Aalto University
School of Science and Technology
Faculty of Information and Natural Sciences
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Publishing content from an enterprise microblog to social media

Master's Thesis
Espoo, April 13, 2010

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ABSTRACT OF
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Enterprise microblogging is one example of how social media can be used in the work place. A Microblog can be used to distribute knowledge efficiently and raise awareness of people's work.

This thesis takes enterprise microblogging one step further: to become a part of a company's external communications and an active source of their social media contributions. For this purpose a microblogging tool is constructed, allowing employees to collectively publish messages from the microblog.

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Yritysten sisäiset mikroblogit ovat yksi esimerkki miten sosiaalista mediaa voidaan hyödyntää työpaikalla. Mikroblogia voidaan käyttää tiedon tehokkaaseen jakamiseen ja työympäristön parempaan tiedostamiseen.

Tämä diplomityö vie ajatuksen yrityksen sisäisestä mikroblogista askeleen eteenpäin: osaksi yrityksen kommunikaatiopalettia. Mikroblogiin aktiivisesti lähetettäviä viestejä voidaan hyödyntää myös sosiaalisessa mediassa. Tätä tarkoitusta varten rakennetaan mikroblogi, joka sallii viestien äänestämisen ja julkaisemisen.

Avainsanat: sosiaalinen media, intranet, mikroblogi, yritys 2.0, web 2.0
Kieli: englanti

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Espoo, April 13th 2010

Oiva Eskola

Abbreviations and Acronyms

AJAX	Asynchronous JavaScript and XML. A collection of web development techniques commonly used to create interactive web applications
KMS	Knowledge management system
LAMP	A stack of open source software used to build a general purpose web server. The software includes Linux (operating system), Apache (HTTP server), MySQL (database software) and PHP, Python or Perl (scripting languages)
OAUTH	An open protocol to allow secure API authorization
OSS	Open-source software
PHP	PHP: Hypertext Preprocessor. A widely used, general-purpose scripting language
SAAS	Software as a service
UGC	User generated content
VM	Virtual machine. A virtual computer running inside another computer

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Chapter 1

Introduction

The purpose of this thesis is to look into the use of social media in organizations while focusing on microblogs. The point of view is partly that of information sharing and partly marketing. Information sharing is used here in two roles: as internal collaboration between employees and as external communications and marketing.

A process of publishing content from an enterprise microblog is proposed as a solution to increase the amount and the transparency of communications to public. A software tool is built to enable both microblogging and publishing messages. The process and the tool are evaluated in the context of one organization and its employees.

1.1 Background

Social media is a term that has seen great use during the last five years. And not without a reason—Social media has practically transformed the Internet from a place of information to a place of people and social interaction. Different social media services like blogs, wikis and social networking sites such as Facebook have reached a huge user base.

The traditional media—newspapers, radio, television and book publishers—have had to adapt to a new situation where information is produced and distributed by people for people. But also firms have felt the effect of social media. Their customers are exchanging information and rating firms and products on the internet, while trusting traditional advertising less and less. This phenomenon is forcing firms to become more transparent in order to retain the people's trust.

Despite these challenges, social media can also be seen as an opportunity to firms. Communicating to customers and other stakeholders has changed but has not stopped. Utilizing social media in communications and marketing is something that many firms have now looked into. As a newborn communication channel there are no set rules or best practices but they are being formed rapidly.

Social media services also offer new means of communications that could be put in use *inside* firms in order to make information sharing more efficient. Decentralized companies and knowledge workers need new tools to replace email as their communication channel.

Valve Branding

This thesis is done for Valve Branding Oy (Valve). Valve is a Finnish internet agency. Valve was founded in 2000 and currently has 37 employees.

Utilizing social media has become an important part of Valve's work during the last couple of years. Social media is being used in marketing and communications. It is safe to say that most of Valve's projects have at least some social media angle.

Valve has also been developing social media guidelines as a part of its communications offering. Many of Valve's clients have understood the need to embrace social media, but they lack the internal procedures and best practices to do so.

Valve has identified the need to communicate better the work it does. Various social media tools have been tried, including Twitter, Facebook and a corporate blog.

This is the background for this thesis from the company's point of view. One purpose of this thesis is to find ways how firms in general could adopt and utilize internal social media. Findings from this thesis can potentially be used as part of Valve's social media strategy.

1.2 Problem

The problem is two-fold. On one hand firms need to increase their transparency and re-focus their marketing efforts to respond to the changes happening in marketing communications. On the other hand the firms also need to increase their internal transparency and support information sharing and

collaboration among employees to boost productivity.

This thesis tries to find out if social media can offer solutions that could help in these problems. For example, can social media be used in internal communications? Are microblogs or other social media applications efficient tools for knowledge sharing? If an organization is using social media internally to share information could it be utilized in external communications?

The detailed research questions can be found in chapter 4.

Some of these topics have been studied before, sometimes from different perspectives, and one objective of this thesis is to look into both previous research and existing tools.

1.3 Objectives

This thesis has four objectives:

1. Find ways firms could utilize social media internally
2. Evaluate current social media tools and best practices used by firms
3. Develop a process which enables firms to publish content from a microblog
4. Develop a software tool that implements the process

1.4 Structure of thesis

The next chapter is an introduction to the central concepts of this thesis and the previous research around them. These concepts include social media, knowledge management, Enterprise 2.0 and microblogging.

The third chapter is a review of currently used social media strategies as well as currently available microblogging tools. The current use of social media in Valve is also studied.

The fourth chapter holds the research questions in more detail as well as the evaluation criteria for the results. The research questions are examined using a hypothesis in the fifth chapter and the results are laid out in the sixth chapter.

Chapters seven and eight include conclusions, discussion and a list of future work.

Chapter 2

Previous Research

2.1 Social Media and Web 2.0

The terms Web 2.0 and social media are widely used to describe new ways of communicating online. 'Web 2.0' was first coined by Tim O'Reilly in 2004 to summarize the changes in the Internet after the burst of the dot-com bubble in 2001. While Web 2.0 is a loosely defined term, there are some commonalities between Web 2.0 web applications. Typical Web 2.0 applications feature information sharing, interaction of users with other users and user centered design.

From a technology point of view Web 2.0 embraces lightweight solutions like creating distributed applications by sending XML data over HTTP or enriching the user experience with asynchronous JavaScript and XML (AJAX). (O'Reilly, 2005; Wikipedia, 2005)

Six years after its introduction the term Web 2.0 is being slowly replaced by 'social media' for a more user and content centric view. Social media focuses more on the communities that are present in the web and how they change the ways people consume media. Social media can be defined as the combination of content, communities and Web 2.0 technologies. Here content usually refers to user generated content (UGC); comments, ratings and discussion among others. (Ahlqvist *et al.*, 2008)

Participation, openness, conversation, communities and connectedness are typical phenomena in social media. Contributions are encouraged from anyone who is interested as are comments and sharing of information. Social media is a two-way conversation within communities of shared interests. (Mayfield, 2008)

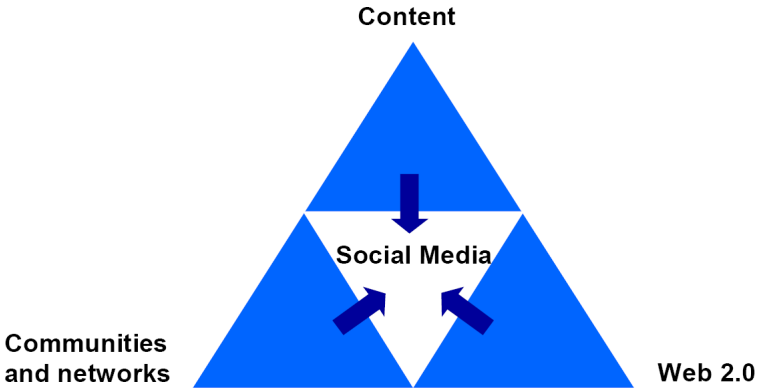

Figure 2.1: Social media triangle (Ahlqvist *et al.*, 2008)

Most social media services utilize content created by its users or have users generate value in other ways. Social media can be produced by an existing community, or the community can consist of individuals who produce content to the service. A social media service is often only a platform on which users generate and share content. User generated content can be divided into three categories:

- New content: text, pictures, videos, music
- Adapted content: compilations, remixes, mashups
- Organized content: playlists, tags, ratings

(Kangas *et al.*, 2007)

Social media services have captured impressive numbers of users that to some extent prove the significance of the phenomenon. The flagship application Facebook has attracted over 400 million users. (Facebook, 2010)

Microblogs

Microblogs are one popular application of social media. Böhringer and Richter define microblogs as "a smaller version of weblogs enriched with features for social networking and with a strong focus on mobility". Users post short messages to their microblog where they are shown in chronological order. (Böhringer & Richter, 2009).

In contrast to blogs, typical microblog messages are much shorter, usually less than 200 characters. In Twitter the messages are limited to 140 characters

to allow posting messages using text messages. Facebook's status updates are limited to 420 characters. (Java *et al.*, 2007)

Microblogs provide a light-weight form of communication. Short messages are easier to write than long blog posts, although summarizing a complex thought to 140 characters can be difficult. This makes microblogs more suitable for sharing short insights, news and links to web articles. The lightness of microblogs makes frequent updating more easy than in blogs. (Java *et al.*, 2007)

Microblogging applications display messages posted by their users as *feeds*. A feed is a chronological list of messages which can consist of messages by a single user or a group of users. (Günther *et al.*, 2009)

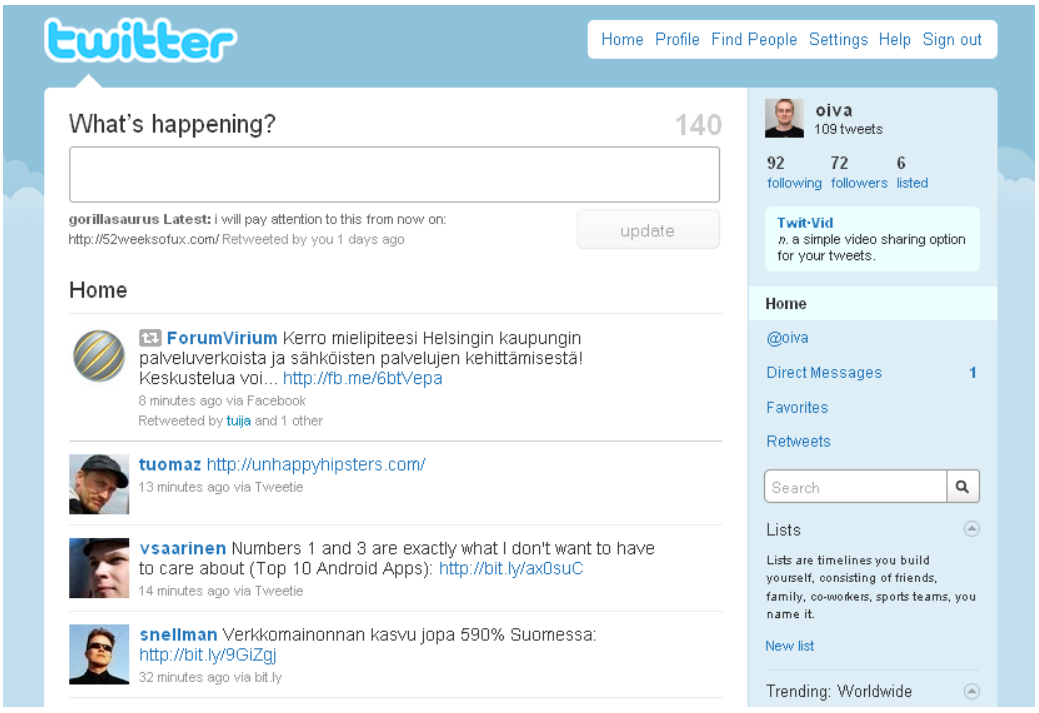

Figure 2.2: Screenshot of a Twitter feed

Microblogs include a strong element of social networking. A user can choose to follow a number of other users whose messages will then form a feed specific to the user. Following someone's messages forms a one-way relationship while social networking sites usually require that two users both accept each other as friends, thus forming two-way relationships. (Mayfield, 2008; Java *et al.*, 2007)

Hash tags

Most microblogs allow users to tag their messages. In Twitter, Yammer and others this is done by using hash tags, combining a word with the hash sign, for example `#microblog`. The tags can be used to build lists of messages with the same tag. In Twitter the most popular tags and words are monitored, and the front page shows a list of trending topics. Messages containing the same hash tag can be monitored in realtime, creating an ad-hoc message channel.

A tag is often a single word (`#blog, #blogging`) or an abbreviation (`#tgif` for *thank God it's friday*). Tags can also consist of several words with spaces removed, for example `#haitiearthquake`.

