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Enterprise Social Networking in Knowledge-intensive Work Practices: A Case Study in a Professional Service Firm

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Abstract

Social media technologies are making fast inroads into organisations. In the context of knowledge-intensive work the propositions of improved communication, information sharing and user involvement seem particularly promising. We study the phenomenon of Enterprise Social Networking (ESN) in the context of Professional Service Firms (PSF). Our case study investigates emerging knowledge work practices on the ESN platform Yammer within Deloitte Australia. We perform a genre analysis of communication data and uncover a set of emerging practices. We reflect on our results in the context of the knowledge-intensive nature of professional service work. We find that Yammer in the case company has become 1) an information-sharing channel, 2) a space for crowdsourcing ideas, 3) a place for finding expertise and solving problems and 4) a conversation medium for context and relationship building. We conclude by positioning ESN in the well-known 3-C model for classifying collaborative ICT.

Keywords

Knowledge Work, Social Media, Enterprise Social Networking, Professional Service Firms.

INTRODUCTION

While early knowledge management approaches have focused on capturing, describing and transferring knowledge captured in documents and databases, newer approaches focus on communicative aspects and take a knowledge-in-action perspective. In this context, the emergence of social software and social media presents as a promising opportunity to facilitate and shape new forms of knowledge work. While the first wave of social technologies, social software such as blogs and wikis, focused on the manifestation of explicit knowledge by enabling the joint creation and authoring of content, a second wave of social technologies such as social networking or enterprise microblogging platforms aims to enable knowledge sharing through social connections, conversations and the narration of work.

However, their potential benefits in the context of knowledge-intensive work are as yet not well understood. As social media adds to the already crowded space of tools aimed at supporting communication and knowledge work, it is necessary to gain an understanding for the emerging roles of such technologies within the media mix of teams and organisations. Therefore, in this study we aim to gain an understanding of the role and benefits of social networking platforms in the context of knowledge-intensive work practices.

We have access to the Yammer message data set of Deloitte Australia, one of the earliest and most prolific adopters of Enterprise Social Networking (ESN). While Professional Service Firms (PSF) have always been at the forefront of applying ICT to support communication and work, it remains unclear what the role of these new technologies will be within the repertoire of existing communication and knowledge management technologies. Professional service work is both rich in communication and knowledge-intensive and as such presents both a range of challenges from a knowledge work and organisation point of view, as well as the opportunity to study social media in action, which we anticipate will yield an understanding transferrable to other similar contexts.

In our case study we use genre analysis techniques to analyse communication data captured on the Yammer platform, this presents the opportunity of investigating the emerging use practices directly without having to rely on interview accounts. The set of genres we derive is a reflection of the ways in which Deloitte users draw on the social network in their day-to-day work for communication and knowledge sharing.

We find that Yammer in Deloitte has emerged as a space for knowledge sharing, idea generation, problem-solving and relationship building. We reflect on the role of Yammer against the background of communication- and knowledge-intensive professional service work and briefly contrast our findings with other case studies. We demonstrate that the ESN takes on a role that is distinct from other technologies. Rather than facilitating work on shared content, Yammer fills a gap in building the shared context and social fabric from which all other knowledge work happens. Based on these findings, we contribute to the literature a model that positions ESN in the well-known 3-C model for classifying collaborative ICT. At the same time, we expose the value of the organisational user group for crowdsourcing ideas and solving immediate work problems. Hence, we expose the practical role and benefits of ESN for professional services and consultancy businesses.

RESEARCH BACKGROUND

Knowledge intensity of Professional Service work

Professional Service Firms (PSF), such as consultancy agencies, accounting and auditing firms, or financial planning businesses, are both knowledge-intensive and client-focused (Maister 1993). Baumard argues that for PSFs the "main capital is of intellectual matter, and most of their processes are turned towards the exploration, discovery, accumulation, exploitation, and re-selling of societal and individual expertise." (p. 135) Service provision in PSFs is built around problem solving and advice (knowing-how and knowing-what) to support client needs. Consequently, PSFs "are extremely dependent on their ability to attract, mobilize, develop and transform the knowledge of [their] employees to create value for their clients." (Løwendahl et al. 2001, 912). Table 1 presents the characteristics of professional service work and the knowledge-related implications; we also derive implications for ICT support as a precursor for the remainder of the paper. The list of characteristics has been derived from Weiss (1999), Beaverstock (2004), Løwendahl (1997), and Løwendahl et al. (2001).

