CHALMERS

Social Media for Internal Collaboration in Globally Distributed Product Development Teams
A Case Study at Rosemount Tank Radar AB

Master of Science Thesis in the Master Degree Program, Management and Economics of Innovation

MARIA LENERIUS
SOFIA RAGNARSSON

Social Media for Internal Collaboration in Globally Distributed Product Development Teams
A Case Study at Rosemount Tank Radar AB

MARIA LENERIUS
SOFIA RAGNARSSON

Advisor, Chalmers: Henrik Berglund
Advisor, Rosemount Tank Radar AB: Mats Nordlund

Social Media for Internal Collaboration in Globally Distributed Product Development Teams
Maria Lenerius and Sofia Ragnarsson

Abstract

The social media phenomenon has completely and rapidly changed the way people interact (Safko, 2010). Everyone knows what everybody is doing (due to Facebook) and can easily access understandable information about almost anything (due to Wikipedia). For some reason people are stimulated to continuously use social media tools.

With this phenomenon going on in people's private lives the question arises whether it would be possible for a professional setting to apply the same phenomenon. In development teams where team members get more and more distributed around the globe, there are increasing needs for interaction, communication and knowledge transfer. The research question this thesis aims to answer is *how could companies with globally distributed teams apply social media for internal collaboration to create value in product development?*

The research was conducted as a case study at Rosemount Tank Radar AB (RTR), part of the global company Emerson. RTR develops and produces instruments for measuring level in industrial tanks. The project was initiated by the Director of Engineering to look into how RTR could gain from social media tools in their product development. A situation analysis was conducted and a pilot was carried out to test a social media tool, Yammer, for a global product development team. The findings were then applied to a project with the goal to develop a new product.

The research identified a couple of main values from applying social media to product development. The increased number of weak ties facilitated by social media enables improved knowledge transfer and idea generation. The social media tools are accessible and allow for co-creation, many-to-many. This enables visibility and interaction in global project teams, making it possible to solve problems faster. By using wikis, information is freed from people's e-mail inboxes and made available to a larger amount of people. At the same time it decreases pressure on employees who are knowledge hubs. All these benefits create value by speeding up product development and increasing knowledge sharing.

Even though the value of applying social media to product development might be obvious to some there are some important aspects that need to be considered at implementation. First of all, people need to understand the value of social media tools. With incumbent technologies to compete with, such as e-mail, it is not easy to convince employees that social media can add value to their work. Important aspects in order to succeed are to achieve critical mass, have support from management and key employees, provide training on basic functionality and value as well as to align the social media tools with work processes. The capacity of hardware and infrastructure has to be ensured and there have to be enough resources to support the users if they get technical issues. This is especially important in organizations that are reluctant to adopt social media, in order to build trust.

Acknowledgments

Contents

Table of Figures

Glossary

Generation Y   No precise dates for when generation Y starts and ends but ranges somewhere between 1985 and 2000. This generation is generally marked by an increased use and familiarity with communications, media, and digital technologies.

SharePoint   Microsoft SharePoint is a web application platform developed by Microsoft. SharePoint is typically associated with web content management and document management systems, but it is actually a much broader platform of web technologies, capable of being configured into a wide range of solution areas.

RTR   Rosemount Tank Radar (Headquarters in Göteborg). Subsidiary to Rosemount, which in turn is owned by Emerson.

Yammer   Yammer is an enterprise social network service that was launched in September 2008. Yammer is used for private communication within organizations or between organizational members and pre-designated groups, making it an example of enterprise social software.

Office Communicator   Microsoft Lync (formerly Microsoft Office Communicator) is an instant messaging client provided by Microsoft.

1. Introduction

The social media phenomenon has completely and rapidly changed the way people interact (Safko, 2010). Millions of people are using some kind of social media in their daily life and the number of users is increasing rapidly. People have never been so informed about other people's lives as they are today (e.g. Facebook). Neither have they been able to easily access understandable information about almost anything in one place for free (e.g. Wikipedia) or get direct information to their mobile phone from the Swedish minister of foreign affairs about how his day was (e.g. Twitter). Popular social media has an enormous reach; Facebook has 800 million users across the world, and the social sharing site YouTube, show three billion video clips every day. People use social media to communicate with friends, to share and co-create knowledge as well as to spread opinions and experiences. People's engagement is enormous and there seems to be something in people that is stimulated by social media and creates a continuous use.

This master thesis will look into how this new and fascinating phenomenon social media can be used in professional settings to increase knowledge sharing and make collaboration more efficient. This section will give you a quick background to how social media is applied in the professional setting and to Rosemount Tank Radar AB, the company at which this study was conducted. The purpose and research questions will be presented here and the introduction will finish off with a road map for the reader on what to expect from this report.

1.1 Background

The vast amount of users in social media and the high activity in them enable quick spread of information. This is making most companies realize that it is essential to understand and exploit social media as a new marketing channel (Safko, 2010). There are some good examples of successful marketing attempts in social media, such as the Old Spice commercial, which has been seen by millions of people on YouTube and where the spread of the commercial has been speed up by individuals sharing the video clip with their friends on Facebook. Marketing has been the most common way firms take advantage of social media. However, there are more ways in which companies can exploit the potential. Social media can be used by firms for improved internal collaboration and communication, for internal and external ideation as well as for external networks of knowledge sharing and collaboration. With a wide variety of communication benefits from social media being realized in a private setting, the next obvious step would be to try to gain similar effects in a corporate setting (Harvey, 2010). More and more companies around the world are starting to exploit the benefits of social technologies for internal collaboration and knowledge sharing. IBM and Ericsson are two companies that have been in the front end of such attempts by introducing social networking sites and ideation tools for their employees (DiMicco et al., 2008; Karlsson, 2010).

Many firms today have product development teams spread on different sites all over the world. In teams like these, there are many collaboration barriers to overcome such as cultures, languages, time and distance (Berg, 2011). The ability to collaborate is closely related to proximity and it can many times be difficult for product development teams to efficiently collaborate and share information, if they are not sitting in the same building (Berg, 2011). This means that firms need ways to improve their communication abilities in order to distribute information more efficiently, improve the knowledge sharing among employees and increase collaboration (Ferron et al., 2011). Redundant work is a common problem for firms, especially when the employees are not all working in the same

location. According to Berg (2011) companies would gain a lot from striving for reapplying knowledge as much as possible and not reinventing the wheel over and over again. Being efficient at sharing knowledge and collaboration cross cultures, time differences and geographical distances may soon become a critical factor for competitiveness (Berg, 2011).

Connecting the employees and making information flow is the key to collaboration and operational excellence in international firms. If social media tools could be successfully used in firms, the employees would come across people and information that they would not otherwise, making it more likely for the firm to reap the benefits of the organization's collective intelligence (Berg, 2011). Collaboration in firms could be more efficient with these types of tools but the question is if the incentives for engagement are the same in companies as for people in their private lives. Even if there are many obvious advantages with using social media for internal collaboration in firms, it can be difficult for organizations to motivate employees to use them (Ferron et al., 2011). That there are possibilities and value of using social media is clear but exactly what this value consists of and what firms need to do in order to be successful with exploiting this potential is what this study aims to investigate.

This master thesis has been conducted as a case study at the diversified global manufacturing and technology company Rosemount Tank Radar AB (RTR). The company has product development on several sites globally and would benefit from a more efficient way to communicate and collaborate in their global teams. It is a high technological company with highly talented engineers, but the company has, despite a few attempts, not been able to introduce social media tools. The manager of the engineering department has therefore initiated this study in order to investigate how they should approach social media tools to implement them in a way that ensure they make use of the benefits.

1.2 Purpose and Research Questions

Given this interesting phenomenon with social media presented in the background, with a significant possibility to effectively distribute information to many people, has made the researchers wonder what companies need to do in order to get a slice of the cake for internal collaboration. Hence, the overall purpose of this study is to investigate *how* industrial technology companies with globally distributed teams can make use of social media for internal collaboration, in their product development. The research question in this study is accordingly;

> *How can companies with globally distributed teams apply social media for internal collaboration to create value in product development?*

In order to answer this question the research question has been divided into two sub-questions. First of all it is interesting to investigate what value and benefits social media can create in organizations. As discussed in the background, social media is creating a lot of value in people's private lives. If people have a particular interest, they are able to connect with others all over the world for inspiration and to gain knowledge, which would not be possible with the resources available in their proximity. People can stay updated with their friends' lives and keep in contact even with those who live far away. Privately, people can communicate with the great mass of society without any technical or financial difficulty, as long as they have something interesting to say. There are also many companies that have made ambitious attempts to reap the benefits of social media in marketing. The purpose of this study however, is to look into what value social media can have in

another important part of a company, the product development, which more and more companies already are starting to explore.

This study takes a focus on RTR, the global industrial company. As many other companies today, RTR has been forced to reduce development costs by offshoring parts of the development activities to low cost countries, making the development activities geographically distributed. This has put pressure on existing communication channels and RTR would gain from more efficient communication tools to increase interactivity in their product development. The first sub-question is therefore;

> *What value can social media for internal collaboration create in*
> *product development for companies with globally distributed teams?*

The second sub-question is regarding success factors when implementing social media in an organization. When social media is used in people's private lives participation is voluntary and people choose to use social media because it brings some kind of benefit to them. The benefits for the individual worker in an organization can be more unclear and organizations face a challenge to make sure that implemented communication tools, such as social media, are used by a critical mass of employees in order to create the intended value. Many companies that have attempted use of social media as a means of collaboration and knowledge sharing tool have encountered resistance among the employees. This has made it important to consider how companies can create incentives to their employees to use social media. The purpose of this study is therefore also to investigate what companies need to consider when introducing social media tools in order to create the sought value and sustainable use. The intention is to generate a framework that highlights the important aspects to consider at implementation. Hence the second sub-question is;

> *What do companies with globally distributed teams need to consider when*
> *introducing social media in order to create the sought value?*

The final purpose of this study is to develop recommendations for how RTR could work with social media in a specific development project in order to collaborate, communicate and share knowledge efficiently between team members that are spread all over the world. This project will be referred to as *the new product project.*

1.3 Roadmap

In order to guide the reader on how this report is built up and what the structure looks like, some reading directions will be presented in the following roadmap.

After this introductory chapter *the elements of the topic* will be presented. This is a theoretical map of the subject. The sources of information in this chapter come from scientific papers and other traditional literature. But since the topic of social media is relatively new, more untraditional sources will also be used, such as interviews, blogs and websites. In *the elements of the topic* a definition of social media, as it is used in this study, will be presented as well as examples of social media tools and useful functions. Further, motivations for using social media will be presented and this section will also present the values and benefits social media can generate in organizations. The last part of this section presents important aspects to consider when working with change management in a

company and implementing social media tools. This will result in a framework of what companies should consider when implementing social media.

In chapter 4, the target company of this case study, RTR, will be presented. A situation analysis of the company's product development process, structured after the framework developed in chapter 2, will be presented here. This includes a description of their overall strategy, the work processes and how they create value. To understand the prerequisites for social media at RTR, the hardware and infrastructure the company provides as well as the software and communication tools that are available to the employees will be presented. Finally, an attempt to present the culture and attitudes at the company will be made.

The presentation of the company in chapter 4 also includes a description of a pilot case study at the company where a social media tool was introduced in one of the company's product development teams in order to "take the temperature" on the attitudes and willingness to adopt social media. The pilot study, referred to as *the product development project* throughout this report, gave an indication of what strategies are important when implementing social media in product development teams. The pilot study also gave an indication of what value a social media can generate in a product development team at RTR. Lastly in this section the situation in the *new product project* will be presented for input to the synthesis and recommendations.

In section 5 a synthesis will be made where the elements of the topic is applied to the empirical findings at RTR. This will be a specific discussion that will result in recommendations, presented in section 6, for how RTR should implement social media tools in *the new product project*. In section 7 a more general discussion will be held regarding general findings that can be drawn from the case study at RTR. Finally, the report will be finished off with a section where the study is concluded and topics for further research presented. A summary of the reading roadmap is illustrated in figure 1.

1 **Introduction**	This section will set the stage for what this study is all about. Here the social media buzz will be presented. This section will explain what the purpose of the study is and what we are trying to find out.
2 **Elements of the Topic**	A theoretical map of the topic. Social media will be defined and a selection of tools and fuctions will be presented. Also, psychological motivations that stimulate people to ue social media will be presented with the aim of making it possible to compare with the incentives for use at work. Lastly, aspects to consider inorder to make social media take off in the firm will be presented which will result in a framework for implementation.
3 **Method**	This section will present the methodology used in this study.
4 **Emerson**	The empirical findings from Emerson. The general product development process will be described, structured after the topics found in the framework in section 2. This will be followed by a presentation of a pilot study where a social media tool was implemented in a product development team. Finally we will present the new product development project for which the recommendations will be made.
5 **New Market Project**	A synthetization of the elements of the topic in section 2 and the empirical findings in section 4. More specifically, the framework from section 2 will here be applied to show how social media could be implemented in *the new market project* to create value and what has to be considered in order to be successful.
6 **Recommen- dations**	The recommendations for how Emerson could work with social media tools in their new market project. This is a summary of what Emerson should consider in order to be successful with their social media strategy in the new project and what value it can create for them.
7 **Discussion**	A general discussion on what value social media can create in a firm and what companies have to consider in order to be successful. This section will also present recomendations for future research.
8 **Conclusions**	A presentation of the general conclusions.

Figure 1: Roadmap explaining the sections in the report

2. Elements of the Topic

The Elements of the Topic is a theoretical map of the subject in this study. This section will present the characteristics of social media as well as a framework for what has to be considered when implementing social media for collaboration and knowledge sharing in product development.

2.1 Social Media

In this section social media will be introduced, taking a stance in the paradigm resulted from web 2.0. This will be followed by a presentation of the social media tools used in this case study. Further, the psychological motivations for using social media as well as the value the tools can create in product development will be introduced.

2.1.1 Characteristics of Social Media

The Web was for a long time limited to people with great computer skills. Only those who could program could create content, and the rest of us could only passively observe. This has changed with the new generation of web applications, called Web 2.0. Web 2.0 represents a paradigm shift in how software developers and end-users use the Web (Lin K. J., 2007). Now everyone with a computer and the internet can contribute content online. Lin K. J. (2007) describes Web 2.0 as being about people sharing information and collaborating online. He says that it is about enabling and encouraging participation through open Web applications and services that facilitate interaction. This means that technologies are important tools for Web 2.0, but they are secondary to achieving the greater goal of promoting free and open access to knowledge (Lin K. J., 2007).

Social media is realizing the principles of Web 2.0 (Kaplan & Haenlein, 2010) and enables people to share and discuss information. Sharing and discussing information is not something new, but there are characteristics of social media that distinguish it from other types of social conversations, these characteristics are presented in Figure 2.

Social Media are web applications that enable people to share and co-create information				
Accessible	Interactive and Commentable	Co-creation of Content	Many-to-many Conversations	Shared Interests
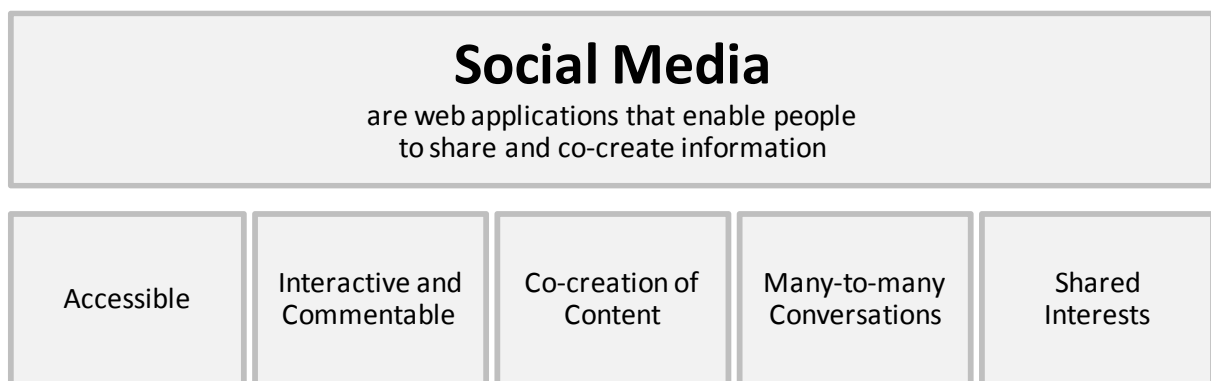
Figure 2: The characteristics of social media

One very important feature of social media is that it is highly accessible. It is accessible to people everywhere which enables distribution of information on the same terms for everyone (Smith et al., 2011). According to Kietzmann et al. (2011) social media substantially changes the way communication takes place between individuals through ubiquitously accessible and scalable communication techniques.

Further, characteristics of social media are that the content is created through interactivity and co-creation. Anyone can produce copy and share anything to anyone at almost no cost (Acando, 2011).

On a more philosophical level, Cook (2008) argues that the content of these sites has been democratized. This is enabled by web based interactive platforms where individuals can co-create and modify content (Kietzmann et al., 2011).

Apart from being interactive and accessible, social media also facilitates discussion between many people based on shared interests. Conversations in social media can be *one-to-many* as well as *many-to-many* which is a great advantage that distinguishes social media from many other communication tools (Smith et al., 2011). This also represents the shift from the previous dominant standard of media: broadcasting (Cook, 2008). Broadcasting is an example of *one-to-many* conversations and does not facilitate *many-to-many* conversations. According to Kietzman et al. (2011), social media consist of people who are connected by a shared object or interest. This means that people generally are not just connected in a network without some common denominator. Such an object can be pictures for Flickr, indie music for MySpace or careers for LinkedIn (Kietzmann et al., 2011).

2.1.2 Social Media Tools

There are many different types of social media tools. Two of them are relevant for this study and will be presented in this section: Wikis and Social Networking Sites. The social networking sites have some characteristic functions important for creating value to people. These functions will be explained in this section as well.

Wikis

Wikis are websites collaboratively created by users and thereby allow for collective intelligence that can be effectively used to share knowledge. The general characteristics of a wiki is that it is accessible over the internet and anyone can create a new page as well as edit or delete content (Standing & Kiniti, 2011), thereby making use of collective intelligence (Acando, 2011). Although most social media tools support information sharing, wikis are unique in their ability to support collaborative content creation and maintenance (Hansen et al., 2010). Many companies are using wikis to create knowledge management system to preserve company information and the collective knowledge of the employees (Safko, 2010). The wikis can help companies with training and provide platforms for collaboration.