2.2 Social media in intranets: Enterprise 2.0

The use of Web 2.0 tools for generating and sharing information in companies has been named as the Enterprise 2.0. Andrew McAfee uses the term strictly to focus on the technological platforms a company can use to display the output of their knowledge workers, for example blogs, wikis and intranets. Don tapscott views Enterprise 2.0 in a larger cultural context, where collaboration is key. Employees can collaborate more easily with the new tools but collaboration should not stop there: knowledge silos, firms and stakeholders should be able to collaborate with each other to stay relevant. (McAfee, 2006; Tapscott, 2006)

2.2.1 The tools

McAfee uses the acronym SLATES to describe the components of Enterprise 2.0 tools. SLATES stands for Search, Links, Authoring, Tags, Extensions and Signals.

Search: intranet navigation is often insufficient for finding the right information. A good text search is often faster and simpler.

Links: one way to improve search is to use links. Google uses inbound links as a part of their search algorithm to calculate the relative importance of each web page. The same approach could be used on intranets but it would require more linking by more people compared to traditional intranets run by a small group of people.

Authoring: people have a natural desire to author and given the right tools they can contribute valuable information. Wikipedia has shown that iterative group contributions can work while blogs demonstrate the power of individual posts and comments. Contributing new content and editing existing content should be made as easy as possible.

Tags: content categorization by tagging is called a folksonomy, as opposed to taxonomy, where content is fitted into an existing categorization. Tags can help create more natural categories and make finding information easier. Adding tags should be easy and encouraged.

Extensions: content finding and categorization should be extendable. A smart algorithm can be capable of extending search and recommending content based on the users' preferences. This technology is in use in many e-commerce websites.

Signals: e-mail alerts and RSS-feeds can be used to signal users when new information is added. Users should be able to subscribe to new content to receive updates that are relevant to them.

(McAfee, 2006; Koch, 2008)

Much of the research done in finding content in the Internet could be adapted to intranets as for example the recommendation algorithms demonstrate. One option to improve search results is to use simple content ranking done by the people who consume the content. A study by Agichtein *et al.* shows that users of a question / answer site can reliably evaluate the quality of an answer. The users either vote 'thumbs up' or 'thumbs down' on answers they like or dislike. The number of 'thumbs up' minus 'thumbs down' divided by the total number of thumbs given to an answer is a significant feature of answer quality. (Agichtein *et al.*, 2008)

Many employees already use social media services in their private life. Thus bringing the same kind of tools into the office is often accepted or even requested by the employees. In fact, a survey by Bughin shows the use of Web 2.0 technologies is often started at the grassroots level, with 45 percent of early adopting corporations of Web 2.0 claiming that "a grassroots attitude was the clear catalyser of adoption and sustained usage". But leveraging this momentum requires loosening the hierarchical structure of an organization. (Bughin, 2008)

Of course, not all hierarchical structures should be dropped. An enterprise needs some structure and common ways of doing things to remain more than the sum of the individuals working there. (Koch, 2008)

The end-users should be kept in the loop when designing and implementing

new tools. Koch suggests that participatory, iterative design should be used when introducing new work systems such as wikis. Part of the iterative process is to identify work processes and systems and the problem that is being solved. Affected employees should try to agree on what tool to use, how to use it and what everybody should expect from the new system. It should also be taken into account that a technical solution might not be the best answer for some problems. (Koch, 2008)

Improved efficiency is not the only reason to introduce social media tools into the intranet. Using social media in the intranet is also a safe way to practice using social media in general—a useful skill when companies adopt social media as part of their communications. The risks in an intranet are small compared to communicating directly with customers. (Sihvola, 2010)

2.2.2 Collaboration and transparency

The new tools should enable employees to collaborate, and more importantly, make collaboration a part of everyday work. Previous knowledge management systems have treated knowledge sharing and management as an isolated activity which consumes additional resources.

The Internet also enables collaboration on a firm level. The cost of starting partnerships has gone down creating new business opportunities. Firms can more easily coordinate work among other firms but also collaborate with customers and other stakeholders. But collaboration requires increased transparency. Disclosing basic financial information is not enough anymore. Customers can evaluate companies and products accurately and share this information with each other. Also, collaborating with other companies and business partners requires sharing intimate information.

Tapscott says that firms are routinely put under the microscope by the media, citizens and whistleblowers. Firms need to be ready for such inspection and communicate their values, honesty, accountability and openness—preferably beforehand. “If you’re going to be naked, you’d better be buff!” (Tapscott, 2006)

2.2.3 Microblogging in intranets

Blogs and wikis are the typical social media services that are incorporated to intranets. But many other social media services could also be used in intranets. One aim of this thesis is to show that a microblogging tool can be

effectively used in internal communications.

Microblogs are one social media application well suited for business environments. Advantages of microblogging include increased transparency and collaboration and providing a simple way to ask and answer questions.

In contrast to email communications, microblogging is less disruptive and information shared via a microblog is more accessible to others. The asynchronous nature of microblogs not only enables recipients to decide when they read new messages, but allows them to decide who they follow and what information is relevant to them. With email the relevancy is left for the sender to decide and messages are only visible to those who are part of the thread. (Günther *et al.*, 2009; McAfee, 2006)

McAfee goes on to say that person-to-person messages, such as emails or instant messaging, or knowledge management databases are not very good at providing answers to questions like what are people doing or what they are interested in. (McAfee, 2006)

One use case for enterprise microblogs is just that: raising awareness of what people are working on. In return, this will help employees understand the context of their own work. In contrast to blogs, people can use microblogs to send even the most mundane messages, like being "at work" or "eating". These messages help others to retain a sort of ambient awareness of the user. In a microblog environment the messages usually do not have explicit recipients and the receivers of a message do not have any obligation to respond. This decreases the threshold to post new messages. (Oulasvirta *et al.*, 2009)

To summarize, Böhringer & Richter suggest the following definition for enterprise microblogging:

> "Enterprise microblogging is technologically supported interpersonal interaction utilizing short information snippets within a separated information space (i.e. company, department, project) in order to create informal, social, group-structural, and workspace awareness." (Böhringer & Richter, 2009)

In their study Günther *et al.* found that employees have concerns that could hinder the adaptation of an enterprise microblogging system:

- Signal-to-noise ratio: employees fear that adding yet another communication channel will flood them with information
- Codification effort: the belief that putting information into the system costs time and reduces performance

- Privacy concerns: the fear that sharing information will result in the management tracking your activity more closely. Employees are also concerned about the confidentiality of the information they share
- Facilitating conditions: integrating the new system tightly with existing tools is emphasized

(Günther *et al.*, 2009)

Also, employees cannot be expected to start using a microblog instantaneously. Böhringer & Richter argue that microblogging cannot be taught. People will always have different ways of using a microblog which should be accepted. (Böhringer & Richter, 2009)

2.3 Knowledge management

The information era has promoted knowledge as a firm's most important resource. This has lead to study of knowledge management systems—different ways of storing and sharing information. Microblogs touch on the theory of knowledge management as a way of sharing and receiving information. (Günther *et al.*, 2009)

Knowledge has been defined as the set of operational routines and creative processes specific to the firm. Knowledge management theories and "theories of the firm" begin with the assumption that there are gains from specialization of individuals. Because production requires a range of specialized knowledge, the coordination of knowledge becomes important. (Grant, 1996)

Lately knowledge management has been criticized for its view of knowledge as a separate resource which must be managed—a view that might not be relevant to modern knowledge workers. (McAfee, 2006)

Still, the recent knowledge management study has started to view knowledge as a feature of a community. This view is at least partially embedded in the design of modern collaboration systems.

2.3.1 What is knowledge?

Knowledge management system design has been traditionally based on three different views of knowledge: knowledge as object, knowledge embedded in people and knowledge embedded in communities. The knowledge as object perspective views knowledge as a private asset owned by the firm, and the

goal of knowledge management is to codify knowledge from people's minds into a 'knowledge repository'. (McLure & Faraj, 2000)

The knowledge embedded in people view sees organizational knowledge as the sum of the knowledge of the organization's employees. Thus knowledge management is in practice the management of human resources, as knowledge is increased either by adding more people to the organization or by educating the existing employees. In this context a KMS is a knowledge map, pointing to the experts of each subject. (McLure & Faraj, 2000)

The knowledge embedded in community perspective views organizational knowledge as the overlapping and common knowledge which does not depend on one individual. In this case knowledge exchange is best supported by enabling discussion and collaboration. (McLure & Faraj, 2000)

The chosen perspective greatly affects not just the mechanisms through which knowledge is thought to be exchanged, but also the motivation for people to share their knowledge. If knowledge is embedded in people, the incentives to share knowledge are more those of self-interest: increased reputation and respect from coworkers. (Constant *et al.*, 1994)

Sharing knowledge with the members of a community relies more on the willingness of people to nurture the community. The returns from participating can be tangible, but many times they are intangible. Tangible returns include gaining access to useful information, receiving answers to specific questions, or other personal gains, for example being able to promote one's work while participating in information exchange. Intangible returns include enjoying helping others and the feeling that "everyone is better off when knowledge is shared". (McLure & Faraj, 2000; Günther *et al.*, 2009; Bughin, 2008)

The motivation behind sharing company internal communication to outside the company is similar. There might be no immediate tangible returns, but the company could benefit from the fact that other people in the industry and customers have access to the same information. For example, by being able to more easily communicate with subcontractors and customers.

2.3.2 Increasing participation

The first step in creating a knowledge sharing environment is simply to *enable* sharing by giving people the time and the tools to exchange knowledge. Participation takes time, but the time used sharing knowledge should not be viewed as time wasted. (Constant *et al.*, 1994)

In their study, Brzozowski *et al.* conclude that managers' participation is

a key factor that motivates people to start contributing to enterprise social media. They also found that the comments the users receive are a more important factor than readership for predicting their future contributions. Comments let users know that their contributions are interesting to others. Nevertheless, the study suggest that social media tools should also show reader counts where possible. (Brzozowski *et al.*, 2009)

Overall, firms should minimize barriers for participating. Every contribution should be seen as valuable regardless of how big the contribution is. (Bughin, 2008)

2.3.3 Future of knowledge management

Tapscott suggest that current knowledge management systems should move from knowledge *containers* towards more collaborative systems. Knowledge should be seen as something that is created in relationships. The somewhat frightening implication from this is that knowledge cannot be owned.

Early knowledge management strategies have focused on exchanging internal knowledge, but customers, suppliers and external information aggregators have become essential to sharing and receiving knowledge. Creating such knowledge network will be necessary to maintain a competitive advantage. (Tapscott, 2006)

2.4 Research methods

The enterprise use of social media is relatively new which has limited the amount of previous research available to authors of the subject. Instead, some authors have relied on their findings of case studies. Böhringer & Richter used a case study method and direct observation of the conceptualization, implementation and diffusion of an enterprise microblogging system in their study of microblog adoption. Andrew McAfee based his paper on Enterprise 2.0 on a series of case studies about blog and wiki use in a bank. (Böhringer & Richter, 2009; McAfee, 2006)

Similarly, several researches have analyzed the content of existing collaboration systems. Java *et al.* (2007) retrieved and analyzed a set of 1.35 million messages from Twitter combined with the social graph of the message authors. The same tactic has been used by McLure & Faraj (2000) who analyzed the content of technical usenet groups. Brzozowski *et al.* (2009) analyzed the effect of feedback and peer pressure using one year's worth of

employee contributions from a large enterprise, combined with the employee directory for a view of the employees' social context. Extensive analyzation and classification of 400 000 microblog messages is also in the heart of the paper by Oulasvirta *et al.* (2009)

In their paper Agichtein *et al.* researched quality of user generated content in a question / answer community. They defined three different metrics for analyzing content quality. These are the textual content itself, user relations and usage statistics. The metrics were combined into a classification framework whose purpose was to automatically separate high-quality content from a given dataset. The dataset of questions and answers was also graded and labeled by human editors. Matching the gradings between the classification framework and human editors gave information on what were the most significant features in questions and answers that made them high-quality.(Agichtein *et al.*, 2008)

Attitudes towards the use of social media in enterprise environment have been studied with interviews and surveys. Tapscott's research of Enterprise 2.0 "investigated hundreds of organizations through executive-level interviews". The social media policy study by Robert Half Technology was based on the interview of 1 400 CIOs. Jacques Bughin, the author of "The rise of Enterprise 2.0" points out that there is a flaw in interviewing only CIOs and CTOs because "Web 2.0 technologies propagate at the grassroots level". Bughin's own quantitative survey was conducted on 2 800 executives from 68 countries, providing an extensive view of Web 2.0 usage in 2007. (Tapscott, 2006; Robert Half Technology, 2009; Bughin, 2008)

2.5 Summary

Social media has transformed the way the Internet looks and functions. People have adopted numerous social media services into their daily lives and made user generated content an integral part of the Internet.

Social media applications are slowly entering companies, often as grassroots initiatives. There exists a demand for new tools that would let knowledge workers do their job efficiently, but also to contribute their knowledge effortlessly.

Microblogs are one category of social applications that can be suitable for companies. Microblogs can be used to spread information and awareness among employees while avoiding the distractions of email. The option of following certain people in addition to the use of groups and tags helps improve

the signal-to-noise ratio on microblogs.

