

Shaping a social software for a distributed military organisation

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ABSTRACT

While the deployment of social software has become widespread in private enterprises in the past years, the usage in military institutions is not common practice yet. This paper documents the implementation and usage of a social networking service in the medical service of the German armed forces – the San-Netz. The case study documents the whole process from a user needs analysis, which took place in two waves of interviews in 2011 and 2012, to conceptualization, development and rollout of the social networking service. Analysis shows several challenges for platform adoption, which stem from the socio-technical context. The paper details possible solutions for these challenges. One proposed solution that is discussed in details is the employment of use-case-centred documentation.

Categories and Subject Descriptors

K.4.3 [Information Interfaces and Presentation: Group and Organisation Interfaces] Computer-supported collaborative work

General Terms

Management, Design, Human Factors.

Keywords

Social Networking Service, Case Study, Social Software, Enterprise 2.0, Military, Training.

1. INTRODUCTION AND MOTIVATION

Enterprise 2.0 is an approach to foster participation of employees in enterprise knowledge management [12]. Building on concepts and tools from Web 2.0, barriers for participation are lowered using social software [1, 9]. Contributing to shared knowledge systems, formerly the domain of an exclusive group of tech-savvy employees, becomes a process everyone with basic Internet literacy skills can participate in. Documenting one's daily practices at work, commenting on contributions made by other employees, networking among personnel, staying on top of what is happening in the workplace, or directly contacting experts on

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specific topics - the vision of Enterprise 2.0 is to make all this as easy and commonplace as talking to co-workers in the cafeteria.

In the past years, companies have tried to adopt existing models and tools for Enterprise 2.0 in their intranets. Academics have analysed these case studies and have derived lessons for successfully implementing such solutions [19, 20, 23]. Just recently, frameworks have been published that inform the process of implementing social software in organisations (e.g. [17]). One very important characteristic of social software is its adaptability to the individual user's needs, i.e. the tool does not determine how it can or should be used. This media feature of social software is called "Nutzungsoffenheit" (open usage or malleability) in current publications (e.g. [17, 18, 21]). In this aspect, social software differs strikingly from traditional business software such as ERP, CRM, or PPC systems, which already have clear structures, processes and pre-defined underlying use cases during their development. In the case of malleability of social software, users need support in finding the use of the tool that benefits their needs the most. A user-centred approach shows most important in this context, especially so because the reaction of an organisation to an technological innovation depends on the way in which the innovation is perceived by those within the organisation [22].

There is still a need for more case studies on implementing social software using this user-centred approach. This does apply to different kinds of organisations, e.g. very hierarchical ones. In this paper, we provide such a case study. We document the implementation and usage of a social networking service [2] in the medical service of the German armed forces. The case study reports on findings from our initial requirements analysis (more precisely, an analysis of potential benefits for the users, the service may and should provide), describes the process of the implementation of the San-Netz, and elaborates on observations we made in a two-year usage period.

2. THE CASE

The medical service of the German armed forces employs about 20.000 people, 2.700 of which are medical officers, and 1.600 are officers-in-training. This workforce is distributed among 5 hospitals, 37 universities and 200 other facilities (not including mobile medical corps or other mobile sites like ships).

In the year 2009, the department responsible for training in the medical service identified a need for a platform that supports knowledge transfer and collaborative learning. Particularly medical officers-in-training were more and more expecting state-of-the art communication tools. The department decided to implement a social networking service.

The following goals were identified in the beginning of the project and served as guidelines during the project:

- Fostering knowledge transfer and collaborative learning among staff
- Improving the quality of education and in-service training of new employees
- Strengthening corporate identity and networking among staff
- Creating an up-to-date, collaborative knowledge base

The project started in November 2010. The Cooperation Support Center Munich (CSCM) at Bundeswehr University Munich was entrusted with project coordination and implementation. The research group also provided user support during the beginning of the rollout of the social networking service. In 2012, responsibility for user support shifted gradually to the medical service. In 2013, the medical service began to take over responsibility for the further development of the platform as well.

3. USER NEEDS ANALYSIS

After initial interviews with potential users about their needs and expectations, which took place in November 2010, we created a concept for functionality and look of the platform. Drawing on models from Web 2.0 and Enterprise 2.0, the idea was to provide an open usage platform. Since many decisions during implementation tend to be determined not so much by technology as they are by the institutional dynamics [22], the main challenge implementing an open usage platform like San-Netz lies in identifying and communicating use cases. Since the users themselves know best about their needs [11], we decided to do a thorough user needs analysis, and then introduce the system following the prototyping approach.