Wikipedia

Wikipedia is the most widely known example Wiki. Some of the biggest strengths of Wikipedia are how quickly articles about recent events appear and that complex things are explained in an understandable manner. Critique against Wikipedia is often directed towards its reliability and accuracy. Some people argue that it might favor consensus over credentials. However vandalism and obvious mistakes are generally short lived.

Wikipedia has 19.8 million articles (over 3.76 million in English) written collaboratively by volunteers around the world. Wikipedia exists in 282 languages and it has 365 million readers.

(Wikipedia, 2011)

Social Networking Sites

Lin and Lu (2011) describe social networking sites (SNS) as online platforms that focus on building social relations between people based on shared interest or activities. In the SNS people are able to communicate and interact with other users. Ideas, activities, events, and interests can be shared within people's individual networks. It is common for SNS to make social connections between users visible (Lin & Lu, 2011). SNS can be

used internally in companies to make employees feel connected and part of the organization (Safko, 2010). The most important functions of SNS will be presented below.

Groups

According to Kietzmann et al. (2011) there are two types of major groups. One is the self-created group where contacts are sorted into groups by the user in order to keep better track. This is a sort of labeling of the user's contacts. The other type of group is created based on shared interests. This can be either open to everyone, closed with required approval for joining or secret where the only access is through invitation.

Harvey (2010) argues that groups are a convenient way of gathering information relevant to a group of people. She says that groups usually have a space for discussion which allows for feedback to be gathered from the group and for group members to interact. It is important to regularly post new discussion topics in groups in order to stimulate activity and to keep people engaged (Harvey, 2010).

Tags

According to Harvey (2010), a tag can be like digitally pointing at someone or at content. A commonly used example is tags on Facebook, used to make people aware that they are in pictures or mentioned in content. Also, tags are useful for handling and organizing the vast amount of information we are provided with online (Harvey, 2010). Tags are in this case keywords assigned to content by the users who upload it. Also, users can tag content with different labels in order to organize and

Facebook, LinkedIn and Yammer

There are many types of social networking services with different focuses, such as dating, friends and careers. **Facebook** is the mostly used social networking site for connecting friends. Facebook started out as a private network for Harvard students and then grew in a limited matter, which created a desire for people to join. Facebook managed to create high connectivity between users and legitimacy by having profiles with people's real names. (Kirkpatrick 2010)

Today Facebook have over 800 million active users, by whom 50% visit the website every day (Facebook.com, 2011).

Another successful social networking site is **LinkedIn** that is focused on professional networks. LinkedIn consists of self-presentations of career professionals. Hansen et al. (2010) explain the characteristics of LinkedIn well: *"Users can post their resume, receive and send targeted job invitations, recommend co-workers, introduce a colleague to another colleague, exchange private messages and join groups such as university alumni associations or specialist interest groups".*

LinkedIn has more than 135 million registered users in over 200 countries worldwide (LinkedIn.com, 2011).

Another social networking site, focusing on the professional setting is **Yammer**. Yammer was introduced in 2008 and according to their website (yammer.com) 80% of the Fortune 500 companies have adopted their platform for social networking. Yammer is very similar to Facebook and does not make a shame of it, expressing that their platform use "Facebook DNA". (Yammer.com, 2011)

categorize it in an intuitive way. Tags thereby act as a classification system that serves as a human guided search engine (Harvey, 2010).

Status Update

Status update is a micro-blogging feature where users can write updates or questions in the SNS. The purpose for writing can differ among users. Some write about their life and some use it as a channel

for spreading knowledge or opinions. The benefit of status update is to get a fast overview of what is going on (Twitter, 2011).

Profile
A profile is like a personal page on the SNS where the user presents herself with varying amount of information (LinkedIn, 2011). Common information on a profile is name, photo, interests, contact information, education and occupation. The profile makes it easy to find people and information related to them (LinkedIn, 2011).

Comment Field
The commenting possibility on activities is the feedback system of social media. This is one of the main functions that make social media interactive communication tools (Facebook, 2011). All photos, status updates, media, links, etc. can be commented on, and the comments can also be commented on, which thereby creates dialog and a weighted opinion (Facebook, 2011).

Like
A function of allowing users to "like" content is another faster way of giving positive feedback to content besides commenting. Some sites use the like function to rate content such as recipes (Tasteline.com) and ideas (Bright Ideas). The more likes content achieves, the more visible it becomes to the people in a network, thereby acting as a way of spreading information about things people like or find interesting.

News Feed
The news feed function is an aggregator that provides users with frequently updated content in one single page (Harvey, 2010). All the activities in the SNS, such as public messages, reminders of birthdays and file upload, are collected in the news feed. When there is a large amount of activities in the SNS, prioritization of information in the newsfeed can be necessary (Harvey, 2010). SNS have algorithms that sort and prioritize the information (based on a person's connections and activities). It is also possible for users to manually control this filtration of information. This makes it easier for users to keep up to date with the important activities and information in the SNS (Harvey, 2010).

Notifications
When new activities occur in a SNS a notification is given to those who are affected by it (Yammer, 2011). This can for example be that new information, that concerns the person, is available such as a comment on his status update, he has been tagged in a picture, or he has been invited to join a new group. The notification is important to ensure that users do not miss important information (Yammer, 2011).

Privacy
The privacy function gives users the chance to influence how much of his activities in the social media should be visible for others and which people should be able to see what (Facebook, 2011). Some people choose to be open with everything to everyone, even people they are not directly connected with. And some chose to not to share anything. In most social networks people also have to ask if they can be accepted as someone's connection before being able to access any information about that person (Facebook, 2011). This gives people a chance to control who can see the things published in the network.

2.1.3 Motivations for Using Social Media

People's engagement in social media indicates that there is something about these tools that make us motivated to participate. According to Lin and Lu (2011), individuals' motivation for joining social media sites is due to a perceived possibility to obtain benefits such as usefulness and enjoyment. There are some human traits that are stimulated in a positive way by the functions in social media tools that make us want to share our thoughts and take part of other people's lives. Kohn (2010) argues that psychology plays an important role in social media's success and that considering psychology is important.

The fact that we are social and curious beings, who like to receive attention from other people, make it possible for social media tools to create incentives for continuous use (Singh et al., 2009). Individuals have different primary motivations for using and sharing content and there are multiple layers of motivations for using social media (Baek et al., 2011). This means that there are different types of actors in a social media that will contribute with different information and activities. For example, social networking site users can choose their level of participation, which may include active engagement (i.e. posting status updates, sharing links, chatting, etc.) or passive engagement (i.e. viewing others' status updates, looking at others' pages, etc.) (Baek et al., 2011).

Group Belonging

One of the main reasons for why people decide to connect with others on social media channels is to have a sense of belonging to a community (Kohn, 2010). Our instinctual need to be with others and to share thoughts has made the use of social media motivated since these tools can help to strengthen connections and communication with others (Rooksby, 2009). According to Passer and Smith (2004) humans are social beings who affiliate in many ways and the evolution has benefited those whose biological makeup made them willing to connect with other people. These individuals were more likely to survive and reproduce than those who were solitary (Passer & Smith, 2004).

Social networking sites are the new form of social interaction and they fulfill users' need for companionship and emotional support (Baek et al., 2011). By joining these sites and creating networks of friends, people can interact with more people than what is possible in real life. Social networking sites fulfill users' need for keeping in touch with friends, staying updated on community events, and maintaining offline connections (Baek et al., 2011).

According to Kohn (2010), group belonging is important to consider in social media initiatives and the approach should be simple. People should be included in communications, invited to be a part of relevant and appropriate online communities, asked to share their knowledge and opinions and engaged in discussions as often as possible. This will make them feel that they are considered important and they will want to not only be a member of the group but they will be excited about being a contributing member of the group.

Curiosity and Knowledge Seeking

A second social mechanism behind social media is curiosity and knowledge seeking. According to Perlovsky et al. (2010) acquisition of knowledge is a deeply rooted psychological need, a motivational mechanism for perception as well as higher cognition. This means that gaining knowledge is emotionally pleasing and people get satisfaction from their curious behavior. People are innately curious and want to explore and discover to learn new things (Perry, 2001) and curiosity thereby represents a prototypical example of intrinsic motivation (Byman, 2005). Social media tools such as

blogs and forums are an increasingly important source of information for people. People that have a specific interest in something can deepen their knowledge by reading discussions in forums.

Attention Seeking and Feedback

According to Passer and Smith (2004) we affiliate for four basic psychological reasons; to obtain positive stimulations; to receive emotional support; to gain attention; and to permit social comparison. Another way of seeking attention is to provide content to social media and according to McAfee (2006) Internet blogs and wikis have shown that many people have a desire to author and write for a wide audience. The motivation for people who contribute with knowledge on wiki sites is based on status and the recognition they receive for their contributions (Forte & Bruckman, 2005).

According to Passer and Smith (2004) people seek attention from others and we have a desire to get people to like us. We are born with an innate need for positive regard and it is essential for a healthy personal development to receive acceptance, sympathy and love from others (Passer & Smith, 2004). When it comes to acknowledgement through social media, people want others to recognize that they are thinking and acting in a cutting-edge manner (Kohn, 2010). Through communication in social media, acclaim can be shown by highlighting people in discussions with other people, by forwarding their words to others and by responding to them (and include other people in the discussion) so that they understand that there is value in what they say and think (Kohn, 2010). The functions of social media make it possible to do this in a time efficient matter.

Motivation at Work

According to Kohn (2010) psychology is important to explain the success of social media. But what about motivation at work? The traditional trait theory assumed that human personality, motivation and driving force is relatively stable over time and across situations (Wiggins, 1996). Newer theories claim that people are constantly changing. Our personality is not a permanent asset; rather it changes in accordance to the environment (Apter, 1984). This sub-chapter will cover motivation at work according to McClelland (1987) and theory on the difference between a private community and a professional one.

McClelland's (1987) theory on work motivation states three needs that influence people's motivation. How much these needs affect us can vary between different people, but the needs are;

- *The need for affiliation* – This means that we have a need for human interaction and friendly relationships. People need others to see and accept them. We all have a need to be liked and confirmed. A person with strong need for affiliation is usually a team player that enjoys collaboration.
- *The need for power* – This is the need for leading and influencing others' behavior. Some people have a strong desire for power over others. Others really want to be able to influence others and thereby have a need for sharing thoughts and knowledge.
- *The need for achievement* – this means that a person get satisfaction from succeeding with something. It is not the praise or recognition that is important, rather the actual completion of a task. Goals are usually set to be challenging in order to increase the satisfaction at achievement, but the goals are usually realistic and reachable.

Udai Pareek (1986) took the work of McClelland and extended it to explain the behavior of people in organizations. The needs Pareek presented, besides achievement, affiliation and influence (similar to McClelland's power) were;

- *Control* – the need to be informed and to observe, as well as to take corrective action when needed.
- *Extension* – the need to take care of others and have the best of the group in mind. The need to belong to a larger group, including society.
- *Dependence* – the need for help from others in order to be able to develop one self. The need for approval and receive feedback from more knowledgeable.

Tönnies (2002) has come to the conclusion that there are different kinds of social groups or human relationships: One where people consider themselves a part of the community and they follow norms, values and beliefs of that group. The group's interest goes before the self interest and people's status is given at birth, typically a family or a group of friends. In these groups there is rarely a need for control due to loyal society members. This group is referred to as Gemeinschaft (German for Community).

On the other hand, the second group that Tönnies (2002) described, Gesellschaft (German for society), is when people consider their self interest to be more important than the larger association. These types of groups have members that support themselves without consideration to shared norms. Status is achieved by hard work and reaching personal goals. There is not much individual loyalty to society and relationships are secondary. These characteristics are typical for the modern society or a business (Ben-Narush, 2009).

However, Zeller et al. (2010) have identified that knowledge management is moving toward becoming more community oriented (Gemeinschaft) and knowledge is shared and co-created with the whole organization's best in mind. Where there is task interdependence and focus on team work, collaborative tools have a greater chance to be adopted (Lin & Ha, 2010). If a person's colleagues are adopting the new technology, he is forced to do it as well in order to do his job. New technologies as Web 2.0 have the potential to become popular and widespread, but their success comes slowly. McAfee (2006) argues that you need to be persistent and expect slow adoption when implementing new technology. However, according to Lin and Ha (2010) there are factors favoring adoption within the professional work group.

2.1.4 The Value of Social Media in Product Development

If a company wants to stay competitive they need to continuously develop new products (Trott, 2008). According to Shuen (2008), with the help from Web 2.0 tools, companies can become more agile, save money and get products to market faster. To survive and compete, companies must quickly leverage and capitalize on the range of internal and external capabilities, know-how, know-who, and networks needed to solve problems faster, better, and cheaper (Shuen, 2008). In industrial technology companies with teams spread over the world, it becomes particularly challenging and complex to make the product development efficient. Social media can be used to facilitate the development work as well as make it possible to make use of the advantages of having a diverse and global team.

The Stage-Gate Model of New Product Development

Product development is the process from idea generation to launch of the product (Cooper, 2001). Many companies use structured approaches to the development work in order to make the work efficient in parallel activities. The stage-gate model is one common approach and is a conceptual and

operational road map for moving a new product development project from idea to launch (Cooper, 2001). How social media can be applied along the stage gate model is visualized in figure 3.
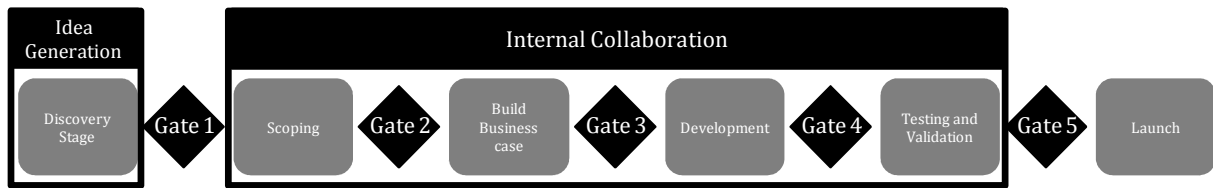
Figure 3: Social media can be used in product development for idea generation and for internal collaboration

The stage gate model is divided into different stages separated by gates which require management approval before they can be passed and the aim is to decrease project risks by coordinating activities between functions and to get products through the process as fast as possible (Cooper, 2001). Social media can be applied in the discovery stage, for idea generation and in the development stages for internal collaboration. How this can be done will be described in the following sections.

Idea Generation

Ideas are the fuel of innovation and therefore an important part of the product development (Björk, 2011). The first stage in the product development process is often referred to as the fuzzy front end, where new ideas and concepts are developed (Trott, 2008). This phase is what sets the course for the product development project and a firm's ability to come up with new ideas is correlated to success of new products. It is therefore an important phase and efforts need to be made to make the development of ideas as efficient as possible (Trott, 2008; Cooper, 2001).

According to Björk (2011), more and more companies are finding new sources of ideas; both through novel usage of the internal organization and by bringing in ideas from outside. She argues that there is a new trend for companies to move toward a collective approach of idea generation instead of focusing on the individual idea generator. The generation of ideas has often been presented as the act of individual geniuses (Björk, 2011). Utilizing the collective creativity of all employees and even include external stakeholders to generate those much needed breakthrough ideas to speed up innovation to generate profitable growth are effective ways (Karlsson, 2010).

> **Ideaboxes at Ericsson**
> *A successful case of a collaborative idea management is IdeaBoxes, which Ericsson piloted in 2008. This was a solution that they developed themselves integrated with their already existing Microsoft SharePoint environment used for collaboration. Ericsson made participation grow bottom up by internal marketing. They boosted participation by challenging the employees with idea generation campaigns. In 2010 they had over 9000 ideas, 15000 comments and 150 different "idea boxes" (based on different innovation needs).*
>
> *(Karlsson, 2010)*

When moving toward a more collective approach to idea generation it is relevant to examine the theory of social networks. Mark Granovetter (1973) discusses the strength of weak ties in his study of social networks. He argued that the weak ties between groups are the most valuable since they bridge gaps, so called structural holes, between groups of people who already have redundant strong ties between them, and make information diffuse in the network more efficiently. Bridging structural holes is beneficial for ideation since the individuals in the network have

the potential to leverage diverse sources of information and knowledge which may be beneficial for creative activities (Granovetter, 1973).

According to Björk (2011), when people have access to a larger network of people (both inside and outside the organization), with whom they can exchange ideas, information and experiences with, they have a higher probability of generating high quality ideas. This means that the way social networks are built up have an influence on a firm's ability to generate new ideas. If weak ties can be created, more information can flow between people increasing the chances of new ideas being generated (Berg, 2011).

A different approach to the traditional idea box, where employees can leave ideas and improvements in a physical box, is an idea collector facilitated by social media. According to Bob Karschnia (2011), great value lies in social media because it enables many people to connect and develop the ideas that a limited amount of creative people have come up with. Social media tools for collecting ideas enables all employees to see, comment and rate ideas in the system. This means that the difference between a traditional idea box and using social media tools is that the last mentioned can collect ideas and also make it possible to develop them cooperatively. The possibility to connect people from different functions to comment on ideas leads to increased variance and quality of ideas (Karlsson, 2010). Although ideas are created in individual people's minds, the interaction among people is important for both the creation and the development of an idea (Nonaka, 1994).

Comparing the traditional idea box to ideation via social media, ideation via social media implies less administration. The more people the company engages in traditional idea generation the bigger the challenge is to evaluate and give feedback to ideas. It may be impossible to administer all ideas in one place and it can be difficult to build a predefined structure of how to differentiate between ideas to sort them. With the help of social media, people can become the collective force that evaluates incoming ideas as an alternative to the lone box manager (Karlsson, 2010). In large organizations the innovation needs may be diverse and a social media can become a structured way to sort and categorize the ideas by letting all employees comment, rate and tag the ideas with different labels (Karlsson, 2010). The best ideas get better ratings and tend to have more commenting, which become a sorting mechanism for which ideas should be chosen. This becomes a scalable and self organizing system for evaluating ideas and matching them with innovation needs in the organization (Karlsson, 2010). Social media provides a built in sorting mechanism that spots good ideas and thereby forms a center of gravity for the general opinion (Rooksby, 2009).

