HELSINKI METROPOLIA UNIVERSITY OF APPLIED SCIENCES

Master's Degree in Industrial Management

Master's Thesis

DEVELOPMENT OF SOCIAL NETWORKS AND TOOLS IN TELIASONERA

Author: Shweta Chandra
Instructor: Taina Tukiainen
Instructor: Marjatta Huhta

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Taina Tukiainen, DSc (Tech)
Director

PREFACE

It was great to be back at school after my graduation in 2004 and this thesis finalizes my Master's Degree programme in Industrial Management at Metropolia. It was quite challenging for me as this is my first study in Finland and the education system is very different from my home country. The thesis topic is close to my heart as it is always amazing to see how people can work together and achieve more than what they can by working single handedly. I have been working in the ICT industry for over 5 years and have faced the challenges of working in geographically distributed teams, using groupware tools to connect and share knowledge.

I took the opportunity to discuss these challenges with Mr. Mika Karvinen, Development Manager at TeliaSonera and he helped me to plan this study. I would like to thank him for his constant support, feedback and guidance throughout the study. I also wish to extend my thanks to Ms Anu Kukkonen, Team Director for Cross competence team for supporting the thesis work and allowing me to conduct the study in her team. I would also like to thank Ms. Tia Kuhlberg at TeliaSonera for helping me understand the intranet and the communication framework in the company. The journey into the world of academic research has been enriching and a good learning experience. Many thanks also to the participants from the cross competence and technical integration team at TeliaSonera for responding to the survey and answering the interview questions.

A special thanks go to my thesis instructor Dr. Taina Tukiainen for helping me select the right approach for this study and for her constructive feedback. I also received constant encouragement and support from Dr. Marjatta Huhta during the scientific writing workshops. I thank her for contributing her time and for her patience in reading the many draft versions of this report.

Finally, my loving thanks go to my husband Abhishek, who found out about this Master's degree program and encouraged me to pursue it. He has been a constant help during my studies, taking care of things at home while I was sitting at my desk and writing. My parents deserve a very special thanks for their blessings and my entire family for their encouragement and support.

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Shweta Chandra

ABSTRACT

Name: Shweta Chandra	
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Instructor: Taina Tukiainen, DSc (Tech) **Instructor: Marjatta Huhta, DSc (Tech)**	

As global enterprises stretch beyond geographical boundaries and organization chart limits, collaborative glue is needed to stick everything together. With many powerful collaborative tools such as video and web conferencing, wikis, blogs and various other web 2.0 tools, the need to collaborate is clear and many companies are now investing in enterprise collaboration solutions.

This study aims to find ways for the case team at TeliaSonera to use these tools and networks more effectively. It analyzes the present collaboration tools at the company and other available collaborative solutions in the market. It also provides a proposal for basic collaboration framework which can be used for implementing pilot projects in the company. The research draws on action research and in action research the emphasis is on learning by doing. The study includes an overview of the relevant theories and a web based survey for analysing the collaboration culture and tools in the company. This is followed by semi structured interviews with team members and team managers to understand the challenges faced by the team.

The results of this study show that the team members agree that collaboration is one of the topmost priorities for their organization in the future. Successful collaboration requires a cultural shift and openness. The survey shows that the level of trust and openness among the team members is good and their organization culture encourages sharing. Despite the promise of technology, there is still dissatisfaction with online collaboration tools and a lack of a unified collaboration setup. Based on these results and the theoretical framework, the study proposes steps for implementing a collaboration framework. The collaboration framework advises the use of pilot projects and test-learn processes to start building the collaboration capabilities.

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1   INTRODUCTION

Collaboration is required at every level of every organization be it a corporation, small business, nonprofit organization, educational institution, government agency, or a legislative body. In simple terms, collaboration means working together or "co-labor". There are several reasons behind the need for more collaboration such as globalization, increased competition, and demand for operational efficiency. Need for innovation, finding solutions for complex problems and improving the business processes are a few more major factors causing firms to focus on collaboration both within and among organizations.

Effective collaboration has become critical in a complex work world where employees are geographically distributed and information overload is considered normal. Doing more with less is the new norm. The team sizes are smaller now due to technological advances and also in order to achieve operational efficiency. Reduced budget allocation to projects and less amount of travel due to virtual teams are the new economic realities. In addition to this restricted fiscal environment, four specific trends are making business more complex, creating a need for organizations to change the way they operate.

The first and foremost trend affecting this is the global value chains. Today, businesses of every size work with outside suppliers, partners, or contractors. Working together across time zones and corporate boundaries poses real challenges. The second important trend which is clearly visible is the information overload. Web 2.0 tools such as video portals, podcasts, blogs, wikis, and discussion forums are changing the way in which information is created, published, managed, and consumed. There are massive amounts of data to manage and it is becoming increasingly difficult for people to process and prioritize information.

Additionally the workforce has become very mobile. Technological advances and the need to work outside of normal business hours and locations foster an increasingly mobile and distributed workforce. Knowing who to contact as well as when, where, and how to reach them is critical to business success. Another important factor to consider is the consumerization of Information Technology (IT). There are new devices and applications entering the corporate IT environment as employees elect to merge consumer-based tools with standardized communications. IT now faces unprecedented challenges in deciding whether to support these tools, which impact business privacy, policy, and security. Without

intervention, these trends can have a dramatic impact on businesses: slowing down key business processes, reducing responsiveness to customers and market trends, and causing missed opportunities.

Collaboration among functional groups and organizations will help companies become more productive and innovative. The need to collaborate is clear and many organizations have invested in the latest and greatest in the collaboration technology but still feel people are not collaborating. There is an increasing need for collaboration as the external environment is moving in a direction that mandates companies collaborate. The problems they face now and in the future will only increase in complexity and it will require teams of people within and across organizations to solve them.

According to a recent survey by Forrester Research, seven out of ten firms are now investing in enterprise collaboration solutions. There are several reasons for this interest in collaboration and collaborative solutions. In the past, IT investments centered on improving the efficiency of fact based transactions. But today's conditions require a new focus on improving interactions: the exchange of ideas and information between team members, customers, and partners. This is the future of work and the next frontier in productivity. (Enterprise and SMB software survey, North America and Europe 2008)

According to McKinsey & Company, the next great performance challenge is to raise the productivity of employees whose jobs cannot be automated. They say that the companies need to build complex, talent-based competitive advantages that will be difficult to duplicate easily. It is clear that collaboration is now business-critical. But enabling effective collaboration between teams, communities, and individuals who are on the move, geographically dispersed, and struggling to keep up with an influx of information is definitely a growing challenge. (McKinsey Quarterly 2005 Number 4)

The case company for this study is TeliaSonera (TS) and TS too faces collaborative challenges. TeliaSonera provides telecommunication services in the Nordic and Baltic countries, the emerging markets of Eurasia, including Russia and Turkey, and in Spain. It offers reliable, innovative and user-friendly services for transferring and packaging of voice, images, data, information, transactions and entertainment. TeliaSonera aims to grow in line with the markets and take advantage of the increased demand for bandwidth, while maintaining profitability in the Nordic and

Baltic regions, where it has leading market positions. Based on the market conditions and maturity levels its operations are organized into three business areas: Mobility Services, Broadband Services and Eurasia. (TeliaSonera internet website 2010)
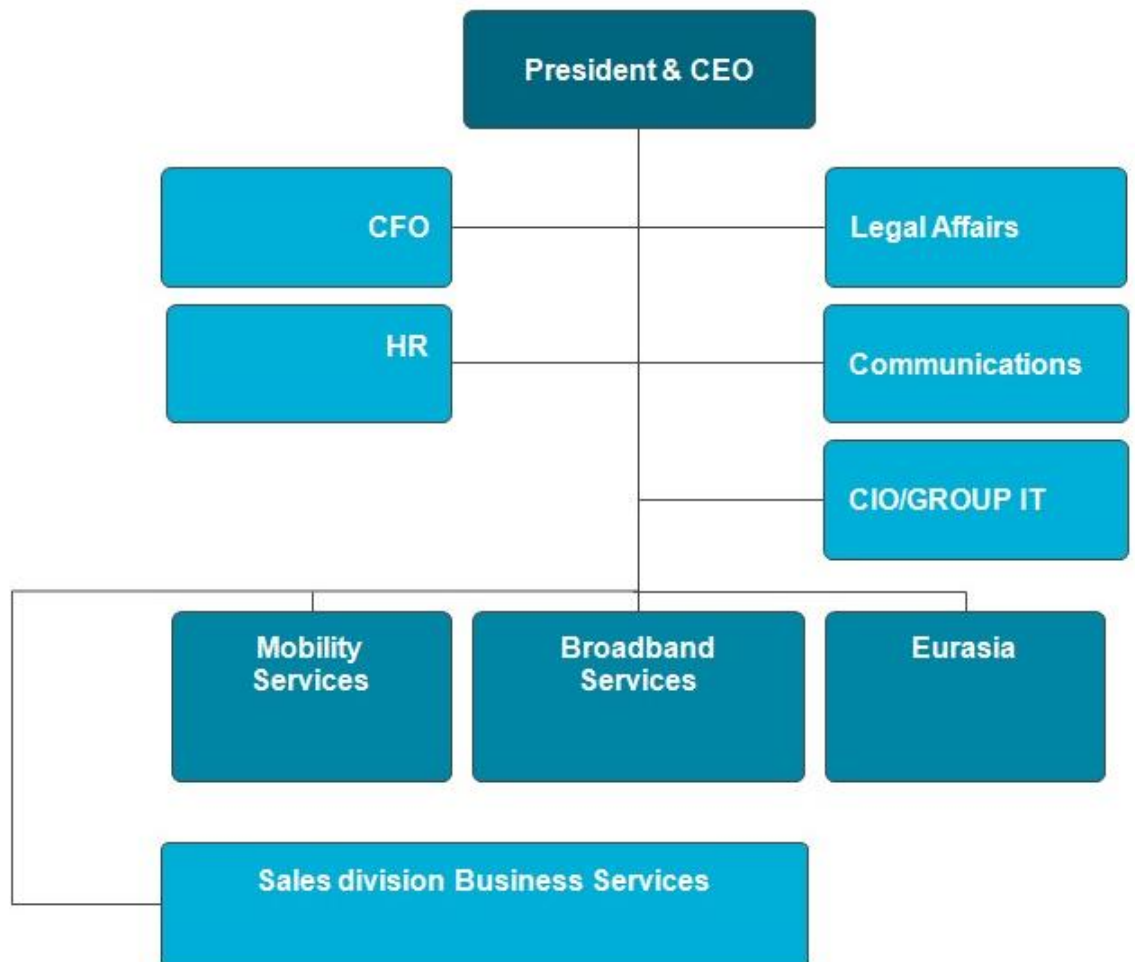
Figure 1. TeliaSonera organization structure. (Source: TS intranet)

Figure 1 above describes the TeliaSonera organization structure. Information technology (IT) is seen as an enabler for TS and is instrumental for all the TS business conducts. The Group IT team and CIO mission is to proactively support and enable TeliaSonera business strategy and focus areas through planning, coordination and execution of the strategic IT agenda. The team is responsible for TeliaSonera IT strategy including governance and sourcing principles, architecture frameworks, technology and security standards, methodologies and other IT related guidelines and policies. It also coordinates and governs TeliaSonera IT portfolio including overall cost efficiency, operational excellence and compliance with corporate instructions and policies.

Additionally the Group IT team at TS continuously watches the developing views on technology and new business and IT trends to remain competitive and gain advantages from these emerging trends. Though they are not early adopters when it comes to new age technologies, they try to adopt the new age technologies when it offers opportunities and helps them differentiate from the competitors.

As discussed earlier, currently there are a number of factors driving the trend towards increased collaboration. The Group IT team has also recognized major trends impacting IT and collaboration is one of the key areas of focus. Unified communications, collaboration tools and social networks are emerging and there is a need for developing a collaboration framework and infrastructure strategy for the organization. Since TS is a global and large sized company, the best way to learn the use of such IT trends would be to use them in smaller teams and evaluate the pros and cons from these pilot implementations. This need for effective collaboration and implementation of collaborative tools forms the basis for this study.

To summarize, the IT business environment is changing rapidly and it is becoming more complex, thus creating a need for organizations to change the way they operate. To succeed organizations will need to collaborate with thousands of specialized players, from customers and partners to competitors. People are increasingly working in places other than their offices (virtual offices) across time zones and geographical boundaries. Teams draw expertise from anywhere in the world. They access applications, data and subject matter experts live and across networks. Sharing information and expertise can be critical in driving both individual and organizational success. A recent IBM study pinpointed trends that CIOs believe will have the most business impact in 2010 and these are global integration, the participatory internet, changing workforce demographics and the increasing simplicity of technology's design and use. (IBM 2010 CIO Outlook v2.0 2007)

Each of these trends has a role in increased collaboration. The internet has made global integration possible and has been the greatest penetration any technology has seen so far with 70.9 percent of the population in North America using it. Social networking has expanded rapidly worldwide. Many people have embraced the Internet's move from publishing to commerce to user engagement, the new state popularly known as Web 2.0. Some people have realized early on that the web could be an increasingly effective way for users to get the right information at the right time, as often from each other as from published data. The younger generation joining the workforce is already using these tools in schools and will expect to see

them at their workplace. People are likely to expect a set of communications and collaboration tools in the workplace that are equivalent to the social networking tools, search engines, e-mail capacity or other capabilities they have at home. Highly collaborative workers are likely to be harder to attract and retain than ever

The way people work is changing. In the traditional way of working, knowledge was considered a source of power but in today's work place knowledge is shared and applied. Previously the content was owned and protected by individuals in the company whereas now it is created by participation of many individuals and published freely. The static employee database has given way to the dynamic profile of employees on the intranet sites with daily updates from members. Traditionally it was believed that ideas came from only within the company but as it is seen now that ideas can come from internal employees or external partners, customers. The value creation process was also considered to be an internal process in the company but now the value is co-created with the help from many internal and external partners.

The implication of these trends is that organizations today need to increasingly work together and with many partners. The company that does not move toward collaboration capabilities may lose significant business advantages. It may lose critical talent and the ability to attract talented employees from the emerging workforce. It will certainly lose efficiency and may actually increase its cost of doing business. Collaboration is now business-critical. Enabling effective collaboration between teams, communities, and individuals who are on the move, geographically dispersed and struggling to keep up with an influx of information is the challenge. Technology can only aid the process; it is people who can make collaboration happen.

1.1 Research Objective and Research Questions

This study aims to find ways for the case team at TeliaSonera to be more collaborative and provides suggestions and recommendations to the team for the same. The study provides a list of available collaborative solutions and a basic collaboration framework which can be used by the company to implement an overall collaboration strategy.

The main research question is "How to use social networks and tools to foster collaboration at TeliaSonera". Successful collaboration depends on many factors such as the environment in the organization (favorable political and social climate),

mutual respect, understanding, and trust among the team members. Factors related to process and structure, communication and shared vision also play an important role in fostering collaboration. Finally the ease of use of collaboration tools and collaborative software is an important factor. Therefore the following sub questions need to be answered in order to reach a solution to the problem and achieve the research objective.

How does the organization/team culture support collaboration?

What steps/changes are required to be a collaborative team?

What is the role of leadership in fostering collaboration?

Which tools are best suited for collaboration?

The study explores to find answers for these questions using existing theories, conducting surveys and interviews in the case team.

1.2   Research Method

In an interdependent world companies are increasingly relying on Action Research as a means to adapt to constantly changing and turbulent environments. It is also referred to as participatory research, collaborative inquiry, action learning, and contextual action research. In simple terms, action research is "learning by doing" – problem identification, steps to resolve it, checking how successful the efforts were, and if not satisfied, repeating the cycle.

In action research the emphasis is on scientific study where the researcher studies the problem systematically and ensures that it is based on theoretical considerations. There are many factors which differentiate action research from other types of research. Its main focus is on turning the people involved into researchers, as people learn best and more willingly apply what they have learned when they do it themselves. It also has a social dimension - the research takes place in real-world situations, and aims to solve real problems. Finally in action research, the initiating researcher does not necessarily have to remain objective but can openly acknowledge their bias to the other participants. Figure 2 below shows a simple model of the cyclical nature of a typical action research process developed by Stephen Kemmis.
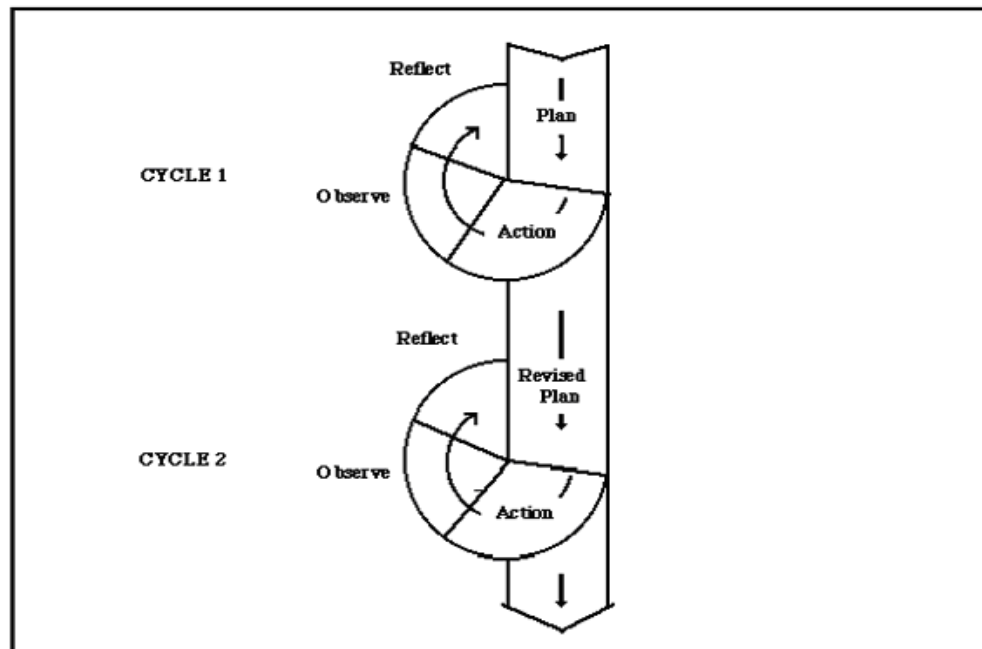
Figure 2. Simple action research model. (Source: MacIsaac 1995)

In this figure 2 above, each cycle has four steps: plan, act, observe, and reflect. Action research is generally cyclic in nature. The "planning" is not executed as a separate and prior step. It is embedded in the action and reflection. The most important step in each cycle is reflection. The researcher and others involved first recollect and then critique what has already happened. The increased understanding which emerges from the critical reflection is then put to good use in designing the later steps and this leads on to the next stage of planning. The main objective of the Action Researcher is to implement the method in such a way that the result or outcome is mutually agreeable for all participants. Thus an Action Researcher needs to take on various roles depending on the stage of the research. It could start from a planner or leader role, and move on to catalyzer or facilitator role. Moving further on it could lead to the role of a teacher or designer and finally to a listener, observer and reporter. The action research method as it is applied in this study is explained in section 4.1 and the limitations and validity of the study is explained in section 4.2.

1.3   Research Design and Structure

Figure 3 below outlines the structure of the study. As explained earlier the research method used in the study is action research. The research is designed according to the action cycle model developed by Stephen Kemmis. The research follows the steps of the action cycle i.e. plan, act, observe and reflect.
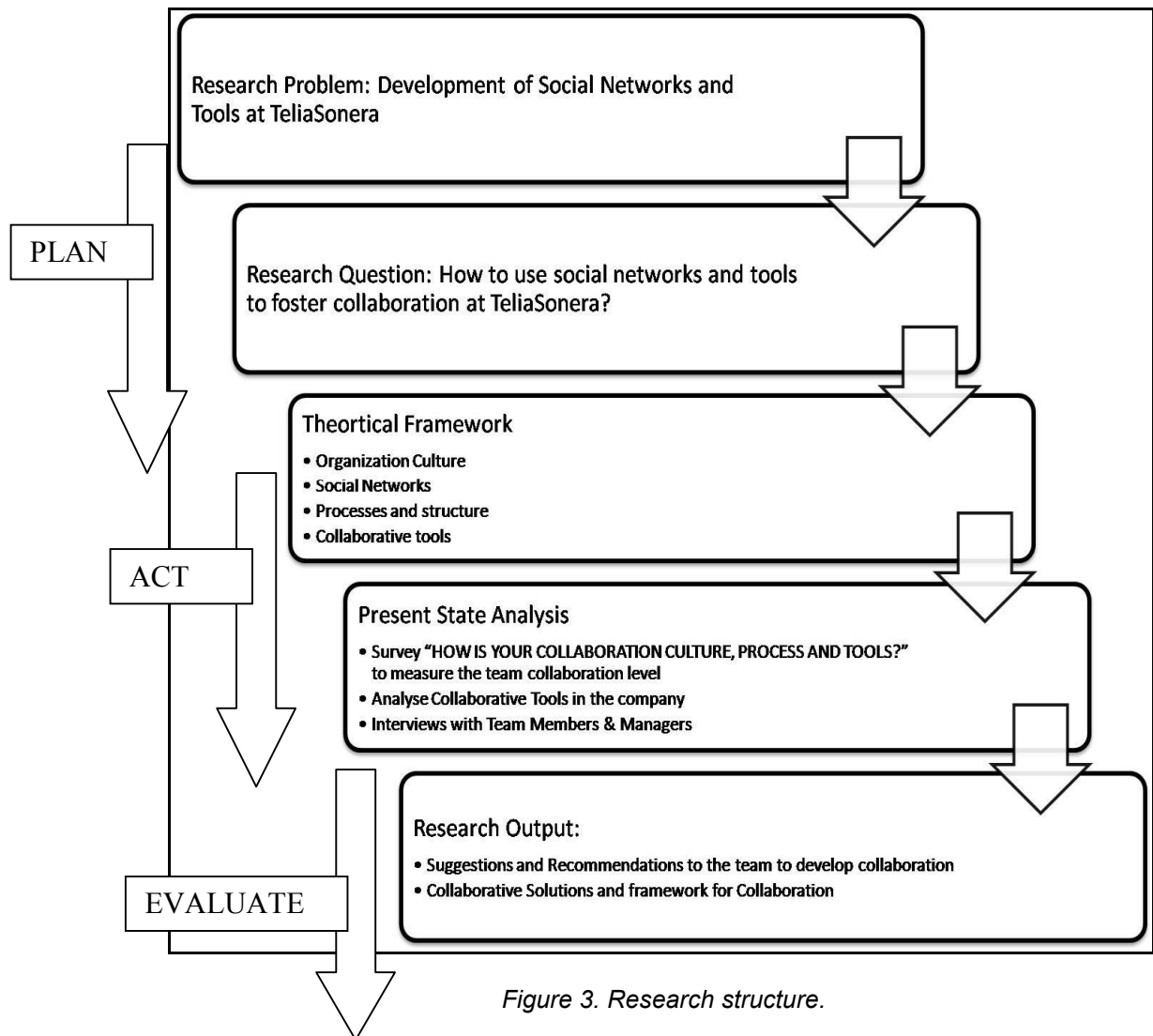
Figure 3. Research structure.