Table 1. Characteristics of professional service work and knowledge and ICT implications

Description	Knowledge work implications	ICT implications
Nature of work tasks		
Conceptual work; creates intangible outputs such as ideas, plans, concepts, manifest in texts, reports and diagrams.	New knowledge creation as core work. Collaborative work on shared content objects.	Provide means for collaboration on joint digital objects.
Unstructured, ambiguous, often complex problems that require client customisation.	Requires discussions and problem-solving as part of knowledge work.	Provide access to wide range of expertise and means for interactive problem-solving.
Novel situations and problems require innovative solutions.	Formal knowledge has limited shelf-life. Requires new input, brainstorming and generation of new ideas.	Allow sharing of new knowledge. Facilitate online brainstorming sessions.
People		
Formal education, norms and rules shared by professionals in the service practice.	Individuals in the practice share common ground as basis for joint knowledge work.	Can be seen as the necessary enabler for ICT-based collaboration to work.
Specialisation and bifurcation of technical knowledge.	Technical knowledge from different domains is necessary.	Access to specialised and prior knowledge should be provided.
Success depends heavily on experience, expertise, know how and intuition of domain experts.	Embedded (tacit) knowledge is highly relevant and complements formal education.	Contacting and finding people should be facilitated.
Work organisation		
Client interaction, working at the client site, travel and mobility.	Knowledge is highly dispersed; locating knowledge as a challenge.	Geographic distribution and mobile access are needed.
Teamwork in projects as core element of professional service work.	Projects need to be appropriately staffed and managed for success of knowledge work.	Support the coordination of joint tasks and of projects.
Time pressure and deadline-driven work environment.	Access to knowledge expertise is often needed instantaneously.	Immediacy in establishing contact; e.g. instant messaging.

Work in PSFs is typically conceptual and creates intangible outputs such as ideas, plans, concepts that manifest in reports, white papers, visual materials and other ideational products. The output can essentially be described as (new) knowledge. Moreover, work in PSFs generally revolves around client-specific problems (Løwendahl 1997) that are often unstructured, complicated, and novel, which means formal knowledge has a "limited shelf life" (Weiss 1999). As a result, new knowledge creation, idea generation and so-called brain-storming are important aspects of work in PSFs. In essence, because knowledge is both an essential input and the output of professional service work, challenges arise regarding organisational learning and the transfer of knowledge between projects and teams (Weiss 1999).

People working in PSFs are typically professionals trained in a standardised body of knowledge that is understood by all professionals in that sector (Løwendahl 1997), such as accountancy, auditing, IT, engineering etc. Hence, individuals typically share a common knowledge background and are enrolled in the same general professional practice governed by shared conventions, rules, codes of conduct and norms ("what one does") (Weiss 1999). At the same time, work is carried out by a rather diverse set of people; teams typically comprise a larger number of junior analysts and a smaller number of experienced partners who bring in their experience and domain knowledge. Hence, as much as the formal education is important, so are the personal judgements of professional experts (Løwendahl 1997, Weiss 1999). It has been argued that the "true value to their clients (and their source of power within their PSF) derives from their unique combination of experiences and intuition." (Empson 2001, 814) Consequently, implicit knowledge such as intuition, expertise and experience (which constitutes know-how) plays a key role in the success of PSFs.