Internal Collaboration

According to Trott (2008) each function of a firm has its own perspective on the product development process. These perspectives may be conflicting and there is therefore a great need for collaboration in product development. With increased globalization many companies today also have their development teams spread on different sites. This means that many teams are separated by time, distance and culture, which according to Berg (2011), creates structural holes between them that hinder efficient exchange of information. Berg (2011) emphasizes how social media tools can enable strengthening of the weak ties between groups and thereby allowing an organization to "increase reuse, improve decision-making, minimize sub-optimization and reduce redundant work and rework" when exchange of information is enabled. Connecting the employees and making information flow are the keys to collaboration and to operational excellence in the global and connected world (Berg, 2011). An organization structure that is more porous and networked can make companies more adoptive, sharpening their ability to access knowledge and thus innovate faster (McKinsey, 2009). Web 2.0 has enabled wider access to knowledge sharing within organizations, but also extended to customers, partners and suppliers (McKinsey, 2009). Connecting different functions in the organization is, according to Edmondson and Nembhard (2009), a great benefit for product development.

Social Media at Ericsson
Ericsson is a global company with over 100 000 employees. In addition to implementing thousands of corporate blogs and tens of thousands of collaboration sites, Ericson has started a professional network where all employees can join. Their goal was to improve collaboration efficiency between employees. The use of social media internally at Ericsson has cut the boundaries between different sites and divisions.

(Serra, 2010)

Efficient knowledge management increases competitive advantage and IT tools such as wikis can facilitate the exchange of information and knowledge between employees (Dalcher & Singh Sandhawalia, 2011). According to Dalcher et al. (2011) information technologies play a key role for enabling interaction and feedback efficiently. An example of this is forums, which provide a platform for the creation and transfer of knowledge (Dalcher & Singh Sandhawalia, 2011). Hedgebeth (2007) argues that organizations have to be aware of the IT tools that exist in order to keep up with the demands of the ever-changing knowledge economy. He means that organizations need to adopt the tools, with customizations, in order to maintain competitive in the global marketplace (Hedgebeth, 2007). When McKinsey interviewed executives on

Social Networking Site at IBM
The social networking site Beehive was introduced in the large enterprise IBM as a new method of communication between colleagues. Both personal and professional sharing was allowed in the network.

IBM achieved stronger bonds with their weak ties between employees. People started to contact colleagues they had not talked to before, rather that communicating with the colleagues in their proximity. The interactivity in the network was high with many comments.

An analysis of employee motivation for using the SNS showed to be the possibility to connect on a personal level with coworkers, advancing their career with the company, and campaigning for their projects.

(DiMicco et al., 2008)

what value they see Web 2.0 bring to their organizations, information sharing was pointed out as one important value contributor. The same report identified blogs, wikis and podcasts as the main contributors to successful information sharing (McKinsey, 2009).

Harvey (2010) argues that while traditional communication channels struggles to cope with the large number of stakeholders involved in complex deployment projects, Web 2.0 technologies such as social networking sites have no difficulty scaling to those levels. Large numbers of users can easily add content simultaneously. The ability for all users to contribute allows a project team to engage with and gain feedback from many more stakeholders than possible using traditional technologies (Harvey, 2010). Problem solving has been identified as a key aspect of product development (Barnett, 1998). Web 2.0 technologies can support problem solving (He et al., 2009). According to Rooksby (2009) social networking sites can support problem solving by creating ad-hoc teams to solve time critical problems.

Studies of large organizations have found that internal information technologies are often used to locate a person who would know the answer to a question rather than to find the answer to the question itself (Rooksby, 2009). This information underlies the motivation for the large companies that are turning to internal social networking sites. According to Rooksby (2009), the essential problem is that organizations "do not know what they know". These issues are essentially problems of people finding. Social network sites are increasingly seen as one way of addressing these issues (Rooksby, 2009).

2.2 Implementation of Social Media

So far the functionality of social media and what it can do for a business have been presented. This section will focus on how to succeed with implementation of social media. Based on literature on diffusion of innovation critical aspects for diffusion have been identified and based on findings from social media literature these aspects are adopted to the specific case of social media adaptation. In the end of this chapter the literature is summarized in a framework to apply when investigating the situation within a company.

2.2.1 Company Analysis

In order to develop a strategy for implementation of social media, an analysis of the current situation at the company has to be made. This section presents four areas of analysis, which are illustrated in figure 4.

Value Creation and Work Processes	Hardware and Infrastructure	Applications and Communication	Culture and Attitudes
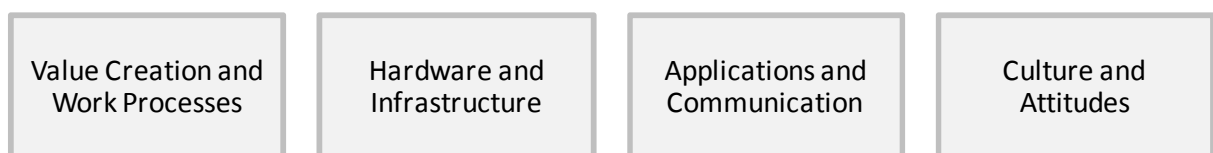
Figure 4: Four areas of analysis for determining how well a firm is prepared for social media

Value Creation and Work Processes
Social media tools are just tools. Shuen (2008) states that in order to be successful with the use of these tools the overall value creating process in the firm needs to be in focus. In order to leverage the potential of social media it is important to consider what it is that creates value in the company and how these competences and processes can be leveraged with the help of social media (Shuen, 2008). If the key driver of Web 2.0 is collaboration, a detailed analysis of how the business model

creates, captures and redistributes value should include many of the following sources and linkages (Shuen, 2008):

- Collective user value arising from valuable uploaded contributions
- Peer-to-peer interaction within open content and sharing communities
- Network effects arising from social networks
- Ecosystems that create indirect network effects generating complementary and third-party business-to-business partnerships and relationships

Hardware and Infrastructure

The development of Web 2.0 tools has been driven by technology capabilities (Hugos & Hulitzky, 2011). The characteristics of social media is that it is accessible to people everywhere which enables distribution of information on the same terms for everyone (Smith et al., 2011) and according to Kietzmann et al. (2011) social media substantially changes the way communication take place between individuals through ubiquitously accessible and scalable communication techniques. However, this can only be realized given that the hardware and infrastructure is sufficient.

An interesting example is Facebook. According to Kirkpatrick (2010) the timing of Facebook's launch was favorable since its complementaries (laptops, digital cameras and internet) had diffused enough to enable adoption. Facebook also cared for the capacity of their infrastructure and made sure that no more users than they could handle were allowed to join the tool. This created trust and made Facebook successful, while other social networking sites failed (Kirkpatrick, 2010). This example shows that hardware and infrastructure capacity cannot be ignored.

Applications and Communication

Rooksby (2009) emphasizes the need to understand which applications and web 2.0 tools are currently in use before introducing social media tools. It has to be determined in advance if the new technology will supplement or replace the old one and if any of the existing Web 2.0 technologies will be built upon or replaced by the new technology (Rooksby, 2009). In corporations where the incumbent collaboration technology, e-mail, is well established, products like social media tools represent significant advancement and are therefore potentially very valuable; however it might take a lot of work trying to explain the benefits (McAfee, 2009).

Rooksby (2009) also argues that it is important to learn how the employees communicate and use current applications. How do they use e-mails? Are there communication hubs? Who is connected to whom? Are people using social media already? What do they think about that and how do they apply it? The answers to these questions will help to develop identify the value that social media can realize (Rooksby, 2009).

Attitudes and Culture

To be effective, reengineering and continuous improvement efforts must result in satisfied users and be accepted and used throughout the

> **Re-application at Coca-Cola**
> *Coca-Cola has launched a major initiative in technology to improve communication and knowledge transfer within the company. Part of that is to visualize the different division's product development online, making information and concepts searchable. In this way divisions can identify successful concepts in other markets and reapply them, using the collective knowledge of the company.*
>
> *(Hayes Weier, 2008)*

organization (Stair & Reynolds, 2011). Two aspects of this relating to social media were identified during the interviews; the aspect of a sharing culture and the aspect of attitudes towards social media.

Since it is fundamental for social media that people share knowledge and information, a sharing culture within the company has to be ensured in order for a social media to be successful in a firm. One of the questions that Shuen (2008) sees as important to ask in order to identify the potential of a Web 2.0 implementation is; "*Does your firm value dynamic capabilities – flexibility creating, connecting, and discarding competences as needed?* ". Since two of the main characteristics of social media tools are share and reapply, there needs to be incentive structures and culture supporting this (Stair & Reynolds, 2011). The new web 2.0 tools make it easy to move data and hand it to those who have the most competence to handle it. However, users may not always be happy about where their data lands (Shuen, 2008), thereby resisting to share. The company culture can be a barrier to change (Rogers, 2003) and it is therefore important to assess the culture in order to find out if it needs to be addressed.

At the same time the attitudes towards new technology is equally important as a sharing culture. Individual knowledge workers' failure to see the benefits of social media tools in the workplace can be puzzling at first. After all, the new tools are both useful and easy to use (McAfee, 2009). According to Stair and Reynolds (2011), acceptance is correlated with user satisfaction and depends on the quality of the tool and the value of the information it delivers to its users. In order to get people to accept a new tool it needs to be perceived as useful, easy to use, the quality of the information has to be high and the organization needs to support the system (Stair & Reynolds, 2011).

2.2.2 Social Media Strategy

To succeed with social media is to succeed with adaptation. Getting a new idea adopted is often very difficult, even when it has obvious advantages (Rogers, 2005). After assessing the organization and identifying the goal of the social media initiative there is a need for a strategy that addresses diffusion. Recommended areas for that strategy includes functionality (the product itself) but also factors that deal with incentive structure, training, strategy for reaching critical mass, processes and owners, guidelines and policies, and finally support. These areas for social media strategy will be presented in this section and they are summarized in figure 5.

Functions	Incentive Structre	Training	Critical Mass

Processes and Owners	Guidelines and Policies	Support
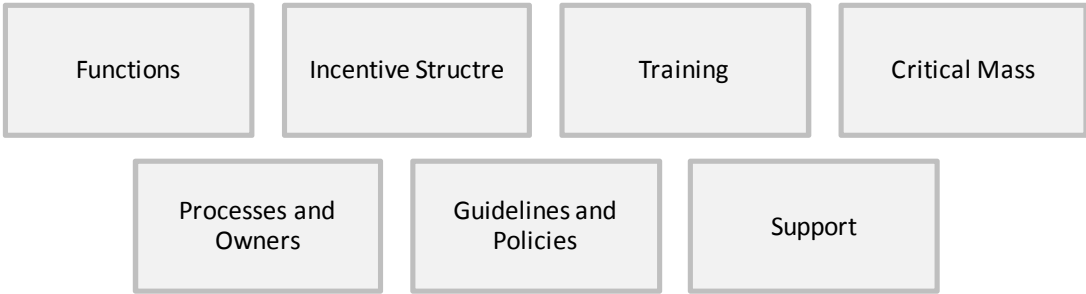
Figure 5: There are seven areas that need to be considered by a firm before implementing a social media

Functions

The number of functions that could be used developing a collaboration tool is endless and so is the number of applications. However, it is important to remember that all the functions do not have to be in use in order to succeed. Blank (2010) argues that in order to get a product to market fast the

minimum number of features that the customer is willing to pay for should be identified and implemented first and then features should be added along the way, until the envisioned product is developed. Shuen (2008) states that the low cost and connectivity of social media means that it is possible to start off small to find an initial audience and then continue to develop the functions that the company sees fit. Since it is hard to predict what the users want, starting small to get an interest and then expand when there is a user group that can promote the tool and provide feedback, could help identifying the next big opportunity (Shuen, 2008).

In Blank's model "Customer Development" he starts off by identifying the customer problem. It is important to identify who the customer is and what needs the customer would be willing to pay for to get solved (Blank, 2010). By creating a product based on the identified needs, a prototype that can be used to receive feedback is possible to develop. Repeating this process will in the end (hopefully) lead to the identification of what the customers are willing to pay for in the product (Blank, 2010). Shuen (2008) argues that the good thing with social media is that it is easy to adopt and market analysis for the tool can be replaced with real-time experimentation. Examples of this are Flickr and Craigslist that introduced a limited product and then kept fine-tuning things that did not work (Shuen, 2008).

Incentive Structure
In order to create results the tools need to add value and there needs to be an incentive structure incorporated in the tools (Björk, 2011). Incentives come from psychological needs such as group belonging and curiosity described in chapter 2.1.3 and motivations at work described in chapter 2.1.3 as well. In order to appreciate those that actively contribute, the reward structure should be designed to foster an appreciated behavior (Shuen, 2008).

Encouraging continuous use requires approaches other than the traditional financial or performance incentives deployed as motivational tools. In the Web community, status is often built on a reputation for making meaningful contributions (McKinsey, 2009). For newcomers who are active, highlighting opportunities for others to give them feedback and allowing the newcomers to increase the size of their audience may be particularly effective (Moira et al., 2009). Kohn (2010) argues that providing users with feedback and encouraging them to join discussions are ways to create sustained use.

Incentives can also come from the overall goal of the job or the behavior that the organization acknowledges. According to Fullmer and Buckman (1999) if people that share are promoted, no other incentives will be needed. Those who have something to contribute will get a forum to do so and it will also become obvious who cannot contribute. Employees need to understand that if they are not willing to participate, opportunities offered to them in the past will no longer be available. (Fullmer & Buckman, 1999).

Training
McAfee (2009) argues that in order for new technologies such as social media to take off there is a need for major behavioral changes from the target users within enterprises. In corporations where the incumbent collaboration technology, e-mail, is well established, products like social media tools represent significant technological leaps forward and are therefore potentially quite valuable, however it might take a lot of work from champions to evangelize, demonstrate, coach, train, and

explain (McAfee, 2009). In order to get people to accept a tool and start to use it, it needs to be perceived as useful and easy to use (Stair & Reynolds, 2011).

The interesting thing about social media is that a lot of the training does not come from traditional training, but instead the social aspect of the phenomenon can be utilized for this purpose. Design elements of social media which facilitate learning from friends, feedback and content distribution can help increase the level of engagement for new users, leading to further content contributions and an overall better user experience. This suggests that showing new users information about the content contributions of their friends makes them more comfortable with contributing themselves (Fullmer & Buckman, 1999).

Strategy for Reaching Critical Mass

An important consideration when implementing social media tools is critical mass, but it is not only critical mass as in number of users, the critical mass also refers to a minimum percentage of users within a specific group. One of the reasons behind Facebook's success was that they gained critical mass within the groups where they first launched (Kirkpatrick, 2010). When they had achieved critical mass in one place they could open up their site to new groups of users.

Critical mass also differs between different kinds of social media tools. In figure 6, Hansen et al (2010) have presented an overview of size of the producer population versus size of the consumer population for different social media tools. From this picture it is identified that implementation of a social network site asks for a higher percentage of producers, than for example a wiki.

Size of Producer Population

		Small	Large
Size of Consumer Population	Small	**Blogs** (Twitter)	**Social Networking Sites** (Facebook, LinkedIn)
	Large	**Social Sharing** & **Popular Blogs** (YouTube, Flickr)	**Wikis** (Wikipedia)

Figure 6: Categorization of social media tools based in size of consumer population and producer population

If social networking sites are to be applied within projects, understanding the factors required to gain and maintain users will be important for the communication benefits to be realized (Harvey, 2010). Many companies experiment with Web 2.0 technologies, but creating an environment with a critical mass of committed users is more difficult (McKinsey, 2009). Successful adoption requires the use of these tools be integrated with the flow of users' work (McKinsey, 2009). It is easy to be impressed by the large, dynamic, and vibrant Web 2.0 communities on the Internet and to overlook the fact that they are actually quite tiny when expressed as a percentage of all Internet users (McAfee, 2009). A key challenge, then, for all who wish to implement a web 2.0 tool in a firm is increasing the percentage of intranet users who contribute to their organizations social media (McAfee, 2009).

Getting critical people within the organization to adopt the technology is important to create spread. Lin and Ha (2010) argue that adoption is affected by those who are using the technology. If critical people within the organization are using the tools, the adoption is likely to be higher. Their studies further showed that heavy use from supervisors led to higher adoption among employees.

Overall, what is desired when considering and implementing a strategy for reaching critical mass is to achieve self-spread or viral spread. Shuen (2008) suggests that ways to increase the viral, interactive, or social influence factors of the business, especially during the critical-mass stage of adoption, should be examined. By doing so, ways to trigger socially influenced viral distribution as well as classic viral marketing and buzz to create network effects can be found (Shuen, 2008). This is by Rogers (2003) referred to as a social decision. He states that an alternative to social decision is an authority decision. Then the decision to adopt is taken by management and often that is a faster way of achieving adoption than a social decision (Rogers, 2003).

Processes and Owners

It has already been argued that social media tools are facilitators of a business process approach rather than a strategy in itself. Successful adoption requires that the use of these tools will be integrated with the flow of employees' work (McKinsey, 2009). Using Ericsson as an example, Karlsson (2010) points out that it is important to design processes and choose owners for the output of the new systems. When implementing their ideation tool "Idea Boxes", this was very important in order to build employee trust in the system.

McKinsey (2011) have found that among companies that have implemented Web 2.0 collaboration tools, successful initiatives were closely related to the way work was carried out in the company and that leaders were appointed to facilitate discussions. They argue that the use of collaboration tools should be steered by a need in the current work processes. Owners should be people that have the power to do something about the output (Karlsson, 2010). Owners can be used to facilitate interaction and achieve more diverse collaboration (Matson et al., 2007).

According to Stair and Reynolds (2011), organizations sometimes have internal social media change agents and champions who are eager to both demonstrate the new tools to their colleagues and to explain the advantages with using them. In many cases these evangelists will be younger employees and new entrants to the workforce, since members of generation Y are much more likely than older workers to be comfortable with these tools (Stair & Reynolds, 2011). That is in line with Rogers (2003) who claims that opinion leaders and change agents are important for the diffusion of innovations. Opinion leaders are leaders within the social system and change agents are external people opposing or contributing to change (Rogers, 2003).