As shown in figure 3 above the first step is to review the problem and study the existing theory in light of the problem. The next step is to plan and conduct surveys and interviews to find the present state of the problem. The final step is to analyze the issues and reflect on them to meet the research objective. The objective is to propose a basic collaboration framework for the case company and provide suggestions and recommendations to the case team for effective use of tools and social relationships.

The thesis report layout is also designed based on the study structure. It follows the plan, act, evaluate model of the research method and is as shown below in figure 4.
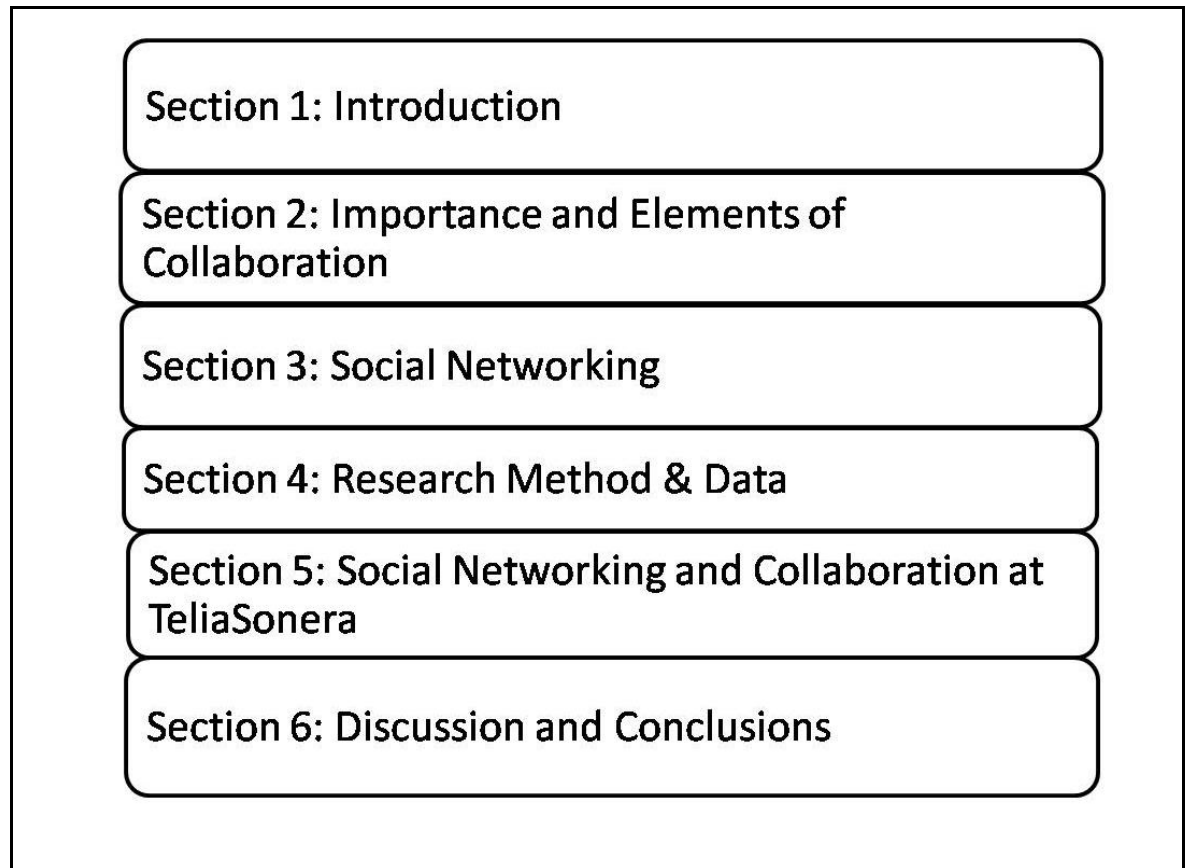
Figure 4. Thesis report layout.

As shown in figure 4 above, the study report starts with a brief and general introduction to the research topic. This is followed by the review on current theories on social networking, collaboration and collaborative tools. The theoretical framework acts as the basis for solving the research problem. This review of the available books and articles on the topic is explained in section 2 and 3 of this study. Section 4 describes the research method and steps in detail. The action research method is a cyclical process of planning, action and reflection. The action cycles are explained in this section. The research findings, analysis and outcome are explained in Section 5. The study report ends with section 6 where the overall conclusion, managerial implications and future steps are discussed.

2   IMPORTANCE AND ELEMENTS OF COLLABORATION

This section provides the theoretical background for the study. Each subsection describes the subjects on a general level and then in detail. The collaboration basics are discussed in section 2.1. The relation between the organizational culture and collaboration is discussed in section 2.2. The tools for collaboration and their usage are discussed in section 2.3.

2.1   Meaning of Collaboration and Definitions

As its Latin roots *com* and *laborare* suggest, collaboration reduced to its simplest definition means "to work together" or to co-labour. C. But in its ideal sense, collaboration implies more than simply labouring side by side: bringing together workers with different backgrounds creates a collision of thoughts that leads to creative genius. This is also seen as the act of people working together to reach a common goal. It involves getting the right information to the right people at the right time to make the right decision. Such well-informed and speedy decisions in turn help organizations get work done. But collaboration is much more than communication. It is the way that all the people in an enterprise function together. Better collaboration means better business operations. Collaboration can be defined as a relational system in which two or more stakeholders pool together resources in order to meet objectives that neither could meet individually (Graham and Barter 1999:7).

Collaboration occurs every time individuals or groups co-operate. Gray defines collaboration as a process where many parties having different aspects of a problem constructively explore their differences and search for solutions which is beyond their own limited vision of what is possible. Chrislip and Larson offer a slightly different but also useful definition of collaboration as mutually beneficial relationship between two or more parties who work toward common goals by sharing responsibility, authority, and accountability for achieving results (Chrislip and Larson 1994:5).

As shown in Figure 5 below, to cultivate collaboration an organization must carefully cultivate the three components of collaboration: people, processes, and technology.
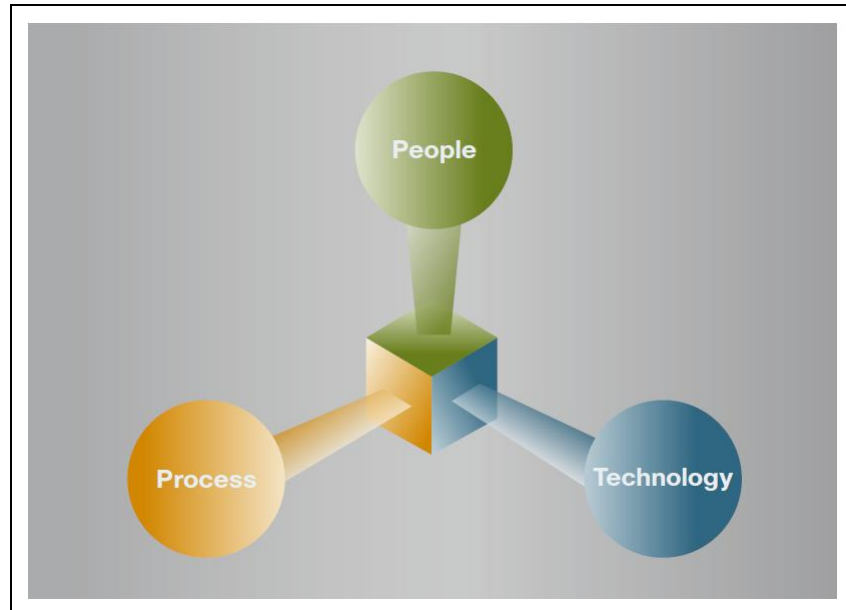
Figure 5. Components of collaboration. (Source: Cisco)

People and processes determine the cultural aspect of collaboration. It comprises people's attitudes and behaviours, trust among the organization, leadership expectations, management practices, incentives and rewards, role models, and hiring policies. Process changes are changes in the way the work gets done in an organization. Processes include governance, decision making, skills cultivation, funding, and operational logistics, with a strong emphasis on review-and-improve cycles. The last but not the least consideration should be on the tools and technologies in use at the company which are the required stepping stone for collaboration. Collaborative tools are designed to help people involved in a common task to achieve their goals.

Mattessich (2001) has outlined many factors that influence the success of collaborations in organizations which are similar to the components of the collaboration described above. These factors are broadly categorized as follows: factors related to the environment, factors related to the organization's membership characteristics which can be taken as the organizational factors in the context of this study. Some of the environmental factors are: history of collaboration or cooperation in the organization, a favourable political and social climate. Mutual respect, understanding, and trust for members and their organizations are important for

successful collaboration. The ability of members to compromise and see collaboration in their self-interest plays a great role in fostering collaboration. Then there are factors related to process and structure such as what the stakes are for each member in the collaboration process and outcome, flexibility in both structure and methods and development of clear roles and policy guidelines. The processes and structure have the adaptability or allow the collaborative group to sustain itself in the midst of changes. Open and frequent communication and also established informal and formal communication links enhances the collaborative process. A shared vision and clear attainable goals and objectives that are communicated to all partners and can be realistically attained form the basis of successful collaboration. Lastly the factors related to resources such as staff, materials, time and skilled leadership is required for collaboration. In the context of this study the collaborative tools is an important factor related to resources. These main factors which form the basis for successful collaboration are explained in the next sections.

2.2   Organization Culture and Collaboration

Organization Culture is important and is the basis of intra organization collaboration. Will Kelly (2009) emphasizes that corporate culture is the key element in driving online collaboration within an organization. Without a culture of collaboration, the best processes, systems, tools and leadership strategies fall flat. It is not enough to just deploy the latest collaboration tools, whether that is Microsoft SharePoint; Office Communications Server; Google Apps; a corporate VoIP telephony system; mobile devices like the BlackBerry or iPhone, the challenge is getting people to use them and for that you need a collaborative corporate culture.

 Every organization has a story to tell on how things get done, how people think, how decisions are made, what conversations are going on, who is interacting with whom etc. Layer upon layer, just like an archaeological dig, each of these threads works together to tell the company's story. The culture is shaped and influenced over time by company founders and leaders. In some instances it is shaped by a deliberate, intentional vision. In others, culture is shaped organically. Either way it becomes the DNA of the organization. The culture is composite of the attitudes, behaviours, experiences, values and beliefs that influence how the company operates and accomplishes its business objectives.

Organizational Culture is marked by the deeply embedded beliefs and values that are shared by members of an organization which become visible in the way work

gets done on a day to day basis. Figure 6 below shows these various elements of organization culture.

Figure 6. Components of organization culture. (Source: New Horizons consultancy)

As a company matures, new leaders shape culture through tangible and intangible actions. Social, technical, economic, political and global events also affect culture through related events. Awareness of organizational cultures has grown over time. Culture has become a common and important characteristic to companies promoting their employment brand and to job seekers considering employment options.

Culture plays such a significant role within an organization that people will work hard to protect the company's culture - consciously or unconsciously, sometimes not even realizing what it is they are trying to protect. During times of transformation this can be quite limiting and costly to an organization. When culture is not nurtured and allowed to evolve organically it can impede growth, interfere with competitive capabilities, make it more challenging to attract desired talent and even cloud information around the type of talent that is needed, and lead to turnover of good people. A strong culture allows for evolution and change.

Establishing a collaborative environment is dependent on how people interact, how work evolves, how diverse perspectives are engaged, and how leaders are

developed to bring out the best in people to guide the organization to success. As a collaborative environment is shaped and embraced, the organization will benefit from increased interaction, idea generation, broader perspectives around problem solving, and a more expansive approach to planning for market and product growth, or contraction.

Some integral elements of a collaborative corporate culture include where employees can come to work and leave based on their schedules. Information hoarding and knowledge archipelagos are discouraged. A knowledge archipelago is formed when employees hoard institutional knowledge, whether it is key documents on employees' local hard drives or crucial information in their heads, much like an archipelago of islands. Having a central repository of information in the organization where employees do not have to run down to somebody to get access to their information is conducive to collaboration. Sharing project and corporate information online is integral to a collaborative corporate culture.

An ideal team culture for collaboration has the following characteristics: trust and mutual respect, a team which sticks to initially made commitments. They have a clear outline and attainable short and long-term goals. They combine online collaboration with face-to-face meetings to speed up the process. Every team member has a unique role and is involved in the process. They have a clear process including self-reflexive loops. Domineering interruptions and put-downs by other team members are low and are not encouraged. They can communicate frequently, clearly and openly. The team has processes to acknowledge upcoming problems and the team members learn to let go certain situations. Finally a team which develops a holistic and long-term view for collaboration can reap the benefits of collaboration.

The organizations with a technically savvy employee base adopt new technology early and such employees can influence the acceptance of online collaboration in the corporate culture. A true collaborative culture requires a supportive management team that wants their workers to be accessible to each other through multiple channels and realizes that traditional working modes would not attract and retain the best talent. It also helps if these managers are early adopters and are champions for online collaboration and the benefits it gives to workers.

Schein (2004) noted that cultures are largely created and modified by the actions of the organisation's leaders. If an organization has employees who get ahead by

working as a loner, shafting their team mates, taking the recognition when others were clearly a part of the success and having reward mechanisms that reward individual pursuits above all else, then the culture will be the antithesis of what is required for collaboration to flourish. The development of trust in nurturing collaborative relationships is a vital skill for leaders (Tschannen-Moran 2001). Trust is built on perception and history. The way a person's motives and activities are perceived determines if others will trust that person. If people trust, they share. If not, they do not share. The way people perceive others is their reality; outside of the other person's motives. If someone is perceived as promoting their own agenda or trying to create their own "empire", others are reluctant to become involved and to share. This applies to organizations and individuals. Affect-based trust refers to feelings of emotional involvement and sincere caring for each other's welfare. Cognition-based trust is the belief that others are competent and responsible. Both of these forms of trust are the foundations for collaboration in organisations (McAllister 1995). Interpersonal trust is also viewed as a key to facilitating and enabling coordinated social interactions (Coleman 1988).

There are several reasons as to why a culture of collaboration fails to flourish in an organization. It has been noted that knowledge and information are organizational currencies, and they are not given away for free. The information is shared only when something in return is promised. Knowledge can be a powerful asset in power play situations. Secondly collaboration is a question of trust and loyalties, and these ties do not often follow official organizational structures. People have contradicting loyalties as most organizations have implicit and explicit organizational structures. Also, organizational boundaries in collaboration are not that clear as people adhere to and trust individuals and groups outside of the organization.

Another factor which inhibits collaboration is that sometimes collaboration is not encouraged by the management. Only few organizations have reward systems that encourage collaboration, and even fewer have a collaboration strategy. The general attitudes towards collaboration are not favorable. It is usually considered as a second-hand substitute for physical face-to-face meetings. Few people believe that they can be effective, efficient, and can have some fun too while using collaborative tools.

Collaboration often means different things to different people; it is useful to think about collaboration as a continuum. Parties may consider themselves in relationships that vary from lower-intensity exchanges, in which the groups are more

independent, to higher-intensity relationships, in which they are more interdependent. In one model (Kaplan 1991), these differences in intensity are reflected in four common terms: networking, cooperation, coordination, and collaboration as shown in figure 7 below.
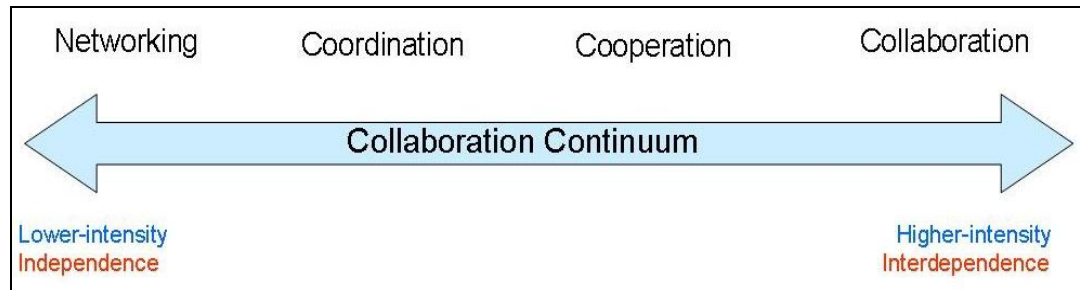

Figure 7. Collaboration continuum. (Source: Kaplan)

As shown in the above figure, parties have a networking relationship when they exchange information in order to help each organization do a better job. Two parties have a coordinating relationship when they modify their activities so that together, they provide better services to their constituents. When two parties cooperate, they not only share information and make adjustments in their services; they share resources to help each other do a better job. In a collaborative relationship, two parties help each other expand or enhance their capacities to do their jobs. (Axner, 2007)

Hence, effective collaboration is a question of organizational change, and in order to become an organization with effective collaborative processes, the organization needs to start from catalyzing a change process. However, there is no blueprint for a process of complex change, and no shortcut around the need to facilitate such a process.

To summarize, one of the most important questions to ask of culture in today's organization is how effectively it supports collaboration and if the company's leaders embrace the idea of a collaborative environment. People have more opportunities to connect, share ideas and create content than during any other time in history. They have easy access to information and can, in most instances, quickly find the answer or gain knowledge on a variety of subjects. This is the current and evolving state of the workforce. Social networking and online collaboration is influencing the way people interact, access information and work together to make things happen. This study aims to evaluate the role the culture of the organization plays in aligning what people value today.

2.3 Collaboration Tools

Technology enhanced collaboration is not new. But traditional text and voice-centric forms of collaboration cannot, by themselves, address today's challenges. Global value chains, information overload, more mobile workforces, and IT consumerization require new collaboration capabilities. To thrive in this new environment, the scope of collaboration must be broadened. It must combine document and text-centric collaboration such as email, instant messaging, team workspaces, and conferencing with voice, video, and context in a way that matches the individual's needs and the situation.

Collaborative tools or software (also referred to as groupware or workgroup support systems) is software designed to help people involved in a common task achieve their goals. It is the basis for computer supported cooperative work. Metcalfe's law (the more people use something, the more valuable it becomes) applies to such software. These are specifically designed to support group working with cooperative requirements in mind and not just tools for communication. Groupware is also defined as computer-mediated collaboration that increases the productivity or functionality of person-to-person processes. (David Coleman 1992)

The groupware concept is to foster collaboration and interpersonal productivity by automating many tasks and enhancing the efficiency of others. Whether a product is e-mail or workflow does not matter in today's competitive business environment but what matters is whether groupware technology provides a solution to a specific business problem. Groupware can be classified by two main factors i.e. when and where the participants are working and the function it needs to perform for cooperative work. A collaborative tool needs to support various types of interactions between the participants such as computer-mediated communication for direct communication between participants. It needs to provide a meeting and decision support system which is required for common understanding between the participants and also a shared applications and artifacts system for control and feedback of the shared work objects.

While communication is often an integral feature of collaboration tools, it is not the only feature. Any tool that allows interaction on a shared resource has the potential to be a collaboration tool. Taking a cue from traditional face-to-face interaction, many collaboration tools have tried to emulate non-technology-mediated interactions. These have included sharing images and video of participants, creating shared spaces or rooms, and facilitating other elements believed to be important in

establishing an appropriately correct environment for collaboration. Determining the factors that increase the likelihood that a tool can attract a critical mass of users may shed light on what facilitates effective collaboration. A natural interface with interactions based on existing communication norms is particularly valuable. The collaboration tools need to have certain important features to enable a seamless cooperation among the participants. Figure 8 below shows the features which exist in some of the current tools in use at many organizations. Group access refers to whether the tool facilitates the sharing of information among a large group rather than simply bilateral exchanges. All of the tools listed with the exception of e-mail and chat programs do this.

Technology	Group access	Document management features	Group access to archives	Efficiently communicate among large groups	Searchable/ taggable by group	Captures knowledge/ decisions from existing workflows
E-mail						
Instant messaging						
Shared calendars	✔					
Web conferencing	✔			✔		
Document collaboration	✔	✔	✔	✔	✔	✔
Intranets/project sites	✔	✔	✔	✔	✔	✔
Wikis	✔	✔	✔	✔	✔	✔
Collaborative product-design tools	✔	✔	✔	✔	✔	✔

Figure 8. Features of collaboration tools. (Source: Cisco)

Document management features, in this context, refer to the tool's ability to track a single version of a document updated by several people. Most knowledge workers are familiar with problems that can arise when multiple versions of a document circulate among a group. Wikis and other document collaboration tools, as well as collaborative product-design packages, have this capability. In addition, many project teams upload successive versions of documents onto project sites (sections of Internets, or password-protected websites, devoted to a single project). Each document is stamped with the author, the time of upload and ideally a version number.

Group access to archives refers to the ability of a group to search through old conversations and documents. The reasons are many: to discover the rationale for decisions, uncover best practices, learn about the skills and roles of people in the organization, and find out what others have done in similar situations. The lack of group access to archives is perhaps the single biggest drawback of e-mail. The opening of archives to the group is one of the most powerful features of collaborative ventures such as Wikipedia and its many specialized counterparts, both inside and outside corporate firewalls.

The feature, efficiently communicate among large groups is self-explanatory. It means that the tools can be used to share information widely. Any Internet-enabled tool including e-mail can blast information from a single user to an unlimited number of addresses. One advantage of efficient communication among a large group is that it allows users to cut across hierarchies to flatten the organization. Junior employees can make their ideas visible. Senior managers can find talent more easily. The easier it is to communicate, the more easily employees can gravitate towards the projects and initiatives where they can add the most value.

