

A Framework for Understanding the Adoption and Impact of Socially Focused Business Practices

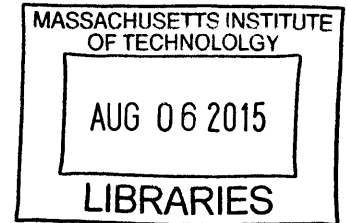
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Submitted to the System Design and Management Program in
Partial Fulfillment of the requirements for the degree of

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Abstract

Two trends have emerged where technology plays a dominant role in aiding organizations to meet their goals. The first is a trend where organizations are engaging customers in developing business strategy. The second is a trend where organizations are discovering, promoting, and adapting to process efficiencies. These two trends have influenced the creation of new collaborative technologies that encourage knowledge sharing. Also known as social software, these technologies have been adopted by organizations aiming to better connect with external stakeholders and communicate business practices organization-wide. Organizations have also invested in their own social platforms, enabling them to host conversations, gather ideas, and communicate messages, among other capabilities.

Organizations are making investments in social technologies to support their goals. However, many organizations struggle to understand the impact of these investments in practice. There are two challenges that organizations typically face when understanding the impact of social technology. One challenge is that they often struggle with user adoption, and as a result, there is insufficient usage to demonstrate improvement or impact. Another challenge is that there is no existing basis upon which the organization can compare performance with and without social technology.

Despite these challenges, organizations continue to promote the use of social technologies inside and outside their organizations. While several have highlighted value to themselves and their clients by using such technologies, others still do not understand how to gain such benefits for themselves.

In this thesis, I discuss five case studies of organizations that have adopted social technology and demonstrated impact on business processes. Drawing on these findings, I articulate several approaches that can foster adoption of these technologies within organizations. I conclude by presenting a framework for understanding the business impact of social technology in the workplace.

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Motivation

I have spent the last 12 years building social software for organizations to use with the goal of improving how they interact, connect, and perform. As a software creator, I seek to identify the use cases influencing software adoption and understand where software exceeds, meets, or does not meet customer needs. In enterprise social software, however, the software itself is not the only indicator of potential success. The software may perform as expected, but some organizations may not see a change in how their people interact, connect and perform. Organizations may observe positive change yet struggle to articulate the impact of these technologies in the workplace. I decided it was a worthwhile effort to study this issue in more detail with organizations who have dealt with or are in the process of dealing with it.

I hope this thesis provides guidance to organizations looking to adopt social software technology. I believe organizations can obtain a clearer understanding of how much of an impact social software has on their business. I also believe there are strategies organizations can employ to help improve social software adoption. I do not, however, believe social software adoption is an organizational state that once achieved can be claimed and dismissed. User needs are constantly changing, user generated content begins aging the moment it is shared, and many facets of organizations – department,

processes, metrics, products, services, etc. – are as dynamic as the people within them. It is important for companies to recognize that adoption is ongoing, requiring continual understanding, evaluation, and changes in supporting processes.

Introduction

Technology's role in Business Strategy

Organizational leaders believe technology is required to meet their business objectives (IBM Institute for Business Value 2013). However, these leaders are changing their focus from technology as a part of the infrastructure needed to execute a business strategy, and they moving toward the idea that technology can make entirely new strategies possible. Two trends have emerged where technology plays a dominant role in aiding organizations to meet their goals. The first is a trend where organizations are engaging customers in developing business strategy. The second is a trend where organizations are discovering, promoting, and adapting to process efficiencies.

Organizations are Engaging Customers in their Business Strategy. Organization leaders are reaching out to customers and key external stakeholders as key business decisions are being discussed. This is especially true with product and service development. Rather than wait for a product to be released into the market, organizations are engaging customers and potential customers earlier in designing and developing new products and services. Customer engagement is a top priority for organizations hoping that stronger client relationships will lead to customer loyalty and

new product or business model ideas. More companies are expected to engage with clients or other external stakeholders over the next 3 – 5 years (IBM Institute for Business Value 2013).

Organizations are Discovering and Promoting Process Efficiencies. In addition to external engagement, organizations are seeking to improve their business operations and performance. Technology has enabled leaders to understand and visualize the process within their organizations. Technology has also aided in understanding which processes are most effective in achieving desired business results. Organizations are attempting to continually evaluate the performance of their operations, and to create new processes to improve overall performance. Using technology, they should be able to promote the practices of teams and processes that perform more effectively.

These two trends have influenced the creation of new collaborative technologies that encourage knowledge sharing. Social software, which continues to have significant impact on Internet usage in general, has been adopted by organizations aiming to better connect with external stakeholders and communicate business practices organization-wide. Organizations have also invested in their own social platforms, enabling them to host conversations, gather ideas, and produce more relevant communications, among other capabilities.

The Rise of Social Technology

Over the last 10 years, social technologies have come to dominate our everyday lives. In the 1990s, websites that enabled personal presence (e.g. Geocities), social networking (e.g. SixDegrees.com), blogging (e.g. Blogger), and person-to-person chat (e.g. AOL IM) were at the beginning of a trend toward socially connecting people through Internet technology. The Internet provided various mechanisms for people to promote their personal presence, find and connect with like-minded others, strengthen existing relationships, share ideas, and organize.

Various technologies may fall under the category of 'social technologies', such as real time communication, asynchronous notifications and updates, communities/groups, discussions, rich media, and more. For the purpose of this thesis, I refer to the following shared "objects" as comprising social technology:

Personal profiles

Status updates

Communities / Groups

Discussions

Collaborative documents

Wikis

Link sharing

Images/Videos

In order to be considered a social technology, the objects referred to above should include organizing around a network and at least one additional property:

Explicit or implicit social networks. Adding people to a network, joining a community or group, suggesting people who are closely related.

User generated content. Providing content, such as text, images, videos, or other media, that is shared with other users of the system.

Commenting. Enabling people to comment or converse on a shared object.

Rating. Providing an option to express approval/disapproval of a shared object or reshare items of interest.

Co-Editing. Allowing more than one person to collaborative author content.

These technologies and their properties can manifest in numerous ways. For example, Twitter hosts large scale discussions oriented around short status updates with basic constructs to organize and reference those discussions. YouTube and Pinterest enable rich media sharing with individuals and groups, giving content owners options to enable discussions and link to their personal profiles.

As more social technologies were developed, and as their capabilities improved, the number of social users grew, as shown in Figure 1. User adoption of social sites has steadily increased. Early social sites like Friendster claimed 3 million users within the first few months of going live in 2002 (Rivlin 2006). MySpace, another social technology entrant, overtook Friendster in 2004 in terms of number of page views; both were

overtaken by Facebook who by 2009 had more than doubled Myspace in time spent on site (The Nielsen Company 2009). Today, user statistics are measured in the billions. The number of social network users worldwide was just shy of 1 billion in 2010 with projected users reaching over 2 billion by 2016 (The Nielsen Company 2009). Over the period of 2000 to 2014, more than 200 social websites have emerged (Wikipedia contributors 2014b). Twenty percent of website visits in the summer of 2014 were referred from Facebook and Pinterest combined (Wong 2014).

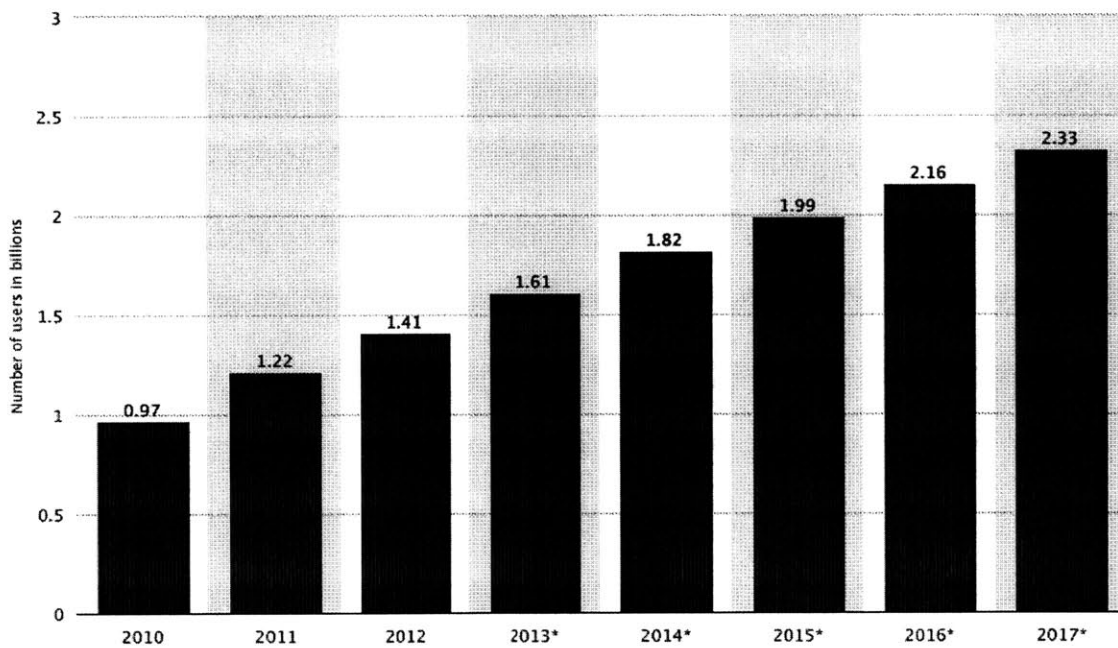


Figure 1 Number of social network users worldwide from 2010 to 2017 (in billions)

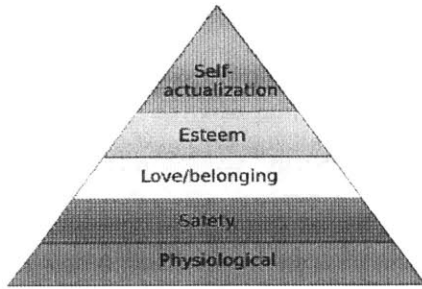


Figure 2 Maslow's Hierarchy of Needs

To better understand the growth in social software adoption, we need to understand why people are using these tools and what they are hoping to accomplish. Participants often cite connecting with family and friends as the main influence on their

usage. According to Pew Research, two thirds of social media users say that staying in touch with current friends and family members is a major reason for why they use these sites, while half say that connecting with old friends they've lost touch with is a major reason behind their use of these technologies (Smith 2011). Psychologists view social media adoption as an extension of human needs and desires. One desire is for large networks that enable users to build their social capital. Another desire stems from the anxiety that lack of participation may lead to missed opportunities for social interaction, experiences, or events (Nowinski 2014). Despite criticism regarding its hierarchical structure, Maslow's hierarchy of needs offers a useful starting point to consider human behavior, whether online or offline (Figure 2, (Maslow 1943). The degree by which social technology plays a role in fulfilling some of these human needs is an area that needs further research.

Social Technology in the Workplace

In the workplace, social structures such as teams, departments, and managerial hierarchy exist to encourage employee engagement and organizational productivity. From the day a person is hired into an organization they begin to navigate the social

structure in order to be an effective employee. While the social structure may benefit both the individual and the organization, it can also detract from productivity as well. When organizations have employees duplicating work efforts, providing inconsistent information to clients, and being unaware of reasons leading to key decisions, then productivity is at risk.

One method for preventing these types of productivity detractors is to encourage knowledge sharing and visibility. For example, if one team is working on a project that another team has also been working on, better communication and visibility could encourage these teams to align their efforts. In organizations, however, it is challenging to know who is working on similar projects and would be willing to share insight and provide coordination.