Guidelines and Policies

Implementing a social media tool that has the potential to handle a lot of information, and spread it fast, makes it important to put in place guidelines and policies (Lin & Ha, 2010). Employees can have a wide reach with information and communication which makes it important that they converse in a good and inoffensive way. Policies have to be put in place before social media tools are unleashed in the organization (Bernal, 2009). Rooksby (2009) argues that the worries about social media often are exaggerated and that it can be handled with a well thought out policy on social media communication.

According to Harvey (2010), guidelines can be used to explain which information should be communicated where. She states that these types of guidelines can also help elucidate the benefits and value with the tools and why they should be used. Explaining the value both generate positive attitudes as well as help users to take advantage of the benefits. These types of guidelines for use

should, according to Harvey (2010), be given to users when they are introduced to the tool to help clarify any areas where confusion may arise. This will also help to enforce sustainable use.

Support

The final identified aspect in the social media strategy is support. Support refers to the support provided from top management and leaders in the organization. In order to get people to accept a new tool and start using it, the tool needs to be supported by the organization (Stair & Reynolds, 2011). As identified earlier in this chapter management support is important to create trust and adoption in the organization (Lin & Ha, 2010).

Framework for implementation of social media — categorized questions and outputs.

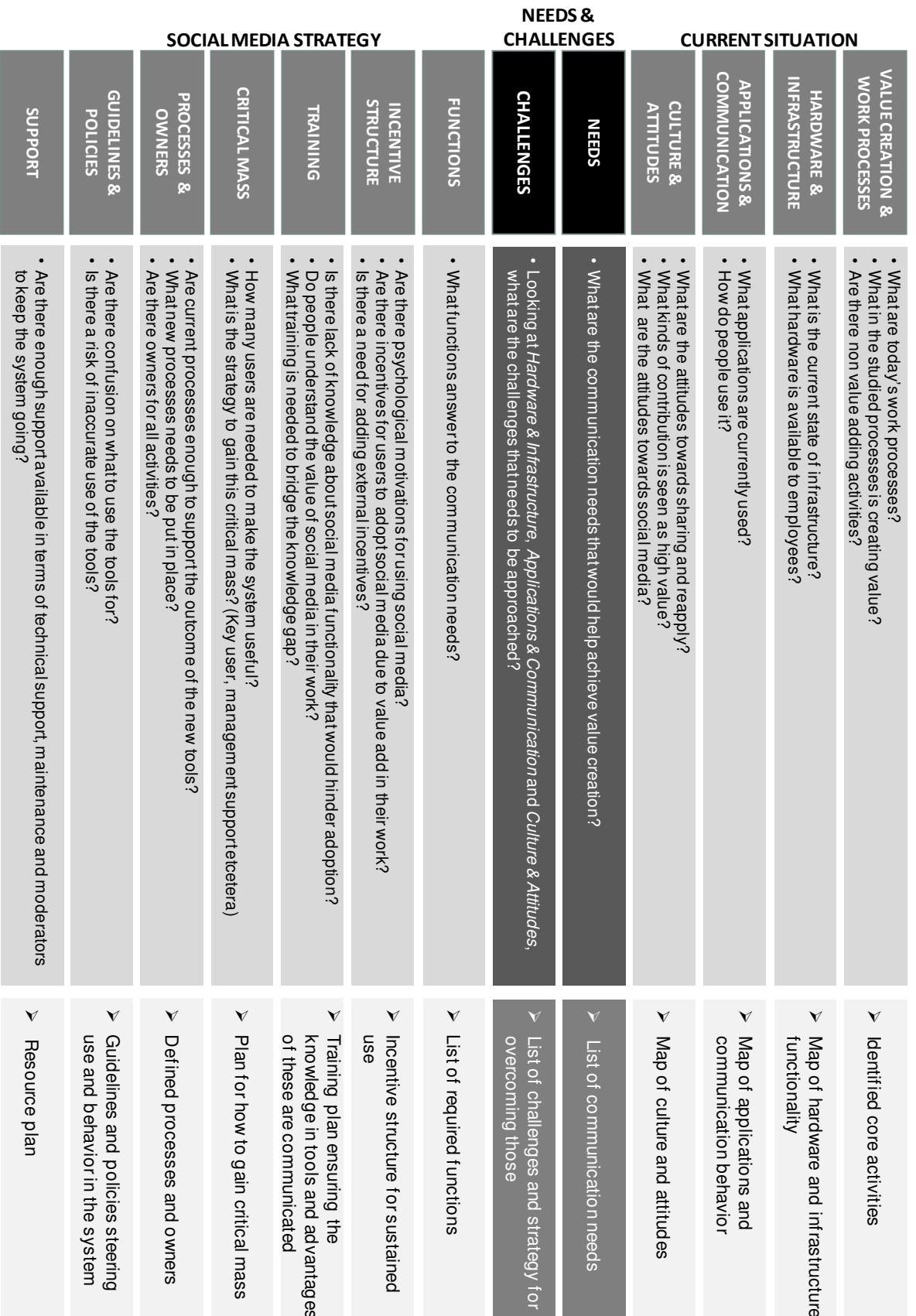| Group	Category	Questions	Output
CURRENT SITUATION	VALUE CREATION & WORK PROCESSES	• What are today's work processes? • What in the studied processes is creating value? • Are there non value adding activities?	∨ Identified core activities
CURRENT SITUATION	HARDWARE & INFRASTRUCTURE	• What is the current state of infrastructure? • What hardware is available to employees?	∨ Map of hardware and infrastructure functionality
CURRENT SITUATION	APPLICATIONS & COMMUNICATION	• What applications are currently used? • How do people use it?	∨ Map of applications and communication behavior
CURRENT SITUATION	CULTURE & ATTITUDES	• What are the attitudes towards sharing and reapply? • What kinds of contribution is seen as high value? • What are the attitudes towards social media?	∨ Map of culture and attitudes
NEEDS & CHALLENGES	NEEDS	• What are the communication needs that would help achieve value creation?	∨ List of communication needs
NEEDS & CHALLENGES	CHALLENGES	• Looking at *Hardware & Infrastructure, Applications & Communication* and *Culture & Attitudes*, what are the challenges that needs to be approached?	∨ List of challenges and strategy for overcoming those
SOCIAL MEDIA STRATEGY	FUNCTIONS	• What functions answer to the communication needs?	∨ List of required functions
SOCIAL MEDIA STRATEGY	INCENTIVE STRUCTURE	• Are there psychological motivations for using social media? • Are there incentives for users to adopt social media due to value add in their work? • Is there a need for adding external incentives?	∨ Incentive structure for sustained use
SOCIAL MEDIA STRATEGY	TRAINING	• Is there lack of knowledge about social media functionality that would hinder adoption? • Do people understand the value of social media in their work? • What training is needed to bridge the knowledge gap?	∨ Training plan ensuring the knowledge in tools and advantages of these are communicated
SOCIAL MEDIA STRATEGY	CRITICAL MASS	• How many users are needed to make the system useful? • What is the strategy to gain this critical mass? (Key user, management support etcetera)	∨ Plan for how to gain critical mass
SOCIAL MEDIA STRATEGY	PROCESSES & OWNERS	• Are current processes enough to support the outcome of the new tools? • What new processes needs to be put in place? • Are there owners for all activities?	∨ Defined processes and owners
SOCIAL MEDIA STRATEGY	GUIDELINES & POLICIES	• Are there confusion on what to use the tools for? • Is there a risk of inaccurate use of the tools?	∨ Guidelines and policies steering use and behavior in the system
SOCIAL MEDIA STRATEGY	SUPPORT	• Are there enough support available in terms of technical support, maintenance and moderators to keep the system going?	∨ Resource plan

Figure 7: Framework for implementation of social media

3. Methodology: Case Study at Rosemount Tank Radar AB

In this section the methodology applied at Rosemount Tank Radar AB (RTR) will be presented. How the case study fit into the overall study can be seen in figure 8. Since the main focus of this study is to identify what value social media tools could have to RTR, a single point of study, a case study research design, was chosen.

The case study is a common approach when you want to understand the situation at one specific subject better (Bryman & Bell, 2007). Case studies give a holistic view of real life situations, such as organizational processes (Yin, 2003), and make it possible to explain the processes of how organizations, in its real life context, work (Tharenou, Donohue, & Cooper, 2007). The Case Study approach generally results in high internal validity since multiple research methods can be applied and triangulated (Bryman & Bell, 2007), which was seen as important to strengthen the recommendations made to RTR. In this case study the applied research methods were *semi-structured interviews*, *questionnaires* and *document studies*.

Pre-Study
Unstructured interviews with professors and industry personnel to get an orientation on the subject and identify best practice within social media strategy

Literature study
- Social Behavior
- Organization
- IT Implementation
- Customer Development
- Social media

CASE STUDY: EMERSON

Situation Analysis

Semi-structured interviews with employees, a questionnaire and document studies

Pilot

Semi-structured interviews to identify potential within given projects. Implementation of functionality to match the identified potential.

External interviews
- Industrial companies with the same challenges as RTR
- Entrepreneurs with focus on innovation
- Social media strategists
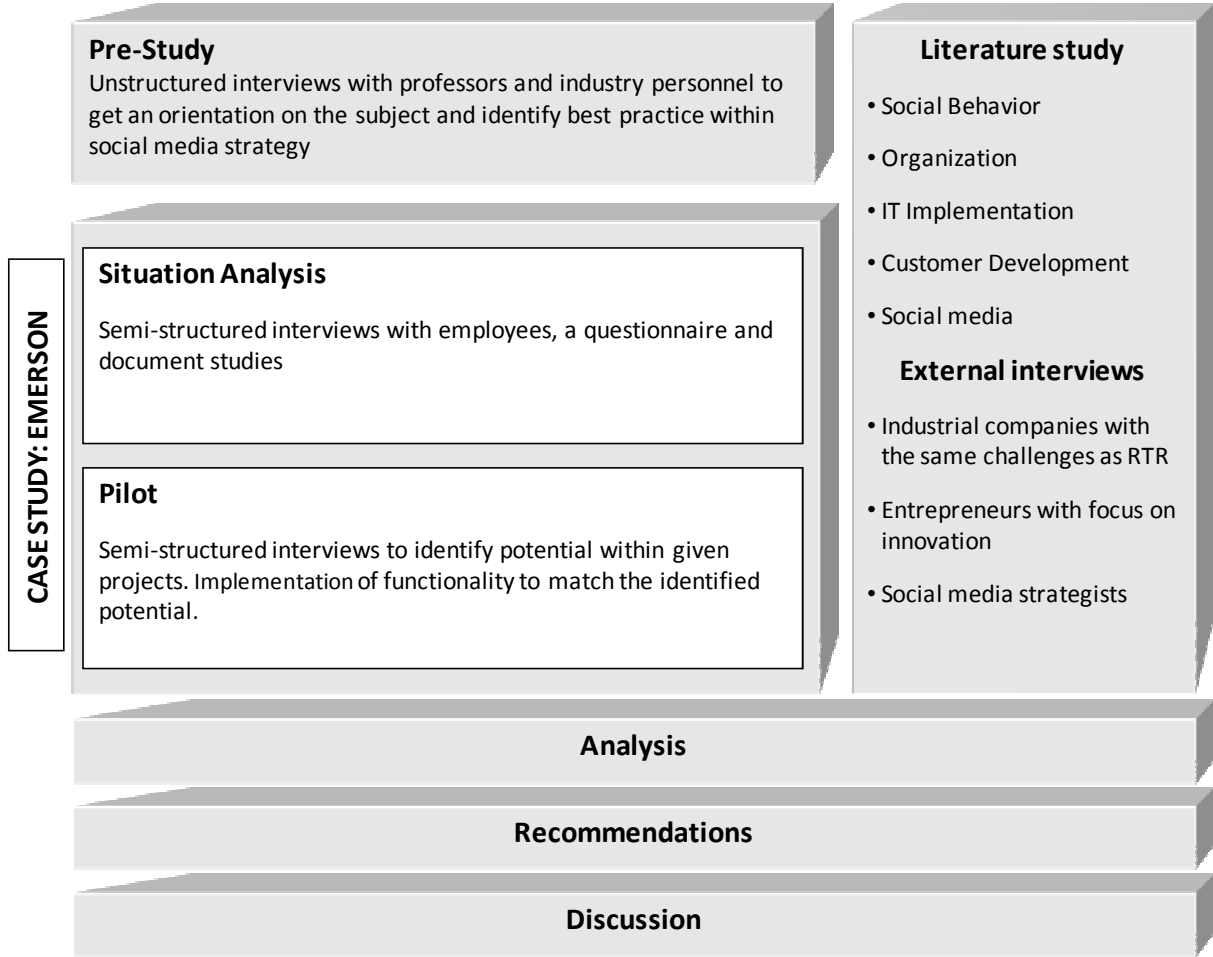
Analysis

Recommendations

Discussion

Figure 8: A map over the method for this master thesis

3.1 Semi–structured Interviews

During the study at RTR the main research method was semi-structured interviews. Yin (2003) argues that interviews are a useful research method when performing a case study. The main reason for choosing interviews as a research method was the convenience and flexibility that it provided, both in terms of the received data but also to the data collecting process. By using interviews as a research method different areas of interest can be examined (Bryman & Bell, 2007). In this case, that meant that the interviewees had flexibility to include interviews with employees from different functions and levels in the organization. According to Bryman and Bell (2007), interviews as the research method also provide flexibility to the received data since it makes it possible for the interviewees to add data that the interviewers did not expect. This also decreases the risk of having the interviewers' preconceived ideas affecting the data sample (Bryman & Bell, 2007).

Bryman and Bell (2007) points out that semi-structured interviews are preferred when the topic is relatively specific, but when the interviewer still wants the flexibility of following up on leads during the interview. For the same reasons the interviewers chose a semi-structured approach. For each interview enough time was scheduled to make sure that the interviewee would have time to provide information he or she found useful. An interview guide was also prepared for each interview (See an example in Appendix 3).

The main sampling method for the interviews was snowball sampling. Snowball sampling made it possible to follow up on recommendations provided during the interview process. Snowball sampling is conducted when people refer you to new interviewees (Bryman & Bell, 2007). Some interviewees were short sampled by management to provide a representative sample for functions that were included in the study.

3.2 Questionnaires

To find out about the employees' opinions and usage of social media, questionnaires were handed out (see Appendix 2). All affected employees were asked to reply and a total sampling was thereby conducted (Bryman & Bell, 2007). The questionnaire was chosen as research method since it made it able to reach the whole organization and provide a quantitative approach where the answers from different respondents would be easy to compare. To simplify the analysis closed questions were used (Bryman & Bell, 2007). Closed end questions made it possible for the researchers to examine relations between different parameters such as age and social media habits.

3.3 Document Studies

As an addition to the interviews and questionnaires, document studies were conducted. Bryman and Bell (2007) argue that document studies can provide useful background information and is good to help build a description of the organization. Process documents, project descriptions, organization charts, among others were studied. Overall, the document studies helped in the understanding of the work processes and to prepare the interviews.

3.4 Pilot

During the case study at RTR a social media tool was introduced, Yammer. Two projects were identified by management and evaluated with help of the developed framework. One of the projects was dropped since no obvious need was identified within the scope. For the second project two tools were tested, Yammer and Microsoft Office Communicator. The tools were introduced and evaluated

on an ongoing basis together with the project team. The insight from these pilots, together with the insights from the overall study provided input to the recommendations for social media at RTR.

3.5 Validity and Reliability

In terms of validity the case study research design usually results in high internal validity, due to the possibility of triangulating several research methods (Bryman & Bell, 2007). Since three research methods were applied (interviews, questionnaires and document studies) the internal validity could therefore be considered high.

However, there are limitations to the external validity of a case study design since it focuses on one single case. This is due to that the situation is difficult to replicate and the external validity thereby decreases (Bryman & Bell, 2007). Since companies are continuously changing it would be hard to find cases where the characteristics are the same to replicate the results, which leads to low reliability. However, the results could be generalized to companies where the characteristics resemble the characteristics of the company in this study; high technology companies where the core competence is engineering and product development, where the usage of social media is currently low.

4. Rosemount Tank Radar AB

This study has been conducted at Rosemount Tank Radar AB (RTR) in Gothenburg. This section will describe the ownership structure of RTR. This will be followed by a presentation of the situation in RTR's product development. This section will also present the pilot study made at a product development project at RTR. Lastly, the situation in the new product project will be presented.

RTR's parent company Emerson is a diversified global manufacturing and technology company serving industrial, commercial and consumer markets. Emerson has 130 000 employees in 120 countries. In 2011 sales reached 24.2 Billion USD and the company had a profit of 3.3 Billion USD. Emerson was founded 1890 in St Louis, Missouri, and was at that time a manufacturer of electric fans. The company has since then grown by acquisitions of companies and Emerson is now one of the largest conglomerates in the world. St. Louis is still the Emerson headquarters, where Emerson corporate is responsible for making sure that all their subsidiaries manage their businesses in an ethical and profitable way. This means that Emerson corporate has the responsibility for the businesses and set up policies and guidelines but the subsidiaries run the daily activities and processes independently.
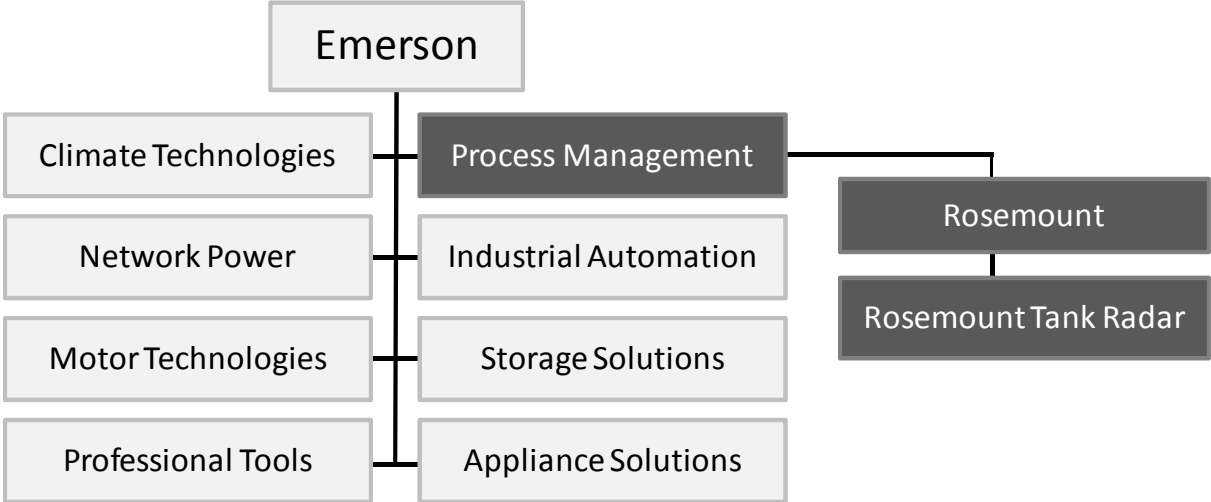
Figure 9: Illustration of the reporting structure for Rosemount Tank Radar AB

The acquired companies have provided Emerson with a broad portfolio of eight different business platforms, as presented in figure 9. RTR is a part of the Rosemount organization within Emerson, which is a part of Emerson Process Management. Rosemount was acquired by Emerson in 1976 and it has its headquarters in Chanhassen, Minneapolis, Minnesota. Rosemount develops and produces instruments for measuring level, pressure, temperature and flow of material in industrial tanks. Rosemount has made several acquisitions over the last decade to cover all of these measurement categories. The level technology was found in the company Saab Marine Electronics in Gothenburg, Sweden, which Rosemount acquired in 2001 and then changed the name to Rosemount Tank RadarAB. RTR has 330 employees in Sweden and another 90 in other countries.