Organisation of work in PSFs usually revolves around the client and involves a high degree of direct client interaction (Weiss 1999). This means that professionals often find themselves in client meetings, in client offices and working at a client site as a member of the client's team. Moreover, PSF workers travel often. From the PSF perspective this means that knowledge is typically dispersed, not just across a range of people, but also geographically (Weiss 1999). The nature of work tasks in PSFs necessitates a high degree of teamwork and collaboration between individuals to solve problems and finish projects. Such work is characterised by time pressure and is generally regarded to be deadline-driven. From a knowledge standpoint that means that access to knowledge and expertise is often diverse, dispersed and needed instantaneously.

This characterisation of professional service work has exposed a range of challenges PSFs face regarding knowledge organisation and distribution. Professional service work, while grounded in formal education of its professionals, is to a large extent dependent on the expertise and know-how of its people, where knowledge is embedded in social interactions and new knowledge is created as its main output. Intuitively then social media should contribute to knowledge work by facilitating social interaction. However it must be asked, where do the value propositions of newly emerging enterprise social media reside? How does social media fit with existing understandings of ICT in knowledge work? We return to these questions in the discussion section of the paper by offering some important observations on what we have learnt about the role of ESNs in the context of the 3-C model of ICT in knowledge work: *communication, coordination and collaboration.*

Enterprise Social Media and traditions of Knowledge Management

The field of knowledge management has historically taken a knowledge-as-object view, an artefactual and asset-oriented view of knowledge (Alavi and Leidner 2001). Accordingly, early knowledge management systems aimed to codify knowledge and make it independent from the individual knowledge bearer (Brivot 2011); the resulting systems have been characterised as 'people-to-document knowledge management systems' (Hansen et al. 1999). In contrast, newer approaches are grounded in a richer epistemology, a knowledge-in-action view, where knowledge is always associated with a 'knower' and a 'social practice' (Pozzebon and Pinsonneault 2012). So-called 'second generation KM systems' are "designed to encourage the development of communities of practice and to stimulate 'knowing' experiences, rather than merely facilitating transfers of knowledge." (Brivot 2011, 494).

In recent years, social software applications have found their way into corporate practice, and we have seen a continuously increasing demand for enterprise social software to support knowledge creation and collaboration (e.g. Bughin and Manyika, 2007; McAfee, 2009). Meanwhile, there is a growing amount of research on the potential benefits of social software in the corporate realm, which shows that social software facilitates user participation (e.g. in wikis and weblogs; e.g. Holtzblatt et al., 2010; Ip and Wagner, 2008) and allows for new ways of connecting, interacting and communicating with other people (e.g. in social networking services: e.g. DiMicco et al., 2008; Zhang et al., 2010).

Interestingly, the social software field seems to mirror the developments in the knowledge management domain to some extent. When weblogs and wikis emerged on the Internet this spurred immediate interest among knowledge management academics and professionals. A range of publications have showcased examples of corporate wiki use and exposed the benefits for collaborative creation of content in the enterprise (e.g., Grace 2009; Watson and Harper 2008). Authors such as Andrew McAfee have argued that wikis are capable of making both the organisational knowledge work and its output more visible and transparent (McAfee 2006; McAfee and Sjoman 2006). A good overview of wiki research can be found in Stocker et al. (2012).

At the same time, wikis still place emphasis on the explicit manifestation and accumulation of knowledge as content (in the wiki). It is with a second wave of social technologies that a truly conversational space for knowledge work opens up. Enterprise Social Networking (ESN) platforms put emphasis on social relationships, communication, conversation and ad-hoc sharing. As such, from a media repertoire point of view (Watson-

Manheim and Belanger 2007) they offer to complement nicely the technologies of the first wave that place emphasis on user-generated content.

In this study we focus on ESN, where the focus lies on short message communication, often referred to as microblogging. On the back of the success of Twitter, microblogging has gained traction and attention from both the popular media and academia alike. Microblogging allows users to send short messages (140 characters in the case of Twitter) into a message stream, from which users can create their own personalised information view by following the messages of a select number of users. Following Twitter's success, corporations are increasingly showing interest in microblogging for group communication and information sharing in their emerging social networks (e.g. Riemer and Richter, 2010). Case studies reporting on initial cases and benefits have constituted early research in this field (e.g., Zhao et al., 2009; Riemer and Richter, 2010; Zhang et al., 2010). In this study we offer a more detailed exploration of a particularly interesting case in a knowledge-intensive PSF.