Technology has been playing a role in increasing visibility, communication, collaboration, and knowledge sharing. Technologies such as email, instant messaging, and groupware have been used since the 1980s to encourage collaboration (Ellis and Gibbs 1989). Over the years these technologies have been adapted by users to perform multiple, and sometimes, unintended tasks: “Although email was originally designed for asynchronous communication, the application is actually being used for multiple functions. Email therefore needs to be redesigned to support filing and task management as well as asynchronous communication.” (Whittaker and Sidner 1996, 7). For example, large-scale projects that are coordinated in email can also impede

productivity of the teams who are dealing with email management issues such as multiple versions of attachments in email, miscommunicated information, long discussion threads, difficulty finding critical information, and challenges in having the right distribution list for key information.

During the late 1990s, technology researchers began to experiment with emerging social web technologies inside the workplace with the goal of better understanding if these technologies could orchestrate improvements in collaboration. For example, the IBM Persona project aims to turn the companies corporate directory of 400,000+ people into an online social presence application (Newbold and Azua 2007). Other projects such as Danyel Fisher's Soylent sought to understand emerging social network patterns from email collaborations (Fisher and Dourish 2004).

Not only were the large institutional research organizations working on this challenge, startups were also emerging to bring to the use of social technologies quickly into the market. Atlassian and Socialtext, among others, recognized the need for flexible online collaborative editing, and brought wiki technology into the workplace. By 2006, the term "Enterprise 2.0" was coined by Andrew McAfee to refer to the use of social technologies and their role in the workplace. Specifically regarding social technology in the workplace, Andrew McAfee describes six components of Enterprise 2.0 technology as search, links, authoring, tags, extensions, and signals (McAfee, 2006). Later, the term "social business" gained momentum, encompassing business practices, cultural norms,

and social technologies that promote visibility, interactions, discussions, networking, and knowledge sharing.

Value of Social Technology for Organizations

Despite making investments in social technologies to support their goals, many organizations struggle to understand the impact of their social technology investments.

Uncertainties include:

- Has our technology investment been a worthwhile investment?
- Which areas of my company have gained value from our investment?
- Which areas of my company have seen no improvement as a result of our investment?

There are two challenges that organizations typically face when answering these questions. One challenge is that they often struggle with user adoption in general, and as a result, there is not sufficient usage to demonstrate improvement or impact.

Another challenge is that often organizations do not identify and measure aspects of their business that they can use to compare performance with and without social technology.

Despite these challenges, many organizations continue to promote the use of social technologies inside and outside of their organizations. Several have highlighted value to

themselves, their clients, and to the individuals and their organizations by using such technologies (IBM 2012). However, many still do not understand whether and how to gain such benefits for themselves.

In this thesis, I discuss five case studies of organizations that have successfully adopted social technology and demonstrated impact on a business process. Drawing on these findings, I articulate several approaches that can foster adoption of these technologies within organizations. Finally, I conclude by presenting a framework for identifying the business value of social technology in the workplace.

Prior Research

In this chapter, I summarize the prior research that has influenced the development of research discussed in this thesis.

Learning from Notes: Organizational Issues in Groupware Implementation. Orlikowski, May 1992

Wanda Orlikowski studied how the implementation of groupware changes work practices and social interactions (Orlikowski 1992). Her results offer insights into why the adoption of social technology continues to be challenging. People's understanding of the groupware, their reward systems, and workplace norms influenced how and why people adopted and used the groupware technology. When people's mental models were not appreciative of groupware's collaborative focus, the technology was viewed in terms of more familiar technologies such as spreadsheets. Orlikowski also found that in competitive cultures where people considered knowledge as affording them individual distinction and influence, groupware alone could not foster collaboration.

Social Software for Business Performance. Miller, Marks, & DeCoulode, 2011

In 2011, Deloitte produced a report describing common errors in understanding enterprise social software adoption. “So far, most of the measurable success using social software to improve operating metrics has been confined to small teams and other outliers” (Miller, Marks, and DeCoulode 2011, 4). The study found that despite relatively high adoption metrics, very few companies had demonstrated measurable impact on their business from the use of social technology. Many companies measured success by adoption rates instead of business performance. The paper highlighted that “adoption metrics do not address what matters most to each tier of participants (employees, managers, and executives). As long as adoption is the primary measure of success, resistance, at all levels, can block successful social software deployment.”

The Deloitte report also discussed the issues that surface with various adoption patterns, such as executive-mandates or grassroots efforts. Figure 3 shows a summary of the issues found from these various efforts.

	Grassroots		Top down	
	Intra-team	Scaling team initiatives	IT sponsored knowledge management	Senior executive sponsored
Example	Small teams use tools from different vendors without the knowledge of Corporate IT	Team initiative grows and ownership is transitioned to Corporate IT	Installation is part of Corporate IT initiative to overhaul knowledge management	Senior executive drives installation and mandates use
Issue	<ul style="list-style-type: none"> • Knowledge is lost • Tools are not used to their potential 	<ul style="list-style-type: none"> • Business impact is not easily accessible • A focused strategy is not developed to target the best opportunities 	<ul style="list-style-type: none"> • Focused on content management • Implementations are costly and often fail 	<ul style="list-style-type: none"> • Business needs not understood • Employees "game" system to meet requirements

Source: Deloitte LLP

Figure 3 Social Software Adoption Issues, Deloitte LLP, from *Social Software for Business Performance*

Enterprise Social Software: Addressing Barriers to Adoption. Chung & Khanna, May 2011

Michael Chung and Ayush Khanna, students at the University of California at Berkeley, presented a Masters project that identified the methods that organizations are using to improve social software adoption in their enterprise (Chung and Khanna 2011). They provide a framework for social software adoption that includes:

- Identifying a champion, who they define as "a super user, who has the ability to take charge of driving adoption of the tool." (p. 35)
- Defining use cases in the form of specific and measurable goals
- Understanding the target audience for such tools
- Finding the right mix of bottoms-up and top-down influence
- Viewing adoption as a lifecycle

Their project included interviews with 8 individuals from social software vendors, implementers, and organizations using social software.

Bridging between Organizations and the Public: Volunteer Coordinators' Uneasy Relationship with Social Computing. Volda, Harmon, & Al-Ani, 2012

This paper discusses the central role that volunteer coordinators play in organizations. Coordinators connect volunteers to each other and to corporate programs, educational programs, among others (Volda, Harmon, and Al-Ani 2012). The researchers found numerous “tensions and disconnects” between the work at hand and the social software in use, including coordination required among teams on managing social media presence, mismatch between team needs and technology, and challenges recruiting volunteers appropriately.

MIT Sloan Management Review & Deloitte Research Report, Social Business: What are Companies Really Doing? Kiron, Palmer, Nguyen-Phillips, & Kruschwitz, 2012

The MIT Sloan Management Review and Deloitte co-produced a research report that describes use cases for enterprise social software, and considers such issues as how

leadership support enables adoption, and how social software can aid in leadership insight. In their report, they found the following (Kiron et al. 2012, 3):

- “Managers believe that social software will become increasingly important to their organizations during the next few years.
- Social business depends on leadership. Metrics may not be critical when companies are experimenting with using social software, but as social software use becomes more important to an organization, having metrics in place can help managers assess, encourage and reward related behaviors.
- Some industries are seeing more value from social tools than other industries... Energy and utilities, manufacturing and the financial services sectors expect that social business will become five to six times more important to their organizations in three years.”

Unanswered Questions

The findings from prior work described here, as well as those of many additional reports and articles read as part of this research (see Citations), suggest convergence on several notions.

The number of organizations that are using social software internally and externally is growing.

Enterprise social software is useful only if it is used.

Measuring social software success requires metrics for business impact not adoption.

Many companies have gained value by using social software within and outside their organizations.

These insights are certainly important to understand and explore as an organization embarks on a social software implementation. However, such understanding alone will not necessarily help an organization recognize if the implementation has been successful. Thus, additional models and methods are needed that will allow organizations to assess the impact that social technologies have had on their businesses.

In this thesis, I present five case studies of organizations that have adopted social technology and demonstrated impact on business processes. I describe how the organizations assessed such impact, including what was measured and when it was measured. I also summarize several approaches used to foster adoption of these technologies within the organizations. Finally, I present a framework for organizations embarking on a social software implementation that identifies the business value of social technology in the workplace, including how to identify business metrics, when to measure those metrics, and how to assess performance over time.

Research Methods

Several research projects influenced the research presented in this thesis. These key projects are summarized in the Prior Research section described earlier. The primary research for this thesis included interviews and surveys with several organizations, and was conducted in two segments. Segment one focused on identifying enterprise social software case studies and articulating business impacts. Segment two focused on understanding adoption best practices and the methods employed by enterprise social software facilitators to get effective use.

Segment one

Five companies participated in case studies that were focused on understanding specific instances of enterprise social software usage and impact. These five organizations were selected because they were utilizing social technology in with their employees and in some cases external contacts. In addition, they each identified a business goal that the software was intended to improve. Three of these companies provided access to individual users and managers of the social technology for the purpose of assessing performance against a business objective before and after the implementation of social software.

Eight interviews were performed with key business or technical leaders in the social software implementations at each of the five companies. The interviews were an hour in length and covered the following topic areas:

- When did you implement social technology in your workplace?
- What social technologies did you introduce?
- Discuss a key business need or objective before your social technology implementation.
- Describe an important and common task needed to accomplish that business objective before your social technology implementation.
 - How long did it take to complete the task?
 - Was the task completed to satisfaction?
- Describe an important and common task needed to accomplish that business objective after your social technology implementation.
 - Did the process for completing the task above change, and if so, how?
 - How long would it take to complete the task?
 - Was the task completed to satisfaction?

For three of the companies, a survey was subsequently developed that focused specifically on each company's selected business process. The intent of the survey was to better understand differences in the work before and after the social software was utilized. While each survey was tailored specifically to each company (based on the interviews), the survey questions generally included the following:

- Role? Example roles specific to each company was provided.
- How long have you been working in your current role?
- How long have you been employed by this organization?
- Please answer the following questions before and again after you had access to social technology (regarding a specific business objective described in the survey).
 - How many people did you interact with?
 - How many emails did you send and receive?
 - How many meetings did you attend? How many of those meetings were in person? Virtual?
 - If in person, how much would you estimate you spent in order to travel to the meeting locations? Please sum across all meetings.
 - How satisfied were you with your access to knowledge and people?
 - Please share what you liked best and worst about accomplishing this business objective.

Other performance metrics and terminology that were included in the survey were specialized to each organization on the basis of the data gathered during interviews.

Segment two

Six further interviews were performed for the purpose of identifying and understanding practices that enable adoption of social technologies in the workplace. Each interview lasted an hour and covered the following topics:

- What is the name and purpose of the community you manage? (if multiple, please describe each)
- How many members are in your community?
- Do you have other community managers?
- Please describe how your community has made an impact on your organization.
- What has made your community successful?
- What could make your community more successful?

Two interviewees from companies that participated in segment one were interviewed for an additional hour to gather the data in segment two. The remaining four interviews were with individuals in additional companies that had not participated in segment one. My interest was to ensure commonality among key contributors to social software adoption while also generating a diversity of responses. In this segment two, I interviewed people in their role as community manager, a role that is responsible for the effectiveness and adoption of social technology for business.

Analysis

Interview data from both segments were analyzed to identify common themes and patterns in deploying and measuring social software impact. The interviews were also utilized to create case studies that were reviewed and approved by each participating company. Survey data was aggregated and summarized to highlight metrics in business performance before and after social software access and implementations. The findings

that emerge from this analysis are presented with each case study in the following chapters.