Modern knowledge management and Enterprise 2.0 theories view knowledge as a common good, something that is generated in communities. Sharing information and ideas between people, regardless of whether they work in the same company, is a key factor in maintaining a competitive edge. But collaboration also requires greater transparency from enterprises.

Chapter 3

Current State

This chapter explores the current use of social media in organizations and examines what microblogging options are available for enterprise use. The current use of social media in Valve is also studied.

3.1 Currently available microblogging applications

Appendix A lists eleven existing enterprise microblog services and products with some of their key features. In addition to the listed applications there are products like IBM's Lotus SameTime, Microsoft's SharePoint and Jive, which are designed for collaborative work, but do not fit the definition of a microblog.

The applications could be divided into two categories: the microblogs that are offered as a service (SaaS) and microblogs that can be self-installed. Some of the microblogs offer both options or a ready-installed rack server which holds the software.

This division is valid because firms typically feel strongly for the safety of their data. For some, storing internal discussion on a machine not within the company firewall can be an issue. Microblog service providers are aware of the security issues at play and many of them disclose the many security measures they have taken to secure their clients' data.

3.1.1 APIs and platforms

Almost all of the listed microblogging applications have an API that can be used to read and write messages. In recent years Twitter's API has become a de-facto standard for microblog APIs, although many still offer their own APIs. Microblogs supporting Twitter's API can take advantage of the many applications that were designed to be used with Twitter and its API. Twitter, being the largest microblogging service, has gathered a mass of third-party applications.

There has also been a push to implement a protocol which would allow different microblogging services to inter-operate. OpenMicroBlogging, released in 2008, was the first protocol that let users of a service follow messages of users on other services. The protocol is supported by Status.net[1] and OpenMicroBlogger[2], two open source microblogging services.

The protocol evolved into OStatus in 2010. OStatus is in fact a collection of protocols like Atom, PubSubHubbub and Salmon which are used in tandem to enable routing of staus updates and other information between microblogs. (StatusNet Inc., 2010)

3.1.2 Examples of microblogging applications

Twitter

Twitter[3] is by far the most popular microblogging service. Twitter was founded in 2006 and has since grown massively. In February 2010 Twitter's users posted 50 million *tweets* per day. (Twitter, 2010)

One reason for Twitter's success is its API which has enabled developers to create an ecosystem of more than 50 000 applications around Twitter. In fact, more than half of Twitter users do not use Twitter.com to post their tweets but an application that uses the API. (Cheng & Evans, 2009)

Twitter has been designed to be public and it cannot be easily used for company internal communications due to its privacy settings. There is currently no way to limit messages to some predefined set of users. Users can choose to make their messages private in which case they have to individually give permission to anyone wanting to read them.

[1] `http://status.net`
[2] `http://openmicroblogger.org/`
[3] `http://twitter.com`

However, Twitter could be used to publish content from a company microblog. Published messages could be sent to a company account or individual employee Twitter accounts through Twitter's API. Not all employees will ever have a Twitter account which reduces the feasibility of the second option. Using a company account to post messages to Twitter has its own problems, mainly masking the employees behind the company.

Other limitation with Twitter is the difficulty of following discussions. Users can reply to other users using `@username` syntax but these replies are only visible to users who follow both the sender and the receiver of the message. Replies are not tied to a specific message which means there are no message threads. The context of a reply could in theory be deduced from the time the reply was sent.

Yammer

Yammer[4] is a microblogging tool made especially for enterprises. It was launched in 2007 as the *corporate Twitter client*. (Schonfeld, 2008)

Message feeds in Yammer are visible only to users with a company email address. A company forms a *network* inside which its employees can communicate and share information with each other.

Networks can be divided into *groups*. Groups can be formed around a certain expertise or the company's department structure. Users can join any group unless the group is made private.

Discussions in Yammer can be made public through a RSS-feed but the privacy is controlled on a network level. This means that either all messages in a company's Yammer network are being pushed into the feed or none of the are. (Yammer, 2009)

WordPress Prologue 2

Prologue 2 is not a microblogging application per se but a theme package for WordPress blogging software which modifies a blog into a microblog. The theme includes a threaded comment display on the front page, real-time notifications of new comments and in-line editing of posts—features, that are designed to make a blog feel more instant. Prologue is best suitable for sharing information within a group. [5]

[4] `http://www.yammer.com`
[5] `http://p2theme.wordpress.com/`

3.1.3 Summary

Current enterprise microblogging tools offer similar features: short messages that can be sent to groups of people. The biggest difference between the services is their installation method. Some of the products are only available as SaaS while others can be installed inside company firewalls and some offer both options. Another differentiating factor is the number of platforms the microblog supports. A web interface is the default in all of the services but many offer a standalone application or mobile versions for their users. A microblog with a Twitter-compatible API opens the possibility to use many existing third-party tools.

Having the ownership of all data can be an important factor for organizations who fear for their privacy. Some services like Yammer try to leverage the fact that user generated content lives on their servers and create a lock-in. For example, removing an ex-employee from Yammer is an administration feature which requires the company to pay $3 per month for every user.

Installing a microblog on an own server does give more control over the data. Using an OSS microblog gives more options for developing new features for the microblog. Microblogs with mature APIs can also be extended, although not in as great extent. The slow response times of APIs on hosted microblogs can furhter limit their usefulness.

3.2 Company and customer interaction in social media

Social media is essentially a two-way communication channel. A firm who is present in social media will attract both fans and critics. Trying to silence the critics will usually only make matters worse. Customers will talk about firms on the Internet but firms have an equal opportunity to take part in that discussion. The best case scenario is to engage users and have them interact with the company. For example, communities can be used for feedback and reviewing early ideas. (Ahlqvist *et al.*, 2008)

Social media should not be treated as a magic ingredient that can be applied to marketing and expect it to work. For example, in 2009 Honda built a Facebook fan page for its new model, the Accord Crosstour. The fan page quickly started to gather negative comments about the car's looks. Some users tried to defend the car, but these users were later shown to be paid by Honda for their positive comments. (Grove, 2009; Ruokomäki, 2009)

Review sites

Review sites are websites where people can write reviews of companies and products they have used. These sites usually offer a rating tool.

Customer reviews are an integral part of most e-commerce sites. For example, Amazon shows customer reviews of the products it sells. The reviews themselves are also rated and sorted by their perceived usefulness. Showing both top and bottom ratings can give the customer a quick look of the product's good and bad features.

Sites like Epinions.com and Yelp are social media services built around rating businesses and products. Customers can review and rate any business on Yelp. While good reviews can help a business to gain more customers, a bad review can equally hurt business. Yelp has over 9 million reviews and 26 million visitors a month. Yelp's business model is to charge businesses for advertising on their site. By advertising, a business also gets a chance to promote their favorite review on top of their Yelp page. (Yelp, 2010)

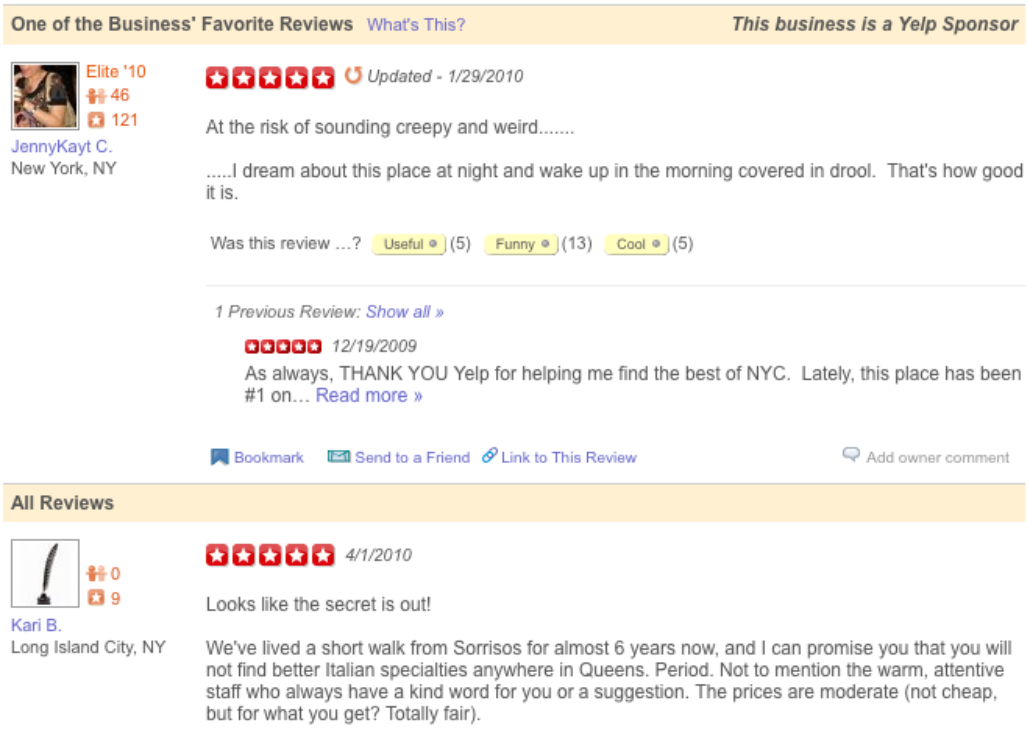

Figure 3.1: Screenshot of a Yelp review

Yelp has recently been accused of extorting businesses by offering to hide negative reviews if the business agrees to buy advertising, and by posting

negative reviews and deleting positive reviews if they do not pay up. (Zetter, 2010; Richards, 2009; Eng, 2009)

Word of mouth

Review sites are one form of word of mouth—other people recommending and criticizing products. What makes word of mouth interesting in the internet is the scale: customers can access opinions from everyone who has reviewed a product. The reviews do not concern only sellable items but the sellers too. One form of word of mouth is seller reputation information which is often used on online auction sites to screen out fraudulent sellers. (Dellarocas, 2003)

There is evidence that customer word of mouth positively affects consumer purchasing on internet retail sites. The existence of customer reviews might even drive overall sales up. Word of mouth referrals have also been proven more effective than traditional advertising when recruiting new customers for an online social networking site. (Chevalier & Mayzlin, 2006; Trusov *et al.*, 2009)

3.3 Social media marketing

In social media, companies need to provide real value to be heard. Companies who are listened to, the so called thought leaders, have not got to their position by means of self-promotion. Becoming a thought leader in an industry requires writing about news and linking to content that are relevant to a company's customers. The content might not be about the company but it increases the value the customers receive and at the same time lets people see what the company's opinions are on each matter and what are its interests. (Hawkins, 2009)

A recent study by Burson-Marsteller (2010) shows that 79% of the global Fortune 100 companies are using at least one social media channel (Twitter, Facebook, Youtube or a corporate blog). Twitter is the most popular of these with 65% of the companies using it, followed by Facebook (54%), Youtube (50%) and blogs (33%). (Burson-Marsteller, 2010)

But where as the big companies are embracing social media, other companies are more reluctant to do so. Social media services can seem like a time drain which lower productivity. In a survey by Robert Half Technology more than half of the 1 400 CIOs interviewed said that their firms do not allow employees

to use social media sites while at work. Only a fifth allows business related usage. (Robert Half Technology, 2009)

One reason for not allowing business related use might be that Social media sites are viewed as a security risk, or the nature of the services is not completely understood. But not having a top-down social media strategy bears the risk of renegade employees creating social media accounts for the company on their own. This raises the risk of multiple stagnant social media profiles. (Burson-Marsteller, 2010)

Using social media services while at work might not actually lower productivity. According to Dr Brent Coker, workers who do 'Workplace Internet Leisure Browsing' are more productive than those who do not. Coker says "People who do surf the Internet for fun at work—within a reasonable limit of less than 20% of their total time in the office—are more productive by about 9% than those who do not." (Coker, 2009)

Various social media horror stories might also frighten managements thinking about adopting social media. In 2008 a Burking King employee posted a video to MySpace of himself taking a bubble bath in a BK kitchen utensil sink. The video spread virally and attracted the interest of a health inspector, and eventually lead to two people being fired. (MSNBC, 2008)

A more extreme example of leaking information came when the Israeli military had to cancel a mission after one soldier posted details of the mission to his Facebook account. (McGregor-Wood, 2010)

3.3.1 Corporate Twitter accounts

Although following conversations on Twitter is hard, it is a good place to initially engage with customers and to promote the work of a company.

Companies using Twitter as one of their communications channels might face the problem of their employees tweeting about the same topics using their private accounts. A corporate Twitter account can feel faceless compared to the people working there. So should the people outside the company follow the employees or the corporate account? This is the question that a Finnish software company Futurice had to answer:

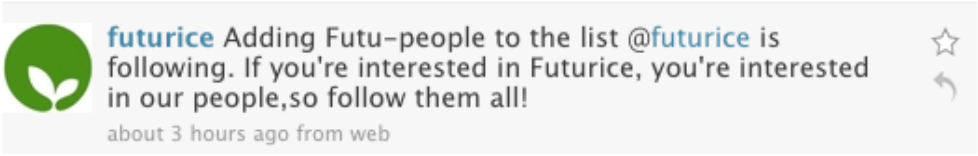

Figure 3.2: Futurice's Twitter account 20 Oct 2009

For Futurice this is a positive problem because the company employs many active twitterers[6]. Their message is getting through either way.