CASE OVERVIEW: YAMMER @ DELOITTE AUSTRALIA

Deloitte, founded in 1845 in London, operates as a network of independent firms in more than 150 countries. Deloitte is a typical professional services firm that provides its clients with auditing, consulting, financial advisory, risk management, and tax services. The Australian partnership of Deloitte Touche Tohmatsu has approximately 512 partners with over 5,700 people located in 12 offices across the country.

Yammer was launched in September 2008; at the same time a group of Deloitte consultants began experimenting with the service. Until April 2009 it was used only by a small group of "geeky types" among its professionals (Deloitte Digital), before the firm decided to bring it to the mainstream. Since then, the user base has grown rapidly: 5124 users joined the network and created 394 groups (until April 2011). Deloitte calls Yammer "an important tool […] used for so many different things" (Deloitte Digital).

Yammer is an ESN service that is used by more than 100,000 companies and is claiming a user base of more than four million.[1] The service is organised using the concept of networks, with each network typically representing one company. Anyone can create a network by registering with their corporate email address and new users can join thereafter. Like Twitter, Yammer is based on the "follower"-principle where users can choose which others to follow. Users can view this personalised stream or follow the "all company" stream. Unlike Twitter, Yammer provides a group feature. Public groups can be viewed by all network members and they are open to join; while communication in private groups are only visible to invited group members.

The Yammer web frontend resembles the look of Twitter or Facebook with a three-column layout and the message stream as the central element (see figure 1). Right at the top sits the text input field labelled "What are you working on?" similar to Twitter's "What is happening?" Here, the user posts messages, attaches files and adds tags. Contrary to the restrictions imposed by Twitter, messages are not length-restricted. All replies to a post are grouped and shown chronologically below the message they are related to, creating a conversation thread. It is also possible to comment on a specific reply and the referred post is mentioned in the header.

[1] See: http://www.socialnetworkingwatch.com/yammer/

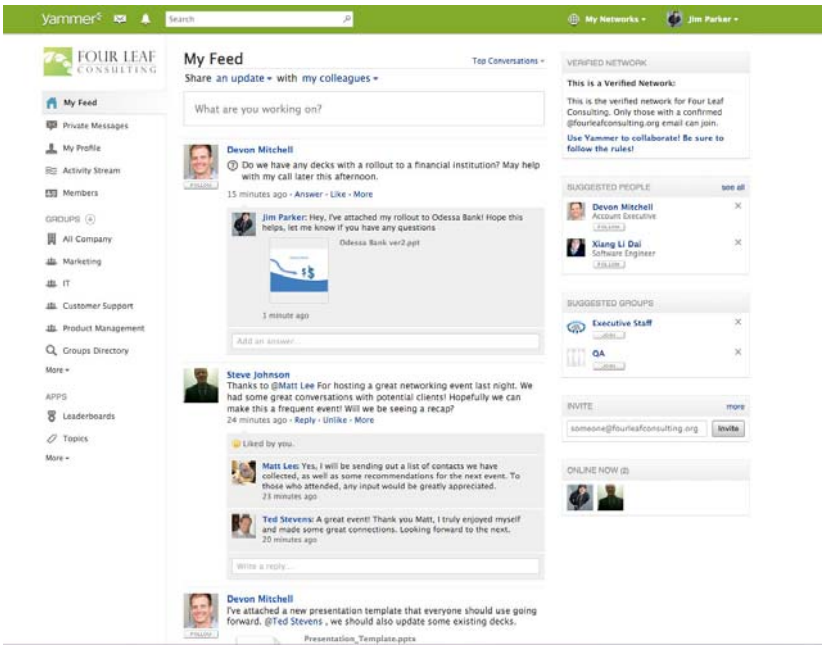

Figure 1: Screenshot of Yammer main screen (Source: Yammer).