Limitations

The organizations that were studied in this project had been utilizing social software for two to five years, and their social software adoption process had taken place some time back. As a result, the analysis conducted on the “before” state of their businesses is based on people’s retrospective understanding and estimates. More accurate comparisons can be gained by recording process data prior to implementing and using the social software. This approach was not available to me. Nevertheless, I believe there are some valuable lessons to be learned from the data I have been able to collect and analyze.

About the Case Studies & Analysis

The upcoming sections present five case studies. In each case study, I present information about each organization, the business process that the organization intended to improve, the metrics used to analyze performance of the business process, and data collected as a result of this study. After presenting all of the case studies, I then compare and contrast them through the lens of an adoption framework to identify effective approaches to generating and measuring business value through the use of social technology in the workplace.

Case Study 1: CEMEX Corporation

Company Background

CEMEX is a global building materials company that provides products and services throughout the Americas, Europe, Africa, the Middle East, and Asia. CEMEX produces, distributes, and sells cement, ready-mix concrete, aggregates, and related building materials in more than 50 countries and maintains trade relationships in approximately 108 nations. With annual sales of US \$15.23 billion, CEMEX is one of the leading cement manufacturers in the world. CEMEX employs close to 43,000 people worldwide.

CEMEX seeks to become more flexible in operations, more creative in commercial offerings, more sustainable in use of resources, more innovative in conducting global business, and more efficient in capital allocation. In order to achieve these goals, CEMEX has developed an approach that includes the following elements (“CEMEX: Our Approach” 2014):

- *Business and Financial strategy.* CEMEX has a geographically diversified portfolio of assets in sustainable and profitable growth markets, focused on their core business of cement, aggregates, and ready-mix concrete. Their vertically integrated portfolio of cement, aggregates, and ready-mix concrete are tailored to each market’s needs and provides the opportunity to manage assets as one integrated business rather than as distinct businesses.
- *Customer Focus.* CEMEX seeks to provide their customers with the most reliable and comprehensive array of building materials in the market. They tailor products and services to suit customers' specific needs, ranging from home and commercial construction, improvement, and renovation to infrastructure, agricultural, industrial, and other specialty applications.

- *Sustainable Development.* Sustainable development guides the CEMEX business strategy and day-to-day operations. CEMEX looks to develop building solutions to meet the needs of a world with limited resources, contributes to the development of a low carbon economy, and fosters long-term relationships with key stakeholders.
- *Innovation.* CEMEX operates in the construction industry, which is shifting toward more cost-effective, efficient, and environmentally friendly solutions. CEMEX focuses on an efficient and sustainable approach to innovation, from supply chain and logistics to plant production and technical centers, to provide customers with reliable and creative construction materials. CEMEX's Global Center for Technology and Innovation in Switzerland is a research laboratory that focuses on innovation in a number of new areas: new and enhanced construction materials; sustainable construction; cementitious materials (cement, fly ash, and slag); concrete and mortar products; admixture formulations; and aggregates.
- *Operational Efficiency.* CEMEX focuses on developing industry-best processes and seek to improve performance as an efficient, agile, and innovative company by identifying, sharing, and implementing best practices across its global network of plants and facilities.

During CEMEX's international growth, the company sought to connect all operations for visibility into how business operations were being carried out as well as to identify high performing processes that could be replicated across the company. The technology available included e-mail, telephone, meetings, and an intranet containing events, news, and documents on microsites and divided geographically, by functions, or both.

CEMEX's intranet enabled the company to keep global HR practices and guidelines in a single space with local sub-communities specializing in each operation. These technologies, however, limited two-way collaboration. Each microsite had an administrator responsible for keeping it updated and making any necessary changes, but community members were limited in terms of what they could do in each space.

Improving Global Programs with Social Technology

One business function that CEMEX focused on improving was global programs such as Alternative Fuels. The Global Innovation Initiative for Alternative Fuels sought to stabilize the company's long-term energy costs, reducing the use of volatile commodities such as fossil fuels, and instead move into alternative fuels, which can often be lower in cost or even free. The initiative also sought to reduce its environmental impact and become more sustainable, making use of products that society no longer needs or seeks to dispose of.

While CEMEX operated globally, it also had to comply with local regulations, client needs, and laws. To do this, CEMEX would deploy teams of experts to newly acquired companies to train people on CEMEX standards and practices. These experts were mid-managers who understood CEMEX processes and were able to teach the staff within newly acquired organizations. These experts had deep subject-matter knowledge and could identify emerging best practices from acquired companies or other internal teams. They had visibility of the day-to-day work being performed at various levels within CEMEX while also being influential with top management, especially regarding changing process best practices. These teams were deployed abroad with each new acquisition, sometimes leaving their home offices for up to a year in order to fully complete the integration.

While there were many benefits to sending the teams to work on-site for extended periods of time, there were also many drawbacks. People were brought in from different global locations and were immersed full-time on projects, leaving their regular roles and generating potential complications due to their absence. The work within the project teams was highly valuable, but very few people outside the teams knew what work was being done. Also, only a select group of individuals participated in these special projects, limiting the experience gained to a small percentage of CEMEX employees. The company sought to change the structure of these programs in order to improve visibility into the teams work and share their knowledge globally.

Social Software Usage

CEMEX leaders invested in social software to address some of the challenges in launching and executing global initiatives. Sending teams of people to work face to face for long periods of time in order to execute an initiative would not scale to the level of global integration that CEMEX desired. CEMEX believed that social software would scale globally and enable several participants to create content and share it across geographies and organizational levels. CEMEX intended to create an environment where people would share their skills, preferences, and experience with their network, enabling discovery for analysis and design. They also intended for individuals to share personal experiences and solutions and for teams to work together on documents as well as share and track information for future reference.

CEMEX launched their social platform, *Shift*, in 2009. CEMEX rolled out the platform to their employees in three waves, each introducing additional capabilities such as integration with consumer social platforms and other internal tools that were necessary for business operations such as web meetings, process servers, and VOIP. Figure 4 shows CEMEX’s initial core practices to be addressed with the social technology.

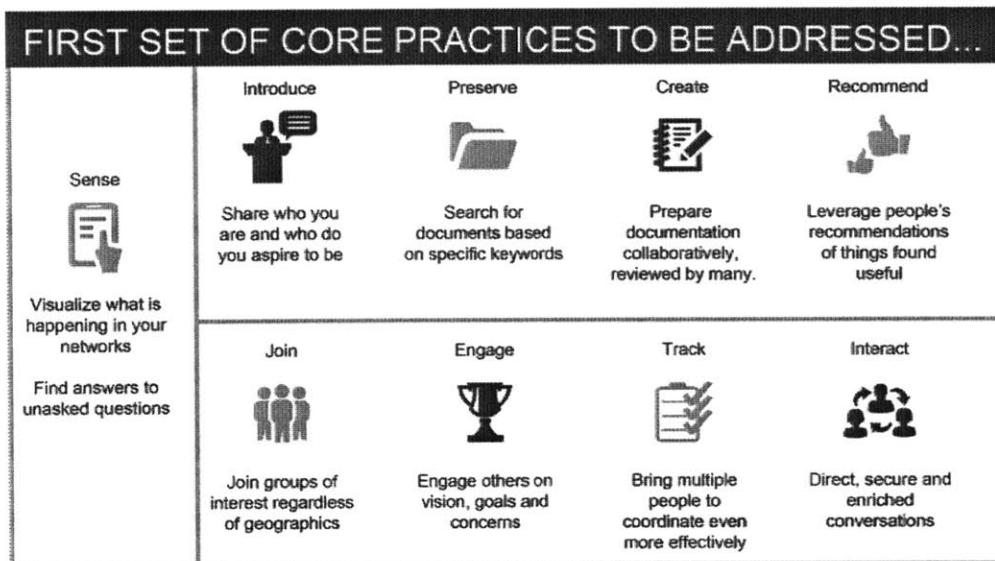


Figure 4 CEMEX’s initial core practices in social technology

Business Outcome

CEMEX has adopted social technology across their company and modeled their Global Innovation Initiatives using *Shift*. In the past, CEMEX had difficulty engaging their global experts to work together to achieve sustainability goals. CEMEX relied mainly on waste

products as alternative fuels, with high variability in available waste material from one location to another. For example, in one city, peanut shells were the dominant waste material, whereas in another nearby city, rice shells were the dominant waste material. The technology necessary to process each waste material was not available at massive scale, and the treatment that each kind of waste required was different. CEMEX aimed to identify locations with proven process and treatment methods and share these experiences with other locations that needed to improve.

Gilberto Garcia, Head of Innovation at CEMEX, described the approach to knowledge sharing as follows:

“By encouraging each operation to share its best practices in terms of waste management and treatment for use in cement kilns, they could share their insight and let others replicate their methods locally. This way the savings and environmental benefits of substitution could be multiplied across all CEMEX operations. Philippine plant managers, with experience in using rice shells as fuel, could share their expertise with plant managers in Costa Rica, where they are just starting to use them as well. The United States and Mexico also shared knowledge in the use of waste tires as fuel for cement kilns, and the list goes on, in the level of sharing and replication of practices.”

By identifying these best practices, a set of basic rules for the use of alternative fuels was developed and shared in the community for the Alternative Fuels Initiative so that these insights could be leveraged when new alternative fuels projects were launched. Technical tools and references, such as CO2 footprint calculations, were also shared in the community space for all of CEMEX to utilize. As a result, when decisions need to be made regarding investment in new technologies or new configurations of machinery,

global experts are able to voice opinions and concerns within the community. The community engages the traditionally isolated countries where CEMEX has a presence, allowing technical experts to make decisions as a team without the intervention of higher-ranking executives who often lack specialized knowledge of the topic area.

Within a period of six years, CEMEX has significantly improved the rate of substitution of fossil fuels with alternative fuels in comparison to its competitors. CEMEX's substitution rate from fossil fuels to alternative fuels was around 5-7% in 2005 and is now at levels of 25-27% on a global scale. These rates are the highest in CEMEX's industry. Some groups within CEMEX have even reached 100% substitution, and those groups are able to assist other groups in improving their substitution rates. This substitution initiative has generated about \$140 million dollars of savings per year and reduced the release of some 1.5 million tons of CO₂ to the atmosphere every year while also decreasing the amount of waste products in landfills across the globe. As a result, CEMEX has received the Global CemFuels Award – which recognizes companies in the cement and lime industry that have transitioned to alternative fuels – for two years in a row (“Global CemFuels Award” 2014).

Case Study 2: Robert Bosch Group GmbH

Company Background

The Bosch Group comprises Robert Bosch GmbH and its more than 360 subsidiaries and regional companies in some 50 countries. Including sales and service partners, Bosch is represented in roughly 150 countries. In 2013, the Bosch Group invested some 4.5 billion euros in research and development and applied for some 5,000 patents — an average of 20 patents per day. The Bosch Group's products and services are designed to improve the quality of life by providing solutions that are both innovative and beneficial. In this way, the company offers technology worldwide that is, in its terms, "Invented for life."

The company was set up in Stuttgart in 1886 by Robert Bosch as a "Workshop for Precision Mechanics and Electrical Engineering." The special ownership structure of Robert Bosch GmbH guarantees the entrepreneurial freedom of the Bosch Group, making it possible for the company to plan for the long term and to undertake significant up-front investments in the interests of safeguarding its future. Ninety-two percent of the share capital of Robert Bosch GmbH is held by a charitable foundation (Robert Bosch Stiftung GmbH), while the majority of voting rights are held by an industrial trust (Robert Bosch Industrietreuhand KG). The entrepreneurial ownership functions are carried out

by the industrial trust. The remaining shares are held by the Bosch family and by Robert Bosch GmbH.

