forms of organizing. Furhermore, the use of social software seems to have theoretical implications for modern change management aswell.

To begin with, social software emerges as something new in the field of commmunication and interaction which takes place across the web. However, whether it is just an add-on to the existing communication technologies in organizations or whether it creates a fully new area for organizational behaviour by bringing a novel way of communicating and interacting into organizations, is still too early to say. All the same, social software appears to enable, enact, and leverage "virtual network organization".

The second main theoretical implication of the thesis relates to a new understanding of organizing. After all, the virtual network organization metaphor used in this thesis helps make sense of contemporary networked organizations in which people communicate and interact over the web through information technology. Moreover, the virtual network organization metaphor helps to understand implications of the use of social software in terms of organizational phenomena such as human networks and communities, communication and interaction, and knowledge.

Lastly, introducing and adopting social software applications such as blogs and wikis in an organization seems to lay a foundation for introducing a new discourse, and hence change attitudes and behaviour. However, whether the use of these applications can help to sustain changes is not evident. Nonetheless, the participative approach to managing change inherent in the introduction and adoption social software seems to be appropriate in modern times when flexibility, creativity and participation are emphasized.

7.3 Evaluation of the Study and Suggestions for Further Research

Where evaluation of the study focuses on critiqueing the research approach chosen and in the weaknesses of the narrative strategy used in theorizing from process data, directions for future research gives some guidelines in terms of interesting and promising areas of research.

7.3.1 Critique

There are several general issues when evaluating the type of case study method and narrative strategy used in this research. For one, theory-building research using case studies can be evaluated using three criteria: (1) whether the

concepts, framework, or propositions that emerged from the process are "good theory" (i.e. parsimonious, testable, and logically coherent), (2) empirical issues, such as the strength of the method (e.g. was a careful analytical procedure followed) and the evidence grounding the theory (e.g. have rival explanations been ruled out), and (3) whether new insights were presented. (Eisenhardt 1989) Secondly, the narrative strategy approach to theorizing about process data used in this research often results in theory which is high in accuracy, but its simplicity and generality tend to be lower. As a consequence, the resulting theory can be an idiosyncratic story which is of marginal interest to those who were not involved. Moreover, the conceptual contribution of the research can be rather thin. (Langley 1999)

When looking at the research through these criteria, two obvious observations can be made. One, the low amount of process data (i.e. the number of empirical cases) used in this study resulted in theory which might be shallow and of marginal interest to uninvolved parties. Consequently, the generality of the results can be rather low. Two, the "dialogue" between the theoretical exploration into the concepts covered and the empirical cases researched is not especially rich. Although this might be due to the novelty of the whole phenomenon under research, it lowers the level of parsimony and logical coherence of the propositions.

All in all, the theory built from the cases in this research is rich in detail, but lacks perhaps to some degree the simplicity of an overall perspective. Furthermore, the risk that the theory describes a very idiosyncratic phenomenon and that its generality is low are also evident. However, considering the action research type of approach used in this research, these shortcomings are not unsurprising.

7.3.2 FURTHER RESEARCH

As social software is a novel phenomenon, interesting suggestions for future research abound. One very prominent area of research derives from the recognition that technology characteristically has its most profound effect when it alters the ways in which people come together and communicate (Kollock & Smith 1999). Consequently, organizations may become less bureaucratized and more flexible. This in turn can reflect in phenomena such

as "border crossing", changes in interaction and decision making, and in power redistribution. (Andriessen 2003) Results have also shown that not only changes in communication network patterns but also in power take place following introduction of a new technology (Brass & Burkhardt 1992). If this is true for the introduction and adoption of social software aswell, the implications can be very dramatic for its future in organizations. After all, if those who have power in the organization at the moment do not wish to relinquish their power, they might try to delay the introduction and adoption of social software.

Another interesting area for future research in terms of social software relates to human networks. For instance, results have shown that human networks constrain actions (i.e. behaviour) of actors in organizations, and in turn are shaped by them. Furthermore, the actions of actors can be best explained in terms of their position in networks of relationships. (Mowshowitz 2002; Nohria 1992) Hence, an interesting area for research in terms of social software might be behavioral changes (e.g. openness and information sharing) in organization due to introduction and adoption of social software.

Besides organizational behaviour, social software appears to have implications for society aswell. After all, innovations in organization and management, co-evolving with the information technology, make it possible to reorganize society too (Mowshowitz 2002). Hence, it might also be interesting to research the implications of social software usage in education (e.g. schools and universities), non-profit organizations, and other institutions and contexts besides business.

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Appendix I – Web questionnaire on social software

NB: The original web questionnaire was on one web page and in Finnish.