In general, following both a corporate account and the company's employees' accounts can result in receiving duplicate content. The employees *retweet* (resend) the company's messages to their own accounts for the purpose of spreading the message to a larger audience. On the other hand company accounts are often used to retweet its employees' messages to show off their latest achievements.

Customer service

Some companies have adopted Twitter as customer service channel. Companies like AT&T, British Airways, GE, Samsung and Toyota have customer service representatives monitoring Twitter for messages with problems regarding their services or products. 67% of the Fortune 100 companies who have a Twitter account use it at least partially for customer service. (Swartz, 2009; Burson-Marsteller, 2010)

Many times Twitter is the first destination where customers go to vent when something is not working right. This gives companies a chance to step in, offer help, and start solving the problem. (Perez, 2008)

This approach is not limited to Twitter. A service like Google Alerts can be set up to notify about new blog posts that mention the name of a company or some of its brands. This way the company can participate in the discussion right from the beginning.

[6] `http://twitter.com/futurice/futupeeps`

3.3.2 Corporate blogs

In a 2008 study of 2 000 companies, 34% of the companies told they have a blog. Some companies like Pepsi and Toyota have hired social media marketers whose job is to interact with customers on blogs, Facebook and Twitter. However, for example Coca-Cola believes it is better if all employees in marketing and communications participate. (Hawkins, 2009; Wasserman, 2009)

Blogs can give firms a human voice which is hard to achieve using traditional advertising. However, achieving this requires a level of transparency that some organizations might not be comfortable with. Brooks states that "one of the biggest mistakes a brand can make is to think that blogging is just another channel that can be tightly controlled and used to market a product direct to users." (Brooks, 2006)

3.3.3 Facebook fan pages

In 2010 over 1.5 million businesses were present in Facebook. But the business model for businesses in Facebook is still evolving. Reports show that ads in Facebook have lower click-through and conversion rates than elsewhere on the Internet. (Facebook, 2010; Middleton, 2009)

One option for businesses is to use Facebook for raising awareness of the company and their products with fan pages. 54% of Fortune 100 companies have a Facebook fan page. On average the companies have two fan pages. (Burson-Marsteller, 2010)

It can make sense to have separate fan pages for the company and its main products to lower the barrier for customers to show their appreciation for things they like. For example, the food giant Nestlé has 96 000 fans on Facebook while its coffee brand Nescafé has 580 000 fans. Some products have the luxury of spawning spontaneous groups like the "Coca-Cola In A Glass Bottle Is Way Better Than Plastic" (401 000 fans), which bring great visibility, but groups are also formed around negative comments.

Facebook fan pages can benefit from word of mouth because people have their social networks just a few clicks away. A campaign by finnish cruise company Silja Line had users take part on a sweepstake by choosing which of their friends they would take with them on a cruise. The friends were sent invitations to take part on the competition and in turn pick their favorite friends to take on the prize cruise, helping the campaign to spread virally. (Robot, 2009)

3.4 Current use of social media in Valve

Valve's use of social media services has evolved organically over time. New services have been adopted usually owing to the actions of a single employee who has been given the authority to test a service and create a profile for Valve.

The organic growth of Valve's social media presence led to a situation where the role of some of the communication channels was unclear. In 2009 the different channels were assessed and made part of a social media strategy.

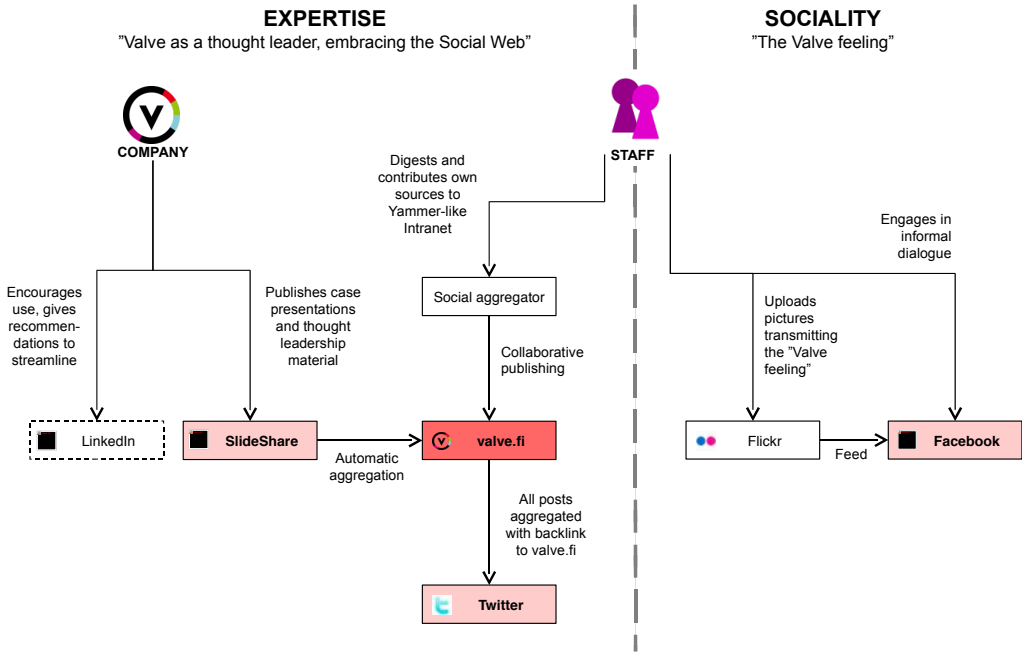

Figure 3.3: Valve's social media strategy

In this strategy the different channels are divided into two categories: expertise and sociality. The expertise side consists of channels that are used to convey an image of Valve as a thought leader, an expert in the field. The content in these channels consists of Valve's case studies and content digested and published by the staff.

The sociality side is about what it feels like to work in Valve. The content includes pictures of various happenings and everyday life at Valve and informal discussions on Facebook.

The social media strategy also depicts the social aggregator in the middle. This is essentially the part this thesis tries to solve.

The social media strategy has not been fully implemented yet. Currently Valve uses the following social media channels:

Yammer

Valve has used Yammer since late 2008. In one and a half years 46 users have posted over 2 500 messages. On average 4.5 new messages are posted every day which is little less than one message per user per week. However, some users are much more active than others. The ten most active users are responsible for half of the messages.

Yammer is used mainly to share links to interesting material that is usually somehow relevant to the line of work at Valve. Currently 60% of Valve's Yammer messages contain at least one url. The messages generate a moderate amount of discussion. More than every third message (35%) has received at least one reply.

The use of hash tags to tag messages is rare. Only 4.6% of messages contains any tag. As the following table shows, many of the tags are not even used to describe message content.

Tag	Messages	Notes
`#joined`	61	A tag in an automatic message sent by Yammer to announce new users
`#yam`	9	A tag used in Twitter messages to automatically import them to Yammer
`#cft`	7	Consumer Facing Technologies (CFT) is a former unit of Valve
`#sem`	5	
`#google`, `#humor`, `#yle`	4	

Table 3.1: The seven most popular tags on Valve's Yammer account

Groups are equally little used: only 1.5% of messages are written to a specific group. Valve has four groups set up, not including one test group. The groups are formed around former unit structure which might explain their low use. However, the low use of groups is not that big of a problem. In a company of Valve's size most of the messages posted to Yammer are at least somewhat

relevant to the whole company. Even if they are not, they help building awareness of what people are working on and what they are interested in.

The fact that tags and groups are so rarely used can make finding content harder. A new employee looking for information on a specific topic would have to rely almost completely on text search. The tags are also important if content from Yammer should be posted to Valve's public website. People outside the company should be given a chance to further filter the published content, for example only reading messages about marketing or programming.

Blog

Valve's blog[7] is by far the most long-lived of the company's social media channels. It is also the most inactive. Started in August 2002, the blog has mainly been used to post company news such as being nominated in a competition or winning a prize. The blog holds a total of 68 blog posts which averages to only 0.74 blog posts per *month*, although the last two years have seen the number raise to 1.25 – 2.33 per month.

Facebook fan page

In March 2010 Valve had 349 fans in Facebook[8]. Currently the Facebook fan page is mostly used for funneling visitors to Valve projects and posting news and job opportunities. New messages are posted to Valve's wall on average 1.45 per week (0.2 per day).

Most of Valve's employees are on Facebook but their profiles are considered personal and are not being forced to promote Valve. Still, many become fans of pages created by Valve for its clients and some actively promote the pages to their social network.

Twitter

Valve's Twitter account[9] is mainly being used to post links to content created by Valve. Other uses include posting links to interesting content or updates when Valve's employees are taking part in a conference. As of March 2010

[7] `http://blogs.valve.fi/`
[8] `http://www.facebook.com/valve.fi`
[9] `http://twitter.com/valve_fi`

Valve has 454 followers in Twitter. The content posted to Twitter greatly overlaps the content posted to Valve's Facebook profile.

The Twitter account was created in February 2009. In little over one year 69 messages have been posted, averaging 1.2 messages per week or 0.17 messages per day.

Flickr

Photo sharing service Flickr[10] is used to share pictures of everyday life in Valve. The pictures show Valve's employees working, giving presentations, taking part in conferences and hanging around in the office.

The Flickr account was created in March 2009 and in one year a total of 136 photos have been uploaded averaging to 0.37 photos per day.

Analysis

The following figure shows how many messages and photos are created by Valve employees to social media services daily.

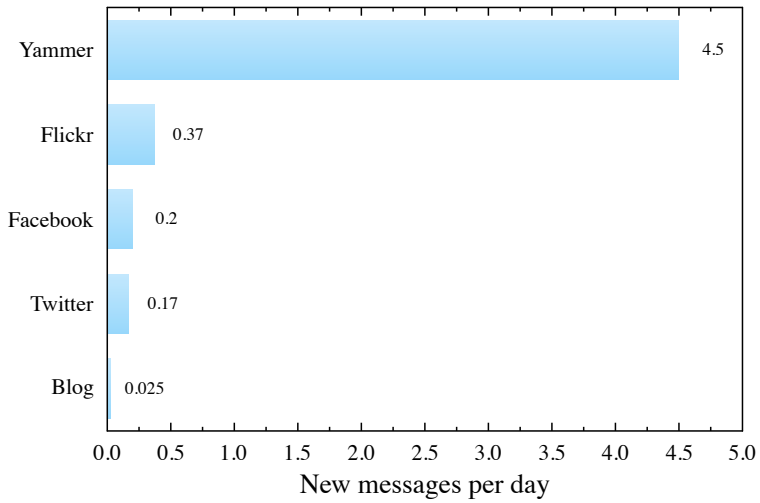

Figure 3.4: Amount of new material per channel published by Valve

[10] http://www.flickr.com/photos/valve_fi

As the above figure shows, internal social media (Yammer) in Valve is an order of magnitude more active than external social media.

The very low use of public social media is in conflict with the fact that Valve helps its clients build social media presence and does projects directly involving social media services—a classical case of "cobbler's children have no shoes". Valve acknowledges that active content production is a key feature in making a successful website but currently fails to achieve it with its own website.

One challenge contributing to this situation has been the small number of people directly responsible for generating content to the different channels. All employees are allowed to, but not required to post new content. With client work eating the majority of everyone's time, little time is left to produce conscious social media contributions.

This is where the social aggregator (see figure 3.3) proposed in this thesis comes in. The responsibility of coming up with new content is transferred from few to many by utilizing the internal social media content currently available.

The strategy also proposes the aggregation of messages from the public website to Valve's account on Twitter. This feature is left outside the scope of this thesis, but it should help make the Twitter account more active in the future.

A large proportion of content in Yammer consists of links to recent blog posts and news. Posting a link to external content usually hints something along the lines of "I like this" and "you should know about this" but this is rarely stated explicitly. Usually the messages contain the headline of the linked site along with the URL.

Chapter 4

Research questions

The main question that this thesis tries to answer is "can content from an enterprise microblog be used to increase a company's social media contributions?" The sub-questions are:

- How should content be published from a microblog?
- What content can be published?
- How to best use social media in marketing?

Using content from an enterprise microblog to increase social media contributions

This problem is researched using a hypothesis that messages from a company microblog could be published to a public website. The hypothesis is tested in Valve, where the experience of using an enterprise microblog for one year has shown the capability of the microblog to create active discussion and gather useful information.

How content should be published from a microblog?

The hypothesis is that the employees can vote microblog messages without distracting the everyday use of the microblog. The voted messages would then be published to a public website.

What content can be published?

People might have differing opinions on what content is publishable. Company management naturally wants to prevent sensitive information from leaking. What are the mechanisms to flag content?

Guidelines might help create a culture where people understand the reasons why some messages should be published and others not. Some people might want a way to preemptively mark some content as off-bounds, but how to prevent excessive self-censoring?

How to use social media in marketing?

