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Enterprise Microblogging for Advanced Knowledge Sharing: The References@BT Case Study

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Abstract: Siemens is well known for ambitious efforts in knowledge management, providing a series of innovative tools and applications within the intranet. References@BT is such a web-based application with currently more than 7,300 registered users from more than 70 countries. Its goal is to support the sharing of knowledge, experiences and best-practices globally within the Building Technologies division. Launched in 2005, References@BT features structured knowledge references, discussion forums, and a basic social networking service. In response to use demand, a new microblogging service, tightly integrated into References@BT, was implemented in March 2009. More than 500 authors have created around 2,600 microblog postings since then. Following a brief introduction into the community platform References@BT, we comprehensively describe the motivation, experiences and advantages for an organization in providing internal microblogging services. We provide detailed microblog usage statistics, analyzing the top ten users regarding postings and followers as well as the top ten topics. In doing so, we aim to shed light on microblogging usage and adoption within a globally distributed organization.

Keywords: Microblogging, Enterprise Microblogging, Knowledge Management, Knowledge Sharing, Web 2.0, Enterprise 2.0, Social Media
Categories: M.0, M.6

1 Introduction

Web 2.0 [O'Reilly, 2005; O'Reilly, 2007] has evolved as the new dynamic user-focused web, equipped with social features by default. It has empowered people to become the main creators of web content by providing a wide range of easily applicable social technology: A plethora of popular Web 2.0 platforms including Wikipedia, YouTube, Facebook, MySpace, Twitter, Flickr, Delicious, etc. were built upon such technology and the principle of user-generated content. Web 2.0 platforms such as these have steadily lowered the barrier for sharing knowledge on the web.

Besides the well-known classic weblogs, which may be used to express a human voice on the web [Nardi et al, 2004; Rosenbloom, 2004], microblogging has become increasingly fascinating for the blogging community, especially since early 2008. This trend is driven mainly by the huge success of the most popular microblogging service, *Twitter* (twitter.com). In the context of blogging, the word 'micro' refers

specifically to the limited size of such blog posts. *Twitter* for instance allows broadcasted messages to be no longer than 140 characters.

Microblogging enabled a new form of lightweight communication, where users share and broadcast very small chunks of information about themselves, their activities, their thoughts, or anything else of interest to them. Compared to traditional weblogs, *Twitter* offers a slightly different functionality. *Twitter* messages may be public or private (using the 'DM' command), can be republished by anybody (with the 'RT' command), directed to one ore more persons (using the '@' symbol), and dedicated to one or more topics (by providing 'hash-tags', the '#' symbol).

Being a rather new phenomenon, little academic research has yet been conducted on microblogging. [Naaman et al, 2010] have explored the characteristics of social activity and patterns of communication by analyzing the content of postings on *Twitter*. They found out that the majority of users are self-focused, while a much smaller set of users is really driven by sharing information. [Java et al, 2007] studied the topological and geographical properties of *Twitter*'s social network. They have identified different types of user intentions and analyzed the microblogging community structure to learn how and why people use *Twitter*. Recently, micro-blogging has also being investigated to determine its possible contribution to the educational/scientific domain, facilitating mobile learning [Ebner and Schiefner, 2008], improving technology-enhanced learning [Costa et al, 2008], or supporting social networking in scientific conferences [Ebner and Reinhardt, 2009].

Past experience has shown that Web 2.0 applications and technologies, including weblogs, wikis and social networking services, will find their way into enterprises sooner or later [Efimova and Grudin, 2008; Koch and Richter, 2008; Stocker et al, 2008; Stocker and Tochtermann, 2009], and we expect the same to happen with microblogging.

Microblogging is capable of offering various benefits for individual knowledge workers and their organizations when deployed in the enterprise [Ehrlich and Shami, 2010]. With regard to the Technology Acceptance Model presented by [Davis, 1989], microblogging's 'built in' simplicity will have a positive effect on user acceptance. Moreover, the limited size of microblog postings will keep the individual information overload to a minimum and may encourage increased participation, compared to other Web 2.0 applications.