Searchable/taggable refers to how information is organized. This means that the information is an undifferentiated mass of documents on myriad topics (as in most e-mail inboxes) or if the information can be organized using tags (an ad hoc sort of indexing in which users can provide a label to categorize any video, text, photo, chart or spreadsheet they contribute to a collaborative workspace). This means that is it possible for the team to easily search for the information on the basis of the way information is stored. Virtually all text-based communications can be searched, but e-mail and chat can only be searched by the individuals directly involved in the conversations and that is why it is not much of help when the goal is sharing knowledge across the group.

The feature of capturing knowledge/decisions from existing workflows refers to the idea that information created when working on a project can be preserved to help build the knowledge of the organization over time. Generally the information at many organizations is hidden away in silos and guarded by gatekeepers. The idea of capturing knowledge from existing workflows is simple: creating a platform where an entire company can benefit from the lessons and insights resulting from the project. Instead of being buried in e-mail, the information is available to all, ready to be searched, linked to and tagged.

The best collaboration applications will combine ease of use with open standards and the ability to interconnect with a range of knowledge repositories. In addition improved search features will also be required to get companies out from under information overload, letting them search not only on subjects but also on objectives. Applications that support tagging (as many do now) will help to achieve this. Built-in rating systems will help users rank information by importance and make it more prominent. Applications that can express data in multiple ways such as tables of numbers, as words and as visualizations will help users to understand today's overwhelming amounts of data.

Richness of communication is another dimension of collaboration technology which is very important. This determines how closely a tool can approximate a face-to-face meeting. The information conveyed by text is tiny compared to the information in a human voice; a visual interface adds still more information; and a face-to-face encounter conveys a rich stream of sensory, emotional and intuitive data that can lead to the commitment that is the basis for successful collaborations. There is no substitute for eye contact and other intangibles when building relationships. Figure 9 below depicts the richness of communication in the various tools used today.

Tool	Text	Voice	Visual	Being there
E-mail / IM / intranets / wikis	✔			
Conference calls		✔		
Web/video conferencing	✔	✔	✔	
Telepresence	✔	✔	✔	✔

Figure 9. Information conveyed by various collaboration tools. (Source: Cisco)

The figure above rates four types of collaboration technology in terms of the communication richness i.e. the amount of information conveyed in terms of reading, hearing, seeing and other kinds of non-verbal information. Each provides more information than the previous one. The final category is telepresence, defined as a set of technologies which allow a person to feel as if they were present, to give the appearance that they were present, or to have an effect, at a location other than their true location. A sophisticated telepresence system can allow participants in different locations to make eye contact and interact in a convincing way.

Organizations invest on tools and are disappointed when there is no return on investment (ROI). In many cases, the problem is not with the tools all the time; it is that workers do not use them. The tools have reached maturity, adaptability, and user-friendliness but still the adoption rates of collaboration tools are quite low. Early examples of collaboration include Audio Conferencing, Video Conferencing, or Computer mediated communication. With the advent of web 2.0 interactive capabilities virtual collaboration took on a much broader meaning, allowing for the full spectrum of activities and behaviors that are required for two or more people to come together and co-create new work.

Pollard (2006) examines the purposes of the new set of collaboration tools which help in better organizing and facilitation and also improve the effectiveness of collaborative activities. It was estimated that these tools have greater power and promise and will replace the earlier existing communicative tools such as email. However most of these tools remain under used or hardly used at all. Figure 10 below shows the rough estimate of current usage of these tools:
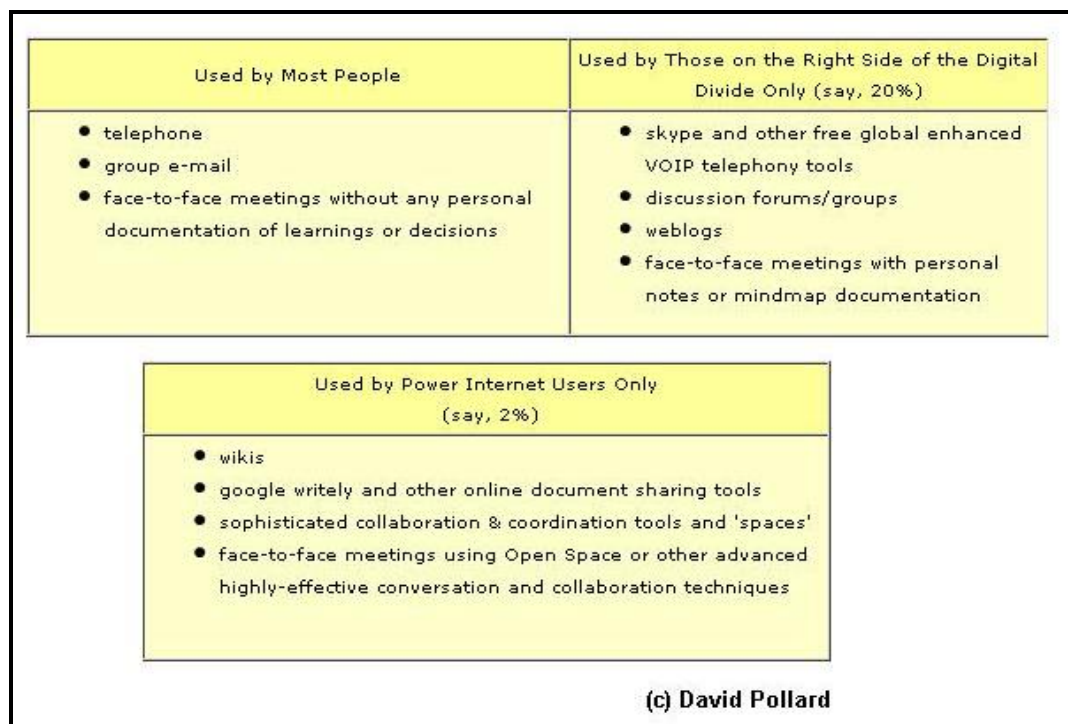

Figure 10. Usage of collaboration tools. (Source: Pollard)

As shown in the figure above, the author lists many reasons for this underutilization. Some of them are that most people are still unfamiliar with the tools in the second and last columns. Some of these tools are not easy to learn to use. The way these tools are used is not the way most people converse and collaborate. People with

poor interpersonal skills find that these tools do not solve this underlying problem of ineffective interpersonal skills. The traditional learning systems reward individual efforts and not collective efforts.

 In many cases the cost of limiting the conversations and collaborations to the 20% or 2% of people who can effectively use these tools is just too high, so people shift to the lowest-common-denominator tools in the left column above. But the consequence of this is suboptimal conversations and collaborations: A lot of wasted time, high travel cost, a great deal of miscommunication and non-communication, misunderstandings about what has been learned and decided, great ideas and important information not heard or not used, learnings and information lost or forgotten, and collaborations dominated by the loudest or most powerful instead of drawing on the best from all participants. The digital divide among the tech savvy and not so technically inclined employee is becoming wider instead of becoming narrower.

Definitely there are some situations where the collaboration tools work better e.g. when the collaborators are geographically distributed or work in different time zones. It works best when all the collaborators are equally enthusiastic and capable in using the tool. It just takes a handful of influential members of a team to stop using the tool for the tool to be abandoned. The majority of working people in organisations are baby boomers and have not been brought up in an environment using collaboration tools. Thompson (2007) emphasizes that organizations can get more return on such technology by better understanding the generational differences within the work force, and looking for ways to support collaboration between these different groups.

Currently most organizations have employees from four generations in the work environment. They are the Millenial, Gen X, Baby boomers and the traditionalists (Retireds and rehireds) The millennials have just entered the work force and this generation grew up with internet and using connective tools. The Gen X are in the middle management jobs and though highly internet centric, they are not naturally collaborative. The Baby Boomers use more of desktop applications and use less web applications. Their comfort level with technology varies widely. They are not technology adverse; but they have developed styles and preferences that are not likely to change. The fourth are the traditionalists and though they are not technophobes, technology is quite new to them. They desire to collaborate in person or by voice.

The challenge lies in picking up products and services that do not force users into a style that is not comfortable for them. It is difficult for the people to change their working style. CIOs should look for devices and solutions that make the tools suit the users and not the other way around. The focus should be on the practice of collaboration and new tools should be introduced only when the need arises.

The next section explains the importance of social relationships and social capital in any organization. The social network analysis of an organization can help in analyzing who collaborates with whom in the company and helps in leveraging this fact.

3   SOCIAL NETWORKING

Organizations cannot afford to ignore the impact of social networking upon their organizations' day-to-day activities. As information technology evolves, a better understanding of broader business management principles is essential. With awareness and knowledge, it is possible to become a more educated decision maker and a more effective collaborator within the organization. This section and its subsequent sections add the importance of social networking concepts to the theoretical framework of the study.

Studies on information seeking and workplace collaboration often find that social relationships are a strong factor in determining who collaborates with whom. Social networks provide means for visualizing existing and potential interaction in organizational settings. Groupware designers are using social networks to make systems more sensitive to social situations and guide users toward effective collaborations. Yet, the implications of embedding social networks in systems have not been systematically studied. Social networks can be used to visualize through large group of connections and guide users toward collaborative interaction. There can be two different ways in which social networks can be used in a system to recommend individuals for possible collaboration. One common approach is to use social network visualizations as an overview of group participation or group membership. Another approach is to use social networks as a mechanism for recommending specific people for collaboration. In this approach, visualization is often a means of finding a specific person.

Online social networks are webs of relationships that grow from computer mediated discussions. The webs grow from conversations among people who share a common affinity (e.g., they work for the same company, department, or in the same discipline) and who differ in other ways (e.g., they are in different locations, keep different hours, specialize in different disciplines, work for different companies). When the people are distributed across time and space, then these conversations need to take place online, over an intranet or private internet forum.

Within a company, a well-tuned online social network can enhance the company's collective knowledge and sharpen its ability to act on what people know in time to be effective. It is long recognized that this kind of network is critical to an organization. Creating these opportunities to connect is often the stated or unstated purpose of facilitated off-site meetings and other communication initiatives. However, the life of

connections made at these meetings was very short until online technology tools provided the means to support the network over time. Social networks grow from the personal interactions of human beings over time, as well as from the technological infrastructure that connects those humans.

The current phase in the internet industry known as Web 2.0 involves a set of new and innovative tools that take users beyond the simple browsing, searching and publishing of static web sites. Web 2.0 tools enable users to actively participate, publish and interact with others on the web quickly, easily and at little or no cost. This market has absolutely exploded, with over 250 Web 2.0 applications available to us today. Out of all of this noise and chaos, a new application "online social networking" has emerged. Social networking, a component of the Web 2.0 environment encompasses both synchronous (wireless, mobile, telephony) and asynchronous (email, blogs) modalities. That is to say, social networking sites can offer a unified communications platform where users have the capability of interacting with others on a simultaneous basis. In addition to the communication capabilities, collective information gathering and project collaboration can occur within the context of a virtual (and searchable) content repository.

The first generation of online social networking went mainstream in 2007, lead by the popularity of two consumer social networking applications; myspace and Facebook. These sites tapped into one simple basic human need; need to connect and socialize with others. The statistics are quite overwhelming with over 250 million people belonging to one or more consumer social networking sites. Out of this first social networking wave came the next wave, as the technology has evolved and migrated from the consumer space into a new business category called corporate social networking or second generation of social networking. Corporations are just now starting to realize the potential business benefits of online social networking.

Many companies today, both large and small, struggle with vital corporate knowledge being trapped in information silos like email inboxes (knowledge). There is a limited understanding of organizational expertise (talent) and a very widespread global workforce (relationships). These barriers hamper productivity, decrease employee awareness and cripple the pace of innovation.

Corporate social networking is the natural evolution of current collaboration and knowledge management tools used in organizations today. This is because doing business is both a personal and social activity. Businesses do not strike deals or

perform transactions; people do. Corporate social networking empowers organizations to capitalize, nurture and connect their most valuable asset: their people.

Many companies are already embracing corporate social networking tools to connect employees, share knowledge and bring distributed teams, groups and organizations closer together to collaborate and share knowledge to achieve real business results. Corporate Social Networking delivers an effective way for managing the knowledge, talent and relationships both within the organization by connecting the workforce, as well as externally by reaching out to customers, suppliers, and partners.

Corporate social networks deliver a cost effective way for acquiring the best talent, improving corporate communications and drive employee engagement and well being. Several activities such as management and monitoring of employee processes, interactions and activities can be securely coordinated within a corporate social network. This includes creating connections employees require to find and utilize information to drive business results and better recruitment by reaching into your workforce on prospective candidates. It enables an organization to more effectively manage the talent within the organization by creating a culture of collaboration and career development.

In summary, corporate social networking is becoming increasingly recognized as a powerful business application that connects the knowledge, talent, and relationships within the workforce, as well as externally in reaching out to customers, suppliers, and partners to drive real and sustained business value. Corporate social networking is fundamentally changing the way organizations both today and tomorrow conduct business.

3.1   Social Media and its Uses

Online social networking epitomised by websites such as Facebook, LinkedIn, MySpace and Twitter is becoming increasingly pervasive in the enterprise workplace. This is one development that is causing repercussive reactions in the minds of many chief information officers (CIOs). For some, social media sites represent potential malware threats and nab enterprise network bandwidth. To others, these social media tools are a business opportunity to be approached cautiously but optimistically, that offer new avenues for extending sales, marketing,

recruitment, research, and technical support, which complement traditional working practices.

The terms social media and social networking are being used interchangeably and it becomes difficult to answer the question of what is social media and how does it differ from social networking, social news, social bookmarking etc. Social Media falls into a broader category than social networking or bookmarking which actually come under the sub categories of social media. Media is an instrument for communication, like a newspaper or a radio, so social media would be a social instrument of communication. In Web 2.0 terms, this would be a website that does not just give information, but interacts with users while giving that information. This interaction can be simple or complex. The term "Web 2.0" refers to the web development and web design that facilitates interactive information sharing, interoperability, user-centred design and collaboration. Figure 11 below shows examples of these tools which include wikis, blogs, message boards, discussion groups, etc.
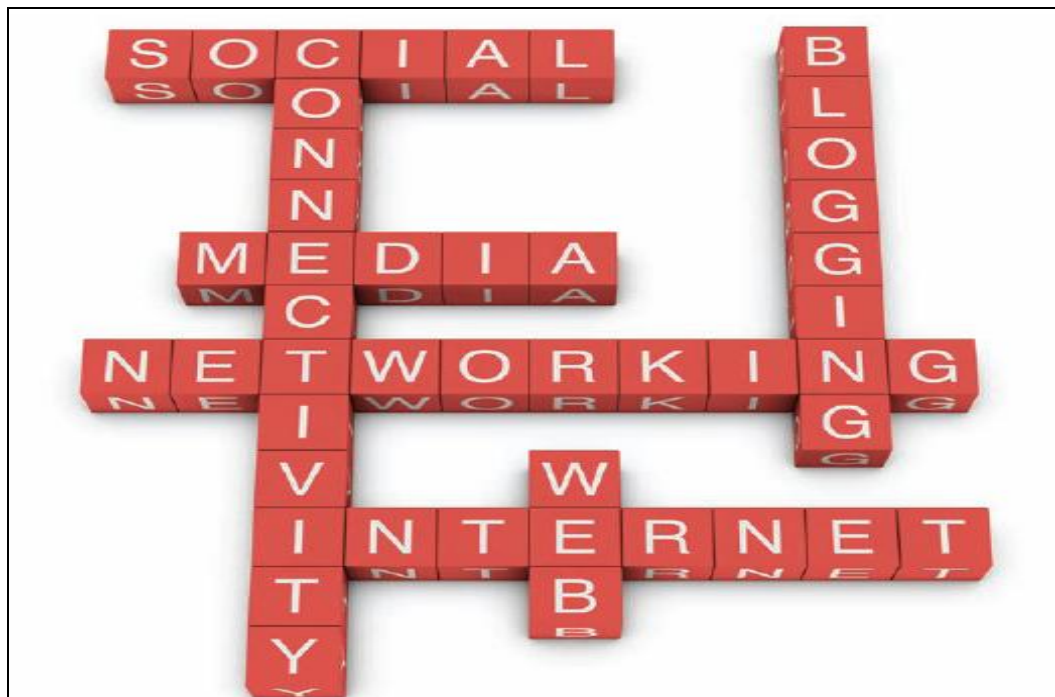
Figure 11. Social media tools.

Social media is defined by certain characteristics. Participation forms one of the main characteristics of social media. It encourages contributions and feedback from everyone who is interested. It blurs the line between media and audience. It has a good degree of openness. Most social media services are open to feedback and participation. They encourage voting, comments and the sharing of information. There are rarely any barriers to accessing and making use of content. It has a

conversation channel whereas traditional media is about "broadcast" (content transmitted or distributed to an audience). Social media, however, is better seen as a two-way conversation. Social media has a sense of community. Social media allows communities to form quickly and communicate effectively. Communities share common interests, such as an interest towards photography. Most kinds of social media thrive on their connectedness, making use of links to other sites, resources and people.

Some examples of social media websites are social bookmarking (Del.icio.us, Blinklist, Simpy) which interact by tagging websites and searching through websites bookmarked by other people, Social News (Digg, Propeller, Reddit) which interact by voting for articles and commenting on them, Social Networking (Facebook, Hi5, Last.FM) which interact by adding friends, commenting on profiles, joining groups and having discussions, Social Photo and Video Sharing (YouTube, Flickr) which interact by sharing photos or videos and commenting on user submissions and Wikis (Wikipedia, Wikia) which interact by adding articles and editing existing articles and blogs which are personal weblogs.

In this study the attention is on social networks, blogs, wikis and community forums and how these affect the employees working in a corporate setup. People joining a social network usually create a profile and then build a network by connecting to friends and contacts in the network, or by inviting real-world contacts and friends to join the social network. These communities retain the interest of their members by being useful to them and providing services that are entertaining or help them to expand their networks. Social networking makes it easier for people to listen, interact, engage and collaborate with each other. Examples of social networking platforms include Facebook, MySpace, YouTube, LinkedIn, Twitter, etc. MySpace, for instance, allows members to create vivid, chaotic home pages to which they can upload images, videos and music. In the context of the workplace, an organization can take these social networking tools and apply them toward strategic business purposes

At its simplest, a blog is an online journal where the entries are published with the most recent first. There are a number of features that make blogs noteworthy and different to other websites: blogs tend to be written in a personal, conversational style. They are usually the work of an identified author or group of authors. Blogs tend to define what it is they are writing about. The services people use to write blogs make it very easy for them to insert links to other websites, usually in

reference to an article or blog post or to provide further information about the subject they are writing about. Each blog post has a comments section, effectively a message board for that article. On blogs with large audiences the debates in these sections can run to hundreds of comments at a time. Blogs can be subscribed to, usually via RSS technology, making it easy to keep up with new content. Blogs are easy to set up using any of a number of services.

Wikis are websites that allow people to contribute or edit content on them. They are great for collaborative working, for instance creating a large document or project plan with a team in several offices. A wiki can be as private or as open as the people who create it want it to be. The most famous wiki is of course Wikipedia, an online encyclopaedia that was started in 2001. It now has over 2.5 million articles in English alone and over a million members.

Internet forums are the longest established form of online social media. They most commonly exist around specific topics and interests for example software development. Each discussion in a forum is known as a thread, and many different threads can be active simultaneously. This makes forums good places to find and engage in a variety of detailed discussions. They are often built into websites as an added feature, but some exist as stand-alone entities. Forums can be places for lively, vociferous debate, for seeking advice on a subject, for sharing news. In other words, their huge variety reflects that of face-to-face conversations. The sites are moderated by an administrator, whose role it is to remove unsuitable posts or spam. However, a moderator will not lead or guide the discussion. This is a major difference between forums and blogs. Blogs have a clear owner, whereas a forum's threads are started by its members. Forums have a strong sense of community. Some are very enclosed and exist as 'islands' of online social activity with little or no connection to other forms of social media. This may be because forums were around long before the term 'social media' was coined. In any event, they remain hugely popular, often with membership in the hundreds of thousands.

Micro-blogging is a tool that combines elements of blogging with instant messaging and social networking. The clear leader in the micro-blogging field is Twitter with over 1 million users. Other notable micro-blogging players include Pownce and Jaiku, which offer various different features. Twitter users can send messages of up to 140 characters instantly to multiple platforms. 90% of Twitter interactions are not made via the Twitter website, but via mobile text message, Instant Messaging, or a desktop application such as Twitterific. Its flexibility is further enhanced by the ability

to subscribe to updates via RSS. Uses of Twitter vary. It is popular among home workers and freelancers, who use it in part as a 'virtual water cooler'. Other people use it simply to stay in touch with a close network and share thoughts or start conversations. Its suitability as a vehicle for breaking news has encouraged the BBC and CNN to introduce Twitter feeds.

The consumerization of Information Technology (IT) has led to new devices and applications entering the corporate IT environment as employees elect to merge consumer-based tools with standardized communications. More people working for businesses are using consumer technologies such as PDAs and iPhone in the workplace. Consumer social networks such as Facebook and LinkedIn continue to dominate business use, although the gap between consumer and corporate-sponsored social networks is narrowing.

A new survey on social networking and usage of social media in the workplace, released by AT&T, shows strong evidence that enabling employees to use social networking tools as part of everyday working life leads to an increase in employee efficiency. It shows that social networking can be a good thing for organizations; with 65% of those surveyed saying that it has made them and/or their colleagues more efficient. 46% say that it has sparked ideas and creativity for them personally. Yet employers fear that employees are wasting valuable paid work time to check on friends' status updates and randomly tweet to the world about what they are doing. These topics of conversation are seen in too many management meetings and there are concerns about the IT implications of opening firewalls to allow access to these Web sites. The prospects of using social media to market their companies is seen as quite lucrative but the companies are scared about opening the door to social networking for their employees.

Social media is a valuable tool. Organizations may miss its potential because of their fears. Denying staff access to social networking sites will only drive them to find a way round the ban. Employees should be given all the tools and the permission they need to market the company they work for. Social media at work can be used to help the employees in their jobs, connect to customers and help their company grow. Employees could be used as part of the social media strategy of an organization. If the organizations believe in the power of social media, then they should get their employees trained in the best practices and time-saving tools that exist today for social media.