Existing practices and previous research are studied for ways of achieving thought leadership using social media.

4.1 Justification

Firms that want to use social media for their marketing face two problems: the increased demand for transparency and the challenge of producing enough content. Transparency means that a company needs to acknowledge the fact that it is made of real people. This is relatively easy by letting employees use their own profiles on social media and contact with the clients. What is hard is incorporating this to the already busy work of modern day knowledge workers. Letting employees collaborate and contribute both internally and externally using the same microblog would kill two birds with one stone and thus it is worth studying.

Semi-public microblogs and other collaboration tools do exist but the existing research of microblogs focuses largely on the adoption of microblogs to enterprise environments and the differences between blog and microblog content. There is not much research about transferring internal collaboration in organizations to external communications which makes a prototype in this field an interesting learning experience.

Aside from academic interests, a tool that can increase the rate of social media contributions will almost certainly find use in Valve. The tool can also serve as a prototype for future products and use scenarios that do not fit the scope of this thesis.

4.2 Criteria for evaluation

Success of the results of this study is evaluated using the following criteria:

Business criteria

From Valve's perspective the end results is hoped to improve the company's brand by enabling better communications outside and increasing the rate at which information is published. The resulting tool is hoped to be an integral part of Valve's social media strategy.

Other criteria

1. Analyzing published content: is the amount of published content greater than with current tools? How is the published content different from currently published content?

   Compared to current social media communications, the published content should be more current, more personal and more diverse.

2. No self censoring: The number of content posted to the microblog must not drop because of the chance of it being published.

3. Feedback from employees.

Chapter 5

Implementation of study

5.1 Research methods

This thesis approaches the research questions by using a hypothesis and testing that hypothesis. The core assumption is that firms can gather tremendous amounts of information from their field. By digesting and publishing this information to others they can achieve some degree of thought leadership in the field which in turn will improve their business.

It is assumed that others working in the field have interest in the published material. It could be argued that a firm in top of their field and following the trends and development of their business environment will have interesting opinions and material to publish. Vice versa, if they are not interesting then maybe they are not top of their game.

To test this hypothesis a process to gather and publish information is designed alongside with a software tool that supports the process. The design process does not start from scratch. There are certain educated guesses on how these questions should be solved based on previous research and existing tools.

The end result of this process is primarily the software tool. The tool is first tested with users using a light prototype. Findings from these tests are used to refine the tool which is then developed to the stage that it could be used. The software tool is then tested with a small user group in a business environment.

5.2 Hypothesis

There are five assumptions which are used to design the prototype:

1. A microblog is an efficient way to gather and share information that is both interesting and useful to a firm's employees
2. Employees can crowdsource publishable content from a microblog. The employees can be trusted on this matter and it will be an efficient way to find the publishable content
3. Firms will want some safety measures to prevent social media failures
4. Firms represented by their employees will appear more friendly and transparent
5. Customers will want a channel to participate in the discussion

More specifically, employees could use a microblogging tool to share information they find interesting or important. This information could include links to interesting content in the Internet, advice on certain tasks, questions and answers regarding work, and more. The microblog could also raise awareness on what the people in the firm are doing.

Employees could themselves find publishable content from the content posted to the microblog. Given a possibility to vote, the employees would then identify any content they find publishable. Having some minimum threshold of votes before publishing a message would prevent most accidental or malicious messages from being published.

In addition, giving all users a chance to censor any message could further reduce the risk of sensitive information leaking out.

The published content could be distinguished from traditional one-way communications by adding a commenting option. This would enable anyone to take part in the discussion, inside or outside the company.

Reasoning behind hypothesis

In addition to the core assumption, another basic assumption is that sharing knowledge between people working in a company is beneficial. This assumption goes back to knowledge management systems and helping people do their job better with readily available information.

The basic assumption is expanded to cover information that might not be crucial for one's work but is interesting from the line of business perspective. Thus it is assumed that people working in a company or a large group are somewhat interested in the same work-related things.

Having a group of people interested in same things and able to share their knowledge makes an efficient information gathering system. If sharing is encouraged the people will think whether a new piece of information might be of interest to others in the group. Even if not 100% effective, the group of people will filter important content efficiently. With modern day knowledge workers receiving information is not hard, but the problem becomes filtering the information and finding the embedded knowledge.

Valve's prior use of Yammer, an enterprise microblog, seems to support these assumptions. As figure 3.4 shows, the channels has remained active over the one year it has been in use. There seems to be at least some value generated for its users.

The next assumption is that there are people outside the company who are interested in the same information and would like to have access to the already filtered content. These people might include different stakeholders, customers, competitors and other people working in the same line of business. With knowledge workers this is likely to be true as part of their work is to learn new things and keep up with trends.

Content should be shared

It takes a leap of faith, but this thesis argues that sharing and publishing the gathered information will make the company more successful.

For one, the sharing will increase awareness of the company. It will show what the company and its employees are interested in and communicate the idea that the company is an expert on certain subjects. Displaying what has influenced the company increases openness and helps others to see what are the company's expertise.

Moving the publishing responsibility from few to many should increase the amount of published content compared to the old model of a marketing department or a marketing person handling the company's communications. Increasing the amount of published content should help in raising awareness of the company.

Employees should represent the company

The traditional company communications model is often built around a limited number of points of interaction. This helps keeping the brand voice consistent, but the company itself can be left faceless in the public's eye. People have to deduce the company's inner workings from its actions and issued statements. This results in the discussion about a brand happening

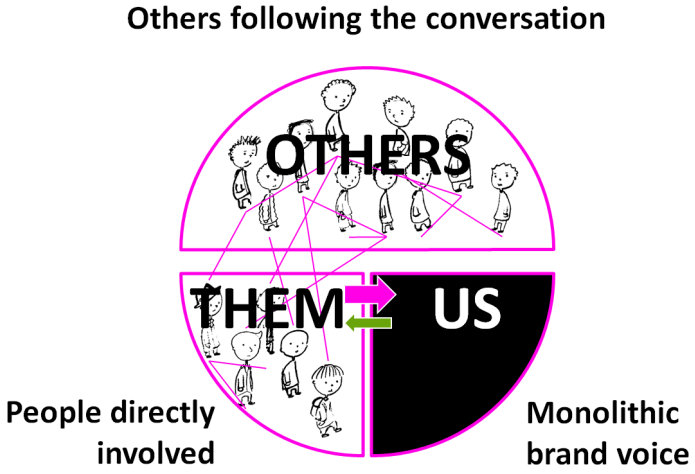

Figure 5.1: A brand appearing as a black box. ©Valve

mostly outside the company. The transparency of a company can be increased by letting the employees themselves respond to clients and discuss what they are working on. This allows the public to interact with real people inside the company.

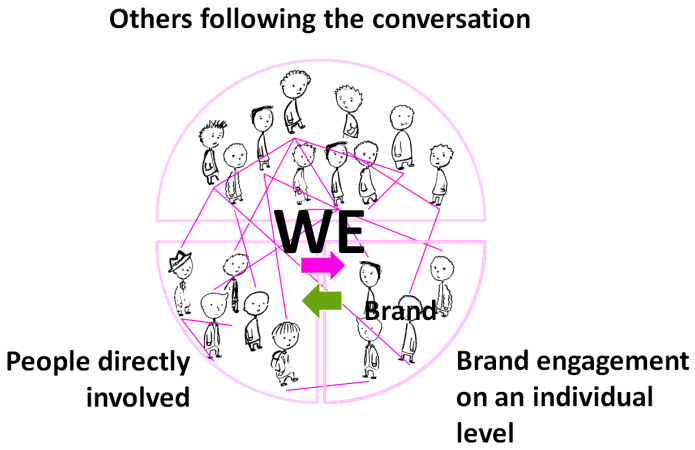

Figure 5.2: A brand engaging with people. ©Valve

5.2.1 Requirements for the process

Based on the hypothesis, these requirements were formed for the process of publishing content:

1. Identify publishable content. The system must find messages that could be published
2. Prevent sensitive information from leaking out
3. Minimize the number of tools. Users' attention is divided between all the tools they need to use to get their work done. Introducing new tools could create resistance
4. Identify the author. Message authors should be identifiable throughout the publishing chain to promote transparency. Users should have their own profiles with an avatar
5. Let customers interact. Customers must be able to comment published messages. The new comments must also be visible to the original authors to generate discussion

5.2.2 Requirements for the tool

1. Support basic microblogging. Users must be able to send short messages, reply to existing messages and tag messages
2. Users must be able to create groups and join existing groups. The groups can be public or private. This will enable users to follow only those message feeds they are interested in
3. Support voting of messages either for publishing or censoring
4. Support commenting from public website
5. Give users a chance to make their messages private when posting

Understanding the possibility of your messages being published could introduce self-censoring and users might not send the message in the first place. This could be prevented by giving the employees a choice of keeping their own messages private. This could be implemented as an opt-out when posting a new message.

5.3 First prototype

An early prototype was built based on the requirements to test the feasibility of the proposed tool. The microblogging tool was prototyped by modifying Yammer's web interface with a Greasemonkey script. See figure 5.3.

In the prototype, the user writes a message and chooses a group into which it will be posted. The main difference with Yammer is that any message can later be published to the public website, or censored. User can choose to make the messages private prior to posting the message. If the message is private it cannot be voted or published. The messages are public by default.

When the message is posted other users can vote for it to be published. After receiving a predefined amount of votes the message immediately published.

Any user can at any point censor any message. In this case the message will not be published and already published messages will be unpublished. In the prototype a message requires only a single censor vote to be censored.

The end result of the publishing actions, a message feed in the public website is not present in the prototype but its function is explained to test users. The idea is that newly published messages will be displayed on the public website. On this website the message authors will also be displayed using an avatar. The website's visitors can write a reply to the message. These replies will also become visible in the microblogging tool.

Message Threads

Some messages generate discussion which is important to include in the published version. The same concerns about publishing only good content and giving the users a chance to opt out are present in replies as there are in original messages. However, there are some aspects to why replies possibly should not be treated as regular messages.

The high number of replies can make voting on them a tedious process. Also, the content of replies is usually less informative, but they contain discussion which is an important part in bringing the users voice public. Having to vote on individual replies could result in an ill-logical message thread where some replies are missing.

The prototype treats message threads based on the publicity of its first message. If the first message is published then all replies to it will be published by default. However, users are given the option to self-censor their replies in the same way as when posting regular messages.

Figure 5.3: Yammer web page modified by Greasemonkey script

Screenshot of the prototype shows three messages posted into a group called CFT. The first message is published, the second one has been censored and the third has no votes to either direction. A checkbox has been added to the message form letting users choose if their message can be published or not.

The prototype was tested with small scale usability tests. The results of these tests can be found in chapter 6.1.

5.4 Evaluating Yammer content in Valve

Message evaluation criteria is researched by conducting a survey with Valve's employees. The employees are asked to evaluate existing content from Valve's Yammer network.

Latest messages from Yammer are shown to participants and they are asked to label each message with either:

1. I would publish this message in Valve's public website
2. I would prevent this message from being published in Valve's public website
3. I would let others decide what to do with this message (i.e. take no action)

Participants are free to comment their choices regardless of the choice.

The content evaluation results can be found in chapter 6.2.

Chapter 6

Results and analysis

6.1 Prototype evaluation results

The prototype was tested with three small scale usability tests on the 14th - 15th of January 2010. The purpose of these tests was to find out what users think of the concept, screen out major usability problems and discuss possible design solutions. The three test subjects were Valve employees who use Yammer in their work.

The test included background questions about Yammer usage, tasks involving the prototype and questions about possible usage scenarios. List of questions and tasks can be found in appendix B.

6.1.1 Usability problems in prototype

The severity of the usability problems are rated with the following scale: (Nielsen, 1997)

0. I don't agree that this is a usability problem at all
1. Cosmetic problem only: need not be fixed unless extra time is available on project
2. Minor usability problem: fixing this should be given low priority
3. Major usability problem: important to fix, so should be given high priority
4. Usability catastrophe: imperative to fix this before product can be released

#	Description	Task	Severity
1.	Link labeled `Publish` not found	1	4
2.	Users unable to tell if voting a message made it public	1	3
3.	The purpose of the link labeled `veto` was not understood	2;5	4
4.	A published message not identified as published	-	2
5.	Censoring your own messages was seen similar to deleting them	5	2
6.	A lock icon next to a private group's name was thought to mean the user can not enter the group	3	1

Table 6.1: Table of usability problems found in the prototype

1. Publish link not found

The terminology regarding voting a message was confusing in all of the tests. Links with verbs 'vote' and 'publish' were both tested but both proved to be problematic. 'Vote' was confused with 'liking' a message, a feature that currently exists in Yammer.

2. Users unable to tell if voting a message made it public

'Publish' was seen as misleading as a message was not necessarily published if it did not have enough votes after the user had clicked 'publish'. None of the users were sure if a message was published after they voted for it. One user commented that "the amount of required votes should be present somewhere on the site." Another user said that "there should have been clear feedback after I clicked vote. Without it, I could just click 'vote' for every message because I might confuse it with liking the messages."