Although we feel that there is still a lack of empirical studies about the adoption of microblogging in enterprises, some research covering the organizational context has already been published. [Günther et al, 2009] have investigated new constructs, including privacy concerns, communication benefits, perceptions regarding signal-to-noise-ratio, as well as codification efforts for technology acceptance of microblogging systems in the workplace. [Böhringer and Richter, 2009] have provided valuable insights from an early adopter who implemented his own microblogging system. They are among the first researchers to actively discuss the upcoming topic of 'enterprise microblogging' in a broader context. The case investigated by [Riemer and Richter, 2010] revealed that microblogging in a corporate context can be very different from what is known from microblogging on the web. By applying genre analysis to blog posts, they found out that the communication is highly targeted, providing awareness information for colleagues and coordinating team matters [Riemer et al, 2010].

Facilition of knowledge sharing represents one of the major challenges of knowledge management research and is a vital component of knowledge management processes [Strohmaier et al, 2007]. Encouraged by the huge potential for transfer, sharing and acquisition of personal knowledge and experiences, the Siemens Building Technologies division decided to implement a microblogging service, tightly integrated in its existing knowledge management application, References@BT. In this paper, we explore the conceptualization, implementation and utilization of this service, in particular discussing seamless integration into the existing knowledge management infrastructure. In doing so, we discuss enterprise microblogging in the context of existing web-based services within the corporate intranet vying for the attention of knowledge workers.

Our paper is structured as follows: In Chapter 2, we discuss the selected research method – case study research. Chapter 3 covers the Siemens tradition of actively facilitating knowledge management and argues for the implementation of a knowledge management infrastructure within the Siemens Building Technologies division. Chapter 4 outlines the knowledge management application and discusses the integration of the microblogging service. A more detailed description of the microblogging service can be found in Chapter 5. Chapter 6 provides a lot of quantitative data on microblogging usage and qualitative data on microblogging success. Finally, we conclude our paper with Chapter 7 and summarize our perceived challenges for enterprise microblogging.

2 Research Design

Our paper focuses on research into Enterprise 2.0, a term coined by Andrew McAfee [McAfee, 2006] describing the adoption of social software within corporate intranets. We investigate a currently established microblogging service within one division of a multinational enterprise – Siemens – tightly integrated in its vital knowledge management infrastructure. Our research scope is defined as follows: We describe the need for a new service within the organization, elaborate on how microblogging was selected and launched, and show how it has evolved since then. In doing so, we discuss the role of the responsible manager (the community manager) and describe how the new service is perceived and accepted among the employees.

We chose case study research as our preferred research strategy, investigating a single case of enterprise microblogging, providing a comprehensive and descriptive single-case study in our paper. According to [Yin, 1984], "a case study is an empirical inquiry that investigates a contemporary phenomenon within its real life context, especially when the boundaries between phenomenon and context are not clearly evident". As we intend to study foremost the surrounding conditions of the phenomenon, we expect to generate valuable findings when using case study research. We thoroughly studied different sources of evidence, including an investigation of artefacts (References@BT, microblogging service), a survey of several power users and a study of quantitative usage data. One noteworthy limitation of our findings results from our selected research strategy, as single-case studies provide only limited utility for generalization [Yin, 1984].

3 A Brief History of Knowledge Management at Siemens

Siemens divides its operations into three sectors: Industry, Energy and Healthcare, with 405,000 employees located around the globe (as of September 2010). Developed products range from simple electronic controls to fully automated factories; from the invention of the dynamo to the world's most efficient gas turbines; and from the first internal views of the human body to full-body 3D scans. The three sectors generated an annual turnover of €34.9 bn., €25.5 bn., and €12.4 bn., respectively, in fiscal 2010. The cross-sector businesses account for €4.2 bn. of its revenues. The company values are responsibility, excellence and innovation. To deliver these values, Siemens spends heavily on R&D: €3.8 bn. in fiscal 2010. As of September 2010, Siemens has 30,100 R&D employees in over 30 countries, and more than 58,000 active patents [Siemens, 2010].

Siemens is a pioneer in the exploitation of knowledge management (KM) systems. Since the early 1990s, it has responded to deregulation and technology development with a bold culture shift towards the development of IT-based (and since 1999, web-based) KM systems [Müller et al, 2004]. In the last 15 years, KM at Siemens has experienced various stages of development, from content transfer (explicit knowledge) to capability transfer (tacit knowledge), as well as acting as a social networking mechanism. This process not only includes the deployment and the provision of KM applications, it also requires the creation of a new form of collaboration – away from the paradigm of "knowledge is power" toward a culture of trust and support across geographical, organizational and hierarchical borders.