4.1 Situation Analysis of Product Development at Rosemount Tank Radar

The focus of this study has been on the collaboration and knowledge sharing in the product development teams at RTR. This section will describe the overall strategy, value creation and work

processes, hardware and infrastructure, applications and communications as well as culture and attitudes generally at RTR.

4.1.1 Overall Strategy

RTR's vision is to be the global leader, recognized for excellence in innovative level measurement solutions that provide high value to customers. The quality should be world class and the company goal is to deliver high technological products to customers to improve safety and increase efficiency. RTR strives to keep development costs down by offshoring parts of the development to low cost countries.

4.1.2 Value Creation and Working Processes

In the product development process, software, mechanical and electrical engineers work in parallel developing different parts of the products. There is a need for increased collaboration and coordination between engineers of different specializations as well as engineers in different locations. Significant for the senior engineers is that they often have much experience and knowledge about the products, making them knowledge hubs that receive many questions. The developers are working on different sites around Sweden, Russia and the USA. The work is divided into small parts and distributed between different engineers on different sites. Engineers work alone or in group on their part and then hand it over to another engineer. When tasks are passed on to someone else there is a risk of information loss or insufficient explanations.

Many departments are involved in the product development process. Operations are involved to make sure that the products will be possible to produce in a cost efficient and proficient way. The approvals engineers make sure that the products meet the industry, safety and legal standards. Procurement is involved when it is time to identify suppliers and later to order something, either a prototype or components. In the late stages of the product development phase there are test engineers coming in and testing the products to ensure quality. Many of the test engineers have expressed a need for better information in advance. They wish to get insights in what is coming from the product development further ahead. RTR also has project managers coordinating the work.

RTR use to have an idea box where engineers could submit ideas for new products, product improvements or process improvements. However, the idea box has been cancelled due to lack of efficient ways to take care of the incoming ideas. If an engineer has an idea now, they speak with

> ***Yammer at RIGID***
> *One of the Emerson owned companies, RIGID, have been successful at implementing the corporate social networking site Yammer for internal communication and collaboration in their product development. The engineers used the tool in the product development team to visualize project status, get input from many, solve problems and to get feedback.*
>
> *RIGID developed some guidelines that stated which type of information should be communicated through Yammer and which should be communication in other channels. The guidelines also consisted of examples of good and bad ways to express oneself in Yammer.*
>
> *One reason for RIGID's success was due to having a few users invited to Yammer in the beginning, developing a good example of how the tool should be used before the tool was opened up to the whole team.*

product owners, who in turn will check with marketing if this is something that the customers want. If the idea has potential it will lead to a change request or the initiating of a new product development project. In interviews with engineers it has been found that this is likely an opportunity to improve with new tools and processes.

4.1.3 Hardware and Infrastructure

The engineers are equipped with stationary computers with double screens. Everyone has their own regular phone. Laptops, cell phones and smart phones are used as needed. The current equipment can potentially become a limiting factor for the implementation of future social media tools and heavy internet carried communication tools such as video sharing, phone calls, desktop sharing.

The engineering department and the IT department have different goals. The IT department should have as few software installations as possible in order to make it easy to manage, they also have to ensure integrity and security. The engineers should be able to develop new products as efficiently as possible. As new collaboration tools become available, there is a long time span before these tools are approved for use on the network and this causes frustrations among users.

4.1.4 Applications and Communication

The communication at RTR is mainly carried out through face-to-face conversations, e-mail or over the phone. Only a very few people have office communicator for instant messaging. Colleagues on different sites can have live meeting, which is a service that allows conference calls and a shared desktop. RTR also has equipment for video conferencing, but it is rarely used due to poor sound quality and the hassle to set it up. Many employees express a problem with overfull e-mail inboxes. Another problem with e-mail, expressed by employees, is that they often do not get a confirmation that the people they have e-mailed have understood what they meant.

Emerson corporate set up guidelines for which tools the companies should use, but each company is responsible for their own implementation of tools. Skype was used for some time at RTR for video phone calls between engineers on different sites, but the service was banned by Emerson because of security issues and because it took too much of the bandwidth. The ability to do video calls from their own computer is something that the engineers wish for.

SharePoint has been implemented as a substitute for the old document management system, and the transition between the two systems is currently taking place. SharePoint is basically used for document handling by RTR but the tool has much more functionality that is not used. SharePoint also provides social tools and the opportunity to create internal websites and collaboration spaces, but this is not used to any extent by RTR. The reason has been lack of training and demonstration of the tool and its functionality. However, the wikis functionality of SharePoint was tested by the software engineers a few years ago. One person was responsible for writing the wikis, but as soon as the position as "wiki responsible" was withdrawn, the use of wikis stopped.

The employees' feelings about SharePoint is that it is a good tool for structuring work processes, but that it is slow and difficult to use. A problem is that not everyone uses it which makes it impossible to use it as a channel of communication because some people would not get the information. Some project leaders use SharePoint for visualizing project status and providing and assigning tasks. But getting the employees to use it daily has not been successful.

Some of the employees have expressed in interviews that they lack an interactive forum with the latest project and company activities. Many said that having a FAQ function and an online support would be useful. Also, many employees express a need for an efficient way to get input about new trends, what competitors do and new technology. They want a forum to collect all this valuable information in one place.

4.1.5 Culture and Attitudes

The official company values clearly state that co-operation is important and that the employees should share knowledge and support each other. Communication should be clear and effective and no information should "fall between cracks". One external incentive the engineers have for helping each other is that they cannot be promoted and advance their career within RTR unless there is someone that can take over their current position. This stimulates knowledge sharing among the engineers.

When the co-operation with the Russian engineers first started some engineers were worried that transferring their knowledge to them would threaten their jobs. The management team then made sure to communicate to the Swedish engineers that teaching the Russian engineers would help them get new responsibilities and be promoted. Important to the matter was that the leadership team kept their promise and thereby kept their credibility when promoting knowledge sharing in the company.

In order to get an idea about attitudes toward social media in the company, a survey was conducted asking the engineers at RTR about their use and attitudes toward social media. The results of the survey showed that about half of the engineers use social media on a regular basis. The survey showed a correlation between young age and use of social media. The most common social media sites where social networking sites such as Facebook and LinkedIn. Most engineers are of the opinion that social media does not contribute to their work in any way, but that social media could have potential at RTR if it is implemented right. The survey also showed that about half of the engineers do not feel comfortable with using social media. See appendix 1 for results in graphs.

4.2 Pilot Study for Social Media in a Product Development Project

In order to "take the temperature" of the engineers' willingness to adopt social media and to investigate if a social media tool could create value in project development at RTR, a pilot study was conducted. A new product development project with the project team spread on different sites in Sweden, Russia and the USA was chosen for the pilot study. This meant that the team had the challenge of geographical distance and time difference.

The corporate social networking site Yammer was chosen as the tool for this project. Yammer is a site that very much resembles the social networking site Facebook, with the biggest difference that only people with the same corporate e-mail address are allowed in the same network, to protect the information that is shared. The decision to run a pilot with Yammer was taken by management who thereby supported the tool.

Everyone in the project team, including the functions of software engineers, mechanical engineers, electrical engineers, test engineers, approvals, purchasing, marketing, operations, project leaders, project owners and the management team, was invited to Yammer and asked to join a project specific private group. At first, the project team only received an invitation to Yammer without any further introduction on how this tool could be used or the purpose and benefits of it. This did not lead to any activity in the project group. After a few weeks time an introduction was held with the whole project team where the benefits of Yammer were presented in relation to existing communication tools (see figure 10). A team member from another Emerson company that already uses Yammer was invited to the meeting to present how they use it and the success they had had. The introduction meeting also included training of the basic functionality and settings in Yammer. The project leader presented in the meeting what Yammer should be used for;

> ***Microsoft Office Communicator at RTR***
> *In the pilot project at RTR, the employes were equiped with the chat program Microsoft Office Communicator. The implementation of this communication tool was problematic and getting help from the IT-department to fix the problems turned out to be difficult. The reason was that they did not have the resources to support Communicator.*
>
> *The result of the problematic installation, which resulted in many employees never receiving access to the tool, was a lot of dissatisfaction and mistrust among the employees.*

- Posting status updates on what tasks the team members are working on
- Tasks they need help with
- Team inquiries
- Group announcements

E-mail	Communicator	Yammer	Phone	Meeting
• Sensitive information • People are used to e-mail • Formal Inquiries • External communication	• Informal and quick • Quick responses enables clarification questions • See when people are available	• Discussions with many people • Responses are collected in one place • Questions without specific recipient • Transparent • Project status visible to all	• Secure getting an answer (as long as they are at their desk) • Clarifying questions • Hear nuances in the language	• See people and interpreting body language • Make sure everyone is on the same page • Connect and bond with people

New functionality

Figure 10: The benefits with different communication tools. The new functionality enabled by social media is highlighted

After this introduction meeting, some team members started to engage in the Yammer group and some questions, status updates and announcements were posted. Most posts received feedback from several people. Also, answers to questions and other comments were commented on and the information was in this way corrected or added to, making sure that the person who asked the question got the correct information from many points of views. The tool proved to be valuable right away when a future problem was brought to the surface much earlier than it would have without the

communication between two function members on Yammer. This visualization of information potentially will save RTR two weeks of rework.

However, a couple of days after the introduction meeting the activity started to decline again. Also, not everyone started to use the tool. Only about 30 % of the project team members had been active in the Yammer group one week after the introduction meeting.

The attitudes towards yammer and social media were varying in the project team and some expressed concerns about having yet another tool and the risk of losing productivity due to disturbance if too much irrelevant information would be posted. But even though they were critical it was just an attempt to be realistic and they were still curious and willing to try. One example of this was one employee giving the following feedback: *" I'm an old man who doesn't understand what all these tools (Yammer, Communicator etc.) can contribute to. In my eyes they mostly seem to be a pastime that reduces efficiency. Phone, cell phone and e-mail are enough! But feel free to convince me that I am wrong".* In the project team there were also many very positive people who really could see the benefits with having a common place for collaboration. Among the 30 % of team members who started to engage in Yammer were both initially positive people as well as initially negative people.

4.3 The New Product Project

The aim of this study is to create recommendations for a project that will explore a new opportunity. This section will present an overview of the current situation and overall strategy in this project.

Market research is currently taking place to get a better customer understanding for the new product RTR is planning to develop. Based on the results of this market research, a new product will be developed. Exploring this potential opportunity is of strategic importance for RTR. The objective is to develop a strong product for this new opportunity and then expand globally when the products are established. Speed is key for the project.

The technology for this new product line will, to as great extent as possible, be based on existing RTR know-how. New employees will be added in different countries to support this new product and a group of engineers from existing RTR sites will be needed to spend time in new locations to train the local employees. Support will also be provided remotely from existing sites. This means that the project will entail a lot of knowledge sharing between engineers on different sites as well as within each division.

5. Social Media in the New Product Project

This chapter will link the Elements of the Topic with the empirical findings at RTR to address the research questions. The focus will be on how social media can create value for RTR in the new product project and what they will have to consider in the implementation. A more general focus and answer to the research questions will be given in the discussion in chapter 7.

5.1 New Product Project Analysis

This section will analyze the situation at RTR and the new product project based on the framework in chapter 2. The analysis will account for the new product project's strategy and goals, how the project would create value, the hardware and infrastructure, in what ways people communicate and use applications as well as the culture and attitudes.
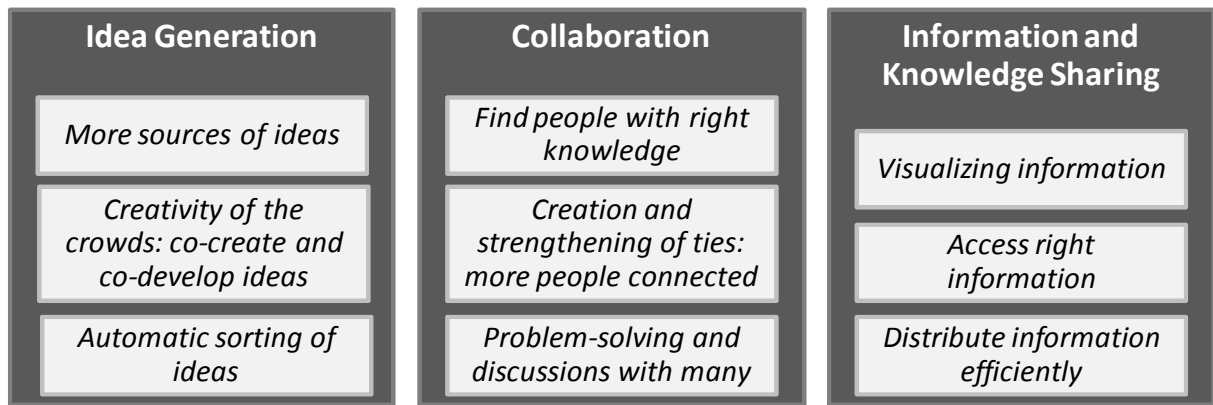
5.1.1 Overall Strategy

When considering what value social media can bring to the new product project, it is important to first consider the overall strategy and goals. As Shuen (2008) points out it is important to remember that Web 2.0 tools are subordinated to the overall goal of the firm and to succeed it is needed to identify what it is that creates value within the company.

The strategy is to develop products based on existing knowledge within the company (including many different divisions) and to train people in some new locations to support the product. This results in needs for knowledge transfer and new networks between RTR at existing sites and the new sites. While traditional communication channels struggles to cope with the stakeholders involved, Web 2.0 technologies such as social networking sites have no difficulty scaling to those levels (Harvey, 2010). The ability for all users to contribute allows a project team to engage with and gain feedback from many more stakeholders than possible using traditional technologies (Harvey, 2010). By applying these features RTR would be able to faster get up to speed around the world and use the comprehensive knowledge existing within the company. By leveraging social media capabilities, interaction between much more people would be facilitated and the process of getting products to market would speed up. And as Shuen (2008) puts it; *"To survive and compete, companies must quickly leverage and capitalize on the range of internal and external capabilities, know-how, know-who, and networks needed to solve problems faster, better, and cheaper".*

5.1.2 Value Creation and Work Processes

When deciding on what social media to implement, RTR needs to carefully consider how they could support the value creation and work processes. According to Shuen (2008) companies need to identify how the business model creates, captures and redistributes value. In the new product project, value creation lies in developing products that answer to the needs that have been identified. Figure 11 summarizes the value social media can create for the new product project, which will be presented in this section.

Idea Generation	Collaboration	Information and Knowledge Sharing
More sources of ideas	*Find people with right knowledge*	*Visualizing information*
Creativity of the crowds: co-create and co-develop ideas	*Creation and strengthening of ties: more people connected*	*Access right information*
Automatic sorting of ideas	*Problem-solving and discussions with many*	*Distribute information efficiently*

Figure 11: The value of social media in product development

Idea Generation

The new product project has a need for coming up with new ideas and speed is key. Social media can improve the ability for RTR to come up with new ideas for products fast. Social networking sites make it possible for people to participate in the ideation process regardless of geographical location. Also, people from different functions can be connected to comment on ideas which lead to increased variance and quality of ideas (Karlsson, 2010). Karlsson (2010) argues that utilizing the creativity of the crowds generate the needed breakthrough ideas much faster. The great value of social media lies in connecting many people who can build on each other's ideas (Karschnia, 2011). Ideas are visualized in the tool and people can cooperatively develop the ideas through comments. The comments on ideas will also create an automatic sorting function, which speed up the identification of which ideas could potentially become valuable.

Collaboration

In order to succeed with multi-site collaboration in the new product project, RTR can apply social media to make it easier to find people with the right knowledge in the product development process. Rooksby (2009) identified that social media can be useful for locating a person who knows the answer to a question rather than for finding the answer to the question itself. This would be extremely useful in the development process for the new product project, where many questions regarding the products will appear. Social media can make collaboration more efficient by creating weak ties between groups and thereby allowing the team to reduce rework, improve decision-making and minimize sub-optimization (Berg, 2011). Connecting the employees and making information flow are the keys to collaboration and to operational excellence in the global and connected world (Berg, 2011). By making sure that the new employees around the world are connected to employees on existing sites in a social media this can be achieved. Also, problem-solving has been identified as a key aspect of product development (Barnett, 1998). Social networking sites are great communication tools that can allow all members on different sites in the new product project to be involved in problem-solving and discussions at the same time (Harvey, 2010). A social networking site can also facilitate cross-functional collaboration, which according to Edmondson and Nembhard (2009) is important for high performance in product development.

Information and Knowledge Sharing

The products that should be developed in this project will be based on existing RTR know-how which creates a need for knowledge and information transfer between RTR in Sweden and global development sites. The teams that need to share knowledge are separated by time, distance and

culture, which according to Berg (2011), creates structural holes between them, which hinder efficient exchange of information. Berg (2011) emphasizes how social media tools can enable strengthening of the weak ties between groups, which would allow RTR to increase the organizational learning and become better at reapplying existing knowledge.