Medical officers-in-training were chosen as the first user group for the prototype. The reasoning behind this selection was threefold:

- Medical officers-in-training were generally seen as the group most familiar with Web 2.0 tools within the organisation.
- Limiting the introduction of the new platform to medical officers-in-training would not disrupt any existing workflows in hospitals, medical centres or other facilities.
- Medical officers-in-training are traditionally scattered among many different universities around the country, and are thus the group with the most urgent need for a platform to communicate and share knowledge.

We conducted six semi-structured interviews with medical officers-in-training; two with freshmen, two with advanced students, and two with young doctors who had just successfully completed their degree. The results of the interviews directly influenced the development of the platform (see Section 4). Additional feedback on the platform and on needed extensions then was collected during 2011 in further discussion with users of the prototype.

In early 2012, we started the second wave of semi-structured interviews for the analysis of user needs. This time we focused on

experienced medical officers. We interviewed twenty knowledgeable officers in management positions in a variety of facilities. Our primary interest was finding which of the already implemented features from the trial period in 2011 could be useful to other staff in the medical service as well. Our secondary interest was generating ideas for new features developed specifically for experienced medical officers. The result of our efforts was a detailed analysis of the users' needs, current usage barriers, and a list of nine potential use cases.

The use cases identified and documented were:

- *Synchronous chat* – Allow groups of users to participate in synchronous text-based discussions of professional and organisational topics, and document the results of the chat for dissemination and further discussion within the organisation. Topics of chat sessions are prepared in close communication with the users of the platform to increase interest and participation. During the chat itself users discuss the topic with an experienced person, for instance an officer who has been on missions abroad if the topic is concerned with missions abroad.
- *Asynchronous thematic exchange* – Document information and discussions around different topics. Users interested in a specific topic can create a group and decide whether it should be open for every user, open just for invited users, or invisible and invite-only. In the group, articles can be written, files can be shared, and all content can be discussed via comments. This makes it easier for personnel separated by hundreds of miles to keep contact and share knowledge.
- *Documentation of (seminar) events* – Document synchronous face-to-face training events for dissemination and further discussion. It is possible to share and discuss documents like presentations but also to write short reviews that can be discussed with the other participants.
- *Treatment strategies for paramedics* – Collaboratively collect, discuss and advance the diverse treatment strategies. There are many different and sometimes conflicting treatments strategies among paramedics. Within the knowledge base of the San-Netz, these can be collected, discussed and advanced by users.
- *Literature research* – Provide online access to professional literature databases. Up to now officers need to visit their library to have access to databases. This is time consuming and can be problematic within working hours. The most important professional literature databases for the medical service could be integrated into the San-Netz, giving users access to important databases everywhere and at any time, making literature research a lot easier.
- *Awareness of publications* – Provide awareness of literature other researchers in the medical service are publishing. Users can integrate their publications into their personal profile. When a new document is added, other users can see this and will not miss interesting publications from their colleagues.
- *Assistance during missions abroad*. In case a medical officer needs information from a specialist during a

The screenshot shows the San-Netz platform interface. At the top, there's a banner with the German flag and the text "Bundeswehr" and "San-Netz". Below the banner is a navigation bar with links: Home, Groups, Knowledge Base, Places, E-Learning, Chat, and Help. A large blue header bar has seven numbered circles (3, 4, 5, 6, 7) above it. Below the header, there's a profile section for "Erik Westermann, Medical Officer Berlin" with a "Logout" link. A sidebar on the left contains links for "My contacts", "My groups", "My calendar", "My invitations", "My messages", "Write article", "Write blog post", "Add calendar event", "Create survey", and "Create group". The main content area starts with a "Status" section where Erik Westermann posts about new clinical elective positions. Below this is an "Activity Stream" (labeled 2) showing recent posts and comments from "San-Netz User" about medical workshops, current situations in Mali, and marching band recruitment. To the right, there are sections for "Contact requests" (no new ones), a "New video" thumbnail ("Rescue of injured combatants"), and "Newest blog posts" (Basic Medical Skills Workshop, Summer Academy Disaster Medicine, Current situation in Mali region).