Not fixing these issues will cause the users to have trouble using the voting features. There will be substantially less incentives for adopting the new application if the voting is hard to use or if the voting does not seem to work properly. Confusing voting with liking can skew the voting results.

3. & 5. Veto not understood, censoring confused with deleting

A similar terminology issue was found in censoring messages. The process can be seen as a *veto*, Latin for "I forbid". However, labeling the link cen-

soring a message with *veto* caused major problems during the first test. For consecutive tests the label was changed to 'censor' which performed better. However, even 'censor' was problematic in task 5. The action of censoring resembled deleting a message for one participant.

As is the case with publishing messages, the users have to know how their votes affect the process. These issues can lead to a situation where the users do not trust that the system can keep sensitive information safe, which will affect voting activity and contribution activity negatively.

4. A published message not identified as published

The feedback after voting a message was not sufficient. Users were not sure if a message was published after their vote. This was a problem especially in cases when the message actually was not published because it required additional votes. The green background color of published messages was mistaken by one user for being the color of new messages—messages that were posted after the user's last visit to the site.

If unfixed, this problem will mask the workings of the voting system and possibly reduce the users' trust for the voting working correctly. This can have undesired effects on voting activity.

6. Meaning of lock icon misunderstood

All of the participants had little experience of using Yammer's groups. This manifested in two ways: first, when navigating to the 'Dev playground' group none of the users took the shortcut present on Yammer's front page, but navigated there clicking first 'Groups' and then 'Dev playground'. Second, one user thought he could not enter the group because next to the group's name was a lock icon which means the group is private (but still accessible).

Using groups should be made easier if users are wanted to use them more. There are reasons why groups should be used, for example making information findable and improving the signal-to-noise ratio for the users.

6.1.2 Interview results

The short interviews conducted with each usability test revealed important qualitative information.

All three participants told they use Yammer more for receiving information than sharing it with others. Two of the participants told this was partly due to self-censoring themselves. Comments like "I don't want to spam others" and "I'm afraid that my links would be old news to others" describe the motivation of the participants to keep message quality high. One user reminded that there are other applications like Facebook that can be used to post content that is fun but not really useful others in the company.

Having messages published on Valve's website was not seen as a problem by any of the users even if the user's full name would be published with the message: "I can use my name for work related things but would use a nickname on some more casual communities." However, two of the three users predicted that it could introduce some additional self-censorship in their part or at least write their messages more carefully.

None of the participants had used Yammer's group feature to post messages to some subset of Valve's employees but it was seen as a possibility. Two of the users recognized that information important to their speciality was not always useful for everyone. Links to highly technical information were named as an example of information that might only interest software developers.

The users had different ways of consuming Yammer's content. One user received a daily email summary of new activity in the network while the other two used Yammer's desktop client.

One user told that keeping yammer.com open in a web browser was problematic because of the high number of work related tabs open in his web browser. Another user told that he uses many different web browsers and cannot keep track of where Yammer.com is in his browsers. The same user also told that the desktop client had some usability issues which reduced its usefulness.

Based on these comments it can be presumed that none of the users keeps Yammer constantly open while working.

Two of the users told that they do not use the 'like this message' feature in Yammer. They said that liking messages was something more suitable for Facebook and that it added no value in Yammer. The third user told that he used Yammer's message liking feature for messages that contained links to well written articles.

The question of being able to vote one's own messages received various answers. One user thought it should not be possible, one user said it should be possible but the vote should not count, and the third stated that own messages should be votable if the vote threshold for publishing is more than one.

6.1.3 New requirements based on the usability tests

The results from the usability tests of the prototype were formulated as the following requirements. Some of the requirements stem from individual usability problems whose number is shown with the related requirement.

1. The action of voting a message must be simple and easy to find and understand (1)
2. Voting a message must give clear feedback about whether the vote was successfully given and whether the message was published or not (2)
3. Published messages must be clearly identifiable from other messages (3)
4. Censored messages must be clearly identifiable (3)
5. Censoring a message must be presented as making it private, not deleting it (4)
6. The liking feature should be present

Voting adds a layer of functionality on top of the microblog. Every new action and its result should be made very clear for the user. Published and censored messages should be clearly identifiable for two reasons: first, they show the users the result of their voting, and second, the published and censored messages help create a culture of voting and standardize voting behavior.

Self censorship is one concern which must be addressed in the design process. The users should not limit posting new messages just because the messages might get published.

The liking feature should probably be preserved in addition to voting a message. Liking a message can be used to encourage message authors to contribute even if their messages would not be suitable for publishing.

6.2 Content evaluation results

Nine Valve employees evaluated 85 messages from Valve's Yammer feed. The following table and figures show how the publish and censor votes were divided among the evaluated messages. In cases where the user did not choose any of the three options (publish, censor, do nothing) the answer was interpreted as 'do nothing'.

Vote	# of votes	% of total votes
Publish	295	38.6
Censor	180	23.5
Do nothing	290	37.9
Total:	765	100.0

Table 6.2: Content evaluation: number and share of different votes

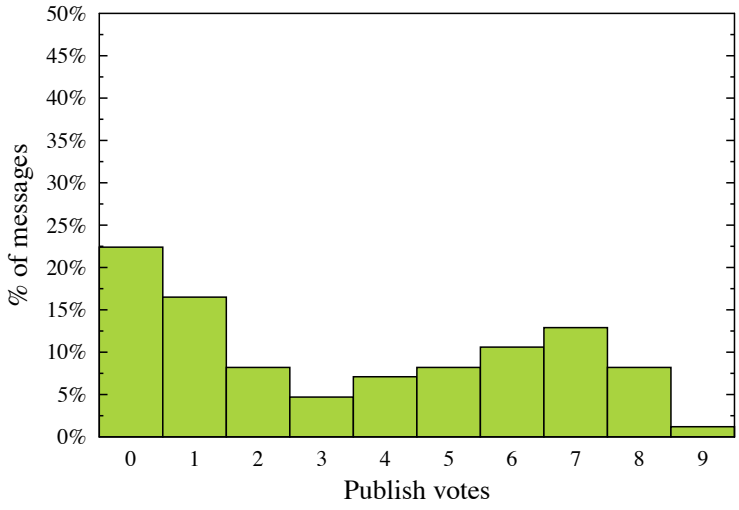

Figure 6.1: Shares of messages with publish votes

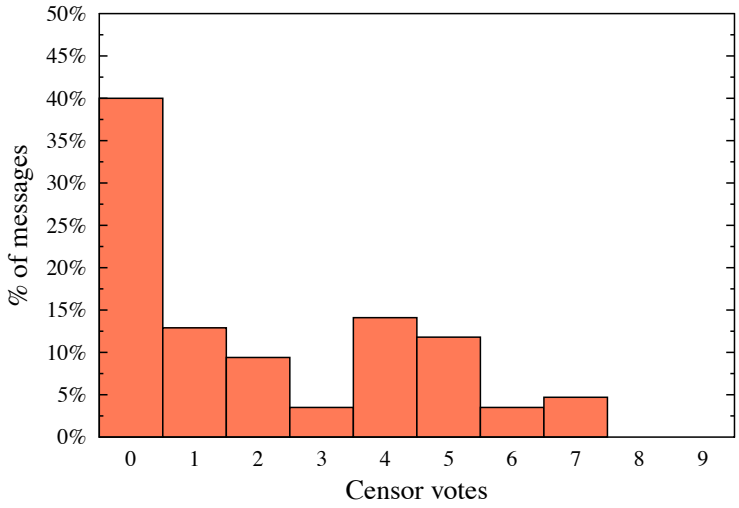

Figure 6.2: Shares of messages with censor votes

Two of the participants commented some of their choices. Reasons for censoring included:

> "We should never bad-mouth our competitors"
>
> "Message makes our work look too easy"
>
> "Message reveals information about our client"
>
> "Message describes our laziness which makes us look bad"

Comments when publishing a message:

> "This message would probably generate discussion"
>
> "The message could link to the original source of news, not a news site"
>
> "This message is a good ice-breaker"

Reasons for not censoring or publishing a message:

> "The message (a URL) could be tied to a project before publishing"
>
> "The message needs additional explanation"

6.3 Valve Drip

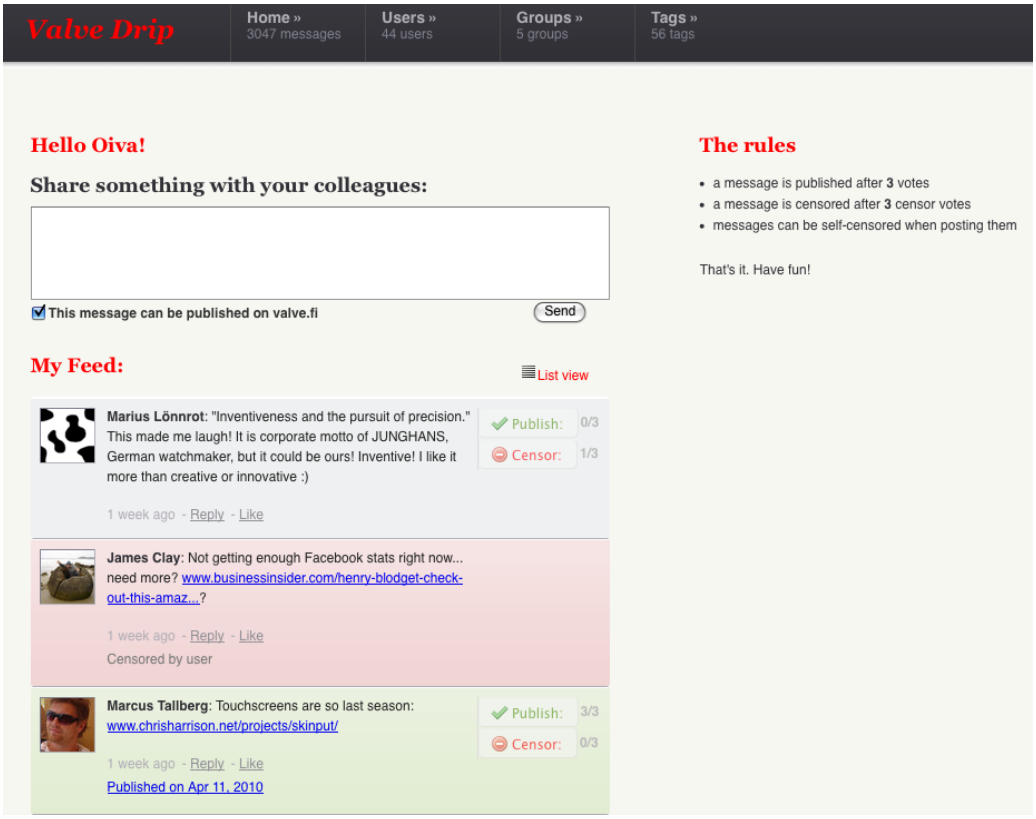

Figure 6.3: Screenshot of Valve Drip

Valve Drip (or Drip) is the application that was built after the prototype. Drip is a basic microblog with the option to publish messages to Valve's website. The functionality in its first generation is very similar to Yammer. The differences include dropped support for multiple networks and all of the administration features which will be added later.

In Drip, each message has a publish and a censor button attached to it. Next to those buttons is the message's vote count with the thresholds for publishing and censoring a message. The thresholds are also stated on top of the page in the 'rules' section.

The screenshot shows three messages, of which the first has received one censor vote, the second has been censored by its author and the third message has been published after receiving three votes. A link in the third message points to public website where the message is published.

Drip handles message threads in the same manner as the prototype. Replies are

published or censored based on the status of the first message in the thread. Individual replies can be censored by their authors when replying.

6.3.1 Architecture

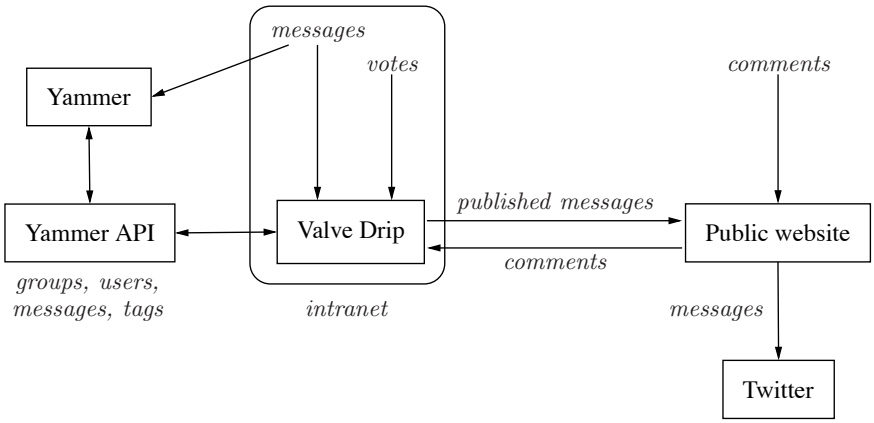

Figure 6.4: Valve Drip architecture

The system consists of Yammer and its API, a local microblog website hosted in Valve, and a public webpage within Valve's public website to which the messages are published.