3.2 The Power of Social Networks

Social Network Analysis (SNA) is a method that has demonstrated value in diagnosing the patterns of interaction among people in an organization and providing a compelling "call to action" in organizations that are fragmented across and within teams. The method and tools of this analysis is based on academic work done in sociology, epidemiology, economics, and many other disciplines. The following steps can be used in an organization to conduct a social network analysis. The first step is to collect data about the knowledge and information flow patterns in an organization. This can be done with sophisticated tools that track email messages or repository logs, but it can also be done explicitly using a questionnaire in a simple Excel spreadsheet.

The next step is to create a network map from the data, and to produce statistical analyses of the patterns in the data. The results from the network map analysis can be used to look for gaps between individuals or groups. Then consultative interviews can be carried out with the individuals or groups to understand the context that is behind the data and the diagnostics. Finally areas where insufficient knowledge and information flow has a serious impact on the business should be identified and management teams need to create the environment that will enable social capital to grow.

The power of social network analysis is that it provides a high-impact visual view of an organization and quantitative data, both of which lead to probing and discerning questions. The work in an SNA project is less about the actual diagrams and charts than about the dialogue that ensues from their examination and the insight and action that emerges from the dialogue. Social Network Analysis is useful in many organizational contexts, but particularly so in conjunction with team formation and reorganizations.

A well planned and knowledgeably implemented online social network could provide many benefits to an organization. It can enable an organization to create an early warning system. An online social network and knowledge community can strengthen an organization's ability to understand the ways in which different parts of the system interact, so that somebody does not, for example, make an engineering decision without being aware of the financial impact or marketing does not know that it will take longer for a product to move through the pipeline than originally planned. A company that has a good early warning system would not miss opportunities or fail to meet challenges quickly enough. Online social networks alert people to the

things that collide when someone has got a good idea but does not know what is going on elsewhere, or how their idea affects others' plans or resources. For an early warning system to be effective, communication must be timely.

Online social networks can make sure knowledge gets to people in time. One person may know something that many other people need to know, and in the course of events, maybe only that person knows it, unless they participate in communication activities that cut across time and space and departmental boundaries. It is not just a matter of locating and transferring the specific knowledge, it is more a matter of setting up a kind of a nervous system that can survive and thrive in an atmosphere. Organizations must find ways to encourage and stimulate people who know what is going on to diffuse that knowledge through the organization. Well-designed online social networks provide a vital context to knowledge exchange that can make the exchange more potent and widespread. Exchange of useful knowledge must not be confined to a meeting or a chance encounter in the hallway.

Social networks can help to connect people and build relationships across boundaries of geography or discipline in an organization. For most global corporations, establishing effective avenues for improving collaboration across the enterprise is strategic. Finding effective ways to share knowledge throughout the organization is one key to the company's ability to develop and unify common business unit strategies. People who should be talking to each other as they have similar interests often do not communicate because they are in different parts of the world, different floors, or different departments.

Sometimes asynchronous conversations cross communication boundaries of other kinds. The quiet people who might never have something to contribute in a face to face meeting, given time to compose their thoughts, with nobody watching them while they do it, can influence discussions they might not have joined before in an online social network. These kinds of knowledge exchanges and relationships attune people in the organization to each other's needs as more people know what other people know and know it faster through online social networks.

Social networks can multiply intellectual capital by the power of social capital, and thereby reducing social friction and encouraging social cohesion. Knowledge is an important asset but it has to be applied to be useful. It gets applied via the processes associated with social capital. In order to realize the benefits of working

as an aligned, interdependent system everyone needs to have conversations that are diverse, complex, and deal with everything from key routines to major strategies. Collaboration can be thought of as a network of different conversations. Organizations must create time and space for groups to have multiple, rich conversations between meetings which means that they need to find ways to use a range of communications technologies to support these conversations. It improves the way individuals think collectively, moving from knowledge sharing to collective knowing.

Social networks if used intelligently can also attract and retain the best employees by providing access to social capital that is only available within the organization. In the current times good employees are an increasingly scarce resource. The ability to attract and retain good people is much more important than it has ever been before. A strong community is an attraction to outsiders. Strong face to face communities that have an appropriate online component constitute social capital that is only accessible to those inside the company. Strong social networks can be a factor in retaining people at a time when competition for good employees is fierce. But creating this allegiance requires more than providing Intranet portals with general discussions about software or hobbies that can be replicated by any organization. For online discourse to become authentically useful social glue, part of the online and offline conversation has to be about the company at a deep level. Online networks make it possible to engage many more employees in these deep conversations about the kind of company they want to be, and what is important for them.

To summarize, online Social Networks can be a key strategic resource. It allows a distributed organization to function where groups can work together across departments, functions, and roles on developing strategies to respond to changing conditions. This is where organization becomes more than the sum of its parts. Instead of relying on small, isolated groups or outside consultants, organizations can leverage their social network to identify opportunities and resources for strategic initiatives. To support strategy, the communication across the network must be rich, conversational, continuous, and involve everyone in the organization.

New skills are required to engage with each other effectively at different times from different places. This is where the organization can get the biggest payoff for investing in communications resources (time, energy, supporting technology). An organization that does this well can create strategies, processes, and new

approaches it needs to thrive. Conversations are the lifeblood of modern organizations. Until recently, the knowledge and understandings conveyed in meetings and memos and water cooler sessions just leaked into the air. The great advantage of new media is not how much information they can put at disposal of individuals and organizations but the kind of conversations they make possible. The technology for sharing knowledge and cementing powerful social networks is no longer rarely accessible or expensive. The knowledge of how to use the technology, not the software or the physical means of transporting it, will be the strategic advantage of those who possess it and diffuse it.

Within most companies, collaboration, sharing, creating something new together is the focus of several distinct types of community, communities of practice, communities of learning, communities of interest, and communities of purpose. Communities of purpose are best described as teams, task forces, or groups with a focused mission and set of deliverables. There is a broader theme at play if an entire organization is considered to have a common purpose. This theme is the social capital and consists of the stock of relationships, context, trust, and norms that enable knowledge-sharing behaviour. Like intellectual, structural, and customer capital, social capital is one of the key indicators of a company's prospect for success.

3.3 Future and Challenges of Networks in an Organization

The future of social networking is vast. It is challenging for companies in the ecosystem, or those seeking to enter it, to take into account all the forces that are converging here as they plan for their futures and that of their communities. There are quite many forces in play as shown in figure 12 below.
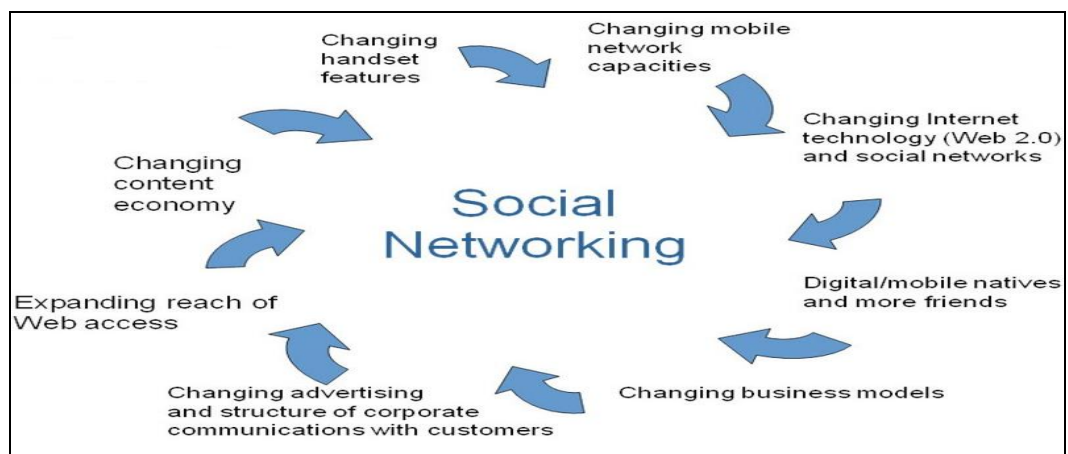

Figure 12. Change drivers for social networking. (Source: W3C report)

There is a significant opportunity for social networks to reduce the detrimental effects of architectural silos by opening their closed communities for the benefit of users. Totally distributed social networking is a possible future scenario. Social network analysis can be a very effective tool for promoting collaboration and knowledge sharing within important groups such as core functions of an organization, research and development departments or strategic business units. In today's fast-paced knowledge intensive economy, work of importance is increasingly accomplished collaboratively through informal networks. As a result, assessing and supporting strategically important informal networks in organizations can yield substantial performance benefits.

In addition, network relationships are critical anchoring points for employees, whose loyalty and commitment may be more to sets of individuals in their network than to a given organization. These informal networks are increasingly important contributors to employee job satisfaction and performance. Yet despite their importance, these networks are rarely well-supported or even understood by the organizations in which they are embedded. Social network analysis provides a means with which to identify and assess the health of strategically important networks within an organization. By making visible these otherwise 'invisible' patterns of interaction, it becomes possible to work with important groups to facilitate effective collaboration.

People rely very heavily on their network of relationships to find information and solve problems. One of the most consistent findings in the social science literature is that who you know often has a great deal to do with what you come to know. Yet both practical experience and scholarly research indicate significant difficulty in getting people with different expertise, backgrounds and problem solving styles to effectively integrate their unique perspectives.

CIOs' worries in respect to social networks centres around five areas of concern: perceived loss in staff productivity; data leakage from staff gossiping freely in an open environment; malware and phishing scams practised by cyber-crooks; the open access potentially offered to the company servers by lax and outdated attitudes towards passwords. Blocking staff access to sites has been a primary knee-jerk response to managing the issue, but this creates additional management overhead for the IT administrators, and keeping abreast of the scale of the phenomenon is another ongoing challenge.

The alternative to clamping down is ramping-up. Organisations would be best advised to cautiously engage with social networking services, formulating a multilevel approach as part of an acceptable usage policy. Granularity is the key. Access control in a Web 2.0 environment has to take into account the application itself. Measures should be taken to provide granular control over the myriad of applications and widgets within each social networking site. Organisations need to incorporate defences into their IT security policy.

Social networks are here to stay, so it is important for businesses to find a practical way to work with these sites and not against them: By adopting a more holistic approach including investment in greater security and control solutions, as well as offering comprehensive user education organisations will be better equipped to deal with social networking risks.

Savvy managers recognise the benefits of social networking and implement a reasoned policy that allows monitored access. A logical extension of this is to employ people to act as Web 2.0 ambassadors. Such people spend their entire day maintaining the sanctioned company presence on various social network sites, acting as a company's 'voice'. Such roles are arguably not that different from methods employed by more traditional marketing and sales operatives.

It seems clear that individuals have mixed feelings about social networks as a tool for finding collaboration. Social networks derive from an analytic and descriptive perspective, whereas their application in groupware is often oriented in a slightly more prescriptive direction. Groupware refers to programs that help people work together collectively while located remotely from each other. Groupware is often broken down into categories describing whether or not work group members collaborate in real time (synchronous groupware and asynchronous groupware). The distinction between the way social scientists actually use social networks and the way groupware designers would like to use social networks is important and is highlighted in the growing discussion of social networks.

For over many years organizations have been dealing with one basic challenge of the network orientation i.e. the world of human interactions and the world of business transactions are treated as two completely different worlds. Human interactions are dealt with in organizational charts, team charters, performance reviews, organizational culture, change management, and training. Business

transactions are managed in the world of process maps, workflow systems, applications, and technology.

The danger is that they will continue this split in the way they apply social network methods and technologies in organizations. Many efforts in social and organizational network analysis focus on identifying communities of practice and communication patterns between individuals. While each effort focuses on a specific kind of community or a business topic area, organizations are still essentially mapping the background or social ecosystem that underlies the work. This is valuable and provides many important insights that have business impact, especially for learning communities, knowledge sharing, and communication. However if social network patterns are tightly linked to business activities and outcomes, it is not only difficult to demonstrate business results but it will perpetrate the same kind of disconnection between people and business processes that have made work places increasingly stagnant.

The last but certainly not the least is the challenge of learning the language of networks. Back when companies were moving into process tools and learning to work as teams there was a huge amount of training support. Today, companies tend to throw people into new technologies or toss a few buzz words at them such as collaboration or networks and expect them to suddenly begin behaving differently. The shift into the process orientation and team structures required significant investments in training and education. However, comparable support appears to be seriously lacking as we move into the world of networked organizations. There are new skills sets, mindsets, toolsets, and behaviours that must be mastered.

Network Analysis provides an opportunity to overcome the split in business management practices where human interactions and relationships reside in one world of models and practices and business processes and transactions reside in another. The more human-centric orientation of the value network perspective brings these two worlds together in a powerful, simple and pragmatic way to model business activities and create more effective organizations.

The theoretical framework provides the necessary requisite to move on to the next step in this study and start preparing the plan of action to obtain data and perform the analysis. The research method, data collection and validity are explained in the next section.

4   APPLICATION OF RESEARCH METHOD AND DATA

The key points of the research method applied in this study are explained in section 1.2. This section describes how the action cycles (plan, act, observe and reflect) were created to implement the method in practice and gather data for analysis and evaluation. The credibility and validity of the research is also explained in this section.

4.1   Data Collection

This study is structured to have 2 action cycles. Action cycle 1 is designed to analyze the current collaboration process in the selected department of the case company. Action cycle 2 is designed to take the inputs from team members and team managers for designing the collaborative framework. Both action cycle processes are described in detail in the next section.

The selected department is the cross competence team in the Corporate Systems group at Teliasonera. Corporate Systems is part of the Group IT team and supports the three TS business areas by providing world class IT solutions to business processes in HR, finance and sourcing areas. They are responsible for the maintenance and development of about 60 IT systems in TS. They are a strategic partner for evaluation, design and implementation of services for business processes in administrative functions, enabling growth for the company.
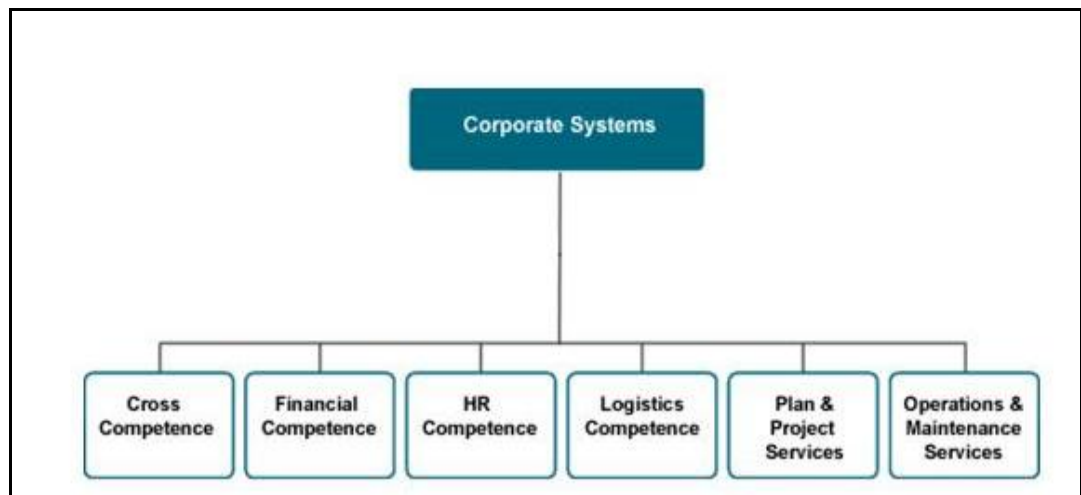

Figure 13. Corporate systems team structure. (Source: TS intranet)

Figure 13 above shows the team structure in detail. Corporate Systems currently consists of about 100 employees in Sweden and Finland. The cross competence group focuses mainly on the technical competence and provides services to the

domain related Competence Groups (Financial, HR, and Logistics), Operations & Maintenance Service (O&M) and Plan & Project Service (P&P). 60 percent of the cross competence group is made up of experienced professionals who have been with the case company for more than 10 years. They deliver their expertise to TS internal business customers mainly via Plan and Project and Operations and Maintenance services groups.
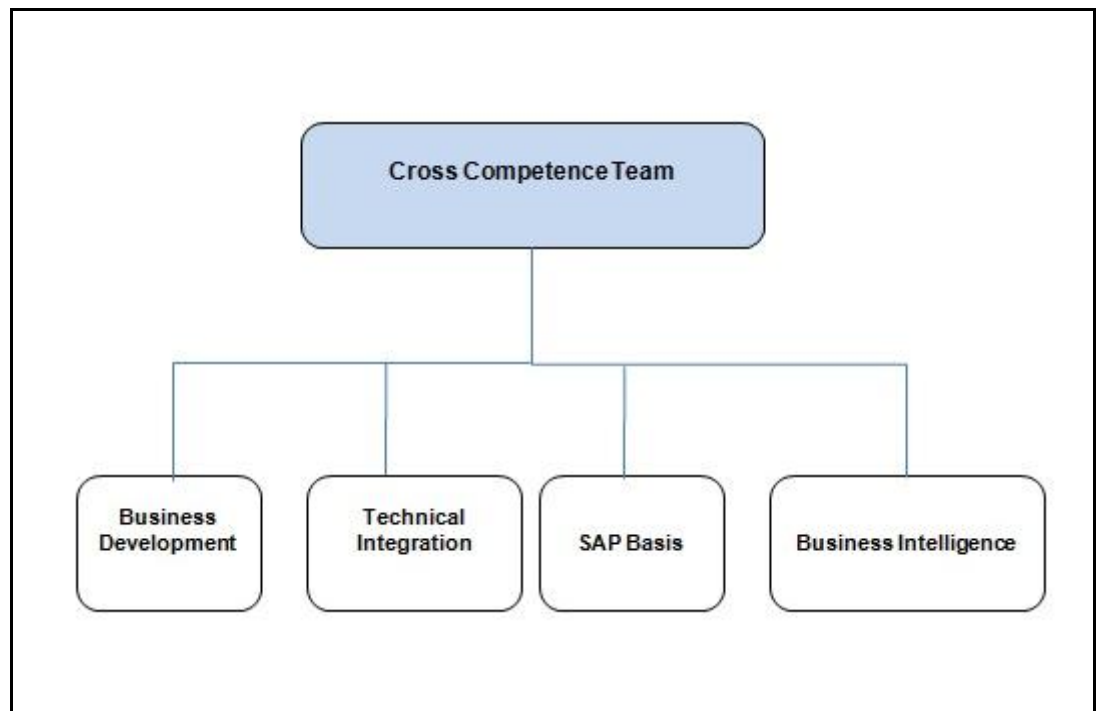

Figure 14. Cross competence team structure. (Source: TS intranet)

As shown in figure 14 above the cross competence team comprises of sub teams: Technical Integration team, Business Intelligence team, SAP Basis and SAP applications' care team and Business Development team. All these sub teams are managed by the Cross competence team director D1. The Technical Integration team is managed by team manager 1 (TM1) and this team is mainly responsible for interfaces (SAP PI); ABAP/Java development; Int./Ext. SAP Portal platforms; SAP Workflow; Readsoft scanning solution; Approval Registry and BMC Remedy tool for SAP Support.

The Business Intelligence team is managed by team manager 2 (TM2) and is responsible for SAP BI platform and SAP BI reporting (technical specifications and implementation). The SAP Basis and SAP applications' care team is managed by team manager 3 (TM3) and this team handles server and DB level support and maintenance; HW planning and extensions; SAPGUI and basis support. The

Business Development team is managed by team manager 4 (TM4) and is responsible for SAP Production Management and Architecture; landscape planning; SAP Solution Manager; Testing administration (HP QC) and automation (SAP TAO) for SAP as well as Training material administration (uPerform) for SAP.

4.1.1 Action Cycle 1: Survey Round for Analysis of Collaboration Setup

Action cycle 1 for this study was conducted in the cross competence group which has 27 employees in total. The main role of this team is to provide technical competence to the case company internal business customers. The planning phase of action cycle 1 consisted of reading the books and articles related to the research topic and preparing the survey questions to analyze the case team's collaboration culture, level of trust among team members and collaborative tools in use. The books and articles studied are listed in the references section. In the action phase of the cycle, the survey "How is your organization's collaboration culture and what collaboration tools are in use" was sent to the group inside the case company.

The survey questionnaire given to the participants was prepared by the researcher with help from the white paper by Cisco Systems (Collaboration: Transforming the way business works: Economist Intelligence Unit). The test is made up of question statements and there are 25 questions. Each question has statements concerning a certain aspect of collaboration and organizational culture. The participants answer by selecting one or many of the multiple choices per question as per the instruction. The questionnaire was created as a web based survey using a free web survey tool www.esurveyspro.com and the link to the survey was sent out by email to all the team members on 5 March 2010.

The email provided brief information about the research and its objectives. It also contained instructions for answering the questionnaire. One week was given to collect the responses and in case of any clarification or doubts regarding the questionnaire, the participants were asked to contact the researcher. The response rate to the survey was 62 percent and the individual responses were stored. The individual and collective responses were analyzed in the observation phase and reflections from these observations were discussed with a few of the team members and team managers.

4.1.2 Action Cycle 2: Interview Sessions for Building Collaborative Framework

Action cycle 2 for this study consisted of semi structured interview rounds with the team managers of sub teams within the cross competence team and the team members of the technical integration team.

In the planning phase of this action cycle the interview questions were prepared by the researcher using Microsoft Word 2007 and were sent in advance to the team managers. The existing collaborative tools and solutions inside the case company were also studied. The action phase consisted of two set of interviews: one with the team managers and another with team members of the Technical Integration team. The interview with team managers was a face to face meeting on 19 March 2010 inside the case company premises and was attended by TM1 and TM2. TM3 and TM4 were unable to attend this meeting and the interview round. The interview meeting started with an overview of the study presented by the researcher. The results of the survey conducted in action cycle 1 were also discussed with team mangers and their view points were noted down. The interview questions were based on the important elements of collaboration such as the organizational culture, processes and tools. These questions are included in the appendix section.

The interview with the technical integration team members was conducted through web conferencing as the team is spread in five cities and two countries. The Technical Integration Team has 9 members and the employees represent Finnish, French, Latvian and Swedish nationalities. Their main role is development and maintenance of TeliaSonera's SAP environments. The team works in tight cooperation with the Cross Competence group. The web meeting took place on 25 March 2010 and was attended by team manager TM1, all the team members and cross competence team director D1. This interview meeting also started with an overview of the study presented by the researcher. The results of the survey conducted in action cycle 1 were also discussed and positive and negative feedback was given by team members. Team members also proposed several ideas for the collaborative project implementations. The pros and cons of these ideas were then reflected on by the team manager TM1, researcher and team members.