Figure 1: Layout of the current platform

mission abroad (e.g. on setting-up specialised equipment) but cannot immediately place and international call, an alternative is accessing the San-Netz and contacting colleagues via personal messages, chat or comments in closed groups.

- *Collaboratively writing an organisational handbook (documenting process information).* Internal organisational information cannot be discussed publicly on the Internet. The San-Netz is a closed platform for a limited number of users and is therefore a space where such information can be collected and discussed.
- *Collaboratively documenting information around the different facilities.* In the near future, all facilities of the medical service will have their own profile in the San-Netz. Users can decide themselves which information should be published within these profiles and edit the information. It should be possible to find contact information for various needs, information about the facility and corresponding town and information about which fellow soldiers are stationed there.

While discussing use cases, both within the project team and with potential users, we tried to keep the focus on specific scenarios that show direct benefit for the users.

The following features of the platform enable users to reproduce these use cases in the platform. Numbers show where a feature is located in figure 1.

- (1) *Social networking* – Create a profile with a digital work portfolio, browse profiles of other users, share ideas or questions via short status messages or longer blog posts, connect with other users via contact lists, groups or personal messages, manage appointments or events in the personal or global calendar, invite other users to an event and share events with specific groups.

- (2) *Activity Stream* – Show the user what his contacts / other members of his groups / other users have shared or posted. The intent is to raise awareness [4, 7, 10] about what is going on in the organisation.
- (3) *Groups* – Asynchronous discussion around different professional topics (e.g. patient history, x-rays and other pictures).
- (4) *Knowledge base* – Participate in the sharing of information in a collaborative knowledge base similar to a wiki system following the “Anyone can edit” principle [8] (e.g. field reports, information about the different departments, news about the German armed forces).
- (5) *Places* – Participate in the sharing of information on military facilities in Germany in order to enable new arrivals to learn about their new post. If articles from the knowledge base are linked to a specific facility, they appear here as well. If users have added their current post in their personal profile, they are included in the list of personnel stationed at a specific place.
- (6) *E-learning* – Participate with users from around the country in courses for basic or advanced training. Currently the San-Netz gives the users access to a virtual hospital where they can work with virtual patients. The process starts with the diagnosis but also includes the actual treatment.
- (7) *Chat* – Discuss current topics with other users in a synchronous chat system.

These two lists, use cases and features, show one problem with user needs analyses for social software solutions: Developers and especially implementers often think in terms of abstract functionality that can be useful in different ways. End users however want to have specific usage examples that show how

specific functions of the platform provide benefit for their work. It is often hard to distinguish between the two.

In addition to use cases, the two waves of the user needs analysis discovered some issues stemming from the social-technical context [5, 13, 14, 25] that had to be taken into account while conceptualizing the social networking service for the medical service. The most important issues were:

- *Sensitive data*: Personal data of all employees with the armed forces is highly sensitive. Data privacy is of utmost importance. The feeling of being in control of one's own data in the platform is a key factor in attracting and retaining members. Additionally, many documents within the medical service are automatically classified, even if the content is as relatively mundane as an invitation for a medical skills training event. This is a hindrance in the sharing of information on the platform.
- *Distributed work*: Work in the medical service is increasingly marked by distributed and mobile work settings; not only due to missions abroad but also due to frequent transfers between military facilities in Germany. The medical service is in the middle of its biggest transformations since its founding, and many of its departments are scrambling to stay on top of the on-going restructuring process.
- *Lacking infrastructure*: Accessing an Internet connection is often difficult for staff among all groups of the hierarchy. Many facilities in the medical services have just a few computers with Internet access. Doctors often share a single device. Corporate intranet access is more widespread, but inaccessible for medical officers-in-training while they are studying at a public university outside of their assigned posts.
- *Sudden departures*: Project officers or other personnel involved in on-going efforts can be transferred to a different unit at any time, making their expertise suddenly unavailable.
- *Hierarchical structure*: Fundamental principles of Web 2.0 and Enterprise 2.0 like networking and sharing of knowledge run contrary to traditional values within the organisation. The highly hierarchical structure of the armed forces results in a cultural barrier for networking and sharing of knowledge. There is a constant sense of fear of exposing oneself as uninformed or questioning the status quo, especially so because the next formal evaluation by higher-ups looms over everything employees say or do.
- *Top-level support*: One often cited prerequisite for the success of the platform is support by the top management [3, 6]. Interviewees stated it was absolutely necessary the powers-that-be publicly showed support for the platform, because otherwise, officers with a lower rank would not feel compelled to actively use it. The hierarchical structure exacerbates this problem: A lack of public support by their superiors could in turn stifle active participation by officers because a lack of public support by superiors often is interpreted as a sign that superiors viewed the platform as undesirable, and

therefore any participation by lower-ranked officers as undesirable as well.