Today, Bosch has four areas of technology focus:

- **Automotive Technology.** This business sector supplies independent parts to the automotive industry.
- **Industrial Technology.** This business sector incorporates two divisions: Drive and Control (which develops components for Mobile Applications, Machinery Applications and Engineering, Factory Automation and Renewable Energies), and Packaging Technology (which supplies processing and packaging technology for pharmaceutical, food and confectionery industries).
- **Consumer Goods.** This business sector provides a wide spectrum of products and solutions in the areas of Power Tools and Household Appliances.
- **Energy and Building Technology.** This business sector offers products and solutions in such areas as HVAC, solar energy, and security systems.

Using Global Communities for Key Business Decisions

Katharina Perschke leads the topic “Internal Community Management” for Bosch and is part of the central project team: “Enabling Enterprise 2.0 @ Bosch”. Ms. Perschke discussed Bosch’s approach to social software adoption. The Bosch Group has a systematic approach to decision making. Key business decisions begin with data

collection from various stakeholders and sources relevant to the decision. Next, data is consolidated, analyzed, and reported to key stakeholders. After stakeholders review the data, a decision is made and communicated. This decision-making workflow is prevalent in all aspects of the Bosch business.

Within Bosch Diesel Systems (DS), a part of the Automotive Technology Division, this workflow is in active use when a customer makes a request to Bosch to open a new facility. As described in Figure 5, the process for a localization request begins with a customer inquiry, where each row represents a different department involved in the process. The Bosch sales team then prepares documents to understand the client request. Next, a business unit team prepares a business case for evaluating the location requested. After that, manufacturing and purchasing become involved to align their respective strategies. In addition, a feasibility business case is prepared. Once the evaluations have occurred, a reply is created and released to the business units. Once approved, the response is documented and communicated to the customer. Feedback from the customer is then integrated into the process.

Customer Localization Request (VSDiA)

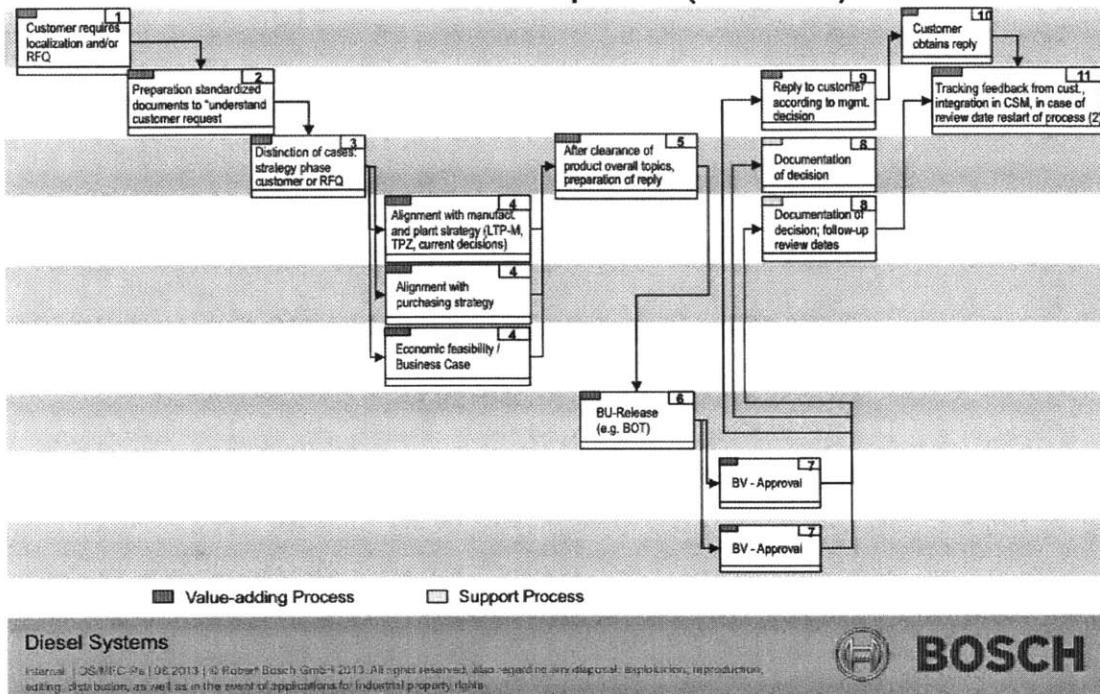


Figure 5 Bosch Customer Localization Request Process

This localization request process is challenging to manage. The main communication channel for sharing information is email, and there are a large number of questions. In one example, 61 emails were shared across six customer localization requests in a three-month period. This was the volume for only one stakeholder involved in the process. Typically, there are nine stakeholders and 24 people involved in the localization request process. A request typically took four to eight weeks to channel through the process end-to-end.

The reason the process was so heavily reliant on email was due to the lack of centralized document storage. In addition to managing information exchanged in the

process, the level of involvement of key stakeholders was not officially secured, leading to varying levels of involvement among the stakeholders.

Bosch chose to evolve this process in order to provide better service to their customers. Their goal was to provide a fast, reliable and satisfying response to their customers for each localization request. In addition, they sought to standardize the process with moderation and reviews, provide transparency while working on customer requests, improve access to customer related information, increase awareness among all stakeholders, eliminate wasted time collecting necessary information, and tie into the overall DS strategic planning processes.

Social Software Usage

Bosch introduced *Bosch Connect*, a social software platform that enabled Bosch employees to connect with each other, find and share expertise, and work on business goals. Bosch chose to create a community space that would allow people involved in the customer localization request process to communicate with each other (see Figure 6). Customers of Diesel Systems worldwide had access to this community, along with internal stakeholders from DS sales, manufacturing, business units, and Bosch central offices such as purchasing.

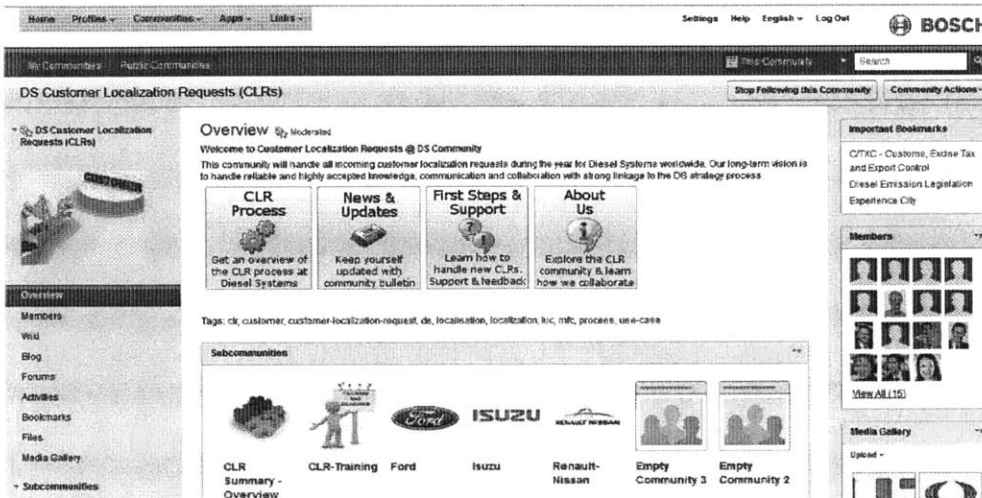


Figure 6 Bosch Localization Request Community

In the community space, stakeholders had direct access to information regarding the customer inquiry, stage of the process, and conversations. It provided a common articulation of who was responsible for which aspects of the process. Each localization request's status was tracked in the community, and the community provided a central, co-editable space where the information required for management decisions, as shown in Figure 7.

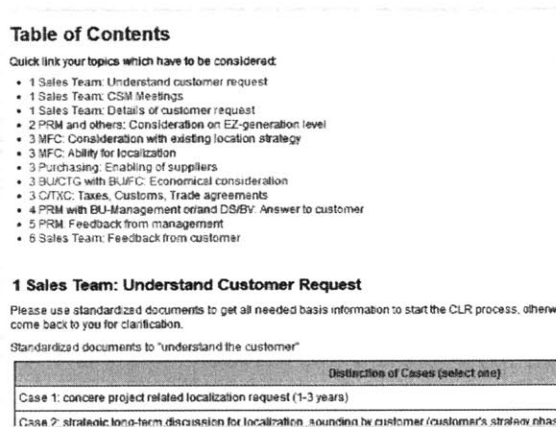


Figure 7 Detailed view of co-editable content

For Bosch, the overall localization request process flow stayed the same, with the same approval points and handoffs (see Figure 8). Roles were clearly defined and information on the process and its status were available throughout, reducing the need to reach out to individuals one on one.

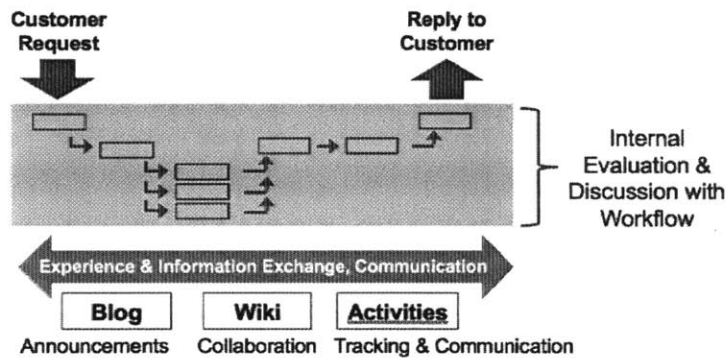


Figure 8 Bosch's work process using social software

Business Outcome

As a result of this community, the process of DS localization request coordination significantly improved on a number of key metrics measured by the company. Email, which had been the primary mechanism for information exchange, was removed from the process. The first tests with up to 9 different stakeholders (24 participants) showed that the process has been speeded up from 4-8 weeks to 6 working days. The community provides valuable knowledge for all stakeholders, a single place with all necessary information and no parallel emails, and a clearly defined and explained

processes with hands-on training on *Bosch Connect*. As a result, the customer response time was reduced by weeks.

This is just one use case community example. After 1.5 years of piloting *Bosch Connect*, the system is open to all associates as of September 2013. The Client Localization Request process is a model that is used for similar processes within Bosch and on *Bosch Connect*.

Case Study 3: The Customs Administration of the Netherlands

Organization Background

The Netherlands, largely considered the gateway to Europe by land, sea and air, is pre-eminently a distribution country (Belastingdienst 2014). Millions of tons of goods enter and leave the country, considered the gateway to Europe, by land, sea and air, and these goods must be inspected. The Customs Administration of the Netherlands has to take political, policy-related and legal guidelines into account in inspecting these goods, and these guidelines are stipulated on both the European and national levels. The goal of the Customs Administration is to perform these inspection tasks as effectively and efficiently as possible, with the aim of limiting barriers for business traffic. Customs is part of the Tax and Customs Administration of the Netherlands, and its territory is divided into nine regions with a national office in Rotterdam.