4.2 Reliability and Validity

Some of the key considerations for reliability and validity in the context of qualitative research method are that validity and reliability are two factors which any qualitative researcher should be concerned about while designing a study, analyzing results

and judging the quality of the study (Patton, 2002). Since there can be no validity without reliability, a demonstration of the former [validity] is sufficient to establish the latter [reliability;] (Lincoln and Guba, 1985). Further there are other essential criteria for reliability and validity in qualitative paradigm such as credibility, neutrality, dependability and applicability (Lincoln and Guba, 1985).

These considerations are applied in my studies. Rigorous techniques and methods for gathering high quality data were used for establishing the credibility of the study. Books and articles from many sources were studied for this research in order to present an unbiased picture. Some of the articles used here are Harvard Business Review articles and MIT Sloan Management review articles directly from the EBSCO databases. The reference materials chosen are in the context of the research topic and are listed in the reference section.

The researcher is not part of the team that participated in this research and thus can have an impartial and an outside view of the situation. The downside of this situation is that the researcher is not involved in the day to day processes of the team and could miss important factors related to the study. The survey responses were anonymous in nature to get honest responses from the team. The interviews were documented and recorded for quality purposes with the permission of the interviewees.

The total number of respondents to the survey was 17 which form only 60% of the team population but qualitative interviews were conducted to get more insights from the team to have reliable results. The study does not contain only the views of the researcher. The researcher has collected the perspectives and views from many participants of the research and has also considered the different theoretical views. Once the data was gathered using the research method, the data needed to be analyzed and the results which were obtained were used for reaching the outcome of the study and achieving its objective. The next section explains in detail the analysis and results of the study.

5 SOCIAL NETWORKING AND COLLABORATION AT TELIASONERA

This section discusses the current collaboration setup, its challenges as indicated by the data collected in the surveys and interviews carried out for the study. It also looks at various collaboration solutions available for organizations and finally it presents a collaboration framework for the case company based on the analysis done.

5.1 Current Collaboration Setup at TeliaSonera

Information technology is instrumental to any organization which does business today. Certainly, new technologies can hurt as well as help an organization. For e.g. ERP systems are now a foundational element for most large companies, proved daunting and disruptive as organizations struggled to adapt to the new business processes these technologies required. Indeed, new technologies on their own can do little to improve a company. Significant new technologies require commensurate organizational changes. Moving from experimental, impromptu use of social networking capabilities to strategic, companywide implementation requires close attention to cultural and procedural changes throughout an organization

TeliaSonera (TS) is the leading provider of fixed voice, mobile and broadband services. With more than 30,000 staff, it operates Europe's largest and fastest-growing wholesale IP backbone, and is the 10th largest mobile group in the world. It has its headquarters in Sweden with its workforce divided into many regions such as Finland, Norway, Denmark, Estonia, Latvia, Lithuania, and Eurasia. TeliaSonera depend on its employees to face and overcome new challenges every day in the fast-changing and competitive industry. For this it needs to empower all employees with the tools and skills necessary to turn the daily challenges into opportunities, making it happen.

The case company believes that IT systems and infrastructure is essential and a key to its future success. TeliaSonera's vision is to be a world-class service company and to be recognized as an industry leader and IT is seen as an enabler to this vision. Currently IT in TS is perceived as costly, inflexible and slow to change. A large number of acquisitions have made the IT landscape very complex to operate and manage. The Group IT team at TS has identified new capabilities that IT needs to supply within the next 3 to 5 years and also the trends impacting IT. Collaboration and collaborative solutions have been selected as one of the latest trends impacting IT and are one of the 6 key strategic trends identified.

Today's business organizations are all about teamwork. The members of those teams may be located right down the hall from one another, or as the business grows, they may be spread out over a wide geographic area as in the case of TS. As the company hires more employees, some of them may work from home as telecommuters, or teams may need input from workers who are out in the field, at client sites or vendor sites. As the team becomes more dispersed, the problem is how to keep everyone in touch and make sure that all team members have access to the documents and other resources that the team is working on together. When there are only a few team members and the project is a relatively simple one, members can use e-mail to inform other members of developments and exchange documents as attachments.

Real-time communications are accomplished with popular instant messaging software such as Windows Messenger and files can be exchanged this way, as well. Team members need to track deadlines, meeting dates, appointments, etc. with group calendars or shared calendars, available via programs such as Microsoft Outlook/Exchange Server. Audio and video conferencing can be done through modern messaging programs or through NetMeeting (which is built into the Windows operating system). There are also third party conferencing freeware programs such as Skype, WebEx.

As the business grows, the teams tend to grow in size and the projects tend to grow in complexity. Collaboration becomes even more complex for workers who are members of multiple teams. The company needs to set up e-mail distribution groups and sort mail pertaining to different projects into different folders, and even with features such as Microsoft Office's change tracking, it can become difficult to keep all the versions of each document straight as it travels between (and is edited by) many group members. In addition, each team member has to deal with several different software programs (an e-mail client, an Instant Messaging client, possibly a calendaring program) depending on what collaborative tasks they want to accomplish at a given time.

People and businesses expect the tools they use in the office to support the highly collaborative, mobile, and virtualized work styles that are the norm in today's workplace. Successful tools allow people to work simultaneously with the same documents, data, and information to share ideas with partners and suppliers, and to deliver products regardless of where they are, or if they are connected or on the go.

At this point, it is time to think about investing in some type of "groupware," or integrated collaboration software. This type of software has been around for a long time; Lotus Notes and Novell's GroupWise were some of the earliest incarnations. Web-based collaboration has become popular because it can be used from any computer that's connected to the Internet and has the appropriate browser; there is no need to install special client software. Web-based collaboration servers such as Windows SharePoint Services (formerly called SharePoint Team Services) or SharePoint Portal Server are common choices for many organizations as they are easily integrated with other Microsoft products such as MS Office, Outlook etc.

Microsoft Office SharePoint Server 2007 provides the current collaborative frame for TeliaSonera. It is an integrated suite of server capabilities that can help improve organizational effectiveness by providing comprehensive content management and enterprise search, accelerating shared business processes, and facilitating information-sharing across boundaries for better business insight. Additionally, this collaboration and content management server provides IT professionals and developers with the platform and tools they need for server administration, application extensibility, and interoperability.

It is a portal product that was chosen to improve the efficiency in corporate operations by effective knowledge management and improved enterprise processes. SharePoint Server portal was selected as it would help users to collaborate effectively and act as a knowledge repository. Microsoft Office SharePoint tool provides an aggregated view of various projects and portfolios for improved decision making. It also helps knowledge architects build a visual enterprise model capturing attributes of various entities. Collaboration features provided by SharePoint helps in reducing the time-to-market of the portal product and also in reducing integration complexity. The collaboration features included discussion forums, instant messaging, online meetings and a calendar specific to the portal.

Windows SharePoint Services is included as part of the Windows Server 2003 operating system and is used for building team sites. Members of the team can share documents, calendars, contacts lists, announcements and other information across the Web, without the need to buy and install additional software on either the server or the client machines. With SharePoint Portal Server, enterprise-level portal sites can be built on the SharePoint technology which is integrated with Microsoft Office. Users can create and manage their own web sites without IT department intervention, and you can target content for users based on their job titles or roles.

Users can be notified automatically when the documents on their team site are changed, and version control will track the different versions of a document through all its changes and keep copies of all versions in case you need to refer to or roll back to a previous version. Other than the SharePoint portal, TS uses Team Documents which is used for storage of documents. Users cannot interact with others, e.g. have announcements etc.

5.1.1 TeliaSonera Intranet Services using SharePoint

The TS Intranet is built using MS SharePoint technology and is a place for news, instructions, links etc. It contains a great deal of useful information for everyday work. It is divided into five tabs: News, (Manager Portal; accessible for managers), Workroom, Employee Services, and General Information as shown in figure 15 below.

Figure 15. TS intranet solution.

The "News tab" looks different depending on the employees' own modifications. There are different versions for business areas; Broadband, Mobility and Eurasia. The business services are in many languages such as Finnish, Swedish, Danish or English. The figure 15 above shows news from Head Office and Eurasia in Finnish. The Manager Portal has information that managers need, e.g. links to approval systems as shown in figure 16 below.

Figure 16: Manager portal.

The Workroom tab can be totally modified by the user. There are different "channels" which every user can modify the way they want. So it could be that there are several unique ones depending on people's preferences. These are open to anyone who wants to add that channel into his/her view. A sample workroom is shown in figure 17 below.

Figure 17. Workroom tab.

The Intranet also has the Employee Services tab with employee related instructions, such as links to travel systems etc. Figure 18 below shows the employee services tab.

Figure 18. Employee services.

The Workroom for Teams which is also based on MS SharePoint is the private work area for specific teams. It has restricted access and members who need to join the workroom can be added only by an administrator of the workroom portal. Any team at TS can set up a workroom site like this for project or team purposes. Access to workrooms is given by request only. Figure 19 below shows a snapshot of Corporate Systems' workroom.

Figure 19. Workroom for corporate systems team.

Wiki is one of the channels in the intranet Workroom and is available for all TS employees as shown in figure 20 below. Users with access to this wiki can add or edit articles. There is also help available on how to contribute to TS wikitionary.
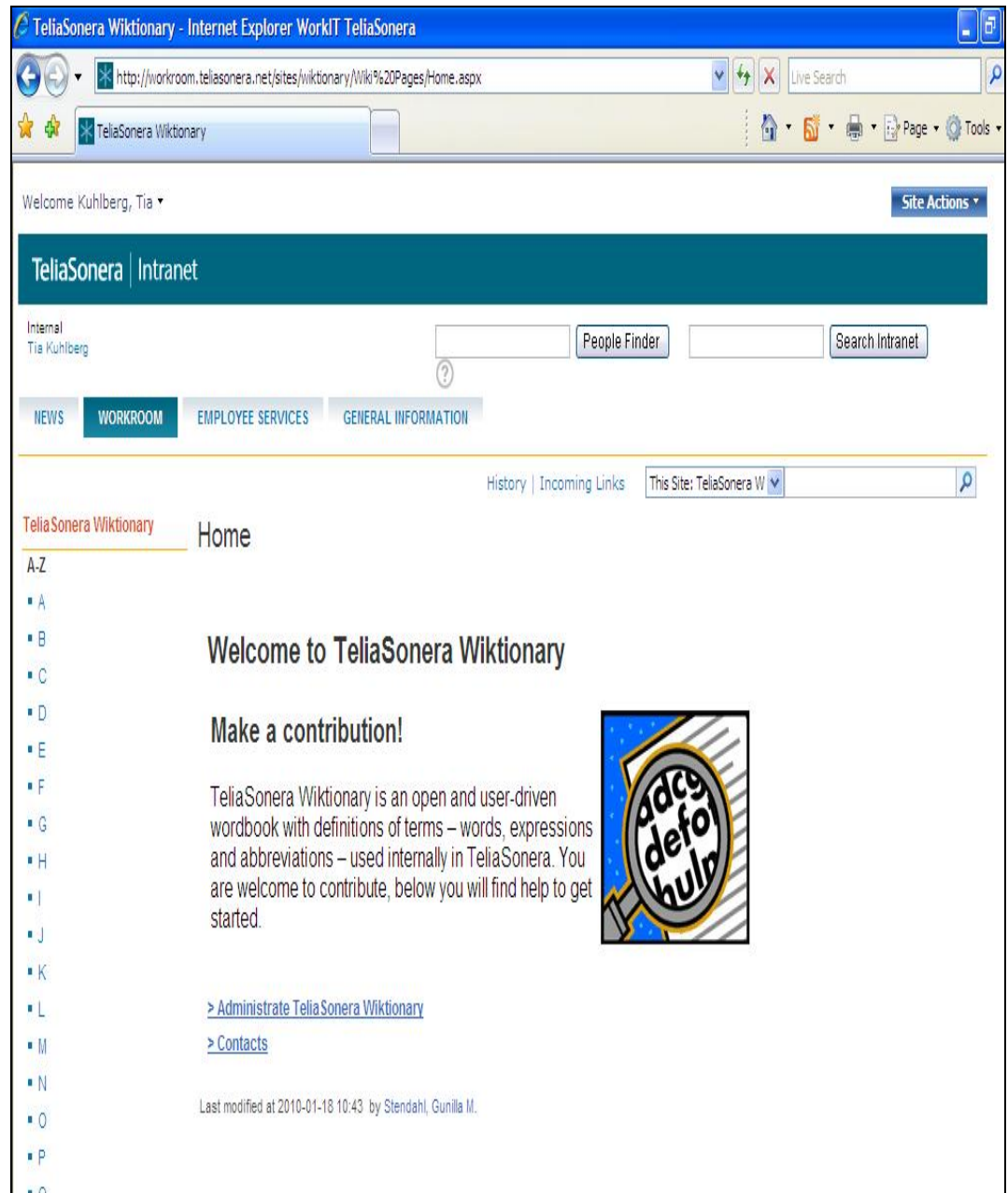
Figure 20. TeliaSonera Wiki.

Though SharePoint is already in most organizations today and is nearly ubiquitous in deployment, there are issues on how it measures up to the ideal and practice of Enterprise 2.0 and Web 2.0 technology. These challenges are discussed in the next section.

5.1.2   Challenges and Issues with MS SharePoint

Today's worker landscape is a surprisingly different place with the rising use of Web 2.0 applications such as blogs and wikis and other applications. Many companies right now are using Enterprise 2.0-style tools to enable collaboration and

management of their knowledge. The software solution which fits the Enterprise 2.0-style as per most organizations is Microsoft SharePoint. In fact, Forrester predicted that SharePoint would steamroll the Enterprise 2.0 market despite the limitations about SharePoint's wiki, blog and social networking functionality. Every organization has deployed SharePoint in some form or another. Enterprise 2.0 working style for an organization provides a variety of benefits such as higher worker productivity, improved knowledge retention, cross-functional innovation, and even as a corporate catalyst. All the above benefits can be achieved only if the software the organization is using actually enables such scenarios in a widespread manner. The question is if SharePoint is a suitable platform for Enterprise 2.0.

Microsoft SharePoint is often referred to these days as MOSS, for Microsoft Office SharePoint Server is certainly one of the most respected and widely used platforms of its kind. It has a truly extensive set of capabilities which Microsoft typically categorizes into five major groups: Portal, search, content management, workflow, and business intelligence. Like most popular CMS and community platforms these days, SharePoint also has open architecture that ensures that almost anything that is perceived as missing can be supplemented by acquiring one of the many 3rd party add-ons or by custom development of what is needed. However, all products, especially very complex ones, have their own strengths and weaknesses and this is where the good and not-so-good begin to become an issue.

One of the largest complaints is the information locked in SharePoint micro-silos and it is nearly impossible to easily reuse that information and share it. There is great information being shared and flowing into the system, but the users do not know it exists, nor can they easily share it, nor do much of anything with that information. The information is difficult to get at by people desiring to collaborate outside the group or across groups and it is not easily unlocked. The Microsoft SharePoint model is one that starts with things locked down (focussed on hierarchies) then opens up, but unlocking is nowhere near as easy a task as it should be. It is not a viable platform to be considered when thinking of enterprise 2.0.

The reality of today is that information flow is really no longer controlled by IT managers, but by the enterprise users themselves. Users have a genuine need to pull information from servers found inside and outside the company. They need sole control of a particular section of the Intranet while they need another section of the Intranet to be open and free for collaboration. The users appreciate the blogs and

wikis their companies set up, but they also need a workflow that recognizes the benefits of applications with Facebook and Twitter like features.

In short, users need Enterprise 2.0 and IT managers need to have a vendor that not only provides an efficient and effective platform, but also a platform that is agile and compatible with other enterprise solutions. Enterprise 1.0 software did not have the social and open mindset originally built into the platform and continue to have problems in the redesign. Enterprise 2.0 vendors on the other hand recognized the need for social publishing from the ground-up and do not carry the legacy baggage of their older counterparts. SharePoint's problem is that while it may deliver social publishing features on top of a document management platform, the platform still seems stuck in two worlds. Perhaps in reality, SharePoint is Enterprise 1.5. SharePoint is not a Web 2.0 native. The Web has been the most successful in creating powerful network effects and as the source of the world's largest and most vibrant social systems. SharePoint was designed before the modern social computing lessons and even though it has powerful capabilities, the platform overall is excessively complex and has relatively weak support for the most common Enterprise 2.0 application types, particularly blogs and wikis, but also social networking features.

On the other hand the technology landscape of the enterprise environment fits SharePoint well but the business requirements to a lesser extent. While Web 2.0 tools are often viral in the public network, they do not transition well automatically into the Enterprise environment where multi-level security, governance, and policy controls are virtually mandatory and which few of the open source (or even commercial) Enterprise 2.0 tools from consumer world support adequately. However SharePoint is strong in many of these points with excellent Active Directory integration and better support for enterprise technologies. SharePoint also integrates well with file servers, documents of many types, and traditional corporate databases, though this also reflects an older version of the technology landscape. Governance and policy capabilities in SharePoint are acceptable, but not best of breed and SharePoint has credible unified search capabilities and works especially well if SharePoint is the only document management, portal, and knowledge management infrastructure in the organization.

The wilds of the open network can be a challenge for SharePoint. It works best with homogeneous environments and not nearly as well when the environment is not controlled, especially on the browser-side and on mobile devices. This makes

opening up SharePoint environments to work with partners, customers, and even the general public to be more difficult than with other platforms which were designed to function in highly diverse environments. Self-service capabilities are lacking or not emphasized. Traditional enterprise systems, including SharePoint, tend to be more rigid in their ability to be shaped by users and too often force users into pre-determined uses rather than letting the users shape the use of the tools to best fit the work. Many large SharePoint installations consist of hundreds or even thousands of smaller sites, each of which must be made consistent in terms of layout and navigation if centralized administration and governance is to be effective. Web 2.0 world has discovered that the more this is handed over to users, the better this works and critically, the better it scales up. Users should be able to create sites within SharePoint, customize them over time to meet the local requirements, and let them evolve and improve through shared contributions. It is, however, by no means impossible to enable this kind of self-service with SharePoint but it does not encourage it nor is it a core design principle for the product. Figure 21 below shows the difference between traditional enterprise software and Enterprise Web 2.0 softwares.
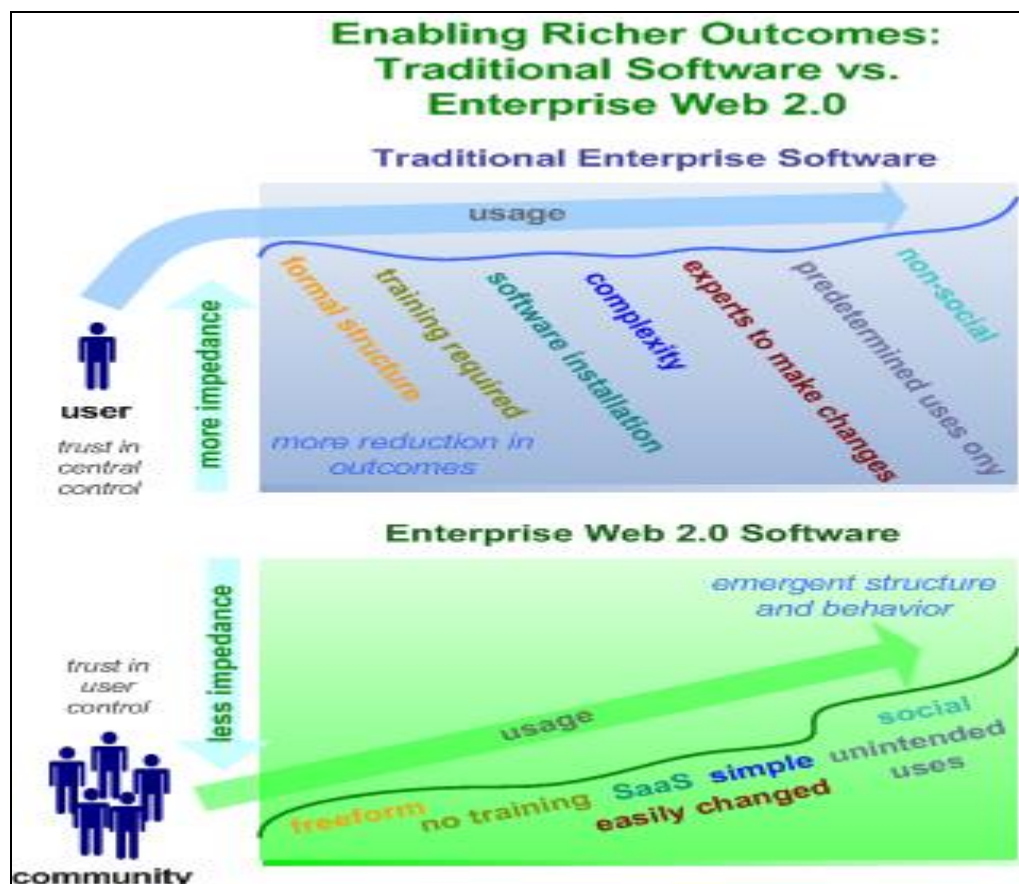
Figure 21. Traditional enterprise system vs. Web 2.0. (Source: ZDNet Blogs Dion Hinchcliffe)

Finally the cost and complexity of SharePoint is also a hindrance. The features of the MOSS platform are quite complex and this means highly trained implementers, administrators, and technical support staff are required to deploy and run it, which all add to the total cost of ownership. SharePoint's inherent sophistication can also mean slow adoption and low engagement by users. In fact, this is a central lesson in Web 2.0 design, that complexity is the enemy of ease-of-use and adoption; most 2.0 products are almost brutally simple in their user experience. SharePoint is also priced as an enterprise product and can be very expensive (at least compared to most Enterprise 2.0 products) for a large installation.

To comprehend the nature of the collaboration culture and challenges with the current collaborative process and tools in use, a web survey and semi structured interviews were conducted with team members and managers in the case team at TeliaSonera. The survey and interview methods are explained in section 4.2 earlier. The results from these are discussed in the next section to understand the present state of collaboration at TS and the opportunities it offers.