- *Techno-scepticism*: A minority among leading officers showed concerns that the introduction of a social networking service would siphon off productivity within workgroups. They did not view workspace awareness of whereabouts, projects and current tasks of other employees as relevant to their work. On the contrary, they viewed existing tools for networking and knowledge creation among employees as sufficient and the introduction of new tools as a threat to the productivity in the organisation.
- *Divergent information literacy*: The San-Netz is supposed to be a space where everyone can share knowledge and learn, regardless of whether the user is still a student or a decorated officer of the medical service corps. Within the medical service, officers-in-training are generally viewed as highly skilled in using computers and especially the Internet, while the common notion is that information literacy is not as prevalent among older officers. An Enterprise 2.0 social networking service like the San-Netz has to include persons who are not as conversant with digital media, and even persons who have hardly ever used computers.

In the following section, we describe how we dealt with these issues during concept and development of the San-Netz.

4. CONCEPT AND DEVELOPMENT

The development of the first prototype of the San-Netz began at the same time as the user needs analysis started, in January 2011. We wanted to provide the first version of the platform very soon to a limited number of early users and then, following the principle of participatory software development, enhance available features, look and feel together with the users.

The core functionalities of the platform derive from a subset of basic functionalities of a social networking service [16] – also see Figure 1:

- To provide the possibility to manage one's own identity, each user is able to create a personal profile and share specific details about career, current location, studies and interests with the members of the community.
- In addition, each user can maintain a list of confirmed contacts allowing contact management on a basic level. Like in other professional networking services, like *LinkedIn* or *XING*, a confirmed contact is a two-way relationship. First, a user requests another user to add him or her as a confirmed contact. Thereupon the contact is able to ignore, confirm or decline the request. The relationship can later be used to provide the user a more personalized activity stream and the ability to share specific details of one's profile only with confirmed contacts.
- On the personalized home section of the platform, three different activity streams are available and sorted by their privacy levels: the first stream contains only activities of the confirmed contacts, the second one provides the latest activities from groups the user is member of, and the third one shows all public activities.

Most of the activity notifications are automatically generated by the platform when a user creates a new or modifies an existing content like a blog post, article, event or poll. In addition, comments on content are visible as activity. Of course, the generated activities are limited by users' privacy settings and visibility settings of related content. Users can also post short status updates to all members of the social community. Thus, each user of the platform has a personalized network awareness to support the interaction between the members and the recognition of interesting information and events.

- The exchange between the users of the San-Netz can be done within specific groups but also in a collaborative knowledge base that every registered member of the network can access. Since the platform is not just a space where information is gathered and then statically provided, every user can edit, comment on and discuss all articles in the knowledge base. So, the knowledge base can constantly grow and improve over time.

Discussion with senior members of the medical service showed a tendency to restrict access to information and to limit commenting. The current solution allows authors to limit access to what they write, and to disallow comments. However, we managed to keep the default setting for content open to all. To support the discussion about the content and to allow questions, an article can be commented on by default. The author of an article still has the option to disable the comment function, which might be useful if the article contains official statements or orders.

Another potential for the San-Netz is the opportunity for the members to have access to journals, e-learning courses and other digital services. Therefore, the platform needs to provide flexible interfaces and authentication services.

The Web platform should be easily available to all personal any time and from everywhere. That is why we decided to make the site available from the public Internet instead of the intranet. Existing platforms of the German armed forces are often inaccessible via the Internet and can only be used through secure terminals. The San-Netz marks a fundamental change. This change is supported by the interviews with the target group, which outlined that many students already use social networking services and Internet forums to organize and to share knowledge. Thus the goal of the San-Netz was to provide a suitable and, of course, more secure alternative to commercial platforms.

In order to choose a stable and flexible base for the social software, we analysed three different open source systems: *Wordpress* with *Buddypress*, *elgg* and *Drupal*. The challenge was to find a stable framework to implement the core features of a social networking service, such as an activity stream to support awareness, groups to provide a space for the different locations and interests, and finally a knowledge base to enable all users to collect and improve their knowledge collaboratively. Another important technical requirement was the ability to flexibly react on changing user needs, and to be able to integrate external services, like e-learning sites and literature repositories.