The Building Technologies (BT) division has been the entity for the former Siemens Building Technologies (SBT) group since January 1, 2008. SBT was founded on October 1, 1998 as a result of integrating the former *Elektrowatt* group's industrial sector units into the building technologies activities of *Siemens*. Thus, the competencies of the former companies *Cerberus*, *Landis & Staefa* and *Siemens* were consolidated into one organization. Today, the BT division is headquartered in Zug, Switzerland, and consists of five business units: Building Automation (BAU), Control Products and Systems (CPS), Fire Safety and Security Products (FS), Low Voltage Distribution (LV), and Security Solutions (SES). In September 2010, BT's workforce included approximately 42,000 employees located in many countries around the globe.

Each business unit operates in a highly competitive market environment and sells products, systems, customized solutions and services through a decentralized organization. Because the BT division has been significantly challenged on price by its competitors, several strategic initiatives have been defined and implemented to reach the Siemens business targets. Concerning the growth of sales and profitability, one of the focus areas was to enable the global sales force to learn from successfully implemented projects and solutions. To facilitate this knowledge transfer, the SES division management decided in 2004 to develop and introduce a web-based intranet application which contains customer projects and solution concepts in order to replicate or reuse these business-related best practices. The focus of this new application was planned to be worldwide networking of all SES employees.

4 References@BT – an Overview

Since 2005, References@BT has been available as a web-based knowledge management platform within the Siemens intranet. As explained in the previous chapter, References@BT was initially planned and developed only for use within SES, i.e. on a single business unit level. Due to the requirements of and positive feedback from other business units, the platform's target group was extended from a single business unit to the whole division within the first year of operation.
At a glance, References@BT ...

- is a web platform for the global exchange of business-related knowledge, experiences and best practices,
- is a social networking tool that networks colleagues and encourages them to communicate with each other,
- is intended for in-house use and is thus only available within the Siemens intranet,
- views its users as a global community of people supporting each other (currently more than 7,300 registered members located in more than 70 different countries).

Since the very beginning, References@BT was not planned and designed for capturing the full range of 'company knowledge' and thus becoming an 'omniscient' tool [Müller, 2007a]. Moreover References@BT aims to network colleagues across geographical, hierarchical and organizational boundaries and encourages them to communicate with each other [Müller, 2007b]. Bringing the two parties – one is urgently needing and the other is able to provide the same piece of knowledge – together quickly is one of the main purposes of References@BT. Therefore, it is not essential to provide fully documented contributions released by a central editorial team. Even if the contributions are not coordinated and harmonized and might lack a perfect grammatical style, it is sometimes more important to provide 80% of a certain set of information immediately than to have 100% of the information several days or weeks later.

References@BT supports all project phases according to the project management process of Siemens BT, i.e. finding reference projects, replicable solutions, service opportunities and experienced experts who can provide support for urgent issues. It received multifaceted input from project managers, such as success stories, information on ongoing projects, finalized projects and service business. In combination with MS SharePoint, References@BT is being integrated into the development process for solution packages, allowing international teams to easily work together across continents and time zones [Müller et al, 2009].

Besides several subscription and social networking features (e.g. following each other, providing personal information), References@BT allows its users to publish their own contributions and make them quickly and globally available to all colleagues. The usability of References@BT is simple and intuitive, the result of many users' requirements by consequent implementation of user feedbacks.

In References@BT, three different content types allow for user-friendly contribution and sharing of knowledge and experiences adapted to the current situation and to the kind and amount of information:

- **Knowledge References** (available within References@BT since March 2005) are structured information objects containing several data fields of different types. Knowledge references are used to cover customer projects, solution/service concepts, business excellence cases, or 'Lessons Learned'. A set of metadata, which are independent of each other (e.g. discipline, vertical market, country, year of completion, etc.), allow multi-dimensional search queries, e.g., a list of all "customer projects with access control, executed in financial institutions in Austria and completed in 2006 or later". All possible search queries can be subscribed to via e-mail or RSS feeds. Furthermore, any reader can post so-called 'feedback' on a knowledge reference, which is immediately displayed below the contribution. A feedback item consists of an attribute (the type of feedback), a textual comment and an optional rating displayed with 0 to 5 stars. The respective average rating is displayed at the top of each knowledge reference and within any search result list.
- **Forum Postings** (available within References@BT since March 2006) are messages which are grouped according to topic within discussion forums or blackboards. References@BT offers several such forums for defined technological or functional topics. It is possible to subscribe to postings in certain forums via e-mail or RSS feed. Within the special 'Urgent Requests' forum, all users have the opportunity to ask any kind of business-related question and any new community member has a notification alert automatically set to it.
- **Microblog Postings** (available within References@BT since March 2009) are short, personal messages which are displayed in reverse chronological order. This content type was specifically implemented to stimulate community participation, as these postings are small in size and thus able to limit information overload when discussing project-oriented topics. A detailed description of this content type is given in Chapter 5 below.

Ideally, users of References@BT should be motivated intrinsically. This happens by gaining an immediate benefit from their contributions, through immediate feedback from colleagues, easy and fun usability, certain social networking features, etc. To quickly increase the number of contributions, rewards were given out as part of a competition (within a limited monitoring period, such as four months). During this period, users could collect points, so-called 'RefCoins', for posting certain contributions, such as responding to 'Urgent Requests', responding to discussion topics, writing blog postings and publishing new knowledge references. The top 10-15 users with the highest 'RefCoins' balance were rewarded. These awards included material prizes as well as non-financial measures such as certificates handed out by the CEO and nominations in internal media.

Currently users participate in References@BT on a purely voluntary basis, which is the chosen strategy. However, to strengthen the knowledge-sharing culture, active participation in KM systems and communities could be an integral part of working processes, business target agreements and/or HR-based staff incentive systems in the future.

Since its launch in 2005, References@BT has been intensively used by a wide range of employees within Siemens. Currently, References@BT has more than 7,300 active users being located in more than 70 countries. As of December 1, 2010, the database contains 2,201 knowledge references from 625 individual authors and 5,107 discussion forum postings from 1,427 individual authors.

5 References@BT Microblog

Prior to the implementation of the References@BT microblog, the following phenomenon was observed: Since end of 2008, several hundred Siemens employees joined a community on *Yammer* (yammer.com), which provides corporate microblogging on the Web, allowing for closed user groups according to a members' e-mail domain. This effort showed that there was and still is a strong need for having a microblogging solution for the staff. To avoid publishing and discussing internal content on an externally hosted site, the development of an in-house microblogging application within the company's firewall was treated at a top priority – not only from the perspective of IT security.

The References@BT microblog differs from other well-known microblogging services in various aspects:

- In contrast to *Twitter*, but similar to *Yammer*, microblog postings in References@BT are not restricted to only 140 characters.
- As it is in *Yammer*, References@BT allows direct replies to any microblog posting and to display the resulting hierarchical structure of nested replies as a so-called 'topic' (see Figure 1 below).
- Every initial microblog posting must necessarily be provided with one or more tags, which (according to the concept of a 'folksonomy' [Mathes, 2004]) are not predefined and can be arbitrarily chosen. This applies as an option for replies. Since the References@BT microblog is not limited to any predefined conversation topics, these tags enable the whole microblog to be filtered for similar content.
- Mentioning colleagues is possible, but due to a different data format a summarized view of all those mentions (as in *Twitter*) is not supported.

By selectively 'following' certain colleagues and/or choosing certain tags only, any user can easily classify and filter the postings according to relevant and interesting content. Any selection can be subscribed to by e-mail or RSS feed, ensuring that only relevant information reaches the information recipients.

In the beginning, there was some fear of negative or useless postings and of intentional abuse, due to the fact that every user (i.e. every Siemens employee with intranet access) is able to write and publish own content. Since anonymous contributions are not possible in References@BT and all contributions clearly show the full name and location of the author, there hasn't been any intentional abuse since References@BT came into being.

The following Figure 1 is a screenshot of References@BT illustrating the integrated microblogging service, and one microblogging topic in particular.