5.2 Research Findings: Challenges of Collaboration

This study conducted in the cross competence team at TeliaSonera shows that more than half of the respondents agree that globalization is one of the key factors which has influenced the amount of collaboration internally at the company. The need to collaborate is clear with the creation of various partnerships within and outside the organization. Implementation of new collaboration technology and also decentralization of the organization is forcing employees to seek collaboration partners. About 60% of the respondents have been working at TeliaSonera for more than 7 years and the team comprises mainly of people working in technology such as SAP, Basis, and Business Intelligence (BI), followed by business development, financials, human resources and logistics areas of competence.

Communicating more efficiently across the organization is seen as the biggest perceived benefit from collaboration. Improving knowledge sharing within the organization, increasing operational efficiency and efficient problem solving are seen as the other important gains which the company can get out of collaboration. Corporate culture is important in successful collaboration. Perhaps the most valuable study result is that the cultural shift towards collaboration is already happening in the organization. A vast majority of the respondents collaborate with

their colleagues in other functions of the organization and there are people in the organization who connect regularly with other people having similar work interests and passions. Successful collaboration requires an organization culture which encourages sharing, not secrecy. More than 70% of the respondents agree to this and they also feel that teams are recognized as a single unit. However the trust between the co workers and management team needs improvement as almost 41% of respondents do not trust their co-workers and management completely at all times. One of the respondents put the situation down in these words: "Currently the company is under reorganization and some functions/teams will be outsourced to external partners, so there is a level of uncertainty and mistrust".

However if the teams decide to collaborate for any purpose, they do so with a feeling of promise and each person playing a valued role. Employees understand that future success depends on collaborating across greater distances be it physical, cultural or organizational. The majority of the respondents feel that in the next 3 years they will be spending less of their time working independently than they do now. They will be spending more of their working time with teams in different functions, different locations and even with teams at other organizations. They will continue working with teams in the same function and teams in the same location but much less than they do today.

Open-ended survey questions as well as interviews with team members and leaders suggest that there is a process for collaboration but it needs to be more structured. One of the team managers was quoted as saying "There are some processes for communication but we need official processes with information such as who are the stakeholders, what are the knowledge sharing processes etc." Most respondents feel that they need someone in the organisation to learn more about effective collaboration approaches and currently there is no one they can talk to about collaboration approaches. One team member said that "We work with multiple teams, different individuals and need to network with many people in the organization to get the work done, so different levels of collaboration is needed for all these partners and interactions". Another member agreed to this statement and said that "People are already collaborating without these high tech tools and what they need is right tools mapped to right purposes. Most people want to make sure that they get some advantages from collaboration and the organization gets the return on investments on these tools".

"It is sometimes challenging to deliver the messages in an equal way but I think we have managed pretty well and I would describe the cooperation between our team members with one word: seamless. A good proof is our team's Employee Commitment Score (ECS) which was 70 percent in 2008," says one team manager. He also adds that "Although, the overall situation is good, we have identified several improvement areas and taken actions to make things happen. For example, within my team we constantly strive for Simplicity."

However the biggest barrier to collaboration within the organization is due to the excess workload of the employees and lack of shared goals. Inability to find potential collaborators and also lack of top-level support were also seen as a hindrance to collaboration. The good thing is that information hoarding or perceiving knowledge as power is not prevalent in the organization. Most of the respondents agreed to the fact that their team managers see the value of collaborating and actively support it. However only few respondents feel that senior leaders use collaboration technologies and management publicise examples of successful collaboration work. One member said that "Examples from management and Leadership team can help in creating a culture of Collaboration". The individuals need to get some personal benefits from collaboration as well so that they are motivated towards collaboration. Not many respondents agreed with the survey question "People who collaborate well are rewarded with greater autonomy".

The team managers who were interviewed said that acceptance to different ideas will help in fostering collaboration. However the openness of the Web 2.0 tools can lead to people taking undue advantage and there should be a level of control and security. There should be control as to what kind of information is published and whether the published information is aimed at the right stakeholders. Another team manager said that "Setting targets at department, team or group level rather than individual level will boost the collaboration efforts in any team". Also there should be a way to measure collaboration efforts as many management teams believe in "What you measure, is what you get".

The team mangers also discussed in the interview that they need to have a better reward system to encourage collaboration and also retain collaborative talent in the team. They also look for collaborative talents while recruiting for employees. They are in the lookout for people who can work with other persons in the right way and express himself/herself appropriately when working in large teams. Looking for such talents is not an official process directed by the Human Resources (HR) team but

they feel the HR team can help them set up the guidelines of such a recruiting process. They felt that the best way to give reward is to thank the team involved for the good work publicly and share feedback openly. They do not have the culture of offering monetary benefits in the organization and so publicising the best works of collaboration was considered the best way to reward collaboration.

Collaboration as a process does not require any specific tools but in today's connected world, people are no longer in the same location, time zone, or culture. Tools such as videoconferencing and web sharing enable collaboration across distance. Blogs, wikis, and shared workspaces enable collaboration across time boundaries. Figure 22 below shows collaboration tools which enable people to share information across distances and work together effectively.

Traditional	Web 2.0	IM Chat	Shared Workspace	Electronic Meetings
• Voicemail • Email • Fax	• Wikis • Blogs • Intranet publishing • Internet publishing • Social networking sites • IPTV • Internet forums or discussion boards • Project extranets	• Instant messaging • Text messaging • Online chat	• Revision control or document review • Knowledge management systems • Electronic calendars • Online spreadsheets • Application sharing or co-browsing • Workspaces	• Conference calls • Video conferencing • Telepresence • Web or data conferencing • Electronic meeting systems

Figure 22. Collaboration tools. (Source: Cisco)

The survey shows that traditional tools such as E-mail, Online chat/instant messaging, Web conferencing, Video conferencing, Shared calendars, Intranets with shared online data on employees, are used by many people but there are few people who know about other advanced Web 2.0 tools such as online project management systems, Workflow systems, Collaborative tools for designing products, wikis, discussion boards and blogs. Even fewer people, who know these tools exist, seldom use them. However the document management tools are quite widely known and used. Despite the promise of technology, there is still dissatisfaction with online collaboration tools. In the survey, only a minority have adopted Web 2.0 tools. There is little consensus on the most effective ways to use technology to facilitate collaboration. The respondents did not feel that the current tools added much to the collaborative process. Despite of all technologies the most used communication channel is personal or telephone contact.

The adoption rate to new technology is low because there is a great deal of resistance found in groupware adoption. This could be due to individual, group, and organizational factors. Adopting groupware across distance is a challenge: people

must learn about technology, make a collective decision, and coordinate in its implementation. One of the respondents says that "There are so many tools for the same purpose and newer tools get added and it becomes difficult to work with all of them. We need easy to maintain tools and one unified channel for information sharing." Other team members supported this fact and said that "We have huge workload and do not want to spend more time is using or trying new tools". There were also concerns about the language to be used in wikis as the work is not done only in English but local languages such as Finnish, Swedish, and Danish etc. The team members suggested that when introducing new tools, the old tools should be replaced and its usage should be stopped. This way the system is decluttered and all the information and data is moved to the new tool.

Only few of the respondents agreed that they have access to relevant and useful collaboration technologies and are encouraged to use them. One of the respondents said that "I am not satisfied with the current collaboration tools at TS". When asked what can be done to make these tools better, the answer was "They need better voice and video conferencing tools". A few felt that the tools chosen by the company are in some cases too old (not attractive enough) and they hardly can use some of the new tools because they are already booked by other teams/persons. However some respondents were quite happy with the current collaboration tools. One of them said "I am quite happy with the tools I am using, MSN, net meeting, workrooms, they are easy to learn and very usable in my daily work." There were others who supported this and said "Most importantly, a lot of people use these simple tools such as net meeting etc because it is easy to connect to whomever and start a conversation".

When asked what can be done to make people learn to use these tools, one respondent said that "Group pressure can be a problem to stop this evolution. Renewing the tools and the teaching will help to increase the use of new tools." Some members said that "I think people in common will realize how easy it is to communicate, share information and be interactive, and the benefits of it and start using them". Another respondent said that to make people use these tools "the organization has to make sure that these tools are promoted and many people start using them". A few respondents believe that the collaboration tools are underused because it might be that people do not know that the tools exist and thus promoting them is important.

The respondents were also asked about which tools (current or envisioned) according to them will be the winners for collaboration. Most of them said that tools with an "easy to use" functionality and a wide audience will be the winner. One respondent said that "Video conferencing available direct from your laptop is the solution to get people to use tools and interact with each other." Most of the respondents stressed the simplicity factor and the ability of the tools to reach one to one or one to several users. One of the respondents said that "tools which can convert voice to text in a meeting and can display what the participants are saying would be a big improvement to help you to not losing the red line in a long discussion". The team members also feel that social networking tools in the office can help them collaborate better. Email and phone conferencing remain the most frequently used tools for collaboration but there is hope for better tools with easy to use functionality.

The team mangers also discussed the critical purposes for which they should collaborate within the organization. Social networking with other people and teams in the organization and improved visibility of their teams came out as the top contenders for collaboration. Since their team's basic competence is technical they can post guidelines for business teams. The information flow should be both ways, vertical and horizontal. The business teams can post what kind of information they need. This way they can understand other teams and communicate in a better way. The cross competence has more stakeholders and their visibility to the business teams can help them understand the future needs of the business.

Collaborating with business teams can lead to early involvement of the cross competence in the product or service development. They feel that information is coming to them at a much later stage and thus requiring urgent and rapid actions from them. Collaboration can help them work more effectively and also connect to the end customer along with the business teams. Currently the information flow is unidirectional and it is forced down the chain; the cross competence team needs a channel to voice back their concerns to business teams. They want to see the big picture instead of being informed in small chunks.

When team mangers were asked about what suggestions can be given to management for creating a strategy for collaboration, most people agreed that using pilot projects to test the collaborative efforts is the effective way to do it. The organization can look for teams which volunteer for these pilots or find promising areas for collaboration. If the effort is successful then expand the same to other

teams in the organization. Some believed that best practices from other organization and industry can be utilized rather than reinventing the wheel. There were suggestions that different type of tools should be tried and mapped to right purposes. Some suggested using web based social networking tools outside the company which can be adapted for internal purposes. There was again concern about the security and control over important company data. There was a proposal for different collaboration processes for different partners. The internal teams such as the product development team need high security and thus should have greater control over data and teams which collaborate with external partners whereas customer care teams should have more relaxed control.

The survey and interview analysis clearly shows that the teams need a better way to communicate, share knowledge and effectively manage their resources. There is a clear need for collaboration within the team and also with its partners. Out of the three elements of collaboration i.e. people, processes and tools, it is clear that the biggest challenge for the organization is the tools as shown in figure 23 below.
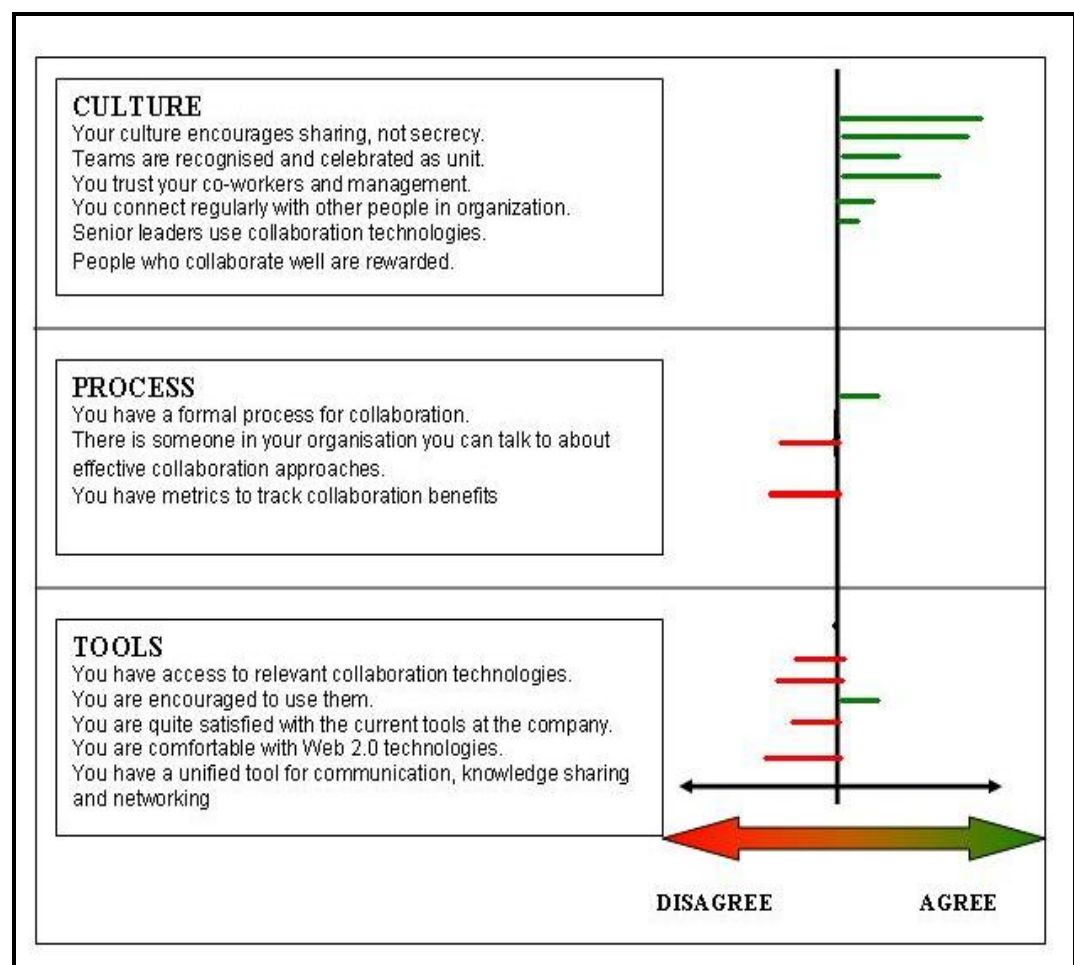
Figure 23. Present state analysis of components of collaboration at TS.

The figure above shows that the organization culture is quite conducive to collaboration and there are some processes in place and there are some which need tweaking. However the tools used for collaboration have serious drawbacks. It was widely agreed by the team members that collaboration at the work place should be one of the topmost priorities for their team and organization in the future and they would like to be connected directly with the end customers. The case organization can choose to develop their current collaboration tools or invest in new tools. Some of the best collaborative tools available are discussed in the next section with suggestions to improve the current tool, MS SharePoint.

5.3   Analysis of Available Collaboration Solutions

To be truly collaborative, employees require access to the right information at the right time across different workspaces. Enabling this collaborative experience requires consistent connectivity capable of supporting rich media communications. End users and businesses are well served by wired and Wi-Fi based networks. As user demand for collaboration-enabling high-bandwidth applications such as video increases, there is a corresponding requirement of networking infrastructures to support these demands.

Research shows that informal learning accounts for over 80% of the learning that takes place in organizations (Bersin J 2009). As organizations realize the potential of informal learning, they are looking for ways to help them harness this power and align those results with tangible business goals and strategies. This is where social networking and collaboration software steps in. These types of tools and technologies pave the way for organizations to facilitate knowledge sharing, collaboration, and learning activities that directly impact organizational initiatives.

Organizations can open up to potentially greater results and benefits in both the formal and informal learning arenas by breaking out of the traditional formal and informal learning silos and embracing the natural synergy that exists between these two areas. Those results can include more productive employees, shorter time to competency for new employees and partners, and more engaged employees. All of these results can have a direct impact on the business goals and objectives.

Social networking and collaboration tools provide an easy way for organizations to connect their employees to each other, provide them with direct access to information and an environment for them to contribute to the content. These types of

tools can help bridge the gaps between traditional or formal learning and less tangible, user-driven, informal learning.

Desktop software may soon be a thing of the past. This is especially true in collaboration applications as most collaborative tools are now Web-based solutions. There is a boatload of options available in the market today. Organizations should investigate the various collaboration tools available. The market is highly fragmented, with dozens of different vendors in many categories. Tools can be combined or integrated in a variety of ways. While selecting the tools, the organization should consider these important IT components; Web 2.0 features in the collaboration tools, productivity and business applications, infrastructure requirements such as servers, desktops, and other user devices, network and bandwidth as well as existing internal IT systems. Taking into account these factors as well as the current collaboration setup at the case company, below are a few options for collaborative tools which can be tried by the company.

5.3.1   MS SharePoint

SharePoint has acknowledged some of the weaknesses which were discussed in section 5.1.2 and has embraced outside vendors that make far superior products to plug-in as components. The case company uses SharePoint and can add plug-ins for their benefit. Some common social tool plug-ins to SharePoint are: Socialtext, Atlassian Confluence, and Connectbeam. Then there are those who build on top of SharePoint, like Telligent and NewsGator Social Sites. If organizations want a great wiki tool, not the complex wiki "template", then Confluence or Socialtext is added. If there is a need for a great social tagging/bookmarking tool that ties into search (this starts enabling the finding of good information in SharePoint's micro-silos), then Connectbeam can be added. Adding these plug-ins can be a quite capable solution, but is built on top of one of the more pricy enterprise platforms. In most cases the cost of all the plug-ins together is less than the cost of SharePoint. It is from this point that many organizations realize all of these add-ins work wonderfully without SharePoint. However, getting all of them to work together as easy plug-ins to each other is not always easy.

Another option that the organization can take is to move in the direction of putting a fully functional social platform on top of SharePoint such as Telligent and NewsGator Social Sites. These are options for those who find value in what SharePoint offers and does well, but want ease of development and a lower cost of development than is the norm for SharePoint. These full-suites also provide the

ease of not having to deal with working through plugging together various different best of breed solutions.

The case company can also decide to remove SharePoint from the organization completely. The reasoning is cost and underperforming as a social platform and what is does well is easily replaced with other solutions as well. When removing SharePoint some organizations are going the piece by piece approach and stitching together best of breed or are going the route of full-service social platform, like Jive Clearspace. The cost per users of such solutions is less, the time to install to up-and-running fully is reportedly about a third and maintenance staffing is also reportedly lower.

5.3.2 Cisco Collaboration Solutions

Cisco Collaboration Solutions address the complexities of today's workplace. They improve and accelerate interactions among people, enabling teams to form more quickly and helping people access relevant business information in real time. Cisco Collaboration can have a demonstrable impact on the effectiveness of key business processes that depend on people, connecting multiple decision makers in multiple locations, across multiple networks. Cisco's open and interoperable approach allows organizations to integrate existing and new collaboration technologies. Cisco Collaboration solutions include:

- Conferencing: it has a wide range of voice, video, and web offerings with on-premises and on demand conferencing solutions.

- Enterprise social software: Decision making can be accelerated by helping employees, customers, and partners quickly find, access, and share relevant business information using secure, collaborative software applications, automated expertise, and media locators.

- IP communications: It has enterprise voice system, which includes a full suite of IP communications solutions and advanced media and collaborative meeting endpoints to boost productivity.

- Messaging: Communication within and between companies using enterprise instant messaging (IM) can be done from the cloud or on the premises. Email solution with hosted email that is highly secure, economical,

integrated into the desktop environment, and ready for the future collaboration environment is available.

- Mobile applications: Employee productivity and responsiveness to customers while controlling mobile costs can be increased by making mobile devices extensions of the enterprise network. It leverages the power of 3G networks to attend web conferences on mobile devices.

- Telepresence: Telepresence solutions can invigorate business processes and drive true customer intimacy with everyone, everywhere. Cisco Telepresence creates live, face-to-face experiences so users can collaborate like never before. People can meet, share content, create high-quality video recordings and events, consult with experts and deliver personalized services.

Users enjoy an array of collaboration capabilities that build on today's capabilities, but also include highly secure, real-time, intercompany and intra company collaboration services such as IP communications, web conferencing, and Cisco Telepresence. Cisco Collaboration Solutions are interoperable with other industry-leading solutions. This interoperability, whether with existing communications solutions or with a wide range of operating systems, mobile devices, business applications, and other third-party solutions, gives organizations the flexibility to choose which collaboration tools they use. Even companies that have standardized on an enterprise IM client like Microsoft Office Communicator or IBM Sametime can still enjoy a seamless user experience. New Telepresence and unified communications solutions deliver rich business-to-business communications across organizational boundaries.

Cisco is introducing enterprise-ready social software solutions that allow customers to dynamically form teams and communities in a highly secure manner. Cisco's technology helps enable teams to be formed based on expertise and relevance, regardless of location, and brings experts together with both asynchronous tools and real-time voice and video. Cisco Show and Share is a social video system that helps organizations create and manage highly secure video communities to share ideas and expertise, optimize global video collaboration, and personalize the connection between customers, employees, and students, with user-generated content. It allows organizations to record, edit and share video with comments, ratings, tagging

and RSS feeds, and speech-to-text transcripts can be uploaded for easy video search and viewing.

Cisco Enterprise Collaboration Platform is an enterprise-class social software portal that features a corporate directory with social networking capabilities. It allows users to create team spaces and community environments 'on the fly' and also offers a customizable framework for integration of legacy business applications and web 2.0 content. Unlike today's document-centric portals, the Cisco Enterprise Collaboration Platform is people-centric, facilitating real-time voice and video communication to connect people, communities, and information to make faster business decisions. There are many products across all categories of Cisco's collaboration portfolio which an organization can choose based on its needs.