RESEARCH DESIGN AND DATA ANALYSIS

The main aim of this study is to investigate the role of Yammer in Deloitte Australia by exposing the communicative (work) practices that have emerged on the platform. For doing so, we apply the method of genre analysis. Genre analysis is a way of eliciting communicative practices from data.

Eliciting communicative practices from the data set: Genre Analysis

Genre analysis of communication data treats communication messages as traces of communicative (work) practices. The underlying logic is that over time, as a technology becomes part of the normal work environment of people, certain ways of working, comprising common activities and routines, emerge that are shared and enacted repeatedly by the members of the community. Those practices can be exposed by systematically analysing the set of messages captured on the Yammer platform.

Genre analysis has been used in Information Systems previously to study the relationships between practices and technologies within organizations and to trace technology adoption and patterns of communication that emerge in the process (Westman and Freund, 2010). Genres can be defined as "socially recognized types of communicative actions [...] that are habitually enacted by members of a community to realize particular social purposes" (Yates et al., 1999, 84). They are descriptions of communication patterns that develop over time and, due to the dynamic nature of communication alter "the ongoing communicative actions of community members through their use of it" (Orlikowski and Yates, 1994, 542).

There are different approaches for identifying genres. Shepherd and Watters (1999) define genres explicitly along the dimensions of content, form and functionality. As we want to identify shared communicative practices, the definition of Swales, who defines genres as "*a class of communicative events, the members of which share some set of communicative purposes*", is useful (Swales, 1990). According to the author, the communicative purpose is a "*privileged criterion*" that shapes a genre and provides it with internal structure. Yates et al. (1999) further state that the purpose of a communicative event "*is not the individual's private motive for communicating, but a purpose constructed and recognised by the relevant organizational community, whether small or large*". In our analysis we do not seek to expose the ESN platform as being a specific genre distinct from other media, e.g. email. That each is a different technology that will mediate communication in different ways is clear. Rather this study focuses on understanding the routinised, recognisable, forms of communication emerging through ESN. We may even see particular genres of corporate communication previously evident in email finding a more appropriate home on ESNs. It is because of these possibilities that communication behaviours within the ESN draw our attention. Hence, in the following analysis, we classify Yammer messages according to their collective purpose and the role a message plays when seen from the perspective of the participant community.

Data Sampling

Deloitte provided the dataset in MS Excel format. It contains 44,589 posts for the period of September 2008 to April 2011[2]. Besides the (text-) body of the messages, six more columns comprise the following (meta) information: a reference to the post it replied to, a thread unique identifier (UID), the timestamp, a group name, a user UID and information if a file was attached to the post. Every post has a UID and is automatically part of a thread. If it is not a reply post a new thread UID is created. All messages in a thread share a common thread UID. Due to the possibility to comment on other posts, they can also hold the UID of the post to which they reply. In the following we will refer to threads that have at least two messages as a conversation.

Due to the size of the dataset it was necessary to select a suitable sample for our analysis. As we are looking to elicit established practices it makes sense to select a time period from the later months of our data set. At the same time the sample needs to still cover a period long enough for traces of shared practices to be witnessed. Consequently, we decided to analyse the last 14 days of our dataset representing 1,985 messages. After removing system-generated notifications and a few empty posts the final data set consisted of 1,809 messages.

Data Analysis Process

The analysis was carried out in MS Excel by one researcher with a second experienced researcher acting as a discussant. After an initial phase of familiarisation through reading long passages of conversations, data coding was carried out in a bottom-up fashion. Starting with a small set of messages, each message was interpreted (in the context of its conversation) by assigning genres codes that label various purposes for posting a particular message. An initial set of genres was then discussed and agreed upon; messages were successively coded and whenever a new genre candidate emerged it was compared with the existing genres. If it did not match these genre codes a new genre code was created. Subsequently, all previously coded messages were reviewed and recoded with the new set of genres. When a genre category grew particularly large, the related posts were revisited to decide if the genre code was too general and needed to be split. Similarly it might occur that a genre was clearly under-represented (less than 1% of codes assigned), in which case it might be merged with a more general one. Generally, posts with multiple purposes were coded with multiple genre codes. On average 1.2 genre instances were assigned per post. The average message length was 220 characters.