The organization of the Customs Administration is displayed in Figure 9 below:

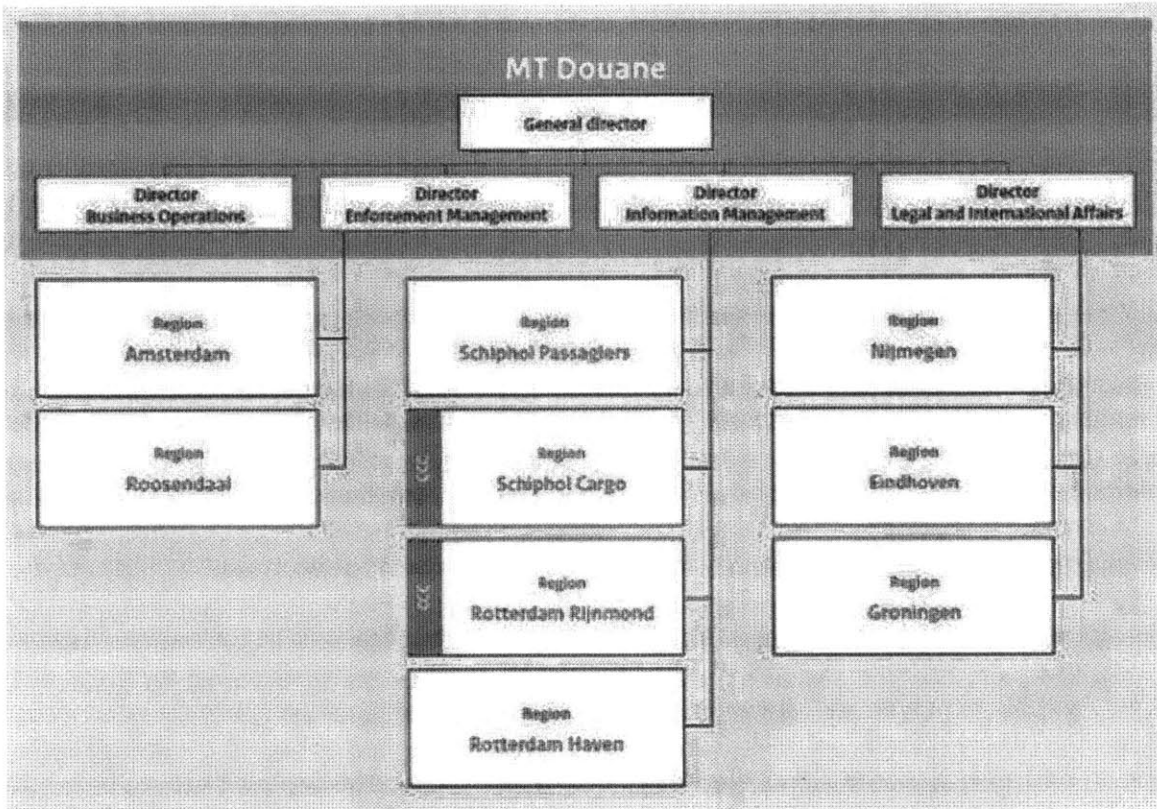


Figure 9 Customs Administration of the Netherlands Organizational Structure

The more than 30,000 staff members of the Tax and Customs Administration of the Netherlands are responsible for a wide range of activities, but are best known for levying and collecting taxes and national insurance contributions. Each year, the Tax and Customs Administration processes the tax returns of 6 million private individuals and 1.1 million entrepreneurs.

Other important work processes of Customs include fraud detection and the supervision of the import, export and transit of goods. The three core tasks of this supervision are:

- *'Stopping' goods at the border.* Some goods are not allowed free entry onto the Dutch or European market. Therefore, Customs takes measures, such as inspecting the movements of goods by means of scanning equipment or detection gates. Customs mainly focuses on drugs, weapons, counterfeit goods, and animals that are suffering from contagious diseases such as swine fever and foot-and-mouth disease. Customs will also 'stop' the export of some goods, such as weapons and ammunition. These kinds of goods cannot be exported to countries that are at war, or countries that are subject to international sanctions.
- *'Controlling' the proper application of laws and regulations.* Customs legislation consists of a system of formalities and obligations for importing goods from countries outside the European Union, for which import duties have not yet been paid. These goods may however be transported, processed and stored in the Netherlands. In such cases, rules apply to make sure that the taxes will be paid. Customs also executes this control task in respect of exports of goods.
- *'Levying and collecting' taxes.* This task includes levying and collecting import taxes, which may be determined at a European level, as well as levying and collecting excises and consumer taxes.

The Customs Administration of the Netherlands works to reduce delay and inconvenience for travelers and their business. In both the Rotterdam Port and at Schiphol Airport, Customs uses automated truck scanners to inspect cargo at a rate of 150 containers per hour, rather than using non-automated truck scanners that inspect at a rate of 20 containers per hour. Customs also operates a number of fixed and mobile

container scanners and large network of detection gates. At Schiphol Airport in particular, Customs uses fixed and mobile scanning equipment. Among these are a radiation detection gate and x-ray scan, which inspects cargo for content, radiology and nuclear radiation. Customs uses a voluntary security scan for inspecting contraband on travelers at Schiphol Airport. In addition, travelers' bodies are scanned and photographed by means of radio waves.

Using Social Technology to Expedite Customs Audits



Figure 10 The Netherlands customs officer
en-route

In 2009, the Customs officers identified several areas where their day-to-day work could be improved. These officers deal with unknown goods, local rules, lack of knowledge, and time pressure when conducting an inspection. Typically, customs officers physically drive to their office to pick up paper work forms that describe their assignments for the day. Then, they drive to one of the assigned inspection locations at a seaport, airport or land location (see Figure 10).

While inspecting, officers may need expertise regarding the contents, such as guidance on medications, organic materials, or other potentially hazardous or illegal goods. Most of the guidance needed was not written down and was typically learned by talking to people. The rules describing how to handle various materials change continually due to new information or evolving situations. For example, during the recent Russian boycott, officers were provided new instructions on how to handle goods from Russia.

In order to access expertise concerning their specific assignments, Customs officers would typically call people they knew personally who may have the information they needed to complete their work. In some cases, the officers would need to drive back to the office to find the relevant expertise or guidance for dealing with certain goods. In addition, Customs officers had little interaction with officers in any of the other 8 regions, and therefore they tended to reach out to colleagues within their own office for expertise, not knowing there were people with more expertise in other regions.

Social Software Usage

In 2013, the Customs Administration of the Netherlands implemented a social software platform called *Duane KennisConnect*, translated as Customs Knowledge Connect, as shown in Figure 11. The system intended to aid in knowledge collection and access throughout the Customs organization and other relevant departments. In addition to collecting and sharing knowledge, *Duane KennisConnect* was created for mobile

access with the intent of giving Customs officers more flexibility in their work environment.

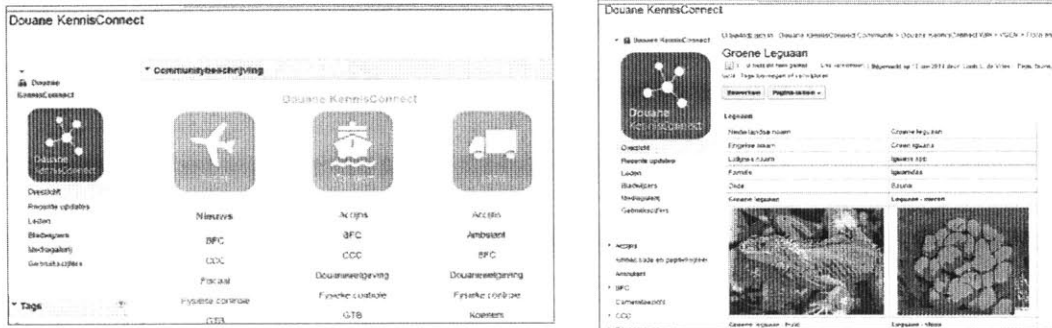


Figure 11 Duane *KennisConnect* Platform

In 2014, the Customs officers begin their day by accessing their mobile devices instead of driving to the office to pick up paper-based assignments (see Figure 12). They then travel to client locations to conduct inspections. During inspections, the officers can use *KennisConnect* from their mobile device to access knowledge on procedures. If they come across illegal objects, they are able to report those through the tool as

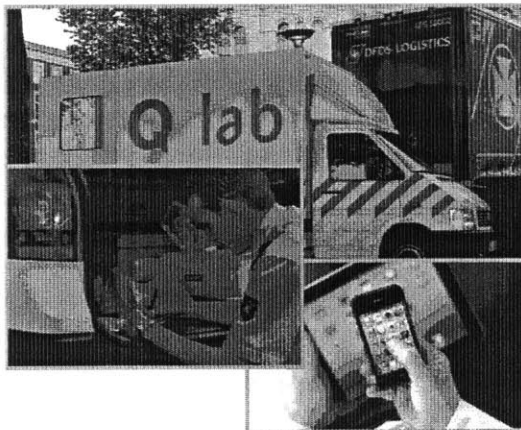


Figure 12 Customs officers move from paper forms to mobile submissions

opposed to filling out paper forms. If they come across goods that are unknown, they can look up people in their organization directory of *KennisConnect* with matching tags or content. For example, if there is a package of medication that is unknown, the officer

can search on that drug's name to find people with appropriate expertise. The officer can also see if they are online and can chat with them immediately or call them. If the person is not online, the office can see related colleagues who may be able to help. Since all 9 regions in Netherlands have access to *KennisConnect*, all the offices are represented in the tool. This enables the Customs officers to search and find expertise based on relevance to the work at hand and not simply on the basis of their personal connections.

Figure 13 shows a sample experience of a customs officer searching *KennisConnect* for information during an inspection where a sea coral was found. The customs officer is not an expert in sea corals and searches *KennisConnect* for coral information. The officers finds a wiki that describes various corals, including images, and describes the proper control status for the corals. In this case, the officer was able to make a decision about the coral without needing to contact people individually or bring the coral to a different location for further inspection.

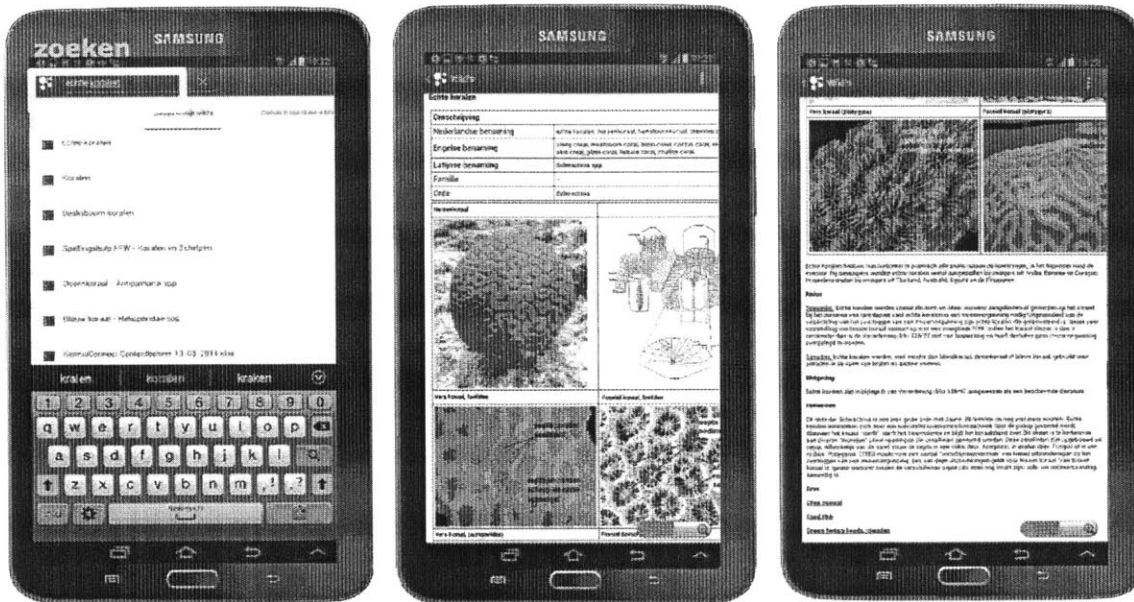


Figure 13 Searching for information on corals in *KennisConnect*

In the case of the Customs Administration of the Netherlands, the inspection process changed in three areas (see Figure 14): first, the Customs officers received their risk analysis through mobile devices at home rather than by paper in the office; second, the officers accessed their knowledge base directly through their mobile devices when questions arose in an audit; and third, results of the audit were recorded on mobile devices rather than paper forms.