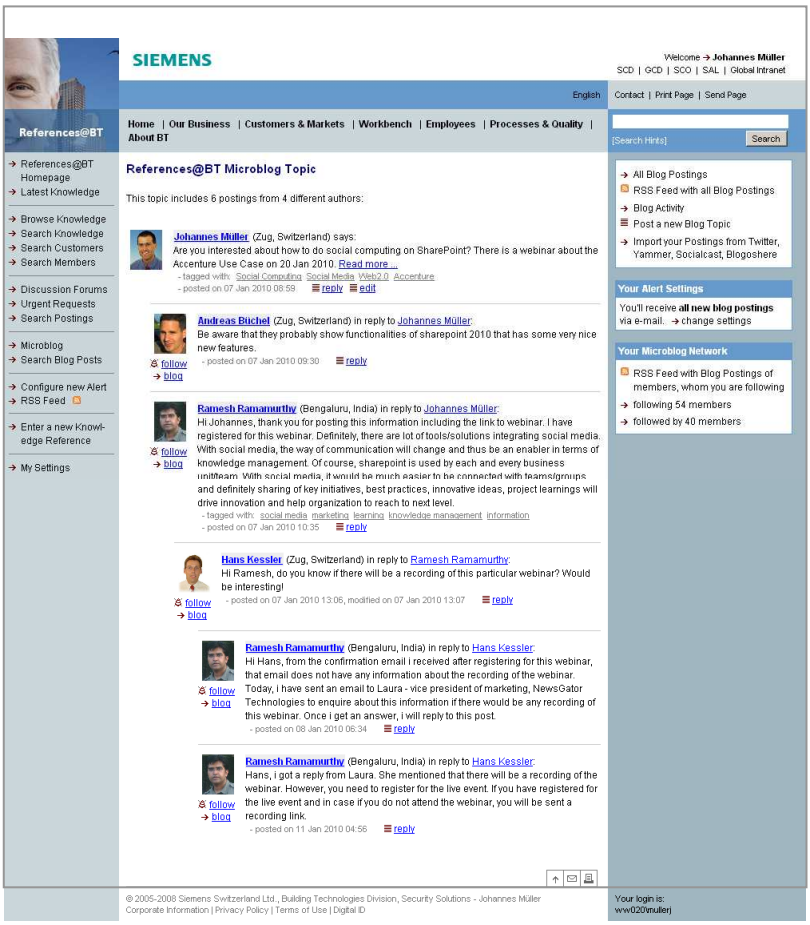

Figure 1: A topic within the References@BT microblog

Though the microblogging service was tightly integrated into References@BT, a series of actions were taken to raise the awareness amongst the employees:

- Soon after its implementation, all registered community members in References@BT were informed about this new feature and requested to write own microblog postings. As introductory measures for promoting the microblog, users were asked to post text comments during a user survey (which resulted in about 150 postings) and to write and share individual Season's Greetings shortly before Christmas (which resulted in about 80 postings).
- Certain postings, filtered according to defined tags, are dynamically displayed on ordinary intranet pages. For example, the latest blog postings related to fire safety are shown on the intranet homepage of the FS business

unit. This significantly helps to spread the idea of providing user-generated content and to motivate intranet users to write own postings spontaneously.

- References@BT allows postings containing a certain hashtag from several microblogging providers to be imported (*Twitter*, *Yammer*, *Socialcast*). This has also helped to significantly increase the content quantity without the need for double posting by the contributors.
- One of the success factors is the strict identification of users, an identity management feature known from social networking services [Koch and Richter, 2008]. Displaying an author's image adds a very personal touch to each posting.
- Like *Twitter* and *Yammer*, References@BT allows users to 'follow' other community members. Microblog postings from all colleagues, whom everyone is following, are summarized and sent as e-mail to the follower once a day. A special RSS feed containing these postings is provided as well.

The majority of the References@BT microblog postings are related to the BT business and to business-relevant information. Many postings contain useful hints, interesting news or links to web pages, information about fairs or conferences, etc. There are several postings discussing issues relating to knowledge management and Web 2.0 within Siemens. Postings with strictly private content are only rarely posted.

6 Microblogging Usage and Success

Besides providing information on References@BT from the perspective of the manager responsible for operation and development of this application, we provide further sources of evidence on the aspects of system usage (quantitative data) and system success (qualitative data).