FINDINGS: GENRE REPERTOIRE COMMUNICATIVE WORK PRACTICES

A total of 18 genres emerged from our analysis (see figure 2), twelve of which were further described by two sub genres (see genres with a 'plus (+)' in figure 2), distinguishing between 'ask for X' and 'provide X'. All other genres consist of 'provide' only. Furthermore, we were able to usefully group the resulting genre set into seven top-level genre categories.

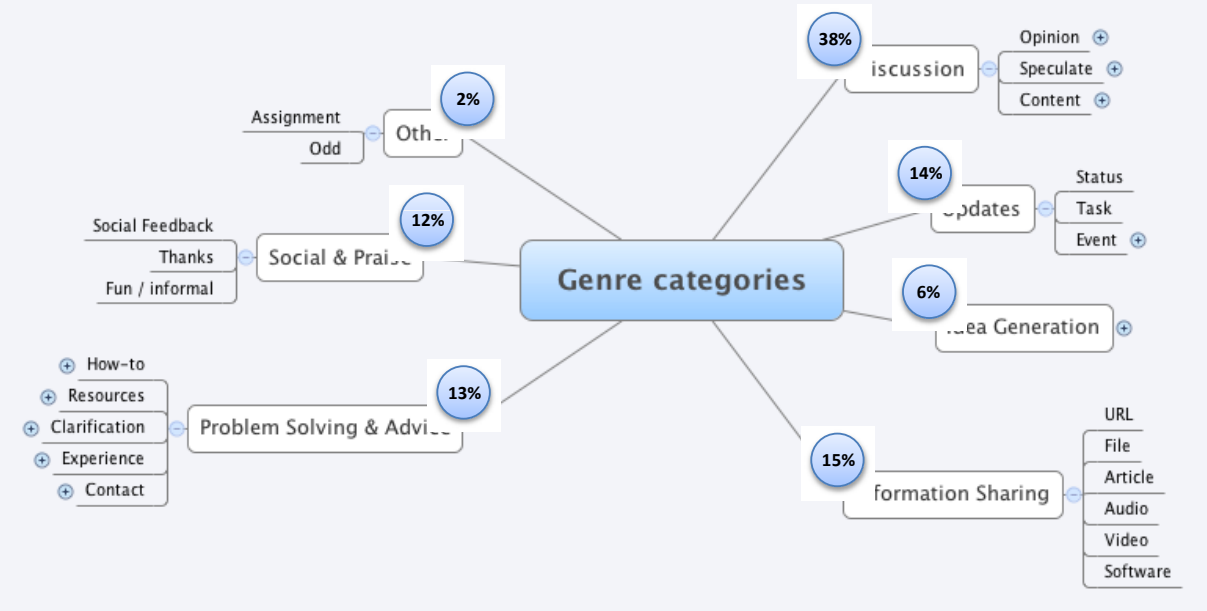

Figure 2. Overview of full genre repertoire; with percentage distribution

[2] Please note that for confidentiality reasons users are only identifiable by their ID not their names. Moreover, the company curated the dataset by removing all client names in order to ensure anonymity.

The most common genre (category) we term *Discussion*. The category makes up 38% of all assigned genre codes and includes three sub genres. The largest sub genre, with more than 20% of genre instances, is called 'Opinion (Provide)', assigned when someone offers their opinion or judgement on various matters during a discussion, such as: *"Agree - great presentation. Looking forward to the new features of Office 2010."* Another 10% were coded as 'Content (Provide)'. This genre is separate from 'opinion' as it is less about personal assessments and more about contributing facts to a discussion. Finally, we distinguish 'Speculate' as a special case where users make assumptions about future events like developments of the stock market (1.2% of codes). Generally, discussions can emerge from almost any post on the platform; interestingly questions in this category are relatively uncommon: requesting an opinion accounted for only 3.7%, asking for content 3.5% and 'Speculate (Ask)' made up less than 0.4%.