Social media can facilitate knowledge and information sharing (Dalcher & Singh Sandhawalia, 2011). For one thing, social media visualizes information and can make problems rise to the surface early on. This proved to be valuable in the pilot project when information was visualized in the project group on Yammer and an employee from one function could react on the information posted by an employee in another function, revealing a future problem much quicker than would have been possible without Yammer. A social networking site where all project members are connected can also help ensuring that the correct information is spread. By visualizing two people's conversation in the group, others can react to the information exchange between them if something is not correct. This was also an advantage of the pilot project in Yammer.

5.1.3 Hardware and Infrastructure

If social media is seen as an innovation that needs to diffuse within RTR, hardware and infrastructure needs to be considered. This is supported by Hugos & Hulitzky (2011) who state that Web 2.0 is enabled by technology. At RTR the use of stationary phones and computers result in people being hard to reach when they are not sitting at their work station. This is a possible hindrance for the diffusion of social media since one of the main benefits will be taken away, the accessibility (Smith et al., 2011). There are also opportunities with the capacity of the RTR's network and hardware, to speed up applications. A slow computer has a great impact on employees' patience with new applications and needs to be considered. It will be important for RTR to further investigate how their hardware and infrastructure can affect an introduction of a social media tool. RTR will also have to make sure to align the IT-department's goals with the social media strategy, further analyzed in 5.3.7 Support.

5.1.4 Applications and Communication

At RTR communication is mainly carried out through face-to-face conversations, e-mail or over the phone. This leaves room for communication many-to-many. Conversations in social media can be *one-to-many* as well as *many-to-many* which is a great advantage that distinguishes social media from many other communication tools (Smith et al., 2011). Some of the RTR employees find their full e-mail inbox to be a big burden and sometimes hard to structure. By replacing some of the communication through e-mail with a social media tool it would be easier to structure the discussions and hopefully the amount of e-mails sent would be less.

For the pilot project two new tools were introduced to extend the existing communication tool box for product development project teams, see figure 12. According to McAffe (2006) it can be hard to convince people to use social media tools, when e-mail is the incumbent tool that people use, even though it is clear that new tools can add value. From figure 12 it can be seen that Communicator and Yammer added new value adding functionality to the communication toolbox, but still it was hard to convince employees about the advantages over e-mail.

E-mail	Communicator	Yammer	Phone	Meeting
• Sensitive information • People are used to e-mail • Formal Inquiries • External communication	• Informal and quick • Quick responses enables clarification questions • See when people are available	• Discussions with many people • Responses are collected in one place • Questions without specific recipient • Transparent • Project status visible to all	• Secure getting an answer (as long as they are at their desk) • Clarifying questions • Hear nuances in the language	• See people and interpreting body language • Make sure everyone is on the same page • Connect and bond with people

New functionality

Figure 12: Communication tool box at RTR

The current way of using SharePoint affects people's attitude towards new tools. SharePoint was introduced at RTR a couple of years back but the use have been limited due to that it is slow and the content has not been structured. SharePoint has become a new storage of documents and many of the social media related functionalities as wikis and Forums are currently not in use. As Rooksby (2009) recognizes it is important to consider what the employees think about the applications they are already using and how they actually use it. RTR would need to go over its usage of SharePoint to make sure that it would be a complement and not redundant with new social media tools. RTR should also clearly state that new social media initiatives will not repeat the same mistakes as in the SharePoint release, thereby handling some of the negative attitudes towards new tools.

5.1.5 Culture and Attitudes

In line with Stair and Raynolds' (2011) argument, RTR has to ensure acceptance of the tools in order for the implementation of a social media in the new product project to be successful. 80 % of the employees think that social media tools could be helpful to RTR. If the reason for the failures of social media initiatives at RTR is due to culture and attitudes is hard to tell. However there has been a great emphasis by the employees on need to prove the value and benefits of the social media tools in order for them to be adopted. This shows that the employees do not immediately see what benefits social media can bring. In the pilot study at RTR, Yammer was not used at all before a presentation with the value and how to use it was provided. This is in line with Stair and Reynold's (2011) arguments that people will only start using a tool if they perceive it as useful. Attitudes toward the tool are also affected by how easy it is to use, which will become an important aspect to consider before implementation.

Another important aspect to consider when creating strategies for social media is creating a culture where people are willing to share knowledge (Stair & Reynolds, 2011). As identified by Shuen (2008) there is a need for a sharing culture to make social media tools work. One challenge that might arise in the new product project is to get the employees to share knowledge with their new colleagues in new locations around the world. Shuen (2008) argues that people might be reluctant to share since information end up with those that have the ability to use it. Whether this is the case at RTR has so far been hard to assess. However, some concerns were raised when RTR moved development to Russia. In this case, that problem was solved by assuring the Swedish engineers that by teaching their Russian colleagues they would be able to have more interesting job tasks and increased

36

responsibilities themselves. In this way knowledge sharing was rewarded. The same rewards for knowledge sharing will be important in the new product project as well.

5.2 Needs and Challenges

This chapter aims at summarizing the findings from the analysis of the new product project and presenting the needs that have been identified through the analysis together with the challenges that will need to be addressed in order to succeed with a social media initiative.

The following needs have been identified from the analysis:

- Structured approach for collecting ideas to new products
- Knowledge sharing between different functions
- Knowledge sharing between different divisions
- Knowledge sharing within functions
- Knowledge sharing in product development teams
- Status updates in projects for direct and indirect stakeholders
- Repeatedly asked questions (support) from external functions need to be addressed more efficiently

The analysis has also identified a number of challenges that will have to be addressed in order to succeed with social media in the new product project:

- Inflexibility of hardware
- Capacity of infrastructure
- Current use and favor of e-mail
- Current use and attitude towards SharePoint
- Attitudes towards social media
- Attitudes towards sharing

5.3 Social Media Strategy for the New Product Project

This chapter addresses the identified Needs and Challenges and analyzes what social media could do to fulfill the needs and what has to be done in order to overcome the challenges. The analysis is summarized in the next chapter where recommendations for the new product project are presented.

5.3.1 Functionality

The new product project would gain from many of the functions available in social media, however to start off small might increase the chance of success. To sell RTR a complete package of tools and functions might be hard due to skepticism towards unproven new tools. In the pilot study when Yammer was introduced, only a selected number of functionality in Yammer that would create immediate benefit was introduced. This made it easier for new users of social networking sites to adopt the new tool. The number of functions can later be extended after needs develop. Shuen (2008) argues that since it is hard to predict what the users want it can be useful to start off small to find an initial audience which can provide feedback and hopefully find the next big thing. To start off small where the needs are great and where people have positive attitudes towards new tools would help create successful cases that could be reapplied. Examples of groups in the new product project with an immediate need for a social media tool are the software development and marketing.

Wikis would answer to the need for training and sharing of information between different sites. Safko (2010) argue that wikis can help companies in their training of employees and provide a platform for collaboration. By applying this to the new product project, newly hired or people in new roles can be helped by more experienced employees providing them with answers. At the same time this would help more experienced employees by screening out repeatedly asked questions and thereby limit the time spent on answering questions.

When project team members are located across the globe, as they are in the new product project, there is a need to replace the face-to-face interaction with other kinds of communication. Groups in a social networking site for project teams can keep team members updated and bring people closer. Project status can be visualized with status updates in the group and information can be liberated from e-mail inboxes when team members can converse in the group instead of via e-mail. This means that people can access the knowledge they want, since everything is available. A group also collects discussions in one place.

With social networking tools and user profiles the number of weak ties between RTR divisions has potential to increase and the search for expertise would be simplified. Social networking sites can be used in the new product project to make new employees feel connected and part of the organization (Safko, 2010). Newly hired employees around the world will have to find people with the right knowledge easily and create close connection to the other RTR sites. By applying social networking tools this can be facilitated.

5.3.2 Incentive Structure

In order for RTR to get the social media tools to work according to their intended strategy, there is a need for an incentive structure to support it. Incorporated incentives in social media, such as psychological motivation for using the tool, act as incentives in different ways and by aligning the tools and its use with work processes will create incentives for use. Where there is task interdependence and focus on team work, which it is at RTR, collaborative tools have a greater chance to be adopted, especially if critical mass is achieved. If a person's colleagues are adopting the new technology, he is forced to do it in order to do his job (Lin & Ha, 2010). On top of that external incentive structures such as a raise in salary or promotion should be applied by making sharing a prerequisite in RTR's employee evaluation.

If enough users are actively using the tools, incentives as group belonging described by Kohn (2010) or affiliation by McLelland (1987) would increase the likelihood of adoption. Indirectly, critical mass will also create increased incentives for adoption due to the difficulty of doing a good job from the outside. McLelland (1987) has identified *"the need for achievement"* as a motivator and Parek (1986) the need to be informed and to observe. If the colleagues are active in a forum where information needed to do a good job and stay updated is shared, further incentives for use are created.

By being aware of the psychological motivations; feedback, attention seeking and need for achievement, RTR management can add another layer of incentives designed with the functionality of social media in mind. According to Passer and Smith (2004) people are motivated by receiving feedback. Kohn (2010) argues that feedback is the foundation for ongoing, engaging discussions that hopefully will go on for a long time. Feedback is also a good way to steer people towards a desirable behavior (Kohn, 2010). So by using the functionality, such as Likes and Comments, management can create incentives for use and participation by actively participating in the social media domain.

Besides incentives that directly include the psychological motivations of social media or that consider how to use the built in functionality, there are external incentives that will affect employees' usage of social media. Tönnies (2002) have identified that businesses are groups driven by self interests and in order for them to work in line with the companies best in mind there needs to be an incentive structure to support that. RTR employees have to feel that they gain from sharing their knowledge, since this is a prerequisite for realizing the full value of social media. Fullmer and Buckman (1999) argue that as long as those that share their knowledge get promoted, no other incentives will be needed. RTR needs to actively consider these aspects and make sure that sharing is one of the parameters that is evaluated when incentives such as promotion or raise of salary is considered. This can hopefully also result in a more community oriented approach which Ben-Narusch (2009) argues is change taking place in many companies today.

The pilot project at RTR has indicated that incentives for use are created with increased amount of use. At first no one contributed to the site, but as soon as the number of posts increased, so did the number of users. It is important for RTR to keep the forum alive with the use of active users, in order to create incentives for outsiders to join. Without this incentive the tools will probably not live long. Since the time spent piloting Yammer has been limited it is hard to tell how the overall culture affects sharing. Critical mass and continuous use would have to be established first to be able to assess the willingness to share.

5.3.3 Training

During this study two main aspects of training have been identified. Traditional training on how to use the tools and training on realizing the value of the tools. As with any innovation that needs its user to change a behavior it can take a lot of explaining to get the users to adopt what is new (Moore, 2006). Due to the low numbers of people who are experienced users of social media from their private lives (40% of the RTR product development employees are active on any kind of social media) some education needs to be conducted to teach people how to use the tools. However, due to people's extensive knowledge and experience with technology in their work, it is expected to be easier than teaching employees about the values these new tools can create.

In corporations where the incumbent collaboration technology, e-mail, is well established, products like social media tools represent significant technological leaps forward and are therefore potentially quite valuable, however it might take a lot of work from champions to evangelize, demonstrate, coach, train and explain (McAfee, 2009). The experience from the pilot study very much supports McAffee's argument. Few of the employees adopted Yammer right away and the main doubt among employees was whether it created value compared to existing technology. There were plenty of discussions about the difference between social media and e-mail. The pilot case at RTR shows that the main challenge for adoption is to get employees to understand the value (that is how to use the tool in a beneficial way) rather than teaching them how to use the tools. This is in line with Stair and Reynold's (2011) argument that in order to get people to accept a tool and start to use it, it needs to be perceived as useful and easy to use. In order to prove the value of the tools it is useful to refer to previous successful cases. This was done in the introduction of the pilot project, where RIGID was invited to explain how they had benefited from Yammer. It will be equally important for the new product project to show successful examples to the employees when implementing social media in the project.

Even though coaching to get people aware of the value of the social media tools should be the main focus, people also need to learn the functionality of the tools. The most efficient way to do this has during this study appeared to be learning from current users. This is in line with Fullmer and Buckman (1999) who describe a way of learning that is very social. People learn the tools through friends or existing users by adopting their way of using the tools. By inviting a few users to set the tone and a god example for usage of Yammer at RIGID, the rest of the group could adopt their way of working by imitation. This approach proved to be successful and is one way for people to learn the tools which RTR could apply in the new product project.

5.3.4 Strategy for Reaching Critical Mass

In order for RTR to gain any value from using social media tools in the new product project they need to achieve a critical mass of users, which is in line with Harvey's (2010) argument that in order to get communication benefits realized, gaining and maintaining users will be important. However, depending on the characteristic of the collaboration tools and its intended use, this critical mass will vary. For a development project that applies a project site such as Yammer for updates, it is critical that all members are users. But if the tool is a wiki for sharing knowledge there is not a need for everyone to participate, only enough people to keep the forum up to date and active.

The goal should be to create viral spread. Shuen (2008) suggests an approach where factors are identified that can trigger socially influenced viral distribution and buzz, to reach network effects. That is what Facebook did when they first launched (Kirkpatrick, 2010). For RTR and the new product project this would mean to provide a few people with the tools, preferably employees who are respected within the organization, and make them create the buzz which can trigger viral spread. This is supported by Lin & Ha (2010) who state that if critical people within the organization are using the tools, the adoption is likely to be higher. Their studies further showed that heavy use from supervisors led to higher adoption among employees (Lin & Ha, 2010). This emphasizes the need for RTR's supervisors to support the social media initiatives.

However, in some situations viral spread may not be enough if people are not willing to adopt or it is crucial that the majority of employees are users. Then a more authoritarian approach may be required. Roger (2005) explained that groups usually adopt innovations via a social decision (which could be compared to the viral spread) or authoritarian decision. Usually, the second is more effective. However it could be expected that this approach would lead to more resistance than when the decision is a social one and thereby something that RTR should be careful applying.

5.3.5 Processes and Owners

Successful adoption of social media requires the use of these tools to be integrated with the flow of users' work (McKinsey, 2009). During the pilot study at RTR, the chat program Microsoft Office Communicator was introduced. People started using it right away, since it only simplified something they already were doing, e-mailing. This tool was thereby very well integrated with their work processes. Introducing a tool such as Yammer or a wiki for collaboration within projects or support to other divisions will require changes in existing processes, since the work flow will change. Especially in the case where a wiki is used as support tool. There, the users will have to get used to visit a web page instead of picking up the phone. It will be important to make sure that the work processes in the new product project are in line with the tools that are introduced and that when needed, new processes are developed.

It is also important to have owners, caring for the tools and the outcome that these generate. Karlsson (2010) argues that the owners need to that have the resources enough to care for the outcome. When implementing for example and ideation tool someone has to be responsible for the ideas and for making sure that the ones with potential are implemented. By showing the employees that good ideas are cared for, incentives for participation and trust in the system are created. At RTR today there is no systematic approach for handling ideas outside projects. Since ideation is something that RTR is in need for in the new product project, a systematic approach to managing ideas may be an opportunity. Many companies are capable of collecting the feedback, but the challenge is often to make it reach all the way to product development, where improvements really can come true (Fundin & Bergman, 2003).

Of course it is equally important to have owners for other tools as well and the employee with the greatest need for the tool should be made owner. As Lowell et al. (2007) argue, owners can help create discussion and interaction in the tool and by making the person with the greatest need for the tool responsible for it, increase the likelihood for it to do well. The owners might need additional help from "evangelists", to demonstrate the advantages of the new tools and create usage. In many cases these evangelists will be younger employees and new entrants to the workforce, since members of generation Y are much more likely than older workers to be comfortable with these tools (Stair & Reynolds, 2011). Especially at RTR where a large percentage of the employees do not use social media today, the evangelists will play an important role. This was made clear in the pilot project when the participation rate on Yammer quickly declined after introduction. This was because there was no key user in the project team taking the role of actively posting information in the group providing a good example and illustrating the value that can be created. During the process of introducing the social media tools in the new product project at RTR, some people that fit the description of a key user have appeared and would be suitable for the role.

5.3.6 Guidelines and Policies

RTR does currently not have any guidelines or policies specifically for internal collaboration in social media. However, the other Emerson company, RIGID, has created guidelines and with some adjustments these could be adopted in the new product project. Guidelines for which tools to use for different kinds of communication and what is appropriate use of social media would be helpful for RTR. This is supported by Harvey (2010) who argues that policies can help people realize the benefits of different communication tools by providing guidance for what kind of communication they are suited for.

In the pilot project, some employees were surprised by how Yammer was used by employees in other divisions, where some were making posts about things not concerning work. This has created reluctance towards adoption, which can have negative effects. Social networking sites are generally more informal than traditional approaches and after something is unleashed, it is difficult to take it back (Bernal, 2009). The lack of guidelines for use of Yammer has had a negative effect on adoption in the pilot study. By making it clear that that is not the intended way to use social media at RTR, guidelines could help create trust in the new tools in the new product project.

5.3.7 Support

Just like Stair and Reynolds (2011) argue, without support from the organization, social media initiatives will not succeed in the new product project. At RTR this includes not only management,

but very much the IT department. In previous attempts to introduce social media at RTR the IT department did not support and the initiative was cancelled. Also, in the pilot project, when Communicator was introduced, the IT department did not have the resources to support problems with installation. This created mistrust and negative attitudes because everyone did not get access to the tool. Choosing tools that are independent and web based, such as Yammer, would decrease the need for support, but as long as the tool demands installation of any kind the IT department needs to be involved. The introduction of social media tools presents a new approach to IT, where the users demand the tools instead of the IT department pushing them out. It would help the new product project to consider the IT department as a stakeholder that needs to be aligned in the decisions, instead of considering them as a supplier.

It has already been argued in the section on critical mass that the support from management increases adoption. In the implementation of a social media in the new product project, managers at RTR should actively support and use the tools to make their departments more likely to adopt the tools. This is in line with Stair and Reynolds' (2011) argument that in order to get acceptance for a new tool, top management needs to support it and use it themselves.

6. Recommendations for the New Product Project

The recommendations for the new product project at RTR presented in this section are based on the analysis in section 5. The recommendations include which social media tools the new product project should apply as well as critical considerations.

6.1 Functions

RTR should implement a social networking site and a wiki for the new product project.