5.3.3 LumoFlow

Lumo Research Ltd provides next generation social collaboration tools for enterprises. Their mission is to improve the productivity of knowledge-driven teamwork. LumoFlow is a social collaboration environment for enterprises created by Lumo Research. It has an agile collaboration environment for managing projects, social networking and knowledge sharing features as shown in figure 24 below.
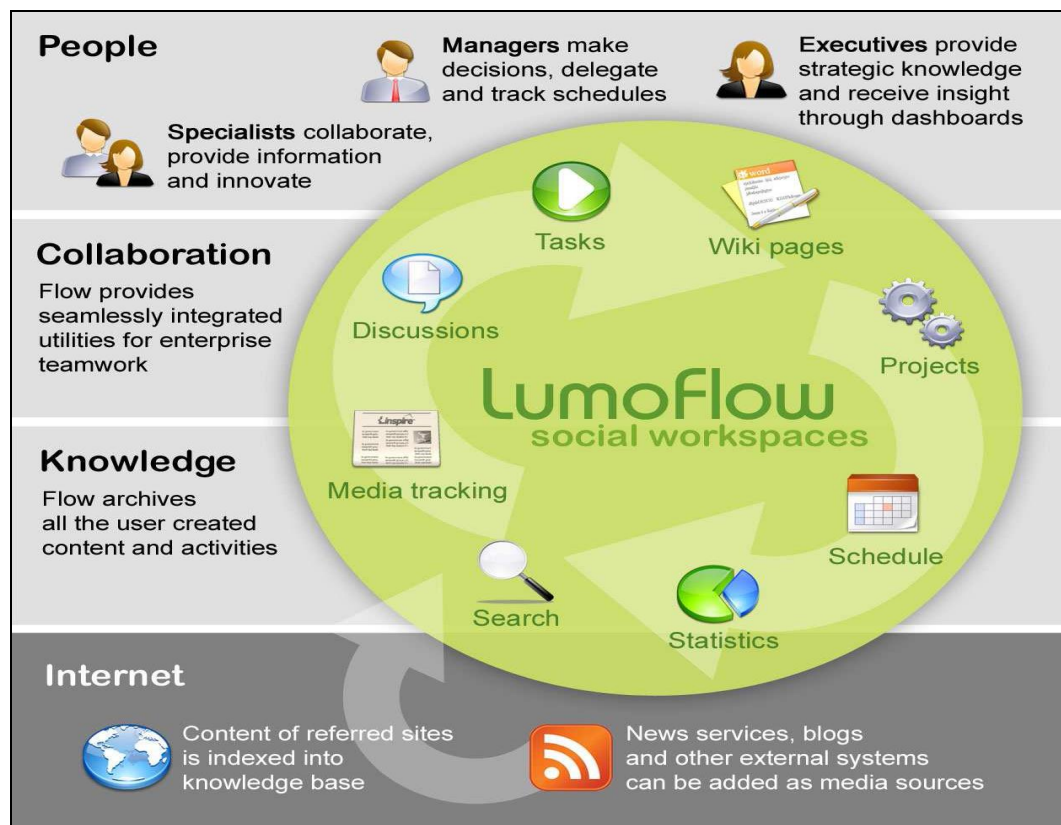
Figure 24. LumoFlow tool.

As shown in the figure above the project management tool has many features such as creating a roadmap with milestones, assign tasks and monitor the progress from the dashboard or reporting hours using the time tracking tool. It allows users access to project dashboards which provides a quick overview to the status of the projects, reminds users of deadlines and checks the latest activities from the activity streams. It also has features such as to-do lists which can be used to assign tasks and follow the progress. It lets users manage their own tasks. Tasks are always open for commenting and completions are informed to other team members. There is a group calendar available with all scheduled items, such as milestones, tasks or meetings, and these can be planned in the shared calendar.

The knowledge sharing features allows users to share information, discuss ideas and store documents. It helps in finding quickly the information users are looking for using the advanced search functionality. Users have access to discussion forums where all project activity typically can be started as discussions. Free flowing of ideas is an essential part of the innovation process and should be encouraged. It has a document storage facility. Documents are seamlessly integrated with collaboration functionality, which keeps the information up to date and makes it easier to find.

This tool also has social networking features and it provides a social networking environment centred on project work. User profiles, comments and status messages are a great way to provide transparency and to keep the distant workers up to date with the rest of the team. The user profile pages provide a centralized list of users in which everyone has the ability to explore and to see what others have been working on. The status messages increases the awareness of the community, even the smallest social actions are important. Employees can use "micro messaging" to keep other team members updated and to provide quick comments. It lets other users see who has logged in recently; see who are contributing at the moment. It provides recognition for most active members.

This tool has an additional feature such as Media tracking. Media tracking helps in getting early access to information online by keeping track of relevant news sources, blogs and other online media. It can help in monitoring industry trends, using keywords to track references to the company's brand and products, or those of the competitors. It also has an advanced search functionality which provides the quickest way for locating specific information. Instead of showing everything in one list, results from different content types are shown separately, which provides a

comprehensive view to the knowledge. The interview with the team members and also managers revealed that they would like to use an external solution rather than internal intranet tools as these intranet tools are quite scattered, so the LumoFlow solution fits the bill. It helps by transforming the existing intranet into a social network. LumoFlow Server is a productized and scalable solution for large organizations.

5.3.4   IBM Collaboration tools

IBM maintains one of the largest unified communications networks in the world and has used this integration of voice, video and data to enhance employee productivity, empower remote workers and reduce communication costs. IBM Unified Communications and Collaboration (UC2™) solutions available to companies worldwide enable people, teams and communities to work together in a rich, integrated multimedia experience.

IBM's own intranet directory captures and shares employee expertise and users of IBM Lotus Connections software now can add that ability to share to their own deployments. An internal tagging system creates tag clouds for sharing bookmarks across the company. Collaboration capabilities also come from solutions such as the IBM Lotus Sametime family of software, from messaging solutions built on Lotus Domino software and from messaging platforms that integrate with Lotus Sametime software. Lotus Sametime software, in fact, has rapidly grown from an instant messaging application to a unified communications and collaboration platform. Its capabilities have grown to include Voice over IP (VoIP) telephony and the abilities to open mailed documents, integrate with presence awareness capabilities, and retrieve and play voice messages—in essence, unifying communications and collaboration to simplify how people work.

IBM's approach is based on more than 20 years of experience in building security-rich, integrated collaboration solutions and a long-held commitment to supporting open source and open standards. IBM Lotus Quickr provides a suite of collaboration applications to help users create online destinations for employees, partners, suppliers and customers to enable more effective collaboration inside or outside of the firewall. IBM Lotus Domino Express provides security-rich e-mail, calendaring and scheduling, instant messaging, and support for a wide range of business needs including arranging appointments and meetings, engaging in real-time discussions with colleagues, and displaying interactions with a particular person.

LotusLive Meetings is a full-featured online meeting service. With the click of a button employees can meet with anyone, anywhere in the world from the comfort of their office through a web browser. Practical and affordable for today's businesses, LotusLive Meetings helps enhance team productivity, shorten sales cycles and contain travel costs. IBM Lotus Sametime provides integrated, enterprise-wide instant messaging, VoIP, video chats and Web conferencing capabilities. With this solution, you can communicate with global teams in real time within a security-rich system that can help minimize risk and promote regulatory compliance.

IBM Websphere Portal Express provides application integration, document management, web content management and collaboration capabilities in a single, easy-to-deploy solution. This solution helps increase employee productivity by delivering timely information and easy access to applications so they can work together more effectively. IBM Lotus Forms Turbo makes it easy to create eForms from the Web browser and make them available to the employees, customers and partners via a simple Web link. These secure eForms can be completed and submitted through a Web interface and provide the basis for deep analysis. IBM Websphere Application Server Express is an affordable, ready-to-go solution that provides a fast, secure, scalable and reliable environment for building dynamic Web sites and applications that can drive new business efficiencies. The solution provides out-of-the-box security configurations so companies can add new levels of management, user governance and auditing to decrease system vulnerabilities while maximizing developer productivity.

Backed by IBM's proven track record in delivering results for thousands of collaborative organizations world-wide, IBM solutions can be mixed and matched and customized to each user's preferred working style. So people can communicate and collaborate using familiar formats and methods and, ultimately, so they can build and maintain more productive, long-term business relationships.

5.4 Framework for Collaboration

The framework for collaboration is suggested based on the three basic elements of collaboration which are people, processes and technology. The following best-practices can help the case company as they try to build corporate social networks for their business. The people issues such as change management should be tackled. Changing behaviour is difficult; the company should plan on finding champions to promote the network; implement incentive programs. The

Generational Gap among the workforce makes it difficult to deploy the same tools across. The differences between how various generations utilize and consume information within the workforce should be identified, recognized and planned for. Easy to use feedback tools should be created in the network such as polls, blogs and rating that can provide critical insight into future investments and deployments.

Technology factors such as having an integrated suite for collaboration should be evaluated. The advantages of a complete suite versus a single point solution should be identified and recognized. Solutions which can deliver not only over the short but also the longer term as the business strategy matures should be reviewed. Security is another important consideration. Corporate data should be made secure including storage, transmission, and accessibility and auditing. Extensibility i.e. looking for solutions that will integrate seamlessly with other desktop applications, enterprise solutions and mobile devices should also be considered.

The components of collaboration take time to mature in an organization. Perhaps the most important advice in developing a collaborative workplace is to just get started. The case company can try to adapt the Cisco Collaboration Framework which provides the guidelines for designing the development roadmap, and the below steps outline this process.

Step 1: Investigating collaboration tools.

The case organizations should begin by investigating the various collaboration tools available. The researcher has analysed and provided a list of the collaborative tools currently in the market. The market is highly fragmented, with dozens of different vendors in many categories. Tools can be combined or integrated in a variety of ways. The company should try using a few of them to get a sense of how they might help the organization. As an organization moves through this investigative phase, it should consider all the important IT components such as Web 2.0 features, productivity and business applications, and the infrastructure needs like servers, desktops, and other user devices. Network and bandwidth requirements are also an important consideration while choosing a collaboration suite.

Step 2: Drafting a collaboration vision statement.

The next step is to begin drafting a collaboration vision statement. The team responsible for this should reflect on how improved collaboration could help the team/organization. It should consider the company's vision and strategic priorities

and the main trends in the industry and how they affect their business. The team should look at the benefits of greater collaboration for the company and study business trends that might make collaboration even more important. The team should try to find out the business areas where information and expertise is most needed to improve the operations.

The company's business posture will influence the collaboration vision, strategy, and implementation: some companies, for example, could choose to have a survival business posture and they could have their collaboration vision statement as "We need to shrink to grow, and collaboration will allow us to reduce costs throughout the enterprise." An organization with a transition business posture can have their vision statement as "We will selectively use collaboration to extract greater performance from our current business processes, especially for R&D and sales." Some organizations use collaboration to create new ways to interact with their customers, partners, and each other that will set them far ahead of their competitors.

Step 3: Running a series of workshops to finalize collaboration "impact zones".

Next, the organization should run a series of workshops to identify the ways in which collaboration can help them reach their business vision. Workshops can focus on initiatives in specific product groups, process chains, or cross-functional interactions. From these workshops, organizations should identify their most important collaboration impact zones, which will then guide their strategy and tactics for rolling out new collaboration capabilities. Collaboration "impact zones" are the building blocks of the Collaboration Framework. These zones are the highest-intensity intersections of interactions, information, and expertise in their organizational ecosystem (employees, partners, customers, etc.). These are the high-value areas that, if improved through better collaboration, can most improve the organization's business and management processes.

At the workshops, primary participants in these processes should discuss problem areas and ways collaboration might improve their processes. Workshop participants should look at collaboration in terms of the extent to which reach, richness, openness, and speed can be influenced. These workshop assessments should lead to a prioritized list of collaboration impact zones.

Step 4: Benchmarking important collaboration metrics.

After the strategic collaboration efforts have been finalized, the next step is to benchmark the main metrics. These metrics are the starting points that will provide the necessary references for assessing progress. They will tell managers whether and how much new collaboration capabilities are helping the organization. Organizations should also establish a matrix of metrics following adoption and use of collaboration tools such as are people actually reading the blogs or listening to podcasts or do employees have access to better information.

Organizations should benchmark current perceptions about the value of collaboration as well as readiness. Formal and informal surveys of both business leaders and employees will help set baselines. Such established benchmarks are invaluable, given the multiphase, long-term development required for meaningful collaboration improvements. Without such references, a company will have difficulty assessing long term progress.

Step 5: Start building collaboration capabilities.

After the benchmarks are established, the organization needs to start building collaboration capabilities in each dimension of people, processes, and technology. The goal here is to gain some early successes to demonstrate how improved collaboration can help the business. These successes will help build adoption momentum and provide how-to examples to guide subsequent efforts. Organizations vary widely in their collaborative cultures and technology environments, and attitudes toward collaboration can vary widely within individual departments of a larger organization. People can be covetous of their knowledge. Knowledge is power, and it can be difficult for people to share such power. Some employees only need to be pointed in the right direction, and they will start proactively figuring out the best ways to make the most of new Web 2.0 capabilities. Other employees may be resistant or, at least, less than enthusiastic, about adopting new collaborative processes and tools.

The company should identify where it has strong collaboration hubs and where it has voids. With this information in hand, the company can then systematically operationalize collaboration. The company also needs to take an inventory of their physical collaboration environments and necessary IT environments to participate in new collaboration initiatives. The three components of collaboration (people,

processes, and technology) must work in concert for the company to gain the greatest advantages from investments in new collaboration capabilities

Step 6: Establishing test-and-learn processes or pilot projects.

Finally, the company should establish test-and-learn collaboration projects. These are still early days for Web 2.0, social networking and other new collaboration capabilities. It is only the beginning of the evolution of collaboration and it must be noted that the new era of collaboration is still a work in progress. The case company should aim to obtain, memorialize, and publicize early successes using new collaboration methods. Early successes offer several benefits such as provide evidence of the benefits of collaborative change. They help an organization fine-tune its collaborative vision. They build collaboration knowledge and skills. They build the momentum of interest and support for new collaboration efforts. Ultimately, organizations need to constantly assess how new Web 2.0 tools are helping or could possibly help them achieve their goals.

Some of the best practices for setting up a formal collaboration process are using pilot projects to identify a known business problem with a high probability for success, to show quick time-to-value and learn from these experiences. A Bottom Up approach empower the employees and makes them part of the decision making process as the employees will ultimately be the key contributors to the social networks. Identifying key measures of success including risks right from the start will help in the process.

The organization needs to consider certain key issues and plan well before taking the social networking and collaboration plunge. Simply providing social networking and collaboration tools with no plan of action to the users will most likely lead to failure. In these circumstances, it is unlikely to see any results. If something does happen, the value to the organization will be questionable.

When it comes to any technology initiatives, the plan is the single most important ingredient to ensuring effective use of the technology after implementation. The technology itself it just an enabler and without a well thought out plan that considers the company culture, business objectives, and how to implement the technology, the technology will fall short of whatever expectations might exist. The planning process will help minimize technology-related crises, use staff time efficiently, and avoid wasting money. Creating a strategic plan will assist the organization with thinking through their priorities, ensuring that they use the technology in a way that directly

impacts their business goals and strategies. If the company culture does not encourage collaboration then implementing technology to foster collaboration is not an ideal strategy. One of the best ways to build a strategy for implementation and best practices for social networking and collaboration project is to use these pilot projects. The below steps are suggested for carrying out such a test and learning process that will help the case company obtain benefits from collaboration.

Step 1: Defining the Purpose of the Project

As a first step, an organizational purpose "why are we doing this" should be identifies. This simple statement should be the foundation of the project. It is very common for social networking initiatives to start out with the end users i.e. the bottoms up approach. Engineers might decide to set up a project wiki, or marketing team might set up a sales portal for training. It is important to analyze those initiatives and look for the common ground and any shared purpose.

Step 2: Defining the Scope i.e. "Less is More"

Once the purpose of the project is defined, the scope of the project i.e. what is included, or excluded, from the project should be defined. It is recommended to keep the scope small to start with. This will allow having a clear purpose, communicating that effectively to the audience, and speed up the deployment. An overly complex scope will slow down deployment, confuse users and hinder adoption. Keeping the scope small and rolling out to a small manageable group with a decisive purpose allows the organization the ability to tweak the scope in preparation for a larger roll-out.

Step 3: Creating a Roadmap to Execute on the Established Purpose and Scope

Creating the roadmap that outlines how the team will incrementally execute on the strategy is the next important step. The team needs to match the tools they plan to make available to the users, based on the established purpose and scope of the project. At this juncture the team should also determine how to derive value of social networking and collaboration and set measurable goals.

Return on Investment (ROI) measures are still evolving for social networking capability but there are methods that the teams can use to determine their progress and collaboration. Here are some examples of success measures to consider, such as qualitative success measures. This means that the team is building better

relationships with and between employees. It is successful in delivering messages to the community. Blog posts are building momentum in the number of quality comments and users are actively using the site to share knowledge and meaningfully supporting peers.

There are quantitative success measures which can be used to measure the success of networking and collaboration such as increase in the number of people joining communities. The ratings for blogs and content are a critical component of a user driven collaboration tool. Subscriptions to RSS feeds, participation numbers and levels of participation (how many people post documents or provide ratings, etc), number of visitors who are interacting with the content also gives an idea on how much people are collaborating and interacting with other team members.

It is good to determine permissions such as who will have access to creating blogs, contributing content, or just reading. It also helps to keep a timeline and steps for rolling out the initiative and have an answer to questions such as does the team want to beta test with a small population segment or is there need to train anyone, such as administrators. Measures should be taken to support this collaboration initiative by having a helpdesk, identifying community managers/leaders.

Step 4: Seeding/Populating the Collaborative Sites

Nothing stops momentum like an empty social networking/collaboration site. Users need to see the value of participation immediately, so the team needs to make sure that they have populated the site with good examples and content before making it available to the users. The team should select people or groups and task them with seeding content regularly. Fresh and relevant content compels users to contribute and participate and come back. Positive user experience is the key to the success of the initiative. Generally anonymity in posting the content should be avoided because it will ensure a basic level of validity in postings, allow the contributor to showcase his/her expertise and the participant to know which users are adding to the content and how to contact them if they need more information.

Step 5: Communication

A plan should be made to "market" the new tool to the users. The "If you build it, they will come" maxim does not work here. If users do not know that the site exists, they will not participate. The users should be informed about the site and how to use the tools. It should be noted that new users who are not familiar with social

networking and collaboration tools will likely require more guidance than others who are familiar with the tools.

Step 6: Assessment of the project

There should be a plan to regularly assess the project to make sure that it is meeting expectations and that there is user satisfaction. This pilot project should be treated as a vehicle for collecting lessons learned and clues on how to improve the collaboration sites. The initial goals set up in step 1 should be reviewed from time to time and the team should follow up on the measures of success that were established earlier.

The above steps can be used by any team to improve their social networking and collaboration capabilities. Social networking and collaboration opens the door to endless possibilities. It provides the organization with the opportunity to evolve and improve their business and the choice to be either evolutionary or revolutionary in their informal learning and collaboration strategy. Evolutionary means that using the tools to better manage every day processes and revolutionary means completely changing the way these activities are approached. There is no single right or wrong direction to take. As they implement the collaboration strategy, organizations should keep in mind that mistakes will happen and they should be prepared to make some changes as they refine the strategy for what works best for the organization. Flexibility is the key to successfully implementing social networking and collaboration at the workplace.

5.5 Recommendations to the Team for Effective Collaboration

The following suggestions for the team will help them to be more collaborative and will ensure the success of any collaborative efforts. It is easy to deduce from the theoretical framework that social capital is an important factor in fostering collaboration. It helps in diagnosing the patterns of interaction among people in an organization. The case team should try to do the network analysis within the team and also with their closest partners. This can be done by using tools which track email messages or repository logs to see how people are connecting to each other. Since the team size is quite small, it can also be done explicitly using a questionnaire in a simple spreadsheet pattern to look for gaps between individuals or groups.

The team has a good collaboration culture and should use this strength for improving their collaboration capabilities. They should recognize that personal attitudes and organizational culture are as important as collaboration tools and keep building the culture of collaboration. New team members joining the team should be mentored well so that they understand the team culture.

They should begin by introducing collaboration tools to people and groups who are enthusiastic and comfortable collaborators. These people tend to be supervisors who have held their job position for 3 to 10 years, and are already using Web 2.0 tools at home. The team managers and team members together should see that the right tools are mapped and IT support, training etc needed to support collaboration is in place. The team should encourage members to model the desired collaboration practices and also try to implement formal collaboration processes. The team managers should reward collaboration by including it in performance reviews, offering rewards for successful outcomes, or both.

6 DISCUSSION AND CONCLUSIONS

This section discusses the collaboration and social networking trends, benefits from investments in such tools and process for an organization to collaborate effectively. It also offers a bird's eye view of collaborative features present in the collaboration solutions available in the market. It also outlines the managerial implications of the study along with its limitations and future steps.

6.1 Summary of Proposed Collaborative Solutions

The various collaborative tool options available for the company are discussed in detail in section 5.4. Each of these options has good benefits and all the important features which are required to work in a distributed office with various groups and individuals. However, some additional features that are present in some of the tools are missing from some of the other tools. Figure 25 below shows the comparison between the tools.

Collaborative Tools	SharePoint	Cisco Solution	IBM Solution	LumoFlow
E-mail	✔	✔	✔	✔
Shared Calendars	✔	✔	✔	✔
Enterprise Social Software	✔	✔	✔	✔
Discussion forums	✔	✔	✔	✔
Instant Messaging	✔	✔	✔	✔
Document Management Tools	✔	✔	✔	✔
Tagging	✔	✔	✔	✘
Microblogging	✘	✘	✔	✔
Web Conferencing	✘	✔	✔	✘
Video Conferencing	✘	✔	✔	✘
Telepresence	✘	✔	✘	✘
Blogs	✔	✔	✔	✘
Wikis	✔	✔	✔	✔
Online Project Management Systems	✔	✔	✔	✔
Workflow Systems	✔	✘	✔	✘
Mobile Applications	✔	✔	✔	✘

Figure 25. Comparison of available collaboration solutions.

As shown in figure 25 above, all the tools have the basic features such as email, shared calendars, discussion forums etc but some of the collaboration solutions have additional features such as Telepresence or a workflow system which allows improved collaboration. It is up to the case company management team to decide which features are the most critical for them and the employees. The case company needs to conduct a companywide survey and interviews to better understand the collaborative needs of the organization. This study can be used as a guideline to conduct this survey.

6.2   Findings and Theoretical Contribution

Globalization, distributed organization structure and the emergence of social media and collaborative tools are forcing companies to form collaborative relationships. The theoretical framework of this study clearly suggests that for collaboration to occur successfully within an organization there needs to be a supportive culture and work environment, encouragement from the leaders and managers as well as a rewards system which reflects the importance of collaborative practices. The study results also confer with this view. More than half of the respondents in the study trust their co workers and management and get support from their managers for collaborative endeavors. The team members also connect regularly with other people in the organization who have similar work interests and passions. However, the reward and recognition processes need to improve.

This study provides a framework on how to best harness the disparate concepts and technologies of the new collaborative Web 2.0 advances. To gain optimal benefit from investments in collaborative tools, organizational leaders must make cultural, management and process changes a priority. If employees do not actively use the tools, then these technologies will fail to gain the critical mass which is important to make the best possible connections with people and information. Enthusiastic, motivated interest in new collaboration tools is perhaps the most crucial element to the success of collaborative efforts.