The second most common category is the *Sharing* of non-task-related information with a proportion of 15% of all genres instances. In this category, users typically share something out of their own initiative; sharing is only very rarely solicited with a question (less than 1%). The fundamental notion is that users want to provide information that they think might be useful for others. Typical information shared are links to websites (6.2%), references to articles in magazines and newspaper (4.2%), links to audio files (0.8%), videos (0.7%), software (less than 0.3%) or file attachments (2.2%). In contrast to the research of Zhang et al. (2010) who identified internal news as a major topic, in our case users focus clearly on sharing information from external sources.

The third largest category with 14% is *Update*. Here, 'update status' is the most widely assigned code. This genre includes reports about what a person is doing or what he or she did in the near past. Moreover, many users tell the community about events like workshops or clients they met; this genre claims 8.5%. It was not possible to identify any questions occurring in this genre. Notifications about upcoming events were coded as 'update event' and make up 4.8%. Finally, 'Update task', where users announce that they finished an immediate work task, was very rare, even though it was prevalent in other cases in the literature (Riemer and Richter 2010).

The category *Problem Solving and Advice* represents 13% of all genre instances. Here, messages are about supporting one's daily knowledge work. Whereas 'Provide' far outweighs 'Ask' in all other categories, the proportion here was roughly 1:1, which means that this genre is driven by questions. Only a small amount of messages were identified as providing proactive support. We did a fine-grained analysis of sub genres in this category. The largest genre is 'Contact (Provide)' with 3.8% of genre instances, with 'Content (Ask)' accounting for 1.5%, which means requests for contacts usually elicit two or more replies, a result that is indicative of the value of ESNs in solving problems by pointing to the appropriate expertise within the network.

The category *Social & Praise* makes up 12% of all assigned genre instances. The main part of this category consists of messages where users thank somebody for their contributions (4.9%). All forms of public commendation and praise were coded as 'Social feedback', which represent a share of 3.1% ("*well done to Tran, Michel and Luy in putting something excellent together and thanks for investing a lot of their own time*"). The third genre in this category is 'fun', which includes informal communication about clearly non-work related matters; this makes up only 3.8%. Typically those comments are embedded in larger work-related conversation. Only surprisingly few threads consist exclusively of informal conversations. At the same time however, a number of threads include opinion pieces that are located on the verge to the 'informal', for example discussing the song list for an event the company is about to host.

The category *Idea Generation* is the smallest category and comprises only 5.8% of all genre instances. However, this is a particularly interesting genre that amounts to an online brainstorming practice eliciting creative input from others. Most of the creative input is solicited by explicit requests, while only a few cases were found where users offer ideas proactively. Consequently, the genre 'Idea (Provide)' makes up 4.7% and the corresponding 'Ask" only 1.1%. Hence, on average every request is answered with more than four ideas.

Finally, we have grouped some outliers in the genre category *Others*. These are posts that occurred a few times, but could not be classified with the rest of the emerging genre repertoire. Some posts in this category aim to delegate tasks or, for example, the allocation of mentors and trainees.