Figure 14 Custom's work process after social software

Business Outcome

KennisConnect was launched to address inefficiencies in the package inspection process within the Customs Administration of the Netherlands. The study was conducted with a group of volunteer participants that were 2.5% of the overall population of people involved in customs inspections. The majority of the study participants served as package inspectors (39%) or as experts (23%) who assist inspectors in making decisions regarding package contents and regulations. Other participants included technical staff (IT), team leaders, managers, and operations (see Figure 15).

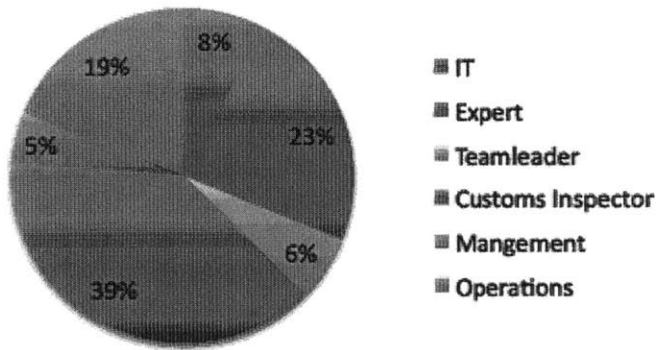


Figure 15 Role breakdown of study participants

Participation levels in *KennisConnect* varied. Some 60% of the study participants declined to indicate whether or not they used *KennisConnect*. Of the remainder, 22% reported that they have used the system, 9% reported that they chose not to use *KennisConnect*, and the remaining 9% were unaware of *KennisConnect* altogether (see Figure 16).

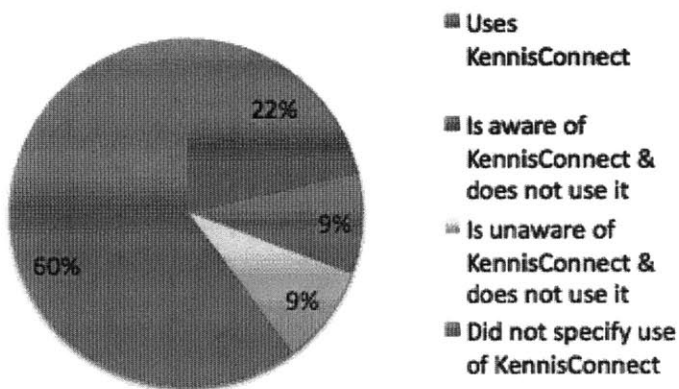


Figure 16 Participation levels in *KennisConnect* (as per study survey)

Study participants were asked to estimate several aspects of their inspection work before and after the introduction of *KennisConnect* (see Table 1). They were asked to provide the number of inspections performed, the number of experts they contacted to assist in those inspections, the number of individual packages inspected, and the number of hours performing inspections, each in a single workday. In addition, they were asked to rate their satisfaction with their access to information and expertise on a scale of 1 to 7, with 7 being highly satisfied.

Participants reported that after beginning to use *KennisConnect*, they are experiencing an increase in the number of inspections performed per day by roughly one-half inspection, meaning they are able to conduct an additional inspection every two days. The number of packages inspected increased by just over 1 additional package inspected per day. The number of experts contacted also increased by just over one-half contact per day, or one additional contact every two days. Hours spent inspecting reduced by approximately 15 minutes per day. Satisfaction levels with access to information and expertise increased slightly.

	Before <i>KennisConnect</i>	After <i>KennisConnect</i>
Number of inspections per day	8.62	9.09
Number of experts contacted per day	1.90	2.47
Inspections hours per day	6.90	6.63
Number of packages inspected per day	13.54	14.66
Satisfaction with the inspection process	3.27	3.29

Table 1 Inspection factors evaluated before and after *KennisConnect*

Study participants were also asked to provide additional comments about their impressions of inspections before and after *KennisConnect* was available to them. Prior to using *KennisConnect*, participants reported that the inspection process posed challenges due to a lack of expert availability, low information quality (such as out-of-date or unverified information), and amount of time required to find necessary information. Despite these issues, participants reported appreciation for direct contact with their expert colleagues. Some participants offered the following comments regarding the inspection process prior to *KennisConnect* (translated below):

The worst part was that the information was not always up to date, and that the information per folder sometimes could differ.

To verify the information obtained was harder.

It was difficult to find relevant information. Once found, that was the correct (current) information.

Challenged in accessibility and availability of the expert for the question.

After the availability of *KennisConnect*, participants reported the inspection process to have improved regarding the quality of information available, access to expertise, and mobile access. However, participants reported a diminished lack of personal contact with experts and challenges with the hardware that supports *KennisConnect*. Some participants offered the following comments regarding the inspection process after access to *KennisConnect* (translated below):

More clarity of work. Tablet performance is not good enough.

After *KennisConnect* at my disposal, I have a very simple way to access specialist information (work instructions, etc). The big advantage is that I can access this information via the mobile app always and everywhere. The search function in *KennisConnect* works fine.

I do not like using a tablet to work with, as the battery is often empty and too large to have on hand. Furthermore, I do not always have a computer at my disposal.

Knowledge is always at hand, even when traveling.

Better and faster information, but less social contact.

Almost no direct contact with expert.

The PCs is particularly slow and then you also have to ask the right questions to get the right answer...how to formulate the question to a computer is still unclear.

Over the past two years, *KennisConnect* has been utilized by the customs officers and support staff to improve the process of conducting inspections. The study showed several improvements to the inspection process, including quality of information, access

to expertise, and mobile access. Despite these improvements, study participants reported a diminished lack of personal contact with experts and challenges with the hardware that supports *KennisConnect*. In addition, 69% of the study participants were unaware of or unable to answer questions regarding *KennisConnect*. By increasing usage through better awareness of *KennisConnect* and hardware improvements for current users, *KennisConnect* can more significantly influence the inspection process.

Case Study 4: The Salvation Army

Organization Background

The Salvation Army is a charitable Christian organization based in London that operates worldwide. The organization is structured in a quasi-military fashion, using military roles such as soldiers and officers. The Salvation Army was founded in London in 1865 when William Booth, a minister, left his official position to work directly with the poor, homeless, hungry and destitute (The Salvation Army International 2014). The organization provides services to both adults and children. Its support for adults includes adult rehabilitation, Veterans Affairs Services, Prison Ministries, Elderly Services, Human Trafficking, and Missing Persons, and its support for Children & Families includes Hunger Relief, Housing & Homeless Services, Christmas Assistance, and Youth Camps & Recreation. The Salvation Army also provides Disaster Relief and Emergency Disaster Services.

Using Social Technology to Create and Plan a European Conference

The Information Technology (IT) Department of the Salvation Army is a worldwide organization with 5000 employees (van den Berg 2012). In 2012, the Salvation Army conducted its first conference in Europe for IT employees in the Salvation Army attended by employees, administrators, and managers of the Salvation Army in Europe.

Planning the conference involved roughly 35 people. The team was based in the Netherlands and physically met in the office to coordinate planning efforts. When interacting with people outside their location, the team relied on video chat, phone, or email. Given time zone differences, it was difficult to hold discussions with all members of the planning team, and as a result there were few time slots available when everyone could meet. The team members were resource constrained in their operations, and as such, they preferred to work on tasks rather than spend time in meetings.

Once approval was obtained for holding the conference, a round of email messages was sent to the planning team asking what they wanted to discuss. This information was sent to roughly 30 planners and an additional 15 managers, generating up to 200 emails in responses regarding attendance and planning. Only the lead planner and a secretary had access to the topic suggestions that were tracked in documents and spreadsheets in a single computer. A small group of five people held a phone meeting to discuss topics and make agenda. The group determined a date, location, and speakers, and at the time they chose not to include external speakers given the complexity involved. The location selected was in Switzerland, and the Swiss IT team was selected to organize the conference logistics. The team in the Netherlands had little visibility into the Swiss team's plans. The Swiss team took care of all the local logistics such as arranging transportation, selecting meeting rooms, and social events. The event planners reported approximately 23 meetings held in preparation for the event, with the majority of those

meetings being held in-person. The actual conference event lasted two days, and took over six months of planning.

Social Software Usage

In 2012, the Salvation Army began using a social platform to connect its volunteers with each other and with recipients of the Salvation Army services. The IT department, for planning its next conference in 2014, later utilized this platform, coordinating tasks related to the conference, session suggestions and selection, and content distribution.

Business Outcome

In 2014, the Salvation Army hosted an IT conference that was titled ETX2, European Technical Exchange 2. The IT department had been utilizing a community for coordination purposes, and to begin planning, that community was utilized to begin communication. The planners created a sub-community space where members could join who were interested in attending or helping with ETX2. The information required for the team to plan was created on pages available in online wikis and included travel details and ideas for selecting a conference date. For ETX2, external speakers were invited, and those external speakers were coordinated through online chat, Twitter, and the occasional email.

The group utilized discussion forums for session suggestions and narrowed down the content to be presented. Internal speakers coordinated through the community and asked others to share their views on what should be presented. Planning meetings were significantly reduced from approximately 23 to 13. The lead planner reported that “the meetings were shorter and more effective...we didn't have to meet each other often.”

Conference planners reported less than 25 emails were sent and received for planning with the team, and email was mainly used for planning with the external speakers. The conference-related documents, agenda, and travel information were announced throughout the community. The worldwide IT team also contributed to the event even though the event was targeted at European IT by suggesting session content and also by borrowing session content for IT sessions elsewhere.

The conference planning began in February 2014 and the conference was held in May 2014, reducing the amount of time that was required to plan the conference. Despite fewer meetings and emails, the scope of the conference and logistics was larger. The event was now a 3-day conference, as more sessions were added in addition to social events such as a canal tour through Amsterdam and events that highlighted the purpose of the Salvation Army including a dinner in one of the elderly homes where the attendees prepared meals for the residents.

On the day of the conference, attendees filled in a wiki with travel arrangements so they could plan their pickup from the airport. Photos and presentations were shared by attendees in the community space. After the event was over, discussions were continued online in the community. The Salvation Army has determined that another conference will be held in France in 2016, and the team organizing the 2016 event will use the social software having full access to all the work done in 2014 as a starting place.

Case Study 5: Software Company Customer Support

Company Background

Alpha Software is a fictitious name used in this case study to represent a publicly traded software provider based in the United States with offices worldwide. Alpha Software's customers operate in various sectors such as financial services, insurance, healthcare, communications & media, life sciences, and government. Alpha Software's technology is based on a patented, rules-based engine that describes the practices, processes, and procedures utilized in business operations. This rules technology allows companies to aggregate their diverse business practices and lets business managers implement operational changes.

Alpha Software develops software applications for sales, marketing, service and operations. Alpha's applications are developed to aid critical business operations, connect enterprises to customers, and adapt to rapidly changing requirements. Alpha's software applications are available on-premises and in the cloud. Alpha's software offerings include:

Business Process Management: Focuses on simplifying and automating operations to reduce costs and improve business agility.