6.1 Microblogging Usage

First, we introduce quantitative operational figures: Table 1 and Figure 2 present the microblogging service's user statistics, illustrating the number of postings, different authors and following relationships per month.

In total, 2,609 microblog postings have been created by 565 different authors within 21 months, i.e. since the launch of the microblogging service. The average number of new postings per month is 124 and rising. This insight raises two interesting research questions: What is the ratio between microblogging users, registered community members and the total number of potential users (employees), and what does this ratio tell about the success of the service?

Within the Siemens' Building Technologies Divison, 7.7% of the registered members of References@BT publish microblog posts i.e. about 1.3% of all employees. From our perspective not every community member has to create postings, but at least those who have relevant information to communicate. The value of enterprise microblogging not only results from the number of publishers, but in fact also from the number of readers.

Month	Jan 10	Feb 10	Mar 10	Apr 10	May 10	Jun 10	Jul 10	Aug 10	Sep 10	Okt.10	Nov.10
New Postings	101	101	102	88	90	158	159	163	204	275	133
Different Authors	24	31	34	39	33	37	58	40	63	109	48
Following Relationships	68	60	108	48	45	67	53	2988	731	346	310
Month	Mar 09	Apr 09	May 09	Jun 09	Jul 09	Aug 09	Sep 09	Okt 09	Nov 09	Dez 09	
New Postings	38	48	63	55	81	44	292	129	122	155	
Different Authors	15	22	21	27	35	21	189	43	40	101	
Following Relationships	26	10	28	7	31	29	51	53	133	77	

Table 1: Usage statistics of the References@BT microblog

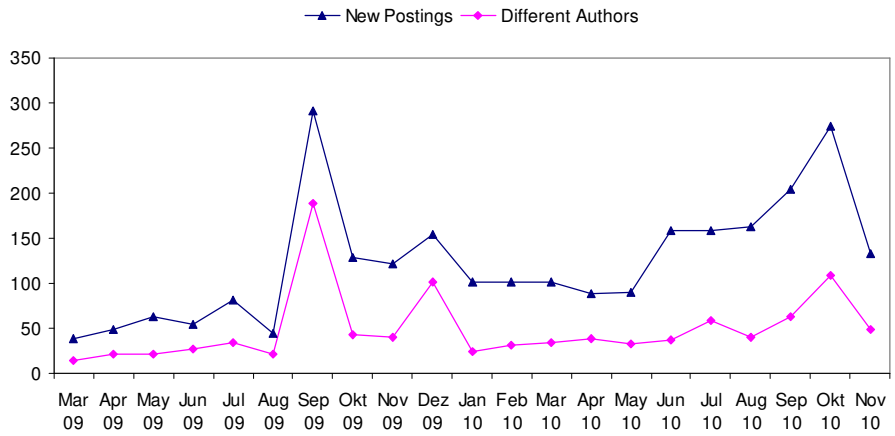

Figure 2: Usage statistics of the References@BT microblog

The number of new postings has two noticeable peaks in September and December 2009. This is a result of the introduction measures described in the previous Chapter 5. The fact that the number of new postings remains at a significantly higher level after the first introduction measure in September 2009 can be interpreted as a success. These introduction measures were basically aimed at motivating additional employees to explore the microblogging service.

The peak of new following relationships in August 2010 is a result of a promotional e-mail, which was sent to every References@BT community member. This e-mail suggested certain colleagues working at the same location as the e-mail recipient as potential followers. This measure was aimed at raising the interconnectedness of employees.

Table 2 presents the top ten ranking of the most active users regarding postings, the top ten users regarding followers, and the most commonly assigned topics. The table shows that most of the postings contain information that is business-relevant and partially linked to business units. The remaining posts are about knowledge management, References@BT, an international team event and TechnoWeb [Heiss and Jankowsky, 2001], which is another Siemens-internal community platform. The numbers illustrate that so far three users have created more than 100 posts and also three users are followed by more than 50 colleagues.