Hence, we could not rely on an out-of-the-box solution of a social networking service, but needed a flexible and adaptive platform with a professional and active developer community to build upon. The latter was the case for the open source content

management system Drupal. The community has so far provided more than five thousand additional modules, which can be used to extend the features of the core version and a very detailed documentation of the development process of a social networking service [15].

We are continuously improving the usability and documentation of the San-Netz to enable medical officers and officers-in-training to use the platform comfortably. After more than two years of development and improvement we are currently using about one hundred additional modules to provide a wide feature set of tools for communication and collaboration.

5. ROLLOUT AND DOCUMENTATION

After finalizing the first prototype, we held four workshops at central facilities in different locations throughout 2011. New users were provided with a short document on how to register at the San-Netz and a registration code. The code could only be used one time, but was not personalized. Mentors of officers-in-training were able to hand out the registration codes on a sheet of paper during face-to-face meetings. Another way to invite new members - of course not only officers-in-training - is to use the integrated e-mail-invitation of the platform. Therefore, special users can send invitations to e-mail-addresses registered in the military network.

Upon registering, new members of the San-Netz gain access to an extensive online documentation. It includes several user stories, written using actual statements given in interviews during our user needs analysis. In addition, they were guided by a walkthrough of the important first steps after their registration. Questions like "What is the added value of a personalized account in the San-Netz?" or "Which details should I provide in my profile?" were answered there. Users were also provided with links to a more in-depth documentation, including an article with frequently asked questions. Building on feedback by users, the prototype and its documentation were further refined throughout 2011 and 2012.

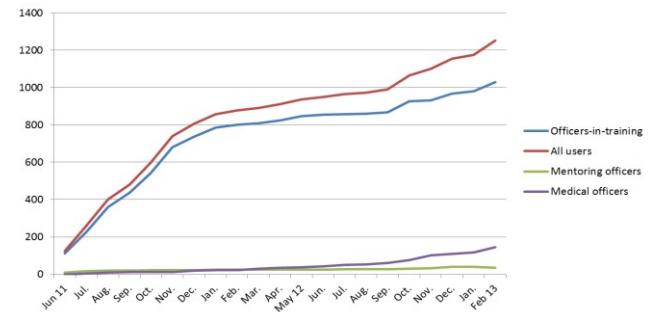


Figure 2: Continuously growing number of registered users

The backbone of any social virtual community should be the Social Guidelines. This is also the case for the San-Netz. Guidelines are also provided as an editable article. During registration, each user has to accept the terms and conditions of the platform and also to respect and act after the Social Guidelines. The Guidelines answer the following questions:

- What are the principles of the San-Netz?
- What is the intended use of the platform?
- What can each member contribute to the community?
- What special guidelines are important for supervisors?

Building on the Social Guidelines, our goal was to establish a growing, sustainable and self-maintaining community for a distributed military organisation.

6. EVALUATION

Part of the project was the evaluation of the resulting platform, including user practices.

We followed a two-way approach, which consisted of

- collecting usage statistics and
- documenting examples of good use.

So far, 1.200 users have joined the San-Netz. A deeper look into usage statistics illustrates the need for a flexible and widely distributed service to allow communication and information exchange: In contrast to the internal secure network of the armed forces, which is usually only available during the normal office times, the members of the San-Netz can access the platform during the whole day, every day. As Figure 3 illustrates, there is a need for more flexibility: the main access times of the San-Netz are from the morning – 8am – to the very late evening – 10pm.

One example of good use regarding the participation of members is the maintenance of the knowledge base. San-Netz users are continuously helping to improve the existing content and to categorize new articles, but arranging these articles becomes more difficult as the knowledge base grows. Therefore, a San-Netz group was created: “the gardeners of the knowledge-base”. Members get special access rights to rearrange existing content. The group does at present have ten members and these users are taking care of over 300 articles in the shared knowledge base, which are available to all members of the San-Netz. Currently, only 86 of these articles are read-only and thus can only be modified by their authors. Since the launch of the platform, 742 new versions of existing articles have been created by the users. Especially the mentors of officers-in-training and the active medical officers were quite busy improving the existing articles, and therefore created about 200 new versions each in the knowledge base. In many cases the changes were the outcome of a discussion in the comments of the articles.