The American engineer and co inventor of Ethernet, Robert Metcalf, formulated what has become known as 'Metcalf's law': "the value of a (telecommunications) network is proportional to the square of the number of users of the system." Metcalfe's law has been modified to fit the new technologies from the fax machine to social networking as "the more people use these tools, the more valuable it becomes". This has been offered as an explanation for the 'bandwagon effect': the

moment it gets going, it is very difficult to stop. Shared goals and a willingness to work together are not enough to make collaboration work. It also requires a systematic approach with strong leadership, shared objectives, adequate resources, processes, oversight and metrics. Companies also face challenges in measuring and monitoring the benefits of collaboration. Successful collaborations share certain elements.

To be consistently successful, collaborations require: a formal process to find the right partners; planning, goal-setting and follow-up; frequent and open communication; trust among partners; and a supportive environment with strong leadership, incentives, processes and metrics. Benefits include greater efficiency and productivity, improved competitive differentiation and the ability to solve problems quickly. In short, learning to collaborate can help companies address three imperatives: move fast, move efficiently and grow the firm.

Companies can move fast when they do not have to build capabilities from scratch. Companies can move efficiently when they can tap easily into required knowledge and expertise (whether inside their own firm or within other firms). And when there is an early-mover advantage, quick and efficient action is often the key to rapid growth. Collaboration is particularly important when moving into the unknown. It will become a source of competitive advantage. Companies that excel in collaborative problem-solving will be better able to grow by entering markets early, taking advantage of local knowledge and ramping up quickly.

Collaboration technologies provide a way for organizations to increase their access to the latent knowledge "stored" within employees, partners, customers, and even the broader public (which might harbour unknown experts with special insight). The tacit knowledge in a person's mind is much harder to capture and codify. It is complex, rapidly changing, and often a bit messy.

New collaborative communications tools including blogs, virtual workspaces, wikis, desktop video, Telepresence conferences, web conferencing, presence communications, and instant messaging, offer new ways to tap such crucial information. However there are concerns about security of data and identity management. Users need to understand how to protect their identities within these spaces and generally need a source of advice and guidance on managing personal data within Web spaces.

There are many ways to effectively use social networking and collaboration tools in the organization. It really depends on what the organization needs to accomplish. Some ways these tools can be used are Expert location (who in the organization is an expert, holds knowledge), easily search for information (and experts) on various topics related to the workplace, promote knowledge sharing and encourage users to share knowledge (and capture that intellectual capital) through the use of wikis, blogs, sharing documents, or adding expertise information to their searchable profile, extend and expand every-day activities such as on boarding and employee learning.

Enhancing employee productivity and engagement by allowing the employees (users) to more easily share best practices, ask questions, and find knowledge on their own is another way to use these collaborative tools. Collaboration encompasses a number of legacy technologies, including instant messaging, presence, IP telephony, web conferencing and file sharing. But now it goes much further than these systems ever did.

Collaboration also includes online project management; business intelligence; applications which let multiple users work on the same file in real time, either in groups or alone; and new platforms designed specifically to tie all these systems together. Increasingly, it also includes the ability to interconnect disparate consumer technologies with enterprise platforms and business processes. Of course, making all these tools work together is tricky. Most of these products were never designed to work together.

Smart collaboration actually makes all these disparate and legacy technologies work together in a user-friendly fashion. It holds the promise to help enterprises cut costs, redefine their business processes, and create new ways of sharing information and developing products. The key to collaboration is simple in theory but difficult in execution. The sum of these disparate systems is far greater than the parts. An organization which is capable of combining all these technologies together correctly will be able to achieve great ROI on collaboration. Organizations embracing unified communications and collaboration tools (UC&C) see better return on collaboration (ROC).
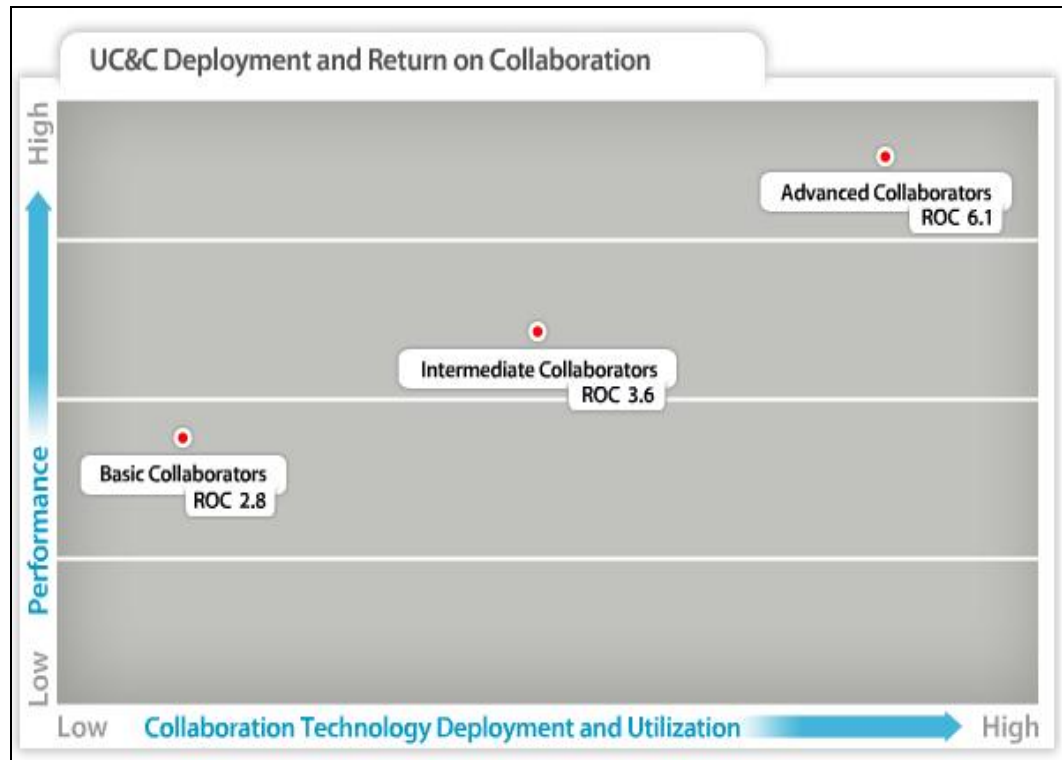
Figure 26. Performance vs. collaboration technology deployment. (Source: Verizon)

As shown in figure 26 above, a study sponsored by Verizon and Cisco, shows that organizations around the globe that deploy the most advanced Internet protocol-based collaboration technologies achieve more than twice the return on their collaboration investment and perform better than their less collaborative peers, The study is the first to develop a model for measuring a return on collaboration investment, the Return on Collaboration (ROC) Index. It establishes a progressive impact of deploying advanced unified communications and collaboration (UC&C) technologies on business performance and measures improvements.

The great news about collaboration is that many of these technologies are already being used by most employees. However most enterprises have no strategy for making this technology work more effectively and securely for their businesses. Collaboration holds the key to better leverage the investments in IT. Enterprises need to craft a smart, comprehensive collaboration strategy and then implement the technologies that are right for the organization and also help the business managers create more efficient business processes.

People can tend not to collaborate; this may be caused by issues regarding understanding, time, work environments or politics. Earlier knowledge was seen as power and sharing of expertise was not encouraged. Collaboration can seem to run contrary to this idea of knowledge hoarding. If people are used to seeing knowledge

as a scarce resource (and through ownership of knowledge it can create increased power for the individual or group) people may be less inclined to engage in open idea exchange and collaboration. Politics and bureaucracy also need to be addressed and understood within the organisational context and the context of the collaborative effort. Good ideas are not always the ones that are implemented. Ideas that are connected to the right people in the right positions can often gain acceptance quickly and easily. Influence on key decisions sometimes rests outside of formal processes.

However, it needs be noted that collaboration is not always a good thing. Bad collaboration is worse than no collaboration. Collaboration for the sake of it without intelligent structure can be very costly and unfocused. The key point in disciplined collaboration is to start with the end in mind: the goal of collaboration is not collaboration, but better results. This means that teams should only collaborate when it is the best way to improve performance; many times it is better to work independently. The three simple steps to achieve disciplined collaboration is to carefully select which projects to collaborate on (and which not), secondly understand the barriers that currently prevent employees from collaborating and lastly design solutions to tear down those barriers. Over-collaboration can be a gigantic problem because people waste time and lose focus because they collaborate on projects of trivial value. As many people believe that collaboration is a good thing, they keep on doing it and do not ask critical questions. They do not get out of bad projects. Organizations need collaborative leaders that harness the collective intelligence around them.

Social networking and collaboration tools not only provide a new way to capture and harness the internal knowledge and extend formal training activities, but also a way to do this cost effectively. The IT industry has recognised that collaboration and social networking is the way of the future and there is a strong move to create products which seek to improve productivity by virtualizing communications and business processes. People and organisations are looking at ways to connect with each other virtually and Web 2.0 products are being designed to meet those needs. Furthermore, it provides a powerful way to get the employees more involved and become the centre of informal knowledge sharing and learning.

6.3 Managerial Implications

Most of the mangers in today's workplace work with more than one team and the team members have diverse job disciplines. The teams could be located in several different physical locations and often need to communicate across multiple time zones. The day to day work and activities are knowledge intensive and need input from many stakeholders. Collaboration is the key to effectively work together. Managers must be able to tap into the varied skills and wider perspectives of all team members. Effective leaders should know how to collaborate when it is not easy. A leader can also foster collaboration by encouraging active involvement and free exchange of information. Moreover, the leader must set the tone by keeping an open mind to different ideas.

The first step is to identify the challenge faced by the team when working across multiple groups and how collaboration can help the team and the business objectives. Team meetings can be used to ask everyone to brainstorm all the possible challenges they face when working within the team and with other teams. Some of these challenges may include, for example, communicating across multiple time zones, lack of follow-up, knowing who to contact or who is accountable. Once the top challenges are identified, the cost associated with each of these items should be analyzed. The next step is to find the cause and nature of these challenges. For example, is it a communication issue (not timely, not enough or too much, big picture is unclear) or a change management issue. The challenges may appear to have more than one root cause. The point is to analyze what is the root cause for the particular team before proceeding so that the team can implement the appropriate solution.

The next important step is to choose and implement simple tools available in the organization that will help mitigate the challenge. It is possible that there are many options available in the company intranet and some of which can be too complicated or unsuitable for team or the purpose. It is a complex world of information overload and teams should strive for simplicity. Finally the team should be able to measure if the tool was successful. So they should have metrics defined along with the challenges and also a reasonable timeframe to determine if the challenge has been addressed. In the case it does not work then the solution should be reanalyzed and check what parts have helped. Modifying the solution and determining what is needed to make it work better for the team is necessary.

Solving the prioritized challenges with simple, practical tools helps in reaping the benefits when collaboration works: projects are completed on time and on budget, cost recovery is improved because the team has identified efficiency gains, eliminated redundancies along with improved team morale.

6.4   Limitations and Future Steps

One of the limitations of this study is that the results cannot be generalized to the whole of TeliaSonera organization as the study was conducted in a team consisting of 27 members whereas the organization has more than 30,000 employees worldwide. Another factor is that more than 80% of the case team members are technology workers and thus are quite adept at using new tools and technologies.

The next step would be to conduct similar surveys and interviews in other teams of the case company and use those findings to get a fair picture on using the social networks and collaboration tools. The organization can also decide to use social network analysis tools to find out which people are already collaborating and sharing information and where there is a gap. The pilot project proposal mentioned in section 5.4 could be done in one of the teams which are ready for collaboration. The Group IT team could use this study and further develop the collaboration framework at the organization. Planning and executing a social network analysis could be another research study to be carried out in the organization. This would help the organization to better understand the patterns in which groups or individuals seek information or help from other members in the organization.

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APPENDIX A: SURVEY RESULTS

1. For how long have you been working at TeliaSonera ?	% of Respondents	Number of Respondents
3 months - 1 year	0.00%	0
1 - 3+ years	23.53%	4
4 - 6+ years	11.76%	2
7 - 10+ years	5.88%	1
10+ years	58.82%	10

2. What are your main roles? [Please check all that applies to you]	% of Respondents	Number of Respondents
Financials Competence	17,65%	3
Logistics Competence	11,76%	2
HR Competence	17,65%	3
Business Development	23,53%	4
Business Intelligence	17,65%	3
Technical(SAP related)	64,71%	11
Technical(Non SAP related)	23,53%	4
General management	17,65%	3
SAP Basis	5,88%	1

3. Teams are recognised and celebrated as unit.	% of Respondents	Number of Respondents
Strongly Agree	11.76%	2
Agree	70.59%	12
Disagree	17.65%	3
Strongly Disagree	0.00%	0
Do Not Know	0.00%	0

4. You trust your co-workers and management.	% of Respondents	Number of Respondents
Completely at all times	41.18%	7
Not Always	58.82%	10
Not at all	0.00%	0

5. Your organization culture encourages sharing, not secrecy.

	% of Respondents	Number of Respondents
Strongly Agree	17.65%	3
Agree	70.59%	12
Disagree	5.88%	1
Strongly Disagree	5.88%	1
Do Not Know	0.00%	0

6. People enter into collaborations with a feeling of promise.

	% of Respondents	Number of Respondents
Strongly Agree	5.88%	1
Agree	82.35%	14
Disagree	5.88%	1
Strongly Disagree	0.00%	0
Do Not Know	5.88%	1

7. You enter into collaboration as a unified team, with each person playing a ued role.

	% of Respondents	Number of Respondents
Strongly Agree	11.76%	2
Agree	82.35%	14
Disagree	0.00%	0
Strongly Disagree	5.88%	1
Do Not Know	0.00%	0

8. There are other people in the organization who have similar work interests and passions and with whom you connect regularly.

	% of Respondents	Number of Respondents
Strongly Agree	47.06%	8
Agree	47.06%	8
Disagree	0.00%	0
Strongly Disagree	0.00%	0
Do Not Know	5.88%	1

9. Do you have a formal process for collaboration.

	% of Respondents	Number of Respondents
Yes	64.71%	11
No	35.29%	6

10. You have access to relevant and useful collaboration technologies and are encouraged to use them.

	% of Respondents	Number of Respondents
Always	35.29%	6
Sometimes	64.71%	11

Never		0.00%	0
11. There is someone in your organisation you can talk to, to learn more about effective collaboration approaches.		% of Respondents	Number of Respondents
Yes		47.06%	8
No		52.94%	9
12. Do you collaborate with your colleagues in other functions of your organisation?		% of Respondents	Number of Respondents
Regularly		52.94%	9
Irregularly		29.41%	5
Only on selected projects or issue		17.65%	3
Rarely or never		0.00%	0

13. Overall, how have the following factors influenced the amount of collaboration internally at your company?

	Has increased collaboration	Has decreased collaboration	Has no effect on collaboration	Don't know	Number of Respondents
Globalization of the organization	52%	23%	17%	5%	17
Decentralization of the organization	35%	17%	23%	23%	17
Competition	11%	11%	47%	29%	17
Cost savings/operational efficiency measures	17%	41%	17%	23%	17
Enhancement of the distribution/supply chain	41%	5%	11%	41%	17
Creation of partnerships	52%	11%	5%	29%	17
Implementation of collaboration technology	70%	0%	11%	17%	17
Corporate strategy and policies	64%	0%	35%	0%	17
Attitude of senior management	35%	11%	35%	17%	17

14. Which of these objectives would benefit most from collaboration?	% of Respondents	Number of Respondents
Increasing operational efficiency (e.g. process improvements, faster speed to market)	11.76%	2
Communicating more efficiently across the organization	35.29%	6

	% of Respondents	Number of Respondents
Increasing productivity	11.76%	2
Improving problem solving	17.65%	3
Improving knowledge sharing within the organization	23.53%	4
Improving service for customers or constituents	0.00%	0
Lowering costs	0.00%	0
Increasing revenue growth	0.00%	0

15. According to you, what are the biggest barriers to collaboration within your organization?	% of Respondents	Number of Respondents
Information hoarding (viewing information as a source of power)	5.88%	1
Lack of shared goals	29.41%	5
Lack of top-level support	11.76%	2
Inability to find potential collaborators	23.53%	4
Unwillingness to accept solutions not developed with the group ("not invented here" attitude)	0.00%	0
Insufficient resources/excess workload	29.41%	5

16. People who collaborate well are rewarded with greater autonomy	% of Respondents	Number of Respondents
Strongly Agree	5.88%	1
Agree	47.06%	8
Disagree	23.53%	4
Strongly Disagree	0.00%	0
Do Not Know	23.53%	4

17. Managers see the value of collaborating and actively support it	% of Respondents	Number of Respondents
Strongly Agree	5.88%	1
Agree	88.24%	15
Disagree	5.88%	1
Strongly Disagree	0.00%	0
Do Not Know	0.00%	0

18. Senior leaders use collaboartion technologies and explain the benefits of collaboration	% of Respondents	Number of Respondents
Strongly Agree	0.00%	0
Agree	47.06%	8
Disagree	35.29%	6
Strongly Disagree	0.00%	0
Do Not Know	17.65%	3

19. Management publicises examples of successful collaboration	% of Respondents	Number of Respondents
Strongly Agree	0.00%	0
Agree	23.53%	4
Disagree	47.06%	8
Strongly Disagree	0.00%	0
Do Not Know	29.41%	5

20. How much of your working time do you spend doing the following?

	More than 50%	Between 25-50%	Between 10-25%	Between 5-10%	Less than 5%
Working independently	29%	47%	23%	0%	0%
Working with teams in the same function	5%	47%	41%	0%	5%
Working with teams in the same location	5%	23%	35%	0%	35%
Working with teams in different functions	5%	17%	29%	47%	0%
Working with teams in different locations	5%	29%	29%	5%	29%
Working with teams at other organizations	0%	5%	35%	11%	47%

21. Three years from now, which of the following do you expect to spend more of your working time doing compared to today?

	More than 50%	Between 25-50%	Between 10-25%	Between 5-10%	Less than 5%
Working independently	23%	41%	23%	5%	5%
Working with teams in the same function	11%	47%	11%	5%	23%
Working with teams in the same location	5%	17%	47%	5%	23%
Working with teams in different functions	11%	29%	17%	35%	5%
Working with teams in different locations	5%	47%	35%	11%	0%

Working with teams at other organizations	5%	23%	35%	29%	5%	

22. Which of the below tools are in use at your company?[Please Check all that applies]	% of Respondents	Number of Respondents
E-mail	100%	17
Blogs	47,06%	8
Discussion forums/message boards	58,82%	10
Online chat/instant messaging	94,12%	16
Web conferencing, with live audio and video sent across a computer network	88,24%	15
Video conferencing/Telepresence	82,35%	14
Shared calendars	94,12%	16
Online project management systems	29,41%	5
Intranets with shared online data on employees, clients, vendors, projects	76,47%	13
Workflow systems (allowing people to track progress of a work process)	64,71%	11
Collaborative tools for designing products	35,29%	6
Document management tools (allowing people to collect, organise, and manage documents in a central location)	82,35%	14
Wikis (allowing multiple authors to post and edit articles, building up a body of knowledge)	17,65%	3

23. Which collaboration tools do you personally use?[Please Check all that applies to you]	% of Respondents	Number of Respondents
E-mail	100%	17
Blogs	23,53%	4
Discussion forums/message boards	35,2%	6
Online chat/instant messaging	94,12%	16
Web conferencing, with live audio and video sent across a computer network	76,47%	13

	% of Respondents	Number of Respondents
Video conferencing/Telepresence	52,94%	9
Shared calendars	82,35%	14
Online project management systems	17,65%	3
Intranets with shared online data on employees, clients, vendors, projects	52,94%	9
Workflow systems (allowing people to track progress of a work process)	35,29%	6
Collaborative tools for designing products	17,65%	3
Document management tools (allowing people to collect, organise, and manage documents in a central location)	88,24%	15
Wikis (allowing multiple authors to post and edit articles, building up a body of knowledge)	5,88%	1
Others Regular meetings onsite	5,88%	1

24. Which of these tools do you think would be or are most helpful in facilitating collaboration at your organization?[Please check your top five options]	% of Respondents	Number of Respondents
E-mail	76,47%	13
Blogs	5,88%	1
Discussion forums/message boards	17,65%	3
Online chat/instant messaging	64,71%	11
Web conferencing, with live audio and video sent across a computer network	70,59%	12
Video conferencing/Telepresence	58,82%	10
Shared calendars	52,94%	9
Online project management systems	11,76%	2
Intranets with shared online data on employees, clients, vendors, projects	35,29%	6
Workflow systems (allowing people to track progress of a work process)	23,53%	4

		% of Respondents	Number of Respondents
Document collaboration (allowing people to collaborate on documents in real time)		41,18%	7
Collaborative tools for designing products		23,53%	4
Document management tools (allowing people to collect, organise, and manage documents in a central location)		70,59%	12
Wikis (allowing multiple authors to post and edit articles, building up a body of knowledge)		23,53%	4
Others regular meetings onsite Telephone		11,76%	2
25. Do you feel that collaboration at workplace should be one of the topmost priority for your team/organization in the future?		% of Respondents	Number of Respondents
Strongly Agree		35.29%	6
Agree		52.94%	9
Disagree		11.76%	2
Strongly Disagree		0.00%	0
Do Not Know		0.00%	0

APPENDIX B: INTERVIEW QUESTIONS

Interview Questions for Team Managers

1. What is your personal meaning of collaboration or how do you relate to collaboration at work?

2. What according to you are key factors in creating a culture of collaboration in your team?

3. What are the most important or critical purposes for which your team should collaborate?

4. How important is collaboration for your team? What will be the long term benefits of collaboration for your team?

5. What should be the main features or main ideas in your organization's collaboration strategy? Do you think that the organization should invest in collaboration?

6. How good collaborators should be rewarded? Do you look for collaborative talents while recruiting a team member? How do you plan to retain collaborative talents?

Interview Questions for Team Members

1. How satisfied are you with the current collaboration tools at TS? If not what can be done to make these tools or the process better?

2. Why are collaboration tools so underused?

3. Given time, do you think people will eventually learn to use these tools, despite their shortcomings?

4. Which tools (current or envisioned) according to you, will be the winners for collaboration, and why?