New messages are currently written using existing Yammer tools or the Drip website. Both post the messages to Yammer.

New messages are fetched to Drip from Yammer through its API. The messages are stored in a local database in order to minimize the traffic through the API. The messages contain metadata about their authors and hash tags which are also stored into the database. The message fetching is separate from the logic of the microblog and can be automated to happen at a set interval.

Fetching and posting data through the Yammer API gives an option to make Drip operate without Yammer in the future. At a basic level this would only require posting new messages straight to the local database and removing the message fetching routine.

Message vote counts are stored on the local database. When a message receives enough votes to be published it is copied to another database used by the public website. Likewise, messages that are censored are deleted from the public website database if they have been previously published. Comments to messages made in the public website are periodically fetched and copied into the microblog.

The public website uses WordPress, a popular blogging platform. Published messages are stored as WordPress 'posts' resembling normal blog posts.

6.3.2 Tools and techniques used

The local server software is implemented using PHP and MySQL. A PHP-framework based on Zend is used to handle the basic operations needed in a web application such as templating and database access. The framework uses Smarty[1] templating engine. Access to Yammer API is achieved using OAUTH.

6.3.3 Public website prototype

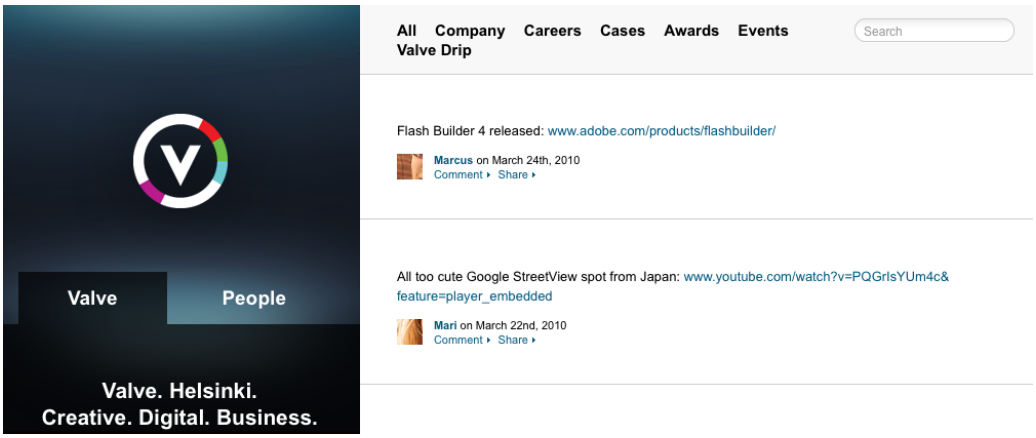

Figure 6.5: Screenshot of the public website prototype

The public website prototype shows how published messages are displayed. The prototype was built on top of an early design of Valve's new website. Each published message is displayed as a short blog post with author information. The messages can be commented and comments are fetched back to Valve Drip.

Message authors are imported to WordPress as regular users. This allows fetching all messages by a user using WordPress' built-in features. Commenting and message editing are also handled by WordPress without any additional work.

Message authorship remains visible trough the whole chain from Valve Drip to the public website. At its current version, users might have different avatars on the public website and on the Drip. The goal is to have identifiable pictures and user names on the public website.

[1] `http://www.smarty.net/`

6.3.4 Software defects

One employee reported on features that were not working with the test version. For example, liking a message in yammer.com was not mirrored in Drip. The main reason for problems like these was the choice to build Drip on top of Yammer's API but to also store the information locally. This structure leads to the two systems getting out of sync quite easily. To minimize the traffic going through the API, new messages are fetched only once to Drip. Later metadata changes to them are not being fetched from Yammer.

One user had problems with Yammer's OAUTH system, leaving her unable to logon to Drip. The solution to these problems would be to move out of using Yammer and its API. This is planned but does not fit into the scope of this thesis.

6.3.5 Valve Drip performance

Valve Drip's speed was tested in its development environment using a laptop running Firefox web browser. The web browser was equipped with FireBug, a web development add-on that allows measuring a web page's loading time. Each speed test was repeated five times to calculate an average loading time.

Loading Valve Drip's front page took on average 3.53 seconds with an empty cache and 3.17 seconds with static files cached. This is not as fast as it could be. Some files like the employee avatars are fetched from Yammer's server and database queries have not been fully optimized.

This is still much faster than yammer.com. The front page of yammer.com took 18.00 seconds to load with an empty cache and 16.79 seconds with static files cached.

The achieved performance of Drip is enough for its designed use and it can be improved with small changes to the site.

6.4 Valve Drip usage

Valve Drip was tested in Valve for a period of two weeks. During this time the application had 25 unique users who visited the application website for a total of 144 times. Users spent an average of 3 minutes on the application per visit.

During the two weeks a total of 68 messages were posted, out of which 18 were replies to other messages. The messages received 55 publish votes and 7 censor votes which led to 9 messages (13.2%) being published. One message of the nine was a reply to a published message. No messages were censored by other users, but message authors pre-censored 14 messages (20.6%).

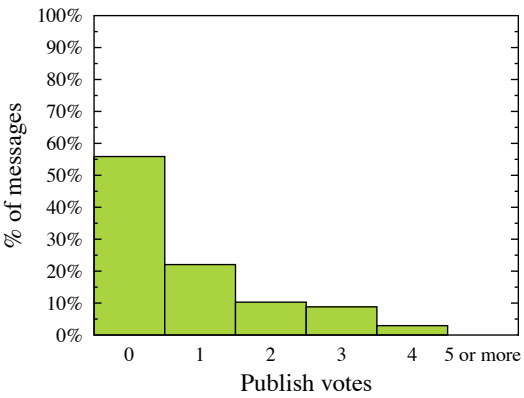

Figure 6.6: Shares of messages with publish votes

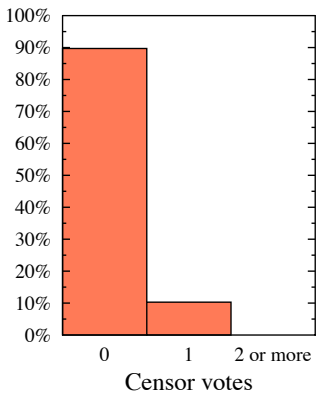

Figure 6.7: Shares of messages with censor votes

The above graphs show how publish and censor votes were shared by messages.

The list of published messages:

- Marius on March 18th: Facebook past Google in US: `http://weblogs.hitwise.com/heather-dougherty/2010/03/facebook_reaches_top_ranking_i.html`
- Aki on March 18th: Speedhero tykittää isosti: `http://www.youtube.com/watch?v=DFM9EQEzFMQ`
  - Marcus in reply to Aki on March 18th: `http://www.youtube.com/watch?v=7JdqTYXiIJQ#t=2m08s`
- Mari on March 22nd: All too cute Google StreetView spot from Japan: `http://www.youtube.com/watch?v=PQGrIsYUm4c`
- Marcus on March 24th: Flash Builder 4 released: `www.adobe.com/products/flashbuilder/`
- Jani on March 29th: Netcycler is now open: `http://www.netcycler.fi`
- Marcus on March 29th: Sveriges Radio (Swedens YLE) launches URL-lengthener: `http://web.sverigesradio.se/webbadressforlangaren/Default.aspx`
- Marcus on March 30th: Touchscreens are so last season: `http://www.chrisharrison.net/projects/skinput/`
- Samuli on March 31st: A foreigner tries out 72 flavors of Finnish salmiakki and blogs about it: `http://www.salmiyuck.com`

The number of published messages averages on 4.5 messages per week or 0.64 per day. The published messages share one feature: each contains a URL to content the message author wanted to share. The linked web pages contain news about the industry and clients, otherwise interesting projects and things that are merely fun.

6.5 Reactions to Valve Drip

Two users brought up the concern that publishing message threads based on their first message could lead to unwanted situations. The fact that replies do not have their own publish or censor buttons makes reacting to malicious replies hard. It was suggested that replies could have an option to censor them like normal messages would. This would enable users to filter out bad replies that would otherwise get published based on their parent message.

The change of censoring to require three votes can create a situation where a message has received one or two censor votes, but it still gets published if it receives three publish votes. One user suggested that these messages would be transferred to WordPress as drafts, and an administrator would have to separately decide whether the message could be published.

6.6 Error sources

The preliminary usability tests with the prototype were done with only three participants. This limits the conclusions that can be drawn from the tests' results. The prototype was also slightly altered between the tests which further reduces the consistency of the results.

The test period for Valve Drip was limited to two weeks which limited both the number of users and messages that were sent. Thus the sample size for assessing publishing and censoring behavior is rather small. The quality and amount of messages might also differ from what they were during the test period which would affect the way people vote.

6.7 Analysis

6.7.1 Censoring in the prototype

Censoring messages with just one censor vote leads to a high number of censored messages based on the content evaluation results. 23.5% of messages received a censor vote. Of those messages, 21.6% received only one censor vote out of the possible nine.

Overall there were many messages whose censoring could be justified. Bad-mouthing or even teasing competition can easily bring bad publicity, and information about clients is often classified. However, the ones with one censor vote often had no apparent reason for censoring. On average messages with one censor vote had 3.7 publish votes and the median of publish votes was 4. With the proposed rule of three votes to publish, one vote to censor, a majority of these messages would have been published had they not received a censor vote. This conflict between publish and censor votes might introduce problems if the reasons for censoring a message are not clear to everyone.

In real life use seeing the publish votes a message has received might reduce the probability of someone censoring it later. However, there are a couple of other possible measures to reduce unnecessary censoring of messages. The censoring threshold could be raised to two or more censor votes which would prevent single users from censoring messages. The censoring threshold could be the same as the publishing threshold or some appropriate percentage of users. The disadvantage of this option is the added delay in censoring an already published message.

Another option is to create clear guidelines for censoring messages which employees can use to asses whether a message should be censored or not. The guidelines should be produced with the users to end up guidelines that people agree with.

Based on these findings the censor threshold was raised to three censor votes for further tests.

6.7.2 Censoring in Valve Drip

I Valve Drip the number of censor votes was much smaller than in the content assessment survey presented in chapter 6.2.

The survey results differ in many ways from how the users asses content in the live environment. The survey asked people to choose one from three options for every message: publish, censor or do nothing. Although the ‘do nothing’ option was present, people chose either publishing or censoring more often than what they would do on the website. On the microblog the users are not required to rate messages. Also, the survey did not include the social context that is present on

the microblog where you can see how others have voted before you.

The context affects especially in situations where a message has already been published or censored. Giving publish votes to an already published message has no other effect than showing support for the message author, a gesture which is better communicated with the 'like' feature. The test data shows a drop in the number of messages which received four votes compared to three votes (6 messages got 3 votes, 2 messages got 4 votes), but the sample size is too small to draw any reliable conclusions.

The rate at which messages were published is promising. Compared to the other public channels presented in figure 3.4 the rate is higher, but there is also room for improvement. During the test period people were using both Valve Drip and Yammer, so getting more people to use Drip internally could increase the number of votes and thus increase publishing. The published microblog messages would increase the amount of published material significantly if merged with blog posts on the public website.

The concerns that malicious or harmful content could get published in a message thread or by getting enough people to vote for it are valid. The tool currently allows this to keep the process lighter, and because these scenarios should not be a problem in Valve due to its small size. Any bigger company would probably want additional security measures into message publishing, but it will make using the tool harder.

Chapter 7

Conclusions

The question that this thesis examined was "can content from an enterprise microblog be used to increase a company's social media contributions?" In the light of the results the answer seems to be 'yes'. The test period demonstrated that a group of employees can take a microblog and use it as a publishing tool. During the first two weeks of use the publishing rate was already higher than on the existing social media channels.

7.1 How should content be published from a microblog?

This thesis introduced a hypothesis that the users of an enterprise microblog could collectively vote for messages they find worth publishing. In this respect the results from Valve Drip are promising. A distributed approach for choosing publishable content from an existing source will easily generate more content than getting people to purposely produce content.

The publishing seems to work as a democratic process but filtering unpublishable content in the same manner proved to be harder. The content assessment proved that people have differing opinions on what content should not be published. The risk is that those who are most protective of a company's image can start to filter out useful information. Striking a balance between keeping harmful content unpublished and not making censoring too easy requires some additional research.

Having administrators capable of censoring any message is a possibility which was not studied in this thesis, but this arrangement could be required in larger organizations.

However, in real-life use the problem of censoring might be nonexistent. The test

use of Valve Drip demonstrated that message authors voluntarily self censored their messages if there was any doubt of the messages' suitability for an external audience. The findings would suggest that the issue of censoring is largely handled by the message authors and other users.

7.2 What content can be published?

In a company, publishing own work early and often provides others a basic view on the inside and shows that work is made. But focusing on self-promotion is hardly sufficient, especially in social media. Acquiring thought leadership might sometimes require promoting the good work of others, or analyzing own work as a learning process. No one is perfect in everything they do but demonstrating the ability to spot the components of great work can be used to create trust. Similarly, the ability to find weak spots in previous projects speaks for the progress being made.