Dynamic Case Management: Focuses on bringing together people and information needed to handle case-based work, such as a company, incident, or person.

Customer Relationship Management: Focuses on organizing data related to customers across various functions including sales, marketing, customer service, and technical support.

Sales Force Automation: Focuses on automating sales and sales force management functions.

Customer Service: Focuses on providing assistance and advice to people who buy or use the products or services of Alpha's customers.

Using Social Technology to Improve Customer Support Request Handling

A core function within Alpha Software is providing customer support to clients who are facing issues with the software in terms of installation, configuration, or usage. When a client submits a new issue to Alpha, a customer support engineer is assigned and expected to come up with a troubleshooting approach based on diagnostic steps from the customer description in the service request. Support engineers' success in providing this service depends greatly on their experience level and comfort "thinking on their feet" to get to the root of the difficulties.

Support engineers are challenged in solving technology issues by their limited access to information. Customer support engineers reported the following frustrations with the process of resolving customer support requests:

“It is impossible to understand everything about the problem. I did not write the code.”

“I have limited experience with this issue.”

“There isn’t good documentation on that feature.”

“In the absence of enough useful information available on fingertips, I had to seek answers to some basic questions that I should have known answers to myself.”

“Normally that process was fraught with frustration due to the search capabilities at the time and the lack of available SME input.”

“Hard to get the right people to provide input on ideas.”

“Working directly with SMEs [Subject Matter Experts] was a great learning experience. Being forced to fumble through the code and then chase people to get the right eyes was frustrating.”

“This issue involved a number of diagnostic patches to be developed and installed. I liked getting into the creation of the patches, but the cycle time for the customers release schedule make this a very long case.”

“I disliked the amount of lab reproduction needed to verify the document I needed to send the customer, so I was glad to post the final results to save future the same hassle.”

Customer problems are often complex. In many cases, customers would likely start with their own internal teams to resolve the issues. If these cannot be resolved internally, then customers call a support hotline or go online to enter a support ticket. At this point, a Level 1 Support Engineer will try to understand the customer problem, determine severity of the issue, collect relevant information, and create a ticket. The support engineer is expected to clarify the issue description, referred to as the “Clarify” stage. Next, the support engineer seeks to “Qualify” the issue by assessing whether the

problem matches the information collected. It can take up to a day to collect relevant information. In the “Solution” stage, the support engineer attempts to find a solution for the problem by searching similar issues in the support ticket system. If there are no similar reports, the engineer then looks at the product documentation and developer websites. If these paths do not lead to a solution, the engineer then moves the request to Level 2.

Level 2 support managers monitor the requests’ queue and assign issues to Level 2 engineers. Various Level 2 teams and team leads specialize in particular aspects of the software (for example, performance). Managers will look at the workload of various Level 2 engineers to determine if they have the time to work on another case. Once assigned a case, the Level 2 engineer will typically seek to collect more information about the issue, and depending on severity will open a conference call with the customer’s team of engineers to discuss the problem directly. Other Level 2 support engineers will often join in this call and help steer the troubleshooting process. The support team will attempt to validate what the client has reported with the client’s IT team on the phone, and suggest changes to mitigate the issue. More issue documentation is collected, including files such as logs, and the support engineer then seeks a specialist in the area.

While a technical lead is often asked to assist in the issue, these engineers are also time constrained and utilizing their time may require approval from the technical lead’s

manager. The issue exchange is email heavy, and as relevant issues are discussed, the information needs to be reflected in the ticket system. Root cause analysis may go on for weeks in complex, severe cases.

Social Software Usage

AlphaNet is a fictitious name that represents the online collaboration platform where Alpha Software's customers, partners and employees interact regarding software development and customer support. The platform is used to evaluate customer needs in order to define product development. The goals of the platform include:

More pragmatic products. *AlphaNet* collaboration is aimed at understanding client needs and addressing those in their products faster.

Speed-to-market. *AlphaNet* aims to shorten development cycles by including customers in pre-release downloads.

Lifecycle agility to seize new opportunities. *AlphaNet* seeks to enable customers and partners to influence product development.

Low risk, transparency and trust. *AlphaNet* provides source code access, feature planning, issue tracking, and pre-release downloads.

Business Outcome

After implementing *AlphaNet*, all product documentation, technical specifications, and engineering artifacts are now stored in *AlphaNet* and available to all who searched for content. The support engineers involved in customer cases are able to utilize this information in addition to the information stored in the ticketing system. For example,

support and sales engineers can create internal documents that are uploaded to *AlphaNet* and thus searchable by anyone in *AlphaNet*, increasing the possibility that these may prove useful in a customer support case. These documents may have detailed steps that describe the resolution or lead to information that help with identifying a resolution. The issue may even be resolved at this stage without needing to seek additional help.

The survey I conducted of users indicates several improvements to the customer support issue resolution process after the implementation of *AlphaNet*. Customer support engineers who participated in my study had on average approximately four years of experience at Alpha Software and three years of experience within Level 2 customer support specifically. These customer support engineers reported on specific customer issues they were involved in resolving before and after the implementation of *AlphaNet*. Significant changes include a reduction of emails needed to resolve issues, meetings held to discuss issues, and hours spent resolving issues (see Table 2). This last metric — hours spent resolving an issue — directly impacts request turnaround time to the customer, and is often used to evaluate customer satisfaction with support.

	Before <i>AlphaNet</i>	After <i>AlphaNet</i>
Number of people needed to resolve issue	5.29	4.83
Number of emails sent and received regarding issue	27.86	15.33
Number of meetings required to resolve issue	5.71	3.00
Number of <i>in-person</i> meetings	1.00	0.17
Number of <i>virtual</i> meetings	4.86	2.83
Hours spent resolving the issue	29.86	14.50

Table 2 Resolving customer requests as reported by customer support engineers

The support engineers also reported improvements in information access when asked to describe their impression of the customer support process before and after *AlphaNet*. For example, support engineers now do not have to interrupt engineers who are busy writing code and do not wish to be distracted or interrupted, thus leading to improvements in personal time management. Support engineers noted the following with regard to their experiences with *AlphaNet*:

"I had access to information created by just about anyone working on Alpha technology and didn't have to rely on documentation specialist or specific SMEs. So, learning new features was easy. "

I have "more information available for discussions with SME via an *AlphaNet* post."

“Having *AlphaNet* gets your issue looked at by many people and also can be used to get it looked at by the right people who can help you with the problem. Sometimes you are not sure who the right people are and even if you do know you have to ask multiple times to get the right people to look at it.”

“In this case it took SMEs from different teams to review and hand the case along. The *AlphaNet* allowed for them to communicate and me to be kept in the loop until the right eyes were on it,” thus leading to a potentially faster resolution.

“Multiple *AlphaNet* resources were used (and subsequently updated) and then reused later by other people dealing with the same issue for different customers. I liked that I could get the information quickly and *AlphaNet* was able to allow others to find the required information.”

In addition to customer support, *AlphaNet* is being utilized by the various functions involved in software development, including engineering and project management. The study showed improvements in the customer support process, including reduced time to resolving a customer inquiry and reduced number of meetings and emails related to customer support issues. Alpha Software continues to evaluate the impact of *AlphaNet* on software development processes in addition to customer support more broadly.

A Framework for Adopting Social Software to Understand Business Impact

Based on the case studies conducted with various organizations, I developed a framework that identifies six key practices that I believe can significantly influence organizational adoption and use of a new social software technology (see Table 3).

Understanding the Business Impact of Social Software
1. Identify and describe business process(es) or initiative(s)
2. Measure performance of the business process(es) or initiative(s)
3. Remodel the process(es) or initiative(s) with supporting technology
4. Set expectations and educate users
5. Measure performance of the process(es) or initiative(s) at regular intervals
6. Improve the process(es) or initiative(s) based on feedback and performance

Table 3 A framework for understanding the business impact of social software

1. Identify and describe business process(es) or initiative(s)

Before implementing or using social software, the organization should identify collaborative business processes or initiatives that require improvement with a goal of enhancing performance. For the participants in this study, the following processes were selected:

- CEMEX: Alternative Fuels Global Innovation Initiative, one of six global innovation initiatives at CEMEX.
- Bosch: Customer Localization Requests, one of Bosch's "Lighthouse Use Case" out of 25 other use cases in the pilot phase in 2013.
- The Customs Administration of the Netherlands: Customs officer package inspections.
- The Salvation Army: Planning an international conference.
- Alpha Software: Customer support tickets.

In the case of Bosch, the company chose to identify a process that was particularly challenging, involved many stakeholders holding different interests, where stakeholders had difficulty communicating and collaborating, and a process with high volume email traffic including many attachments. The company also focused on a process where the process owner was convinced of the platform's benefits and willing to proceed. To identify an appropriate process, the Bosch DS case suggests taking time to interview the most important stakeholders to understand their needs.

For each process or initiative selected, it is recommended that organizations document the steps involved to complete the process, the key stakeholders who are involved in these various steps, and the dependencies in the process. It is also helpful for organizations to identify various aspects of the process, such as where time delays occur and why, to help clarify metrics that would be valuable in the next step of this

framework. For example, is the requirement for stakeholder approval resulting in especially long delays? Is there a constraint, such as driving between offices or multiple time zones, that adds time delay? In addition to time, factors such as quality of output, access to people or information, and costs can provide information about the state of the as-is process.

2. Measure performance of the business process(es) or initiative(s)

Prior to making any changes in work patterns, technology, or behavior, organizations should identify metrics that describe how the process or initiative is performing in its current state and the corresponding measures. Process analysis from the first step of this framework can aid in identifying the metrics for process improvement. Some metrics that were described by organizations involved in this project include:

- CEMEX: Alternative Fuels Global Innovation Initiative
 - Percent of fossil fuels used in production
 - Cost of sharing best practices using in person teams
 - Rate of alternative fuels adoption compared to competitors
- Bosch: Customer Localization Requests
 - Length of time to respond to customer request
 - Number of emails involved in process
- The Customs Administration of the Netherlands: Customs package inspections

- Number of packages inspected per day
- Number of experts contacted per day
- Number of packages inspected per day
- The Salvation Army: Planning an international conference
 - Length of time to plan the conference
 - Number of emails to plan conference details
 - Number of planning meetings
- Alpha Software: Customer support tickets
 - Hours spent resolving the issue
 - Number of emails sent and received regarding issue
 - Number of meetings required to resolve issue

Not all metrics may be available as some limitations may exist due to process constraints. For example, the Salvation Army was not able to include external speakers in their initial conference due to time constraints. Additional useful metrics include employee satisfaction with the new process, what process stakeholders value in the improvements, and customer satisfaction with the process. This information can be collected through interviews, surveys, access to key performance metrics, and observational studies.

3. Remodel the process(es) or initiative(s) with supporting technology

After having identified processes and related metrics, the organization should identify a new model for the process that will be utilizing the social software technology available. In order to accomplish this step, the organization should have intimate knowledge of the process or initiative as well as the software products being implemented. The process modeler identifies how the process can be remodeled to alleviate time delays, improve quality, or change other attributes that would produce favorable outcomes. In order to identify beneficial changes, process modelers need expert-level system knowledge that takes full advantage of the technology available. This knowledge can be acquired through education, usage, or partnership with a technology expert such as an assigned mentor or advocate. (More on advocate programs is available in the section on Advocate Programs.)