- A social networking site should be made available for all team members of product development. The reason is to;
  - o Improve collaboration and problem-solving in a project specific group where discussion threads can collect input from many
  - o Make it easier to find the right competence in another site with the help of employee profiles
  - o Enable people to tag and like content in order to notify people of important information and to give feedback
  - o Collect status updates or micro-blogging submissions in a news feed to visualize project status to all team members
- A wiki should be implemented to facilitate knowledge sharing between engineers as well as between all divisions
- A social networking site should be implemented for idea collection. The tool should be used to gather ideas from all employees

	Engineering & Development	Supply Chain	Operations	Marketing & Sales
Collaboration, Communication, Problem-solving & Visualization	Social Networking Site	*Specific **groups** for teams to collaborate and solve problems* *__Profiles__ to quickly find the right competence* *__Threads__ to get input from many* *__Tag__ to give notifications* *__Like__ to give feedback* *__News Feed__ and __Status Updates__ for visualization*		*Focus on product development teams*
Knowledge Sharing	Wiki			
	Wiki			
Idea Generation	Social Networking Site			

Figure 13: Illustration of the social media tools recommended for RTR in the new product project and which functions to include in each tool.

6.2 Incentive Structures

The tools will provide internal incentives for use based on the psychological motivations that the social media functions stimulate. However, external incentives should be utilized as well. This could be done by;

- Reward knowledge sharing, collaboration and reapplication of work with promotions and financial means
- Members of the management team could comment, like and give feedback in the tools

6.3 Training

Training is important to ensure that people use the tools and that it is used in the intended way. In order to accomplish this, RTR has to;

- Inform the users about the purpose of the tools and highlight the value and benefits they can provide
- Provide basic training of the functionality for those who need it
- Hand-pick a few key users and give them access to the tool some time before the entire group. These key users should "set the tone" for the communication in the tools and provide a good example
- Have members of the management team go in and comment, like and give feedback in the tool to promote positive behaviors

6.4 Critical Mass

In order to ensure that the sufficient amount of employees adopt the tool and use it on a regular basis RTR has to;

- Clearly communicate that it is required to use the tools (for the tools that it is critical to have high usage)
- Ensured and communicate the incentives (for the tools that are nice to have, such as wikis for knowledge sharing)
- Ensure that everyone on all sites have access to the tools
- Make the tools in line with the work processes to facilitate the transition to the new tools for the employees
- Make sure that critical employees adopt the tool, such as managers, people who act knowledge hubs and others that have impact on knowledge transfer. This will increase the credibility of the tool

6.5 Processes and Owners

- The intended use of the tools should be in line with the work processes
  - The ideation tool should have a clear process for taking care of incoming ideas and bringing potential ideas all the way to realization
  - Good ideas should be rewarded
- Owners that are responsible for the tools should be appointed
  - For the ideation tool an owner should be appointed to be responsible for the tool, for the output and for posting directed idea challenges to promote generation of new ideas
  - The wikis should have designated owners
- Crucial for making a social media tool sustainable and valuable is to have key players in the development process act as evangelists and actively contributing to the tool. These key users will both create value in the tool by providing important information and their activities will set a good example for the rest of the team

6.6 Guidelines and Policies

- Guidelines should be set for which type of information should be communicated through which tool
- Guidelines should also be set for how to communicate in order to ensure courteous communication that is secure and efficient

6.7 Support

- Management should support the tools in order to create trust for the tool among users
- Technical support should be ensured
    - Hardware and infrastructure need to have enough capacity to carry the tools
    - IT personnel should have time reserved for support of the new tools to be able to quickly handle problems that arise

7. Discussion

This section will provide a more general discussion on how companies with globally distributed teams can apply social media for internal collaboration to create value in product development. This will be done by first discussing the value that social media can contribute to product development, followed by a discussion on important considerations for an implementation.

7.1 The Value of Social Media in Product Development

With globally distributed product development teams the need for good communication tools increases. When colleagues are geographically separated, collaboration barriers are created by culture, distance, languages and time differences. To overcome these barriers there is a need to make colleagues able to communicate efficiently. This can in many ways be achieved by the functionality of social media, which increases weak ties and creates visibility. By lowering the collaboration barriers, having globally distributed teams can become a competitive advantage due to the diversity that they bring.

With social media the number of weak ties within a company increases without considering which function or division employees belong to, bridging commonly existing silos. Social networking sites at work facilitate connections that would not have been possible otherwise due to geographical location or functional belonging. By connecting employees who would otherwise not co-operate, the chances increase that new ideas and knowledge transfer will occur and companies would thereby dig into all the collective knowledge they have. Especially for a company such as Emerson which has so many cultures in one company due to their conglomerate structure, social media can be an important tool facilitating reapplication of existing knowledge.

Increased connectivity creates good conditions for new ideas to grow. It has long been a said that innovation is born through new combinations of knowledge and that innovation is more likely to occur in an unstructured setting. Therefore social media offers a new opportunity by disregarding existing structures and creating new settings for collaboration. This includes the possibility to include customers and external stakeholders in the innovation work, something that can be of great value. Social media also facilitates improvements of posted ideas through comments and tags and these functions create a built-in sorting mechanism that can help separate great ideas from the mass.

Social media frees information from people's e-mail inboxes. From this study it has become apparent that some RTR employees had already implemented wikis at work, using them regularly. However, their wikis were their e-mail inboxes. By changing this habit and publically posting information in forums or wikis, where more people can access the information, the pressure on people's time and e-mail inboxes would decrease. Frequently asked questions is not a value add to the organization and by applying social media to make answers to questions available to more people, time could be more efficiently used.

Social media helps create visibility. Due to the accessibility of social media, information can be made visible to those not immediately involved in a discussion, but who are in need of the input just the same. This can be compared to the current use of e-mail, where a lot of the information is not made visible to people who need it due to risk of creating too much spam, social media has advantages. By providing visibility in a shared forum such as Yammer, people will be kept up to speed on what happens in the project and can identify problems and solutions faster.

Visibility becomes very important when off shoring increases. In a world were off shoring becomes more natural to companies; there is a need to create interaction to bridge long distances. By using social media the goal is to re-create the "Fika-break"[1] all day long in cyber space, making it natural for people, regardless of location, to interact on a daily basis. By having tools that constantly provide lively discussions and updates, people can get the feeling that they all work in the same office, even though they do not.

So to summarize, social media can help product development through creating a wider platform for ideas, strengthen ties within projects to increase collaboration and facilitate the knowledge transfer to new project members or people stuck with problems. And while doing so, the psychological distance between colleagues in globally distributed teams decreases. Social media can thereby improve lead times and ability to come up with new successful products. Also, social media can hopefully create a more fun work atmosphere.

Besides creating an immediate value to product development, there are other considerations that relate to current trends in society: people changing jobs more frequently and the generation Y that are not used to communication by e-mail. There is a contradiction to the work arena today with jobs requiring much more detailed expertise, while employees want to change jobs more frequently. This contradiction calls for efficient strategies for how to get new employees up to speed. What social media and the new information society offers is immediate access to knowledge. To find the accurate knowledge used to be a skill, but this has now become a commodity. By implementing tools that will make quick updates possible, companies will be better prepared to handle the pressure from job rotation.

There is a new generation growing up that is not used to e-mail, soon to become the work force. Generation Y does not have the same idea of what the office is as current work force does. For them the office is where they are with their laptop, mobile phone and wireless connection. With that, new possibilities open up. To the generation Y being online and multitasking between different media is standard and they will be more suited to use social media tools than e-mail.

7.2 Critical Considerations for Implementation of Social Media

Social media should not be seen as a software application or an IT-issue; rather it should be seen as a *way of working.* The company should not strive to implement social media tools; rather it should strive to become a more knowledge sharing company. Social media tools are enablers of sharing, but people will only do so if it is in the culture as well as if it is part of their own success and what they are paid to do. The culture and attitudes therefore have to be assessed and if the culture does not support sharing knowledge, this has to be dealt with before an implementation of a social media can be considered.

One of the greatest insights from this study is that social media tools are just tools. They cannot be implemented just because they are nice to have or because other companies are using them. If the tool does not meet a need in the overall work processes, it will not be adopted by the employees and therefore cannot be successful. This means that firms need to make a distinction between tools that

---

[1]Fika is Swedish for coffee break. In Sweden it is tradition for employees to take a coffee break a few times a day. This is a time when people get together and can discuss issues informally face-to-face. The fika-break is sometimes referred to as; "*Intense problem solving over coffee".*

are *nice to have* and those that really meet the needs that the employee or the organization have. Identifying a problem and solving it, or at least reducing it, with a social media tool is the first step towards a successful implementation. The focus of a social media strategy should be on finding a way to increase effectiveness in the work processes that are helping the company to reach its overall goal. It is easy to motivate a new tool that is increasing the business value.

One important aspect of social media is the concept of critical mass. Different tools can have different needs for participation rate in order to be valuable. A wiki could (theoretically) only require a user rate of one person; the producer of wiki-content. However, a group for product development collaboration requires much higher participation in order to be meaningful. This means that the incentive structures need to be different for different tools and different contexts.

During the course of this study it has become more and more evident with the importance of incentive structures. Social media is stimulating millions of people to engage and share content every day. In people's private lives the use of social media is voluntary and the incentive for use is that it creates social value to us. In companies the values exist as well but there are also values added by the desire to achieve and to gain financially. Management therefore needs to align incentives such as promotion to the strategy for social media. To encourage sharing, people will have to be rewarded when they actually share. Management can also create incentives by acknowledging contributions done in the social media tools, which is easy and time efficient due to functionality such as commenting and likes. But above all, the strongest incentives are created by critical mass. Therefore the number one focus needs to be to achieve critical mass, which of course also is a matter of incentives.

Firms that want to implement social media tools can be sure to encounter people in the organization who are resistant towards new IT tools. It would be naive to think that changing the way engineers have been working for decades can be done without any obstacles. The work culture is often deeply rooted in the organization and can be difficult to change. To meet the resistance, it is necessary to clearly explain the value and benefits of the tools to the employees. It is not obvious to everyone what the benefits are and what the difference is between social media and other communication tools such as e-mail.

This resistance is usually correlated to inexperience with the tool. The unfamiliarity to the concept of sharing and writing status updates in a social network can seem frightening and uncomfortable to some. The organization therefore has to help these people to take the first step toward becoming comfortable with social media. It is important with successful examples inside the organization to really show the advantages. Social media is very much about social learning and one effective approach to social media implementation is to have a few selected key users who are granted access to the tool in advance. These users will *set the tone* for communication, which can act as a guideline for how to use the tool for coming users. When this has been done there is a greater chance of getting the employees on board the train with a positive attitude. Companies cannot afford to let a small group of opponents get in the way of the company development and the implementation of new tools. But the resistance cannot be ignored. It has to be handled.

All of the aspects discussed in this report as important for successful implementation of social media tools can be overthrown if one fundamental aspect is not taken care of. A prerequisite for social media initiatives is that the hardware and infrastructure are good enough to support the new tool. It

does not matter how much effort is put on changing the culture and creating incentives for use, if the hardware is not strong enough to support new tools and if not everyone can get access. Also, having a strategic IT department that understands the needs of the engineers and that has the overall goal to make development and production activities as efficient as possible, is important for an organization that want to implement social media.

7.3 Further Research

This research was conducted as a case study and thereby provides a thorough description to what the situation is at RTR. Several research methods were triangulated and the internal validity is therefore assumed to be high. However since the results are only based on one case its findings might not apply well to other circumstances. The study can thereby not tell if the value and critical considerations are the same in other companies or industries. That is a question for further research.

It would be very interesting if future research would practically test the framework developed in this study. Since social media for internal collaboration is a relatively new subject there is a need for more studies to understand the phenomenon.

Another topic for further research is to look into the effect generation has on people's inclination to adopt and be positive towards social media. The new generation of young people, which has been raised with social media and spent parts of their social encounters online, will soon enter into the work life. It is close at hand to think that when this new generation comes into organizations, it will be a whole new game field trying to implement these new types of collaboration tools. It would be interesting to see a study that investigates what difference that would make to implementation.

And last but not least. This study has taken focus on internal collaboration in product development. As the focus for companies are expanding to include external stakeholders as well, it would be interesting to find out how social media could support that transformation. That is an area especially interesting to smaller companies that does not have an as extensive amount of knowledge as the billion dollar company RTR.

8. Conclusions

Social media has great potential to create value for internal collaboration in product development. It creates value by increasing weak ties but also due to its characteristics that allows for interactivity, accessibility and the co-creation of information many-to-many. Social networking sites bridges structural holes and creates connection between functional or divisional silos. This enables faster problem-solving and more efficient knowledge transfer as well as a basis for improved idea generation. By enabling collaboration many-to-many, social media becomes an efficient collaboration tool that creates increased interactivity and visibility in teams. This enables issues to be identified and resolved early on in a project.

The value of social media tools increases as development teams become globally distributed and as a new generation enter the work force. Trends point towards globally distributed teams becoming more common and as they do, collaboration becomes more complex. The visibility that social media tools provide makes it easier for globally distributed teams to keep up to date with project status and to support each other in product development. As a new generation, familiar with social media, enters the work force the introduction of these tools becomes easier and at the same time these tools will be demanded by new young employees.

It is very important to keep in mind that tools are just tools and this study has highlighted some aspects that are in particularly important to consider for implementation. First of all there has to be a need for the tool. Social media will not create value by itself, but there needs to be an overall goal and a desire to achieve something. Secondly, success is all about adaptation. In order to achieve adaptation firms need to efficiently clarify the value social media tools bring, include key stakeholders and have sufficient support from IT.

To make people understand the value of the tools they need to understand how to use them. This can be done by basic training, but more effectively by key users that set a good example and make it easier for employees who are not as familiar with social media to follow. By identifying a couple of key users that already realize the value and who can create the benefits necessary to prove to others that they would gain from joining and that a lot of the work is already done. With good examples it is much easier for management to support the tools which is necessary to create trust. Resistant users' trust is a key aspect and it will be important in order to reach a high percentage of usage.

Important for trust is also that the tools are functioning and that users can receive support when needed. Therefore the strategy needs to be aligned with the IT department so that there can be an agreement on who owns the tools. Compared to aspects as infrastructure and hardware, social media tools are very closely connected to work processes and therefore it might be more useful to have an involved user owning the social media tool.

9. Bibliography

Acando. (den 17 10 2011). *Web 2.0 At Work - Simple And Social Collaboration Between Coworkers*. Hämtat från SlideShare: http://www.slideshare.net/marknadsstod/web-20-at-work-simple-and-social-collaboration-between-coworkers-presentation

Apter, M. (1984). Reversal Theory and Personality: A Review. *Journal of research in personality* , 265-288.

Baek, K., Holton, A., Harp, D., & Yaschur, C. (2011). The links that bind: Uncovering novel motivations for linking on Facebook. *Computers in Human Behavior , 27*, 2243–2248.

Barnett, B. (1998). Problem solving in product development: a model for the advanced materials industries. *International Journal of Technology Management , 15* (8), 805-820.

Ben-Narush, O. (2009). Defining Friendworks; Communication perspective on Social networks Types. *Communication, Creativity and Global Citizenship* , 191-208.

Berg, O. (den 4 4 2011). *The Driving Force behind Social Collaboration*. Hämtat från CMS Wire: http://www.cmswire.com/cms/enterprise-20/the-driving-force-behind-social-collaboration-010751.php den 30 10 2011

Bernal, J. (2009). *Web 2.0 and Social Networking for the Enterprise: Guidelines and Examples for Implementation and Management Within Your Organization.* IBM Press.

Björk, J. (2011). *Analyzing and realizing collective ideation in firms.* Division of Innovation Engineering and Management, Department of Technology Management and Economics. Gothenburg: Chalmers University of Technology.

Björk, J. (den 10 10 2011). Researcher at Integrated Product Development KTH The Royal Institute of Technology. (S. Ragnarsson, & L. Maria, Intervjuare)

Blank, S. G. (den 4 March 2010). *www.steveblank.com*. Hämtat från http://steveblank.com/2010/03/04/perfection-by-subtraction-the-minimum-feature-set/ den 6 December 2011

Bryman, A., & Bell, E. (2007). *Business Research Methods* (2nd uppl.). New York: Oxford University Press.

Byman, R. (2005). Curiosity and sensation seeking: a conceptual and empirical examination. *Personality and Individual Differences , 38*, 1365–1379.

Cook, N. (2008). *Enterprise 2.0: how social software will change the future of work.* Burlington: Gower Publishing Ltd.

Cooper, R. (2001). *Winning at New Products - Accelerating the process from idea to launch* (3 uppl.). New York: Perseus Publishing.

Dalcher, D., & Singh Sandhawalia, B. (2011). Developing knowledge management capabilities: a structured approach. *Journal of Knowledge Management , 15* (2), 313-328.

DiMicco, J., Millen, D., Geyer, W., Dugan, C., Brownholtz, B., & Muller, M. (2008). Motivations for Social Networking at Work . *IBM Research* .

Edmondson, A., & Nembhard, I. (2009). Product Development and Learning in Project Teams: The Challenges Are the Benefits. *The Journal of Product Innovtion Management* , 123-138.

Facebook. (den 9 11 2011). Hämtat från Facebook: www.facebook.com

Ferron, M., Massa, P., & Odella, F. (2011). Analyzing collaborative networks emerging in Eneterprise 2.0: the Taolin Platform. *Procedia Social and Behavioral Sciences , 10*, 68-78.

Forte, A., & Bruckman, A. (2005). *Why do people write for Wikipedia? Incentives to contribute to open-content publishing.* Sanibel Island: Georgia Institute of Technology, College of Computing.

Fullmer, W. E., & Buckman, B. (1999). Buckman Laboratories (A). Boston, United States: Harvard Business School.

Fundin, A., & Bergman, B. (2003). Exploring the customer feedback process. *Measuring business excellence , 7* (2), 55-65.

Granovetter, M. (1973). The stregth of weak ties. *American Journal of Sociology , 78* (6), 1360-1363.

Hansen, D., Shneiderman, B., & Smith, M. (2010). *Analyzing Social Media Networks with NodeXL: Insights from a Connected World.* Burlington: Elsevier.

Harvey, N. (2010). *An investigation into the use of social network sites to support project communications.* St. Andrews: University of St. Andrews.