Top ten users (number of posts)		Top ten users (number of followers)		Top ten topics (number of postings)	Postings
MiGr	219	*HaKe*	*53*	References@BT	263
HaKe	*132*	ThMa	43	FS (abbr. Business Unit "Fire Safety and Security Products")	229
ThSc	*102*	AnSc	26	SES (abbr. Business Unit "Security Solutions")	180
SiHo	77	LuBa	24	PLN (abbr. "Product Lifecycle News")	159
TeTe	64	SuSt	24	Walk to Santiago (an international team event)	128
AnBü	56	TiWa	24	LV (abbr. Business Unit "Low Voltage Distribution")	126
TaBe	54	KaCo	22	TechnoWeb (another Siemens-internal Community Platform)	98
RaRa	49	MaHa	22	United States	82
NoPe	37	AnTh	20	Knowledge Management	78
AnMa	36	*ThSc*	*19*	Access Control	70

Table 2: Top ten users and topics

An analysis of the top ten users regarding the aspects number of posts and number of following relationships generated an interesting result: Only two top ten users having the most followers are also top ten users regarding the number of microblog postings. This shows that the majority of users having many followers gained their followers by intensively following others, but not by contributing microblog postings. This phenomenon can be observed in *Twitter*, too.

A comparison between the most active microblog users and the most active authors of knowledge references and forum postings generated another interesting result: The top ten microbloggers never or only very sporadically create knowledge references and forum postings. Conversely, power authors of knowledge references and forum postings are usually not very active within the microblog.

6.2 Microblogging Success

To find out more about qualitative success factors, we surveyed eight frequent users of the microblog on success-relevant aspects derived from the Technology Acceptance Model [Davis, 1989] and the Information System Success Model [Delone and McLean, 1992]. The use of these two popular models enabled us to quickly identify core aspects for our user study: perceived usefulness, ease of use, individual benefits and organizational benefits, asking four questions:

- What are the three main reasons why you adopt the new microblogging tool in daily business? (*perceived usefulness*)
- What do you particularly like when using the tool? What can be improved? (*perceived ease of use*)
- What are the three main benefits you have gained from using this tool in your work? (*perceived individual benefits*)
- What do you think is the main benefit for an organization in owning such a microblogging tool? (*perceived organizational benefits*)

Perceived usefulness dealt with the ease of sharing information (5 statements), the additional channel of promoting events (2 statements), the opportunities of networking with others (2 statements), a suitable tool for improving writing skills (2 statements), a way to follow experts (1 statement), a way of identifying current trends

(1 statement), and the awareness of the latest news (1 statement). The following three user statements present perceived usefulness:

- "The microblogging tool helps us understand and become aware of the latest news in terms of product releases, features, market enhancements, etc. in the BT division. For an employee working in the Industry Sector, it is very important to network with other fellow employees working in other sectors, too. It is also important for them to understand the ongoing changes, projects delivered, business challenges, etc. in other sectors. This will benefit us in terms of knowledge, help us understand some of the best-practices used in BT, and network with others."
- "For a technical communicator/technical writer, it is very important to keep in contact with other groups/sectors working in the documentation business and to keep up to date on the standards/quality procedures used in other sectors. This would help leverage and improve their documentation standards, document quality, document processes, etc. by keeping in line with what is happening across other teams globally. Blog postings on this tool help bring teams working in a global environment closer together."
- "Blogging, of course helps in terms of improvement towards writing skills. It helps me keep my writing skills up-to-date. Taking a topic and sharing views/comments about them definitely leads to gathering collective information. The information collected can be reused further in the form of best practice or methodology that can be implemented in their respective teams."

Perceived ease of use dealt with technological aspects, which employees especially like, including grouping of blogs with certain tags, the possibility of adding HTML links to microblog posts, the possibility of importing blog posts from externally hosted microblogging services, the possibility of forwarding blog topics or profile pages facilitating networking in general. However, employees also mentioned possible technical improvements as the following statement describes:

- "We need to look at Web 2.0 aspects and try to improve this tool to be inclined towards Web 2.0 standards. Since the number of blog entries is increasing, it is good to group all the blogs with their respective blog group name."

Perceived individual benefits dealt with assistance in getting the right contacts (5 statements), assistance in getting the right information (2 statements) and expert knowledge (2 statements), enlarging the personal network (1 statement), learning from followers (1 statement), and gaining an edge on information (1 statement). The following three statements present interesting insights into perceived individual benefits:

- "One of the major benefits had to do with information regarding BACnet. As our platform was using this protocol, the microblogging tool helped me get the right contacts working on this protocol and to receive more information about this protocol that helped me with my documentation work."
- "I found materials (documents, links) and people I would not have come across as easily through a web search or other means of communication."