In some cases, the process remained similar, while in others, aspects of the process changed. In the case of the Customs Administration of the Netherlands, the process changed in three areas. First, the Customs officers received their risk analysis through mobile devices at home rather than by paper in the office; second, the officers accessed their knowledge base directly through their mobile devices when questions arose in an audit; and third, results of the audit were recorded on mobile devices rather than paper forms.

For Bosch DS, the overall process flow stayed the same, with the same approval points and handoffs. However, roles were clearly defined and information on the process and its status were available throughout, reducing the need to reach out to individuals one on one. Organizing relevant information in a single, online source where people could ask questions reduced the need for email and meetings, giving people the option of working on their own time. Double work was avoided because those involved were able to see the current progress and involve other experts if necessary. Findings from the Bosch study further suggest the value of setting up a core team with some of the stakeholders to design the community together through explicitly visualizing and describing the new process that will be implemented.

4. Set expectations and educate users

My case studies found that organizations that implemented a social way of working within a process needed to educate and inform the people involved, including those managing the process and those engaged in the process. Some organizations chose to focus on user education alone, while others also educated community managers who would be responsible for the execution of the new processes.

Organizations also needed to clarify when they were planning to make changes, the nature of those changes, and expectations in terms of what tools to use and what tools

or processes to retire. Adoption issues arose when more than one tool or approach was in use and people needed to coordinate and decide which to use.

In some cases expectation setting was delivered from executive management down to the teams executing the processes. In other cases, a team that had identified a better work process shared their knowledge with others in the company. Many used the social platform as a way to describe the processes, explain the changes that have been made, and answer questions.

Community managers were typically in the role of communicating process changes to users and members. Some organizations, including Bosch DS, invested in community manager education with the goal of enabling people in this role move successfully to a new process. For community managers specifically, three formal training sessions were held:

- A 2.5 hour training session on how to use the tools, for example, how to set up a community, how to develop customizations, how to set up a wiki.
- A 2-day in-person training session for community lifecycle management and soft skills.
- A 10-week online course that enabled participants to read, solve problems, demonstrate understanding of Bosch's social business principles, and take an exam to achieve certification as a community manager.

To date, more than 300 people have completed the first two kinds of training and another 93 people are targeted for community manager certification by early 2015.

In addition to educating community managers, user-focused education was also utilized to encourage adoption. Education at Bosch was delivered company-wide through common-access communities that described their new process models. This education was in the form of text, videos, forum discussions, and shared documents.

Less formal approaches to education were also being utilized to help educate users. As noted in the Research Methods section, research was conducted with companies that were not included in the case studies. In one example, a construction company located outside Oslo, provided an in-context demo of their social platform in a regularly scheduled meeting to the project team responsible for managing large scale construction projects. During the demo, they showed how they planned to use social software to manage drawings, descriptions, building authorities, contractors, and bids to their client in the software. The 30-person team eliminated the large volume of post mail that was sent of these documents; they estimated a savings of approximately 250,000 Norwegian Kroner per year.

5. Measure performance of the process(es) or initiative(s) at regular intervals

Once an iteration of the new process has occurred, the organization then should identify and report on the metrics identified earlier. In some cases, there may not be any noticeable change after one iteration (e.g., customer support satisfaction). However, there may be metrics that do show changes (e.g., length of time to complete the process or number of people involved) and these are important to note.

Table 4 compares key metrics before and after social software implementations were involved in the processes at the organizations studied. These metrics highlight areas where the process underwent significant improvement and areas where more improvement might be achieved. Each organization had a different set of metrics, a different length of time the revised process was in place, and different goals.

At this stage, organizations should perform an analysis of the process to determine if the process is improving. Each organization will identify the metrics that have improved, the metrics that have not changed, and the metrics that are performing poorly. For each of these categories, the organization should identify contributing factors including stakeholders, process contributors, education, and technology, as discussed in Step 4.

Metric	Before	After
CEMEX: Alternative Fuels Global Innovation Initiative		
• Percent of fossil fuels used in production	5-7%	25-27%
• Savings associated to the alternative fuels initiative	\$0	\$140M
• Rank of alternative fuels adoption compared to competitors	-	1*
Bosch: Customer Localization Requests		
• Length of time to respond to customer request	4-8 wks	6 days
• Number of emails involved in process	61	0
The Customs Administration of the Netherlands: Customs package inspections		
• Number of packages inspected per day	8.62	9.09
• Number of experts contacted per day	1.90	2.47
• Number of packages inspected per day	13.54	14.66
The Salvation Army: Planning an international conference		
• Length of time to plan the conference	6 Mos.	3 Mos.
• Number of emails to plan conference details	200	25
• Number of planning meetings	23	13
Alpha Software: Customer support tickets		
• Hours spent resolving the issue	29.86	14.50
• Number of emails sent and received regarding issue	27.86	15.33
• Number of meetings required to resolve issue	5.71	3.00

* According to the *Global CemFuels Award, 2014*

Table 4 Comparing key metrics before and after process improvements

Organizations should also consider that processes may experience a drop in productivity after the initial software rollout (McAfee, 1993). Changes in metrics may occur for reasons unrelated to the underlying process changes. For example, economic factors may affect customer satisfaction and organizational changes may affect time delays. Continually evaluating these metrics at regular intervals will provide additional information about how to draw inferences about the influence of process change as well as that of relevant external factors.

6. Improve the process(es) or initiative(s) based on feedback and performance

Step 5 will help organizations identify the metrics that are changing as a result of process modifications as well as the factors contributing to those changes.

Understanding these factors may help organizations identify further improvements to make to the process or the factors surrounding it. In some cases, additional feedback may be required, such as data on changing levels of customer satisfaction. Data not readily available can be collected through interviews, surveys, and a variety of other feedback collection techniques.

At this stage, the organization should make appropriate adjustments to the process. For example, as was the case with CEMEX, the process was ready to be shared with other

global locations to affect a more significant change. With Bosch DS, the community continually informs process contributors of new process modifications. Once adjustments are made to the process, organizations should return to Step 3 to remodel and describe the changes. The organizations should continue onto Step 4 to reeducate users and participants and continue through the measurement and refinement of Steps 5 and 6.

Additional Recommendations for Growing Adoption

The Framework presented here offers ways for organizations to measure the impact of using social technology on their business. The Framework describes what the impact is, not how to increase it. As a result of analyzing the findings from my case studies of the five organizations and an additional three companies, several recommendations aimed at improving social adoption emerged.

Dealing with Resistance

In the initial phase of *Shift* at CEMEX, there was resistance to changing work practices and using social technology. In response, CEMEX implemented a program to help overcome this change. First, they designed user personas based on 12 different personalities in CEMEX, articulated their predispositions to change, and then described ways to sell the social concept to each of the personalities. Based on the information they collected regarding their 12 personas, they developed a change management plan for each persona. For example, one persona type was that of a senior executive. CEMEX understood that this group would not support a new initiative without proven results, and thus they chose to focus on use cases where they could develop results.

One such use case was referred to as the “perfect palette.” In Mexico, cement is moved in bags that are subject to damage. CEMEX has a popular cement product known for its ultra white hue, but cement bag damage can degrade the white color of the cement.

One CEMEX employee who is responsible for packaging organized a network within the organization to find others who shared the same difficulty with cement packaging. In the community, the group developed the concept of a “perfect palette” that described how to avoid broken bags, using photographs, ideas, statistics, and metrics to highlight improvement. By sharing examples such as these, CEMEX was able to change the mindset of resisters who gradually came to understand the value of social technology.

In another case, the organization dealt with resistance by focusing on simple use cases and simple use of the technology. They chose to educate users with examples that represented the work they were already doing. The company reported that it was easier to conduct training, which was focused on using the tools rather than learning how to do the work. They also took a simplified approach to the technology, rolling out only those features that their users needed at first and reducing duplicate technology in the environment. This prevented users from feeling burdened by complexity.

Advocate Programs

Using social technologies in the workplace requires that end users understand how the technology works as well as how they should be using the technology in their roles.

Some organizations have been able to provide this understanding through communities focused on educating users. However, other organizational cultures lend themselves to more one-to-one interaction. To accommodate this, advocate programs are often established. These programs recruit social software users who know the technology and understand how to apply it to business and user challenges. These advocates are often volunteers who are passionate about the technology. Advocates make themselves available for one-to-one or one-to-many coaching sessions with individuals and teams seeking guidance on using social technology. In one example, the advocates further organized in a community where other teams could request their help, download education resources created by the advocates, and ask questions directly in the community.

Senior Management Adoption

The case studies showed that senior management participation in social tools had an impact on general adoption. Some organizations appealed to the more senior managers by creating programs, education, and use cases specifically for their use. For example, one company created a community space for each region and its management. The community had pages that showed graphs of key performance indicators for that region, driven by systems external to the social technology. Putting these graphs on pages in the social tools made it easier for the managers to find the metrics that had previously been challenging to search for.

In another case, one of the senior executives moved his reporting process to a community space, requiring his direct reports to keep the space updated with news about what was happening in his organization. Managers and board members would write immediately when there was a topic that needed to be addressed, and this would be visible to the entire organization. This level of visibility was a departure from the typically closed way of doing things. One interviewee stated they “needed one guy to stand up with the guts to try something new.” That leads to “peer pressure when they see others are doing it, then the change starts more and more.”

In order to facilitate management adoption, another company used reverse mentoring, similar to the adoption advocate role above. A group of twenty executives were identified to participate in the program, and each executive was matched with a social software mentor from within their organization. The role of the mentor was to help the executive learn how to use social technology, understand how the technology was being utilized within their organization, and provide advice as the executive determined what use cases to implement in the technology. The mentors shared their lessons learned with each other in their own community space.

Conclusion

Social software, which continues to have significant impact on Internet usage in general, has been adopted by organizations aiming to better connect with internal and external stakeholders and support business practices organization-wide. Organizations have also invested in their own social platforms, enabling them to host conversations, gather ideas, and produce more relevant communications, among other capabilities.

Many organizations are making investments in social technologies to support their goals, yet struggle to understand the impact of their social technology investments. Despite this challenge, many organizations continue to promote the use of social technologies inside and outside of their organizations. Several have highlighted value to themselves and their clients from using such technologies. However, many still do not understand how to gain such benefits for themselves.

In this thesis, I discussed five case studies of organizations that have adopted social technology and demonstrated impact on various business processes. Each organization had a unique motivation for utilizing social software. In common, however, was that each identified at least one use case where they hypothesized that an improvement could be made using social software. By selecting and measuring specific use cases, these organizations were able to articulate the impact that using social software had on their business.

Based on my research with these companies, I developed a framework for identifying the business impact of social technology in the workplace. This framework includes six practices:

1. Identify and describe business process(es) or initiative(s)
2. Measure the performance of the business process(es) or initiative(s)
3. Remodel the process(es) or initiative(s) with supporting technology
4. Set expectations and educate users
5. Measure performance of the process(es) or initiative(s) at regular intervals
6. Improve the process(es) or initiative(s) based on feedback and performance

The intent of the framework is to help organizations identify processes and measure them before and after using social technology. To support ongoing adoption of the social technology within their communities, I included a number of additional insights that address such issues as dealing with resistance, building advocacy programs, and increasing senior management adoption.

By following this framework, organizations can obtain a clearer understanding of how much of an impact social software has on their business, and they can take steps to help improve social software adoption. However, social software adoption is not an organizational state that once achieved can be claimed and dismissed. User needs are constantly changing, user generated content begins aging the moment it is shared, and

many facets of organizations – department, processes, metrics, products, services, etc.
– are as dynamic as the people within them. It is important for companies to recognize that adoption is ongoing, requiring continual understanding, evaluation, and changes in supporting processes.

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