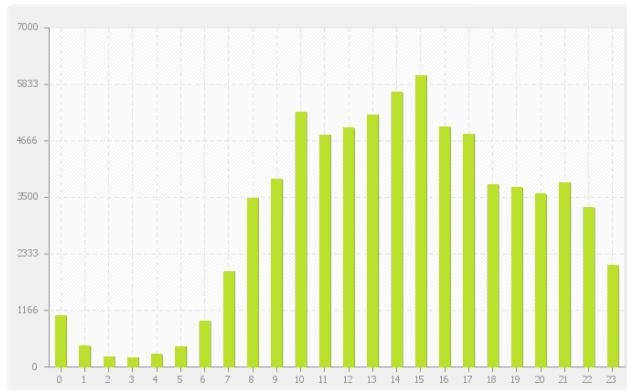


Figure 3: The San-Netz allows the members to access information and share knowledge during any time of the day (measurement period: Q1 2013)

Beyond that special group of gardeners, the concept of self-organized groups has been widely accepted by the users. Almost 100 groups are currently available in the San-Netz. The most active groups created over 70 articles, blog posts, events and

polls, and consist of about 100 members. There are different groups available for special interests – from pharmaceutics in military to private interest groups like hiking or sports in general. Several groups have been created to exchange medical expertise and to discuss the latest research results in the medical sector. Groups for the different universities and military units of the officers-in-trainings also play an important role in everyday communication of the San-Netz users - especially for younger students who have just recently joined the service.



Figure 4: Many users also access the San-Netz during the weekend (measurement period: Q1 2013)

As described in Section 2, the second wave of the user needs analysis identified several use cases. The idea was to test these use cases, and do a detailed evaluation. In 2012, we put two use cases from the second wave of the user needs analysis to test to see if tools requested in the user needs analysis worked as intended and were accepted by the current user base.

One of the use cases was a topic chat geared towards medical officers-in-training, in which experienced officers talk about their everyday working life and answer questions. Ideas for topics were specific diseases, methods of treatment and experiences on missions abroad. Everything discussed during the chat would be summarized in an article about the special topic. During the first chat, a maximum 31 users were simultaneously logged in. The chat lasted one hour and, all in all, 188 posts were made, 22 of which were questions. 13 of the logged-in users asked at least one question. 10 users were just reading posts and did not actively participate in the discussion.

The evaluation in the form of observation during the chat itself and subsequent semi-structured interviews showed that participants felt the discussion was lively and marked by many high quality questions. The students especially liked the parts wherein the officer talked about personal experiences abroad. Interviewees had previously hardly ever heard about personal experiences on missions during their regularly scheduled courses. While our original intent was to use the chat as a way of sharing knowledge, the participants thought this was not as important as getting to hear more about what practical work would be like after university and to learn about gritty details of missions abroad.

7. CHALLENGES AND SOLUTIONS

Experienced users of digital media know how to use a social networking service like the San-Netz, and they also know which additional value the use of the service has. But this is not the case for users that are not as experienced and do not regularly use

digital media. These users need help in different ways. First of all, the social networking service must be presented in an engaging way including a good usability and a clear structure. It must be obvious how to write articles, messages or participate in a chat. Furthermore, the social networking service itself and the use of it must have an added value for the users. This also must be actively shown to them [1, 24, 26].

One way to do this is a use-case-centred documentation. This is a way of helping users to work with social software by showing them how it can be used for different purposes. For example, other users can write short reviews about individual use-cases. This can be done via a text, a podcast, comics or even videos [17]. Usage-oriented documentation is not an explanation of every little detail of the functionality, but rather a collection of use cases, benefits and added value of the social networking service. To take the San-Netz as example, it proved useful to show the users the added value of sharing and discussing information and documents within a group instead of just documenting how to publish posts, something that was not obvious during our test-phase.

One problem with the use of a social networking service in which everyone can add information was the hierarchical structure within the German armed forces and the fear of a dilution of valid and certified information expressed by professionally experienced medical officers. Calls for tighter quality control of platform content repeatedly arose during workshops. Officers in management positions who were tasked with enabling the community focused on amassing copious amounts of official documents that nobody commented upon instead of assisting users in networking and sharing their knowledge. We had to explain that the fundamental principle of Web 2.0 is not to establish tightly controlled knowledge bases, but to make knowledge within the community more visible by enabling users to communicate and to network. Tight quality control by central authorities is sensible and even necessary when we are dealing with official documents containing static knowledge, but it kills participation in collaborative work on shared documents [27]. Similarly, networking and sharing of knowledge is in danger of getting suppressed by repeated calls for tight control of the quality and validity of information in the platform.