- "From the work point of view, this tool has helped me get information regarding the documentation standards, processes, quality procedures and editing standards used by other teams globally."

Perceived organizational benefits dealt with improving the flow of information due to the microblogging service (4 statements), enabling worldwide networking (4 statements), promoting knowledge management practices and learning (1 statement), reducing the overall workload (1 statement), and the diffusion of rich experiences leading to more innovative thinking and better products (1 statement). The following two statements present interesting insights into perceived organizational benefits:

- "Finding other people in the organization that might have the skills or knowledge you require for a particular problem is often very hard. Microblogging provides the ability to find and exchange knowledge with other people in the organization and thus enables very quickly best-practice sharing and avoids 'reinventing the wheel'. It also reduces the workload compared to e-mail communication, since as a user I can search the activities that seem worthwhile instead of sifting through stuff pushed at me, which requires time to scan and assess its usefulness."
- "This tool will help the organization drive knowledge management practices, key learning activities and enable networking with teams worldwide. The rich amount of experience possessed by each of the employees should be driven towards innovative thinking. Knowledge sharing activities within the organization help each other and also help the organization benefit, while developing new products and solutions. There needs to be a central repository to track such knowledge activities, research activities and innovations happening within the organization. This tool will help us share these activities leading towards an effective information management approach."

Perceived Usefulness	**Perceived individual benefits**	**Perceived organizational benefits**
Sharing information visible to all users Announcing interesting events Improving user's own writing skills Following internal experts Identifying trends Transparency on interesting internal events	Search for relevant contacts Search for relevant information Easy access to expert knowledge Expanding user's own social network Learning from followers Gaining an informational edge	Improved flow of information Support for worldwide social networking Advanced knowledge management practices Useful discussions about experiences, leading to innovative thinking and better products

Table 3: Perceived usefulness, individual, and organizational benefits

7 Conclusions and Future Work

Our case study revealed that the References@BT microblog was accepted by the user community right from the beginning. Providing the feasibility to publish user-generated content both easily and – what is even more important in daily business – quickly is a huge success factor. For an organization, a frequently used microblog offers the benefit of faster knowledge sharing and improved networking.

Furthermore, internal Web 2.0 applications avoid the shift of employees towards external platforms hosted by internet providers. As more people, so-called 'digital natives', who are familiar with social media move into companies, the challenge of "how to generally motivate the staff to participate in Web 2.0" will gradually move toward "how to provide Web 2.0 tools that best support our business processes".

Our future research in enterprise microblogging will additionally cover the perspective of those resistant to microblogging. We intend to learn from them, especially where perceived obstacles are concerned. Gathering their knowledge and motivation will enable us to continuously improve References@BT. Second, our future research will be dedicated to measuring the benefits of Web 2.0 applications on the intranet and broadcasting them to senior management.

When adopting Web 2.0 applications on the intranet, a lot of questions are raised – especially by the management. One question always deals with the business value of a new service and how to measure it. Measuring benefits has been a major topic in information systems and knowledge management research for more than two decades now, and there is still no satisfactory answer. In this paper we provided both detailed usage statistics and data from a preliminary user survey. We think that a twofold or threefold approach may be a valuable way to suggest that senior management explore the potential of a new service: collecting usage statistics, conducting user surveys and identifying best-practices (ideally covering stories about time/cost savings during projects and additional business opportunities).

Given a particular usage statistic only, we are not able to say what a perfect ratio of active bloggers, registered community members and total employees should be in a particular case. Enterprise microblogging services (Enterprise 2.0 tools in general) usually do not dictate a certain kind of usage behavior among employees, compared to other business software (e.g. SAP). Hence, predicting a business value is very challenging. Generally, users are given much freedom to create their own usage practices, which does not happen overnight. An effective adoption of microblogging takes time as employees will need that time to explore a new service to finally leverage its potential. Some users may stop early on or even never begin to explore the service at all, as they perceive such exploration a waste of time. Yet exploration can be effectively stimulated by dedicated community building, similar to those carried out at the Siemens Building Technologies division.

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