7.3 How to best use social media in marketing?

There are numerous examples of how companies have used some social media channels successfully, or in some cases unsuccessfully, for marketing. But the point is not using some certain channel or tool, be it a blog, a microblog or Facebook. Customers will notice when they are receiving solely marketing.

The key in social media is to participate actively and provide real value. Usually social media is merely a way to get to where the customers and partners are. Using Twitter for customer service is a great example. Angry customers are in Twitter, helping them is easy and negative publicity can be avoided by simply being in the right place in the right time.

Having a conversation in social media requires some level of transparency. Engaging with people on an individual level instead of using a monolithic brand voice is a good way to increase the transparency. This allows people involved in the conversation and others to accurately asses the internal workings of a company and its motivations.

7.4 Other observations

7.4.1 Knowledge management

An enterprise microblog has the potential to function as a knowledge container. However, the strength of a microblog lies more in its ability to enable the exchange of knowledge embedded in a community through discussion. The findings from Valve's use of Yammer and Drip do not suggest that people would use the microblog to look for past information or store information in a easily findable form. Improving information finding is doable and it could provide additional value for the users.

While the microblog is used for information sharing, it should be noted that at least in Valve's case very little of the shared content is fundamentally important to the employees. The microblog serves more as a source of inspiration and discussion. It also supports the ideas of lifelong learning and the pursuit of professional knowledge. The rewards come in the long run in the form of more adaptive and better motivated workforce.

7.4.2 Using an API

The choice to build Drip on top of Yammer provided some benefits but also caused trouble later on. The fact that Yammer held one year's worth of Valve's data was a significant motivation in building Drip using Yammer's API. The decision was also supported by the fact that many use Yammer's desktop application which was not easily replaceable in Drip. Building an web application using an API gave fast results and made the initial programming effort easier.

Later it became clear that the API was too slow to be efficiently used, which led to the data being mirrored locally. As section 6.3.4 shows, this created some problems. In this case, creating an application that effectively lives on two servers was a suboptimal choice. Being dependent on Yammer's API slowed down development work and also created other problems, like the API changing its location without any prior notice.

7.5 Success criteria

One criteria for the constructed microblog was the ability to produce a greater amount of more current and more personal content than the other social media channels which Valve uses. The content published in Drip is in many ways different from what has been published on Valve's social media accounts. The amount of messages was shown to be larger, but the content is different too. Many of the

published messages contain links to recent news stories. The lack of Valve related content is also noticeable. It is not completely clear if this is a good feature, but on the other hand Drip is only one part of Valve's communications.

The messages are certainly more personal with every published message containing the picture and the name of the authoring employee.

Another criteria was to keep the use of the microblog at its normal level even when introducing the publishing feature. The success of this criteria is hard to assess. Drip was tested by a limited number of employees for a limited time. The rate of messages posted to Drip remained above the normal rate of messages, but conclusions should not be drawn from this amount of data.

The given business criteria can not either be judged before the system is in production use. The effects of the published messages on Valve's brand remain to be seen.

Chapter 8

Discussion and future work

8.1 Discussion

8.1.1 Enterprise microblogging and publishing

The use case for enterprise microblogs exists because it makes information sharing both effortless and fun. Having a platform to share links and information snippets with co-workers changes the mindset of knowledge workers who filter the vast amounts of information they see each day. Every piece of information can be assessed from the point of view of it providing value to others in the company. In Valve, Yammer has provided great value, and at some of time the Drip will hopefully take its place and continue to drive collaboration.

Combining this with the ability to push messages to the public website makes information publishing much easier than what it currently is with the blog. Voting for messages collectively and publishing the messages with the name and picture of the original author makes it much easier than Twitter. In Twitter someone would post a message with the company account, take all the responsibility, and get no acclaim.

Now, one could easily argue that none of the published messages from the test period were really essential for anyone's work at Valve or outside Valve, and that would probably be true. But placing these messages on Valve's website the name and the picture of the employees would most probably say something about Valve and the people who work there. The messages alone might not make Valve look like a thought leader but continuous publishing and increased diversity of messages just might do so.

8.1.2 Choosing the right publish and censor thresholds

Coming up with the right thresholds for censoring or publishing a message proved to be hard. The initial content assessment survey suggested that censoring a message after one censor vote would result in too many of the messages being censored. The censor and publish thresholds were both set to three votes for the testing of the finished application. However, during the actual test period no message received more than one censor vote, but users were quite active in self-censoring their messages.

In any case, different limits should be tested to find a working configuration. The limits should probably be set in relation to the size of the user population. If a formula exists for calculating working limits remains to be seen, but this setting should be left open for administrators to adjust if necessary.

8.1.3 Different platforms rule

The mobility of microblogs and social media in general is an aspect that has to be taken into account when designing new services. Users have different use patterns and preferences for how they want to generate and consume content. For example, Yammer supports at least three different platforms: the web, the desktop and mobile phones. In Twitter the messages can be sent from virtually any platform.

Valve Drip offers only a web version which might already have limited the number of users and messages sent during the test period. Both dedicated mobile and desktop applications would probably lower the barrier of Valve Drip's use.

8.1.4 Organizing content

In an internal microblog the use of tags and groups should be encouraged to improve content categorization. This will make finding content an easier task and reduce the need to store information in separate information silos. Now, there is currently no evidence that the company microblog would be used as a knowledge repository, but this behavior could be promoted by organizing content in a way that makes finding information easy.

Relying on hash tags to categorize the content most probably will not work. First of all hash tags require the user to remember that tagging is even possible, and second the users have to come up with suitable tags for their message.

Tag usage might be increased and tag selection improved by showing users a list of popular tags from which they can select tags to their message. Another possibility might even be to automatically suggest suitable tags based on message content.

8.1.5 Privacy issues

It's not always clear that people want to represent their employer in the Internet. Some social media services like Facebook can be considered very personal and mixing professional life with it could seem out of place. Some might also fear that their social media profile is somehow hijacked by their employer.

Informal discussions with Valve employees revealed that some fear for their online privacy. Appearing on the Internet with your full name is considered a risk because Internet search engines might later turn out unwanted results when querying with the name.

Currently the solution is to use a nick name or a false name in Yammer, or to only post private messages. In the future a choice could be added to change the name under which a user's messages are displayed on the public website.

Making some users anonymous or hiding them behind nick names is in conflict with the principle of making a firm more transparent and talking through the people that work there. The privacy of employees should be respected if they wish to remain anonymous, but the level at which employees can be required to participate in communications should also be discussed.

Employing individuals who are experts in their field holds certain marketing value for the company. Communicating the level of expertise would seem beneficial for both the company and the employee, especially if future recruiters are using the Internet to seek new employees.

8.2 Validity and reliability

Section 6.6 already discusses some of sources of errors in the results. The limited length of the test period might have skewed the results in couple of ways. The messages that were posted to Drip might not represent the average messages. The users who used Drip might be the more early adopters, which would affect the results regarding voting.

Furthermore, the testing of Valve Drip was limited to internal use only. While a prototype of the public website was present, the people taking part in the test were aware that the messages were not really being published to public. However, the test participants were asked to use the publishing and censoring options as if the messages would become public. Still, the test participants' actions might differ from those using the tool in a live environment. This remains to be seen.

Doing the usability tests with more users would have given a more valid picture of the problems in the scope of Valve and its employees.

The content evaluation involved a fourth of Valve's employees which would make

the results reliable, but not necessarily valid. As was shown, the censor and publish votes in Drip were very different from the content evaluation results.

8.3 Future work

8.3.1 Use in production environment

The software tool that resulted from this thesis was first meant to be put into production use during the launch of Valve's new website. Unfortunately the renewal project was delayed enough that the software tool could not be put into full-scale use before this thesis had to be turned in. Testing the tool without the messages being published to the actual website was a schedule mandated solution to get any real-life results.

Incoming internet traffic from social media could be analyzed. Are the publishing actions generating traffic and are people reading the content? The influence of published messages could be analyzed with url shorteners, in addition to standard web analytics software. Some url shortener services such as Bitly[1] offer statistics on how many people have clicked a shortened link.

8.3.2 Developing Valve Drip further

In Valve Drip the ability to publish messages and let people comment on the published messages is still a bit limited interaction. The basic functionality is suitable for attracting an audience but people outside the company could be further engaged.

Options for engaging people include the possibility for anyone to write messages to the public website and rate messages up or down. The resulting tool would resemble some of the current crowdsourcing tools.

Drip could also be made more engaging on the inside by introducing some game mechanics. These could include leaderboards for most published author or rewards for using tags, et cetera.

8.3.3 Dispersed discussions

People and companies might have multiple points from where they publish information. Posting links to Twitter, sharing an article on Google Reader or updating status on Facebook are different ways to generate discussion. The services might have different, although often overlapping audiences.

[1] `http://bit.ly`

Following discussions on all of the services requires visiting multiple websites or using a specialized tool like TweetDeck[2] which can display multiple social service message feeds at once.

One way to share information to different audiences at once is to use software that posts the same message to multiple services. This can create a situation where people respond to the same message on different services. There is currently no way to merge the discussions so that everyone would see them. Having similar discussions on different services is inefficient and this problem should be solved.

This problem does involve the message publishing tool proposed in this thesis. Employees might want to publish the same information on Twitter and the internal microblog. Companies might want to publish internal posts on their public website and on Twitter using a company account. These actions generate two different contexts for the same message.

One option could be to identify the messages by a hash tag and comparing message texts. This would enable fetching replies to messages back to the company microblog. But duplicating replies is in no way problem-free and it would also require further research.

[2] `http://www.tweetdeck.com`

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Appendix A

Enterprise microblogging applications

Table A.1: List of enterprise microblogging services

Name	Launched	SaaS	Price/user/month	Self-installable	License	License fee
Communote	Dec 2008	yes	0/1€[1]	yes	proprietary	0-8000€[2]
Co-op	Oct 2008	yes	free	no	–	–
Cubetree	May 2009	yes	0-$5	no	–	–
OpenMicroblogger	Sep 2008	no	–	yes	MIT	free
OraTweet	Jun 2008	no	–	yes[3]	unknown	free
Present.ly	Sep 2008	yes	free	yes	proprietary	$2000–$20 000[2]
Socialcast	Sep 2008	yes	unknown	yes	proprietary	unknown
Socialtext Signals	Mar 2009	yes	0/$6	yes[5]	proprietary	$1000 /month + $1 / user
Status.net	July 2008	yes	$0 /$0.xx[1]	yes	GNU	free
Wordpress Prologue 2	Mar 2009	no	–	yes	GNU	free
Yammer		yes		no	–	–
Yonkly	Dec 2008	yes[6]	0-$24.95	yes	GPL v2 / proprietary	0/$199/$699

1 Free for a limited number of users
2 Licence fee is based on the number of users
3 Requires Oracle DB
5 Deployed as a ready-installed rack server
6 Hosted version is public

Table A.2: Enterprise microblogging application features

Name	Tags	Groups	API	Twitter-compatible	iPhone app	SMS	Desktop application
Communote	yes	yes	yes	no	no[1]	no	no
Co-op	no	yes	yes	no	no	no	no
Cubetree	yes	yes	yes	no	yes	no	yes
OpenMicroblogger	yes	no	yes	partial	no	yes	no
OraTweet	no	yes	yes	no	no	no	no
Present.ly	yes	yes	yes	yes	yes	yes	yes
Socialcast	yes	yes	yes	no	yes	no	yes
Socialtext Signals	yes	yes	yes	no	yes[1]	no	yes
Status.net	yes	yes	yes	yes	yes	yes	yes
Wordpress Prologue 2	yes	no	no	no	no	no	no
Yammer	yes	yes	yes	no	yes	yes	yes
Yonkly	no	yes	no	no	no	no	no

1 Mobile frontend

Appendix B

Prototype usability test material

B.1 Yammer usage / prototype questions

1. How often do you use Yammer?
2. Do you write messages to Yammer? If not, why?
3. What do you use to read Yammer with and why? Desktop client, Yammer.com or something else?
4. Are you aware of different groups in Yammer? Do you use them in any way?
5. Do you use the 'like' feature in Yammer? Should it be available in addition to voting a message?
6. Should users be able to vote their own messages?
7. Would the fact that messages can be published raise the bar for posting messages to Yammer?
8. Is it ok if your full name is used on Valve's website with the published message?

B.2 Prototype usability test tasks

#	Task	Expected execution
1.	Publish Sampsa's newest message to Valve.fi	User clicks `publish`
2.	Prevent Sebastian's message from being published	User clicks `more` and `censor`
3.	Navigate to "Dev playground" group	User either clicks `Groups` in the header or in the side bar. User clicks `Dev playground`
4.	Write a new message to the group and give permission to publish it	User writes a message and clicks `Update`
5.	Prevent your message from being published	User clicks `more`, `censor` for the message

Table B.1: Prototype usability test tasks.