To help the users and show them how the San-Netz is supposed to work, we extended and clarified the Social Guidelines (see section 5). The Social Guidelines now state that there is no hierarchical structure within the social networking service and everyone, independent of rank, can share information. Additionally, they state that information is not certified by special persons, but by self-monitoring from every single user. Furthermore, the Social Guidelines advise high ranked soldiers to

- (1) enable an open exchange and communication,
- (2) respect the privacy of soldiers of lower rank and
- (3) collaborate with their subordinates.

The Social Guidelines and the usage-oriented documentation are an example of what can be done to assist new users, especially at the beginning of their use of a social networking service. However, it is not enough to show them what can be done and how it should be done. They must get permanent support and encouragement. This can partly be done by giving users the chance to ask questions about the network in support groups or by a feedback tool via which answers to questions are relayed. Moreover, users can and should always encourage each other. Someone must start to write something or share information.

Others will follow, but this only works if someone makes a start. The San-Netz can only work if the users do not only consume information, but also provide it. In the beginning, the start can be done (and in case of the San-Netz was done) by the developers and initial users of the network. Having such a basis is motivation to add further information, because building on existing structures is more attractive than having to start from scratch.

8. DISCUSSION AND FURTHER WORK

The German armed forces are more hierarchical than most private enterprises. One officer put it like this: "*Our form of organisation is built on following orders, not on talking to each other.*" Several interviewees as well as users of the San-Netz expressed a constant sense of fear of exposing oneself as uninformed, should one post a "dumb question". "*You have to remember, every single thing you say or do might come up in your next evaluation by the higher-ups*", said another officer. While users were glad that even the first prototype of the San-Netz included closed groups, content of which is only visible for invited members, the question about how freely users were allowed or even expected to express themselves at the San-Netz came up time and again. The current case study and evaluation of the first two years of usage show challenges that come up in a highly hierarchical organisation. This includes the need for closed groups, the need to optionally disable comments and visibility, and the need to clearly discuss and document the basic goals and use cases of the solution. These needs exist in private enterprises as well, albeit not in as clear-cut forms as in the present case study. Organisations seeking to implement models of Enterprise 2.0 must be aware of these effects and address them.

However, the most important thing to be learned from the project is: hierarchical organisations tend to take an open medium like the San-Netz and make it inflexible and closed. There were recurring tendencies to close open information flow in the platform (e.g. by disabling comments or limiting read-and-write access), and to build more and more support for particular processes into the platform. Another tendency was subverting the original purpose of the San-Netz; turning it from a social networking service into a support tool for organisational processes (like applying for positions or for documenting locations). During the development of the San-Netz, we took up some of the requested functionalities but tried at the same time to heed the original concept. Social Guidelines and usage-oriented documentation showed to be of use to highlight the core goal of the platform: to enable users to collaboratively collect, exchange and discuss information.

On the whole, the project again showed that implementing social software in a (hierarchical) organisation is more a social than a technical issue. Technology helps to keep the system intuitively usable as well as open to adaptions and integration, but it is the communication of potential benefits and the clarification of what the service should and should not be that has the greatest influence on success.

Every single one of these factors could be studied more in-depth with detailed quantitative and qualitative data. This could be done in further research publications. There is also need for additional work on the usage-oriented documentation in the current project. To support this development and the growth of the platform, we will continue to evaluate specific use cases and adapt the existing documentation iteratively.