Part 1/3

Use of social software at MSD Finland

1) Estimate your own familiarity with the following concepts before you entered in the project

	I had not heard	I might had heard	The concept was somewhat familiar	The concept was very familiar	I don't know
Blog	○	○	○	○	○
Wiki	○	○	○	○	○
Discussion forum	○	○	○	○	○
Aggregator	○	○	○	○	○

2) Did you participate in the following events on social software?

	Yes	No
Presentation (30.5.2006)	○	○
Workshop (13.6.2006)	○	○
Personal set-up and testing (with the project manager)	○	○

3) Estimate how familiar you are with the following concepts at the moment

	I have not heard	I might have heard	The concept is somewhat familiar	The concept is vary familiar	I don't know
Blog	○	○	○	○	○
Wiki	○	○	○	○	○
Discussion forum	○	○	○	○	○
Aggregator	○	○	○	○	○

4) How many times have you logged in the social software application during the past 4 months (June-September)?

- ○ None at all
- ○ A few times
- ○ Approximately once a month
- ○ Approximately once in two weeks
- ○ Approximately once a week
- ○ Several times a week
- ○ Daily
- ○ I don't know

5) How often have you used the following functionalities of BLOG during the past 4 months (June-September)?

	None at all	A few times	Approximately once a month	Approximately once in two weeks	Approximately once in a week	Several times a week	Daily	I don't know
Reading	○	○	○	○	○	○	○	○
Commenting	○	○	○	○	○	○	○	○
Writing	○	○	○	○	○	○	○	○

Part 2/3

6) How often have you used the following functionalities of WIKI during the past 4 months (June-September)?

	None at all	A few times	Approximately once a month	Approximately once in two weeks	Approximately once a week	Several times a week	Daily	I don't know
Reading	○	○	○	○	○	○	○	○
Writing/Editing	○	○	○	○	○	○	○	○

7) How often have you used the following functionalities of DISCUSSION FORUM during the past 4 months (June-September)?

	None at all	A few times	Approximately once a month	Approximately once in two weeks	Approximately once a week	Several times a week	Daily	I don't know
Reading	○	○	○	○	○	○	○	○
Writing	○	○	○	○	○	○	○	○

8) How often have you used the following functionalities of AGGREGATOR during the past 4 months (June-September)?

	None at all	A few times	Approximately once a month	Approximately once in two weeks	Approximately once a week	Several times a week	Daily	I don't know
Aggregation of other employees' internal blogs	○	○	○	○	○	○	○	○
Aggregation of external information sources (e.g. Mediuutiset)	○	○	○	○	○	○	○	○

9) Evaluate the usefulness of the following tools in regard to your present work

	Very little	Modest	No effect	Big	Very big	I don't know
Blog	○	○	○	○	○	○
Wiki	○	○	○	○	○	○
Discussion forum	○	○	○	○	○	○
Aggregator	○	○	○	○	○	○

10) Describe in your own words your experiences concerning the use of the abovementioned tools (good/bad, benefits/disadvantages, etc.).

11) In your opinion, how significant social software is in regard to future activities at MSD Finland?

- ○ Very little
- ○ Modest
- ○ No effect
- ○ Big
- ○ Very big
- ○ I don't know

Part 3/3

12) Should the use of social software be promoted at MSD Finland in the future? Why?

13) If social software is to be used at MSD Finland in the future, what would be the most important areas of application in your opinion? Give concrete examples.