Hayes Weier, M. (2008). Collaboration And The New Product Imperative. *Information Week - Research & Reports* .

He, W., Xu, L., Means, T., & Wang, P. (2009). Integrating web 2.0 with the case-based reasoning cycle: a systems approach. *Wiley InterScience* , 717-728.

Hedgebeth, D. (2007). Making use of knowledge sharing technologies. *The journal of information and knowledge management systems , 37* (1), 49-55.

Hugos, M., & Hulitzky, D. (2011). *Business in the Cloud: What Every business needs to know about cloud computing.* John Wiley & Sons Inc.

Kaplan, A. M., & Haenlein, M. (2010). User of the world, unite! The challenges and opporunities of Social Media. *Business Horizons , 53*, 59-68.

Karlsson, M. (2010). Collaborative Idea Management - Using the creativiy of crowds to drive innovation. *Applied Innovation Management* (1), 1-27.

Karschnia, B. (den 11 10 2011). Vice President Wireless at Emerson Process Management. (M. Lenerius, & S. Ragnarsson, Intervjuare)

Kietzmann, J. H., Hermkens, K., McCarthy, I. P., & Silvestre, B. S. (2011). Social Media? Get Serious! Understanding the functional building blocks of social media. *Business Horizons , 54*, 241-251.
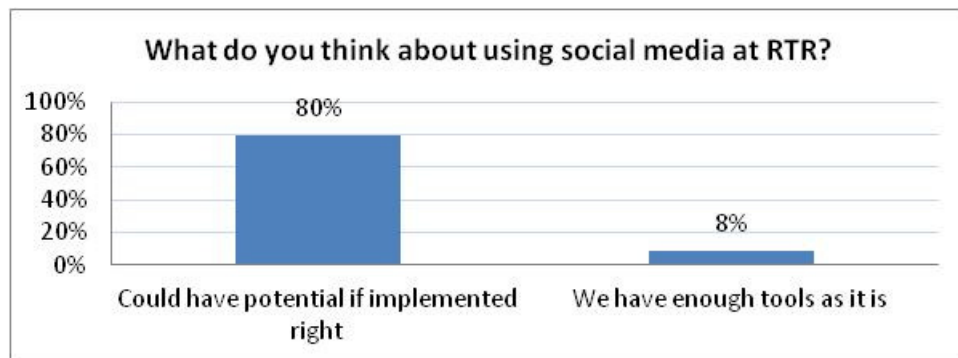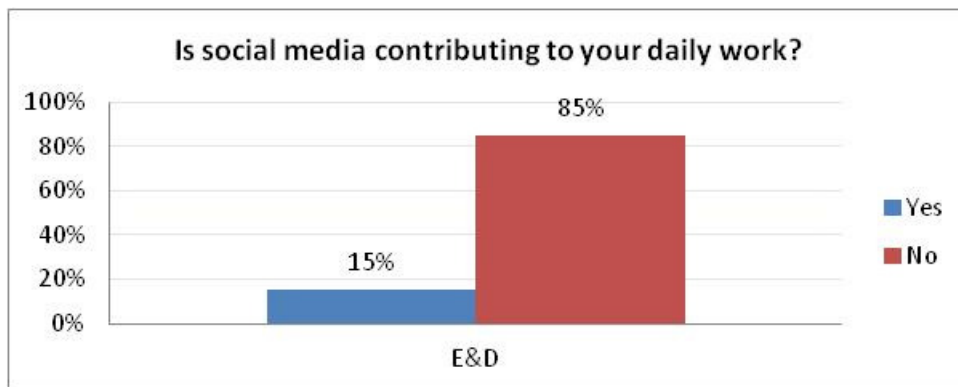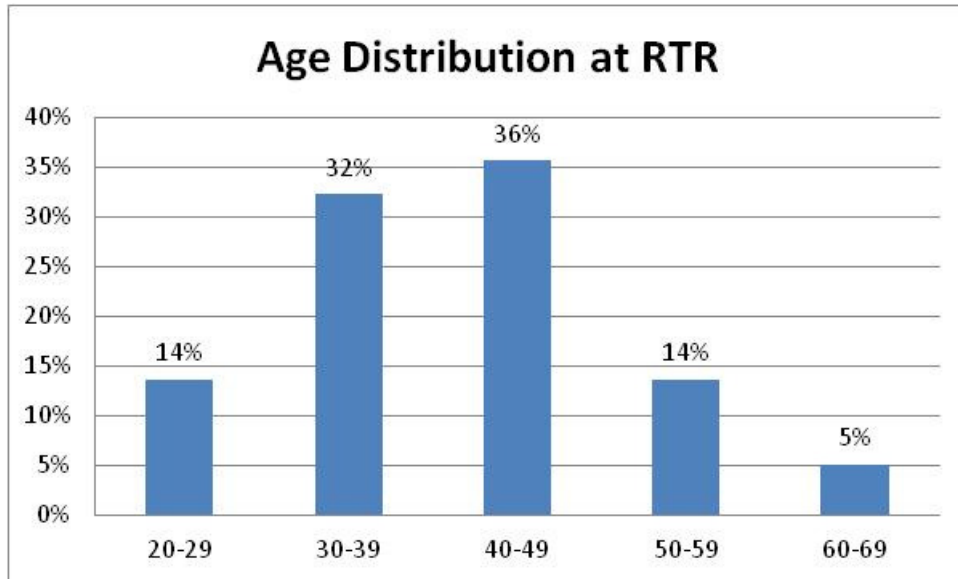
Kirkpatrick, D. (2010). *The Facebook effect.* USA: Virgin Books.

Kohn, M. (den 18 May 2010). *CompuKol.com*. Hämtat från http://www.compukol.com/blog/the-psychology-behind-social-media/ den 6 December 2011

Lin, C., & Ha, L. (2010). Subculture, critical mass, and technology use. *Journal of Computer Information Systems* , 72-80.

Lin, K. J. (2007). Building Web 2.0. *Computer , 40* (5), 101-102.

Lin, K.-Y., & Lu, H.-P. (2011). Why people use social networking sites: An empirical study integrating network externalities and motivation theory. *Computers in Human Behavior , 27*, 1152-1161.

LinkedIn. (den 9 11 2011). Hämtat från LinkedIn.com.

Matson, E., Weiss, L. M., & Bryan, L. L. (2007). *Harnessing the power of informal employee networks.* McKinsey & Co.

McAfee, A. (2009). *Enterprise 2.0: New Collaborative Tools for Your Organization's Toughest Challenges.* Boston: Harvard Business Press.

McAfee, A. (2006). Enterprise 2.0: The Dawn of Emergent Collaboration. *MITSloan Management Review , 47* (3), 21-28.

McClelland, D. (1987). *Human motivation.* New York: Cambridge University Press.

McKinsey. (2009). *How companies are benefitting from Web 2.0.* McKinsey Quarterly.

McKinsey. (September 2011). Social technologies on the front line: The Management 2.0 M-Prize winners.

Moira, B., Marlow, C., & Lento, T. (2009). *Feed Me: Motivating Newcomers Contribution in Social Network Sites.* Boston: Human-ComputerInteraction Institute.

Moore, G. A. (2006). *Crossing the chasm.* New York: Collins Business Essentials.

Nonaka, I. (1994). A dynamic theory of organizational knowledge creation. *Organizational Science , 5* (1), 14-37.

Pareek, U. (1986). Motvational Analysis of Organizational-Behaviour. *The 1986 Annual Developing Human Resources* , 121-128.

Passer, M., & Smith, R. (2004). *Psychology: The science of mind and behavior.* New York: McGraw-Hill.

Perlovsky, L., Bonniot-Cabanac, M.-C., & Cabanac, M. (2010). Curiosity and Pleasure. *eprint arXiv:1010.3009* .

Perry, B. (2001). Curiosity: The fuel of development. *Scholastic Early Childhood Today , 15* (6), 22-23.

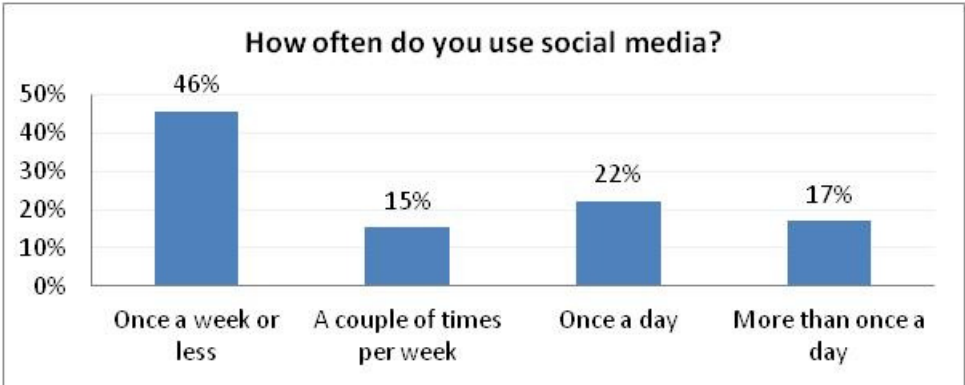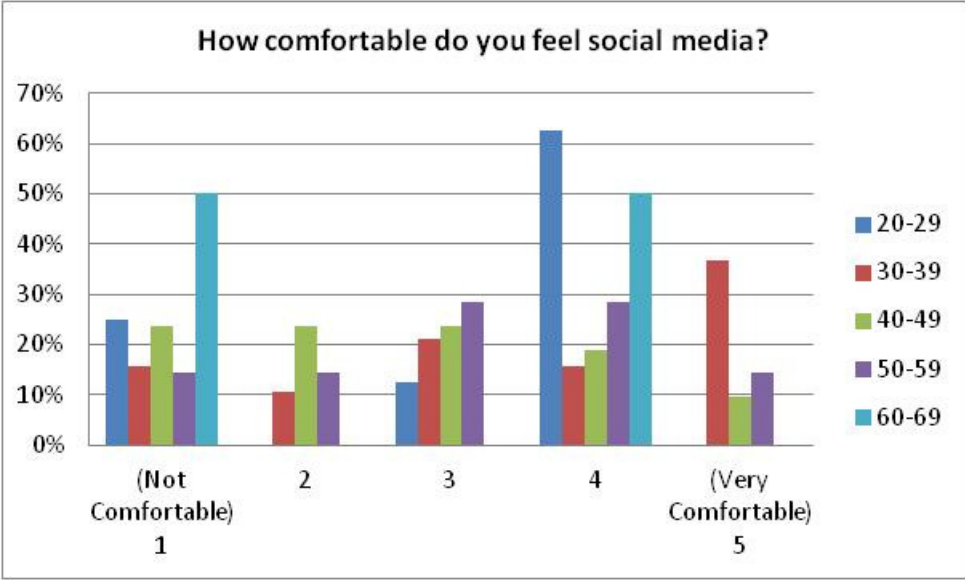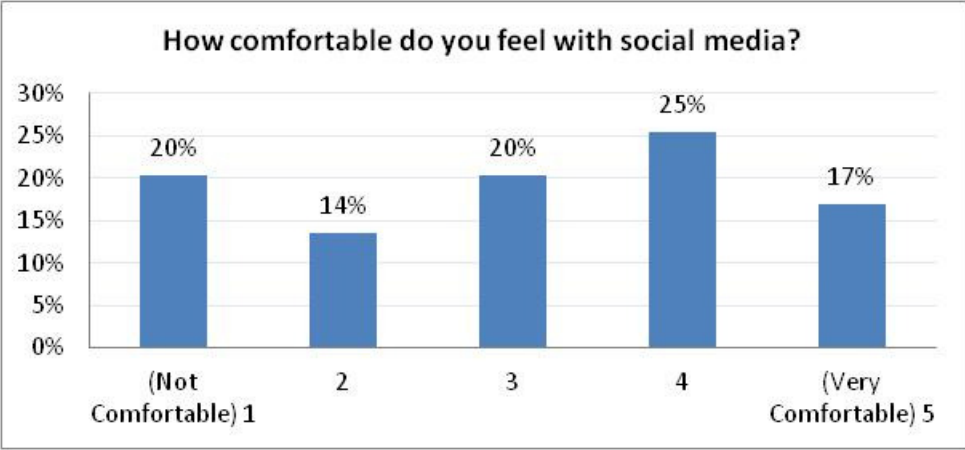Rogers, E. M. (2003). *Diffusion of Innovation.* New York: Free press.

Rooksby, J. (2009). Social Networking and the Workplace. *School of Computer Science, North Haugh, University of St Andrews* .

Safko, L. (2010). *The Social Media Bible - Tactics, tools & strategies for business success.* Hoboken, New Jersey: John Wiley & Sons, Inc.

Serra, M. (den 11 11 2011). Head of Collaboration and End User Workplace, Business Practice, IT and Test Environment at Ericsson. (M. Lenerius, Intervjuare)

Shuen, A. (2008). *Web 2.0: A Strategy Guide.* Sebastopol: O'Reilly Media, Inc.

Singh, V., Jain, R., & Kankanhalli, M. (2009). Motivating contributors in social media networks. *WSM '09 Proceedings of the first SIGMM workshop on Social media* .

Smith, N., Wollan, R., & Zhou, C. (2011). *The social media management handbook - everything you need to know to get social media working in your business.* Hoboken, New Jersey: John Wiley & Sins, Inc.

Stair, R. M., & Reynolds, G. W. (2011). *Fundamentals of Information Systems.* Boston: Course Technology.

Standing, C., & Kiniti, S. (2011). How can Organizations use Wikis for innovation? *Technovation , 31*, 287-295.

Tharenou, P., Donohue, R., & Cooper, B. (2007). *Management Research Methods.* Sydney: Cambridge University Press.

Trott, P. (2008). *Innivation Management and New Product Development* (4 uppl.). Harlow: Pearson Education Limited.

Twitter. (den 09 11 2011). Hämtat från twitter.com.

Tönnies, F. (2002). *Community and Society.* Mineola, NY: Courier Dover Publications.

Wiggins, J. S. (1996). *The five-factor model of personality: theoretical perspectives.* New York: The Guilford Press.

Wikipedia. (2011). Hämtat från http://en.wikipedia.org/wiki/Wikipedia den 11 10 2011

Yammer. (den 09 11 2011). Hämtat från yammer.com: www.yammer.com

Yin, R. K. (2003). *Case Study Research – Design and Methods* (3rd uppl.). California: Sage Publications Inc.

Zeller, F., Chatterjee, J., Bräuer, M., Steinicke, I., & Lapteva, O. (2010). The Diffusion of Social Media and Knowledge Management – Towards an Integrative Typology. *Institute for Computer Sciences, Social Informatics and Telecommunications Engineering* , 62-75.

10.   Appendix 1

Results from the survey on social media at RTR

Age Distribution at RTR

- 20-29: 14%
- 30-39: 32%
- 40-49: 36%
- 50-59: 14%
- 60-69: 5%

Is social media contributing to your daily work?

E&D
- Yes: 15%
- No: 85%

What do you think about using social media at RTR?

- Could have potential if implemented right: 80%
- We have enough tools as it is: 8%

How comfortable do you feel with social media?

How comfortable do you feel social media?

How often do you use social media?

56

How often do you use social media?

Which Social Media do you use?

11.   Appendix 2

Questionnaire: Social Media

With this questionnaire we aim to find out what the knowledge and usage of Social Media within Rosemount Tank Radar Engineering are. When we discuss social media we refer to Facebook, Twitter, Flashback, blogs, etcetera. Maybe you know of a social media that we have not thought of!

Fill this questionnaire out and leave it in the mailbox at XXXXX before XXXX . We are grateful for your help and hope to get the opportunity to speak with you during the upcoming weeks to further understand your work and get input to our project!

Maria Lenerius & Sofia Ragnarsson
Master students, Industrial Engineering & Management

Background info

Gender

Male ☐   Female ☐

Age _____ *years*

Department

E&D ☐   Supply Chain ☐   Operations ☐   Quality ☐

Role _____

Main work tasks *(How would you describe what you do?)*
_____
_____
_____

Social Media

1. How often do you use a social media? *(Such as Facebook, Twitter, Blogs, Google+ , Flashback etcetera)*

| More than once a day | ☐ | Once a day | ☐ | A couple of times per week | ☐ | Once a week or less | ☐ |

2. Which social media do you use?

Facebook ☐   Twitter ☐   Flashback ☐   LinkedIn ☐

Google + ☐   Other: ………………………………………………………………………………………… ☐

3. If you use social media, what do you use it for?

Stay updated with friends, news etcetera	☐	Send messages	☐	Upload content such as pictures, links and movies etcetera	☐	Blog	☐
Comment on content	☐	Other:		………………………………………………………………………			☐

4. How comfortable do you feel with using social media?

1	*2*	*3*	*4*	*5*
?	?	?	?	?

Very comfortable   *Not comfortable*

Social Media and Emerson

5. Is social media in anyway contributing to your daily work at Emerson?

Yes ☐   No ☐

   a. If yes, how?

_____
_____
_____
_____

   b. If yes, which social media do you use?

Emerson specific social media ☐   External social media ☐

6. What is your opinion on social media at Emerson?

We already have enough tools as it is	☐	Could have potential if implemented right	☐	I think it is a great idea	☐	Other: ……………………………………… ………………………………………	☐

7. How do you perceive Emerson to focus on social media, to support the daily work, compared to other companies?

More than other companies	☐	About the same level as other companies	☐	Less than other companies	☐

Thank you for participating! Don't forget to leave the questionnaire at the mailbox in XXX before XXX

12.   Appendix 3

Interview Guide for Semi-structured Interviews at RTR

External Interviews:

- *What are your work tasks and responsibilities?*
- *What does the work processes look like?*
- *Where in the product development process are you?*
- *Which people do you communicate with in your work?*
- *How do you communicate with these people?*
- *What do you think about the communication? Is it efficient? Problematic?*
- *Is there information that you feel that you sometime do not receive? Or are you sometimes informed late?*
- *How do you solve problems in your work? What do you do if you cannot solve a problem?*
- *Where are the biggest inefficiencies and problems in the development process in your mind?*
- *What is the most frustrating thing about your job – making your hair turn grey?*
- *If you could dream, what would you like to have a social media for in your work?*
- *Where do you think that the greatest potential for social media at RTR lies?*
- *If you have a new idea – what do you do?*
- *What is the best thing about your job?*
- *What is the worst thing about your job?*