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10. REFERENCES

- [1] Back, A. and Koch, M. 2011. Broadening Participation in Knowledge Management in Enterprise 2.0. *it - Information Technology*. 53, 3 (2011), 135–141.
- [2] Boyd, D.M. and Ellison, N.B. 2007. Social network sites: Definition, history, and scholarship. *Journal of Computer-Mediated Communication*. 13, 1 (2007).
- [3] Disterer, G. 2000. Individuelle und soziale Barrieren beim Aufbau von Wissenssammlungen. *Wirtschaftsinformatik*. 42, 6 (2000), 539–546.
- [4] Dourish, P. and Bellotti, V. 1992. Awareness and coordination in shared workspaces. *Proceedings of the 1992 ACM conference on Computer Supported Cooperative Work*. 3, November (1992), 107–114.
- [5] Emery, F.E. and Trist, E.L. 1960. Socio-Technical Systems. *Management Sciences, Models and Techniques*. 2, (1960), 83–97.
- [6] Gratton, L. and Erickson, T.J. 2007. 8 ways to build collaborative teams. *Harvard Business Review*. 85, 11 (2007), 100–109, 153.
- [7] Gutwin, C., Greenberg, S. and Roseman, M. 1996. Workspace Awareness in Real-Time Distributed Groupware : Framework , Widgets , and Evaluation. *Computer*. 11, 3 (1996), 281–298.
- [8] Harnad, S. 1990. Scholarly Skywriting and the Prepublication Continuum of Scientific Inquiry. *Psychological Science*. 1, 6 (1990), 342–343.
- [9] Koch, M. 2012. Social Computing in Corporations. *it-Information Technology*. 54(5) (2012), 203–204.
- [10] Koch, M. and Gross, T. 2007. *Computer-Supported Cooperative Work*. Oldenbourg Wissenschaftsverlag.
- [11] Koch, M., Ott, F. and Richter, A. 2009. Wikis und Weblogs im Wissens- und Innovationsmanagement. *HMD Praxis der Wirtschaftsinformatik*. 267 (2009), 47–55.
- [12] McAfee, A.P. 2006. Enterprise 2.0: The Dawn of Emergent Collaboration. *MIT Sloan Management Review*. 47, 3 (2006), 21–28.
- [13] Mumford, E. 2000. A Socio-Technical Approach to Systems Design. *Requirements Engineering*. 5, 2 (2000), 125–133.
- [14] Mumford, E. 1987. Sociotechnical Systems Design -- Evolving Theory and Practice. *Computers and Democracy: A Scandinavian Challenge*, . G. Bjerknes, P. Ehn, and M. Kyng, eds. Aveshot. 59–76.
- [15] Peacock, M. 2011. *Drupal 7 Social Networking*. Packt Publishing.
- [16] Richter, A. and Koch, M. 2008. Functions of Social Networking Services. *Proceedings of the Eighth International Conference on the Design of Cooperative Systems COOP 08* (2008), 87–98.
- [17] Richter, A., Koch, M., Behrendt, S., Nestler, S., Müller, S. and Herrlich, S. 2012. APERTO: A Framework for Selection, Introduction, and Optimization of Corporate Social Software. *Schriften zur soziotechnischen Integration*. 2 (2012).
- [18] Richter, A. and Riemer, K. 2009. Corporate social networking sites—modes of use and appropriation through co-evolution. *Proceedings of the 20th Australasian Conference on Information Systems*. (2009).
- [19] Riemer, K., Overfeld, P., Scifleet, P. and Richter, A. 2012. Oh, SNEP! The Dynamics of Social Network Emergence - the case of Capgemini Yammer. *University of Sydney, Business Information Systems*. (2012).
- [20] Riemer, K. and Richter, A. 2012. S.O.C.I.A.L. - Emergent Enterprise Social Networking Use Cases: A Multi Case Study Comparison. *University of Sydney, Business Information Systems*. (2012).
- [21] Riemer, K., Steinfield, C. and Vogel, D. 2009. eCollaboration: On the nature and emergence of communication and collaboration technologies. *Electronic Markets*. (2009).
- [22] Robbins, M., Dorn, W. and Skelton, J. 1975. *Who runs the computer? Strategies for the management of computers in higher education*. Westview Press.
- [23] Stocker, A., Richter, A., Hoefler, P. and Tochtermann, K. 2012. Exploring Appropriation of Enterprise Wikis: A Multiple-Case Study. *Computer Supported Cooperative Work (CSCW)*. 21, 2-3 (Mar. 2012), 317–356.
- [24] Tarlatt, A. 2001. *Implementierung von Strategien in Unternehmen*. Deutscher Universitätsverlag.
- [25] Trist, E.L. and Bamforth, K.W. 1951. Some social and psychological consequences of the Longwall method of coal-getting. *Human Relations*. 4, 1 (1951), 3–38.
- [26] Venkatesh, V. and Davis, F.D. 2000. A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. *Management Science*. 46, 2 (2000), 186–204.
- [27] Wilson, T.D. 2002. The nonsense of knowledge management. *Information Research*. 8, 1 (2002), 8–1.