Submit

Appendix II – Answers to web questionnaire

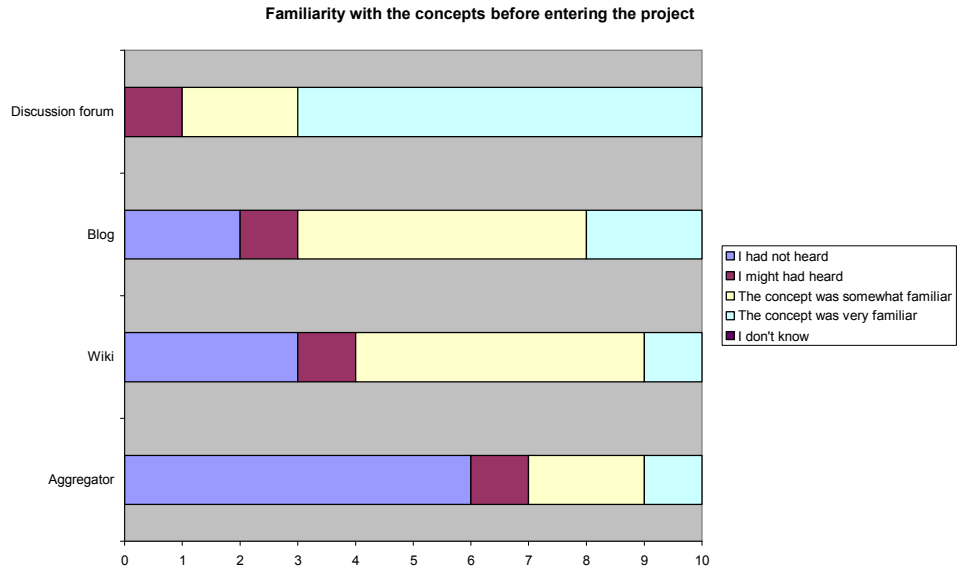

Figure 3 - Familiarity with the concepts before the project

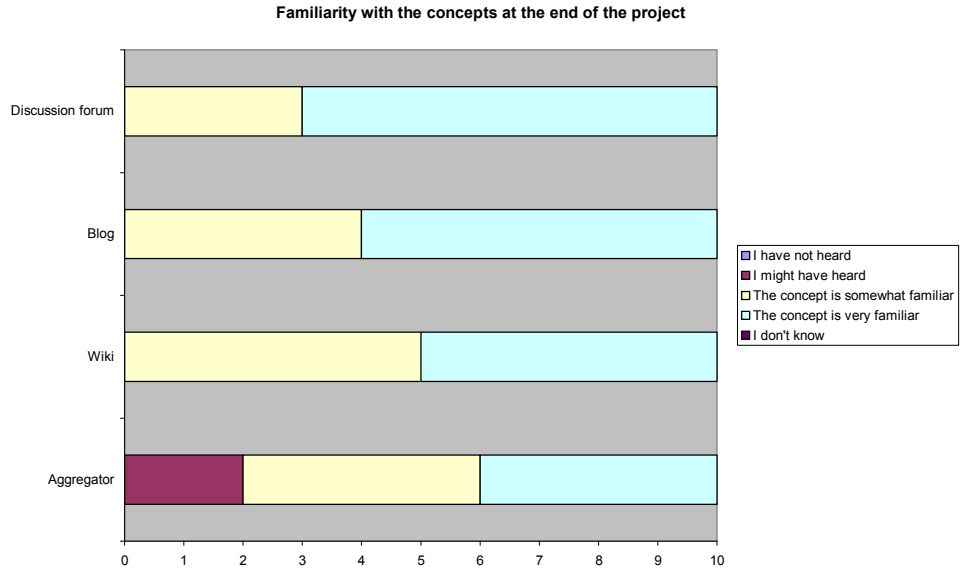

Figure 4 - Familiarity with the concepts after the project

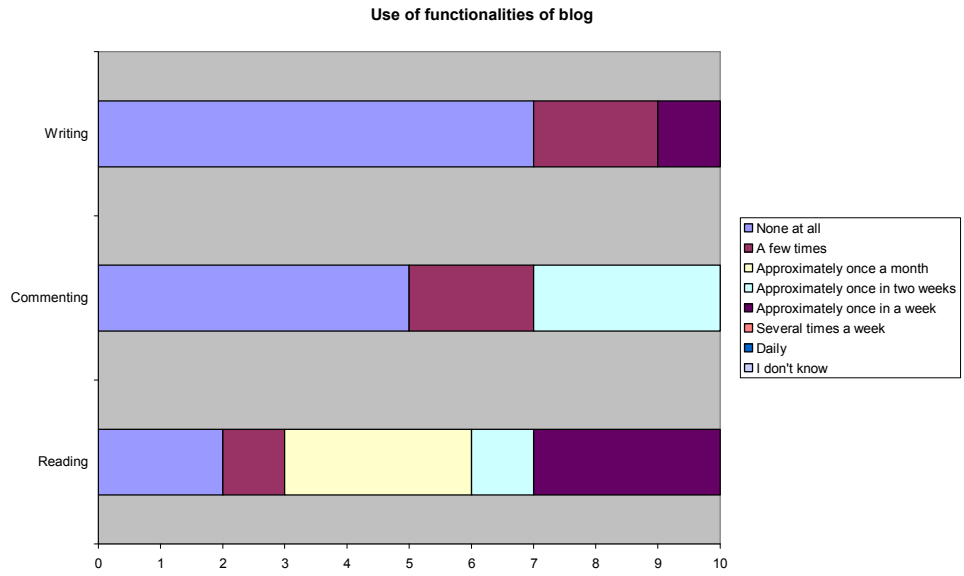

Figure 5 - Use of blog

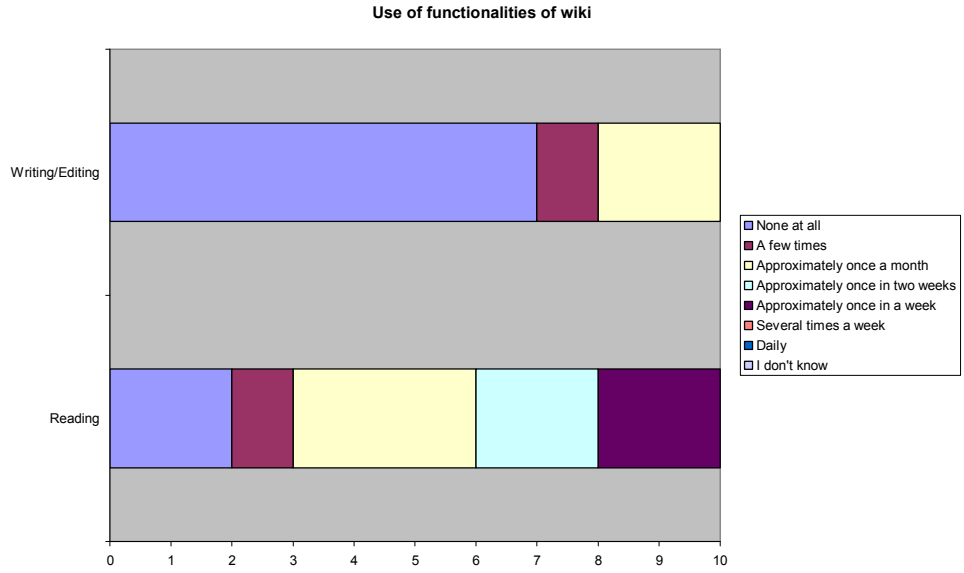

Figure 6 - Use of wiki

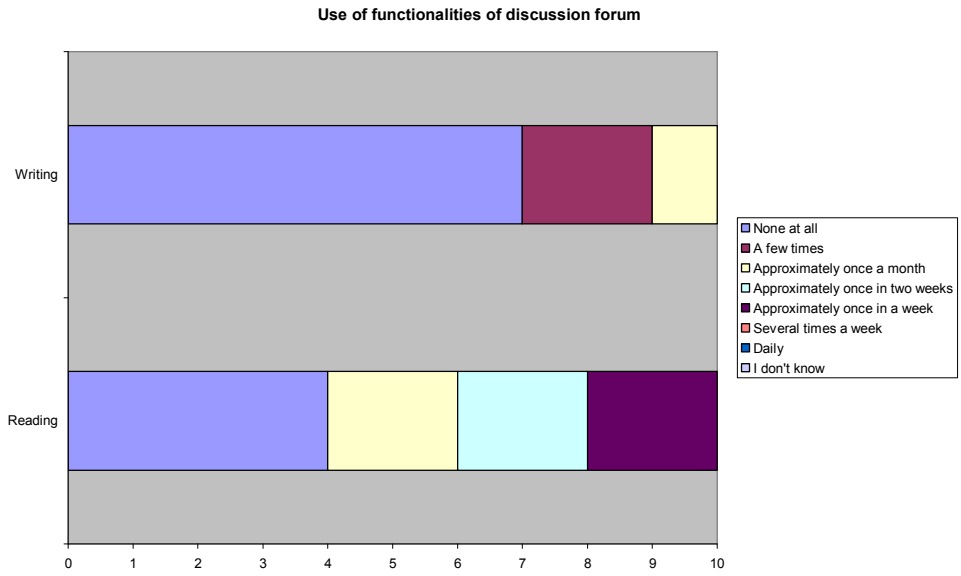

Figure 7 - Use of discussion forum

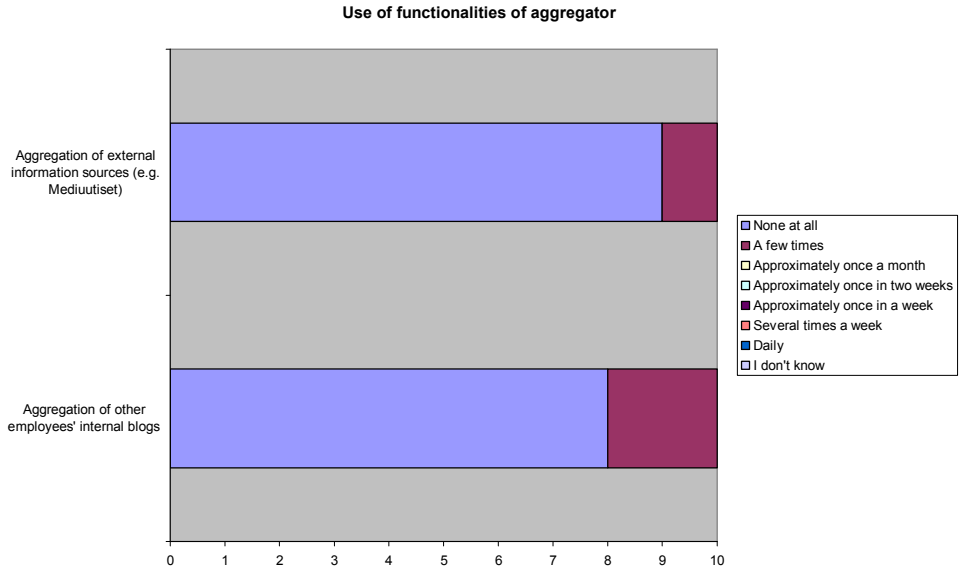

Figure 8 - Use of aggregator

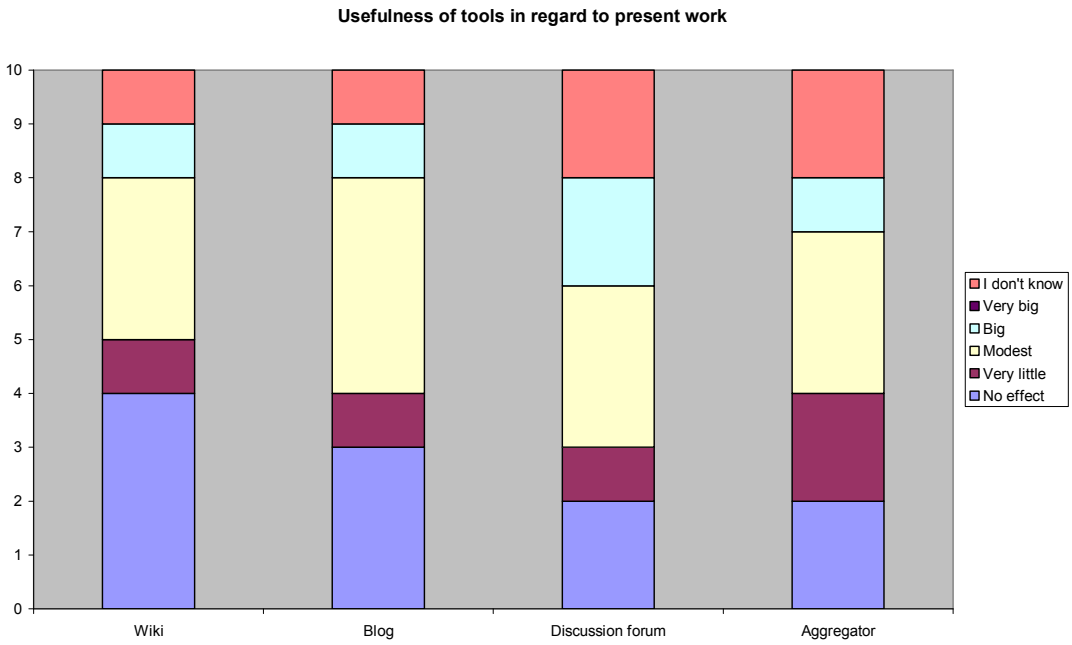

Figure 9 - Usefulness of applications at the present

Appendix III – Phone interviews

Interviewees:

- Christer Haglund, Senior Vice President of Corporate Communication, Finnair Inc. (October 4th 2006)
- Otto Mattsson, Business Development Manager, Sanoma Corporation (October 11th 2006)

Supporting questions:

- How did the CEO blog in the company get started?
  - Where did the idea come from?
- What was the purpose/agenda (mission of the CEO blog?
- How was the CEO blog implemented?
  - By whom, to whom, how often, content?
- What have the experiences been so far?
  - Good/bad, strengths/weaknesses?
- What is going to happen in regard to the CEO blog in the company in the future?
  - Opportunities/threats?
  - Other social software?

Appendix IV – E-mail correspondence

"Interviewee":

- Mikael Pentikäinen, CEO, Sanoma Corporation (October 11th 2006)

Questions:

- How did the CEO blog get started? (Who came up with the idea; had blog usage been considered earlier; why now?)
- What is the purpose of the CEO blog? (Is other media used to fulfil the same purpose?)
- What kind of experiences have you had in regard to the CEO blog usage so far? (Good/bad feedback; strenghts/weaknesses?)'