DISCUSSION: THE ROLE OF ESN IN KNOWLEDGE-INTENSIVE WORK

In this section we reflect on and discuss our findings in light of the particular nature of knowledge-intensive professional service work as outlined in section 2. We discuss both the knowledge-related practices we found within the data set and those that have not emerged in the Yammer space. In doing so, we reflect on the role of ESN in knowledge-intensive work practices in more general terms vis-à-vis other technologies commonly used to support such practices. In summary, the ESN takes on the following roles in our case study:

1. **Building common ground**: Effective knowledge work and indeed even communication requires the emergence of a common background shared by people, a phenomenon that has previously been described as common ground (Clark and Brennan 1991), mutual knowledge (Cramton 2001), or cognitive social capital

(Nahapiet and Goshal 1998). The majority of communication in our Yammer case serves precisely that purpose: through *discussions* and *sharing updates* people get to know each other, learn what is important in the organisation, how others interpret and talk about matters of interest. What emerges is the shared background that makes the world intelligible in similar ways and that is the foundation for all other knowledge work to take place. In overly rationalistic accounts of organisational work this highly valuable aspect of knowledge work might be easily overlooked, as it might be seen as not serving an immediately work-related purpose (such as direct, task-focused problem-solving). In fact in public discourses on ESN this is often dismissed as 'chatter' or 'time-wasting' (Riemer et al. 2010). However, we argue that the emergent nature of a shared background in communicative practice is the glue that holds together and makes possible all other knowledge work. Only if people are aware of what others are doing and what they are interested in can they post the relevant information that provides the foundation for joint problem-solving or serendipitous moments to happen. Moreover, a shared background is also important to understand and interpret correctly other people's questions, be they problems or requests for ideas, and others' input.

2. **Providing input**: A key ingredient of all knowledge work is new information input. Consequently, an important practice is the posting of content, files, links to web pages or otherwise information that users think might be interesting and relevant to their colleagues. The *Sharing* genre identified in our sample is doing just that. It lays the seeds for serendipity to happen that have been described as one of the main benefits of ESN (Zhao and Rosson 2009).

3. **Creating new knowledge**: In our analysis we found several communication threads that were started for the purpose of sourcing ideas from the user group, subsumed in the genre *Idea Generation*. This practice amounts to a form of ad-hoc, internal crowdsourcing. Crowdsourcing is generally described as a "*web-based activity that harnesses the creative contributions of a diverse large network of individuals (the crowd) through an open call requesting for their participation and contributions*" (Stewart et al. 2010). In the context of knowledge-intensive work in our case company, such crowdsourcing activities can also be viewed as a form of online brainstorming (Hymes and Olson 1992).

4. **Harnessing existing knowledge**: Users are aware of the value of the social network on Yammer. They draw on existing expertise actively and explicitly when they have a problem. In the genre category *Problem solving and Advice* we are able to witness "knowledge in action". This represents the most applied and immediately work-related activity that takes place in the Yammer space, in which the existing expertise of the crowd is harnessed by posting a specific question into the space. Hence, the platform is an effective way for having questions answered, but also for learning about other people's expertise and for accessing the geographically dispersed expertise of one's colleagues in an almost instantaneous fashion.

The discussion shows that Yammer in Deloitte Australia has been appropriated as a space for discussion, information sharing, idea generation and problem solving, but not for the immediate coordination or execution of the joint work on shared content objects, even though such practices were found in other microblogging cases. For example, Riemer and Richter (2010) showed how a software development team used microblogging as a stream of activity and awareness-related posts for coordination and alignment of immediate joint work tasks. It is easy to see why Yammer has not been appropriated in these ways. The user group that comes together on Yammer at Deloitte Australia does not share (as a whole) an immediate work context, such as shared work tasks or projects. The group is much larger, more diverse and more dispersed compared to the above-mentioned case. Accordingly, Yammer has assumed a very different role. In fact, appropriation of the microblogging concept at the team level is a very different phenomenon to enterprise-wide microblogging or ESN, demonstrating that the opportunities an open platform like Yammer yields are emerging differently in different organisational contexts. What becomes important is an understanding of how the social locus of knowledge sharing is constructed and mediated in each case.

While our analysis is based on one case only, we argue that Deloitte Australia, due to its size and nature of work is a typical PSF, and because of its wide diffusion (more than 90% Yammer adoption) it is a useful case for tracing the emergent patterns of communication on Yammer so that we can better understand the role of ESN in knowledge-intensive work. It is, in our view, the social practices shared by the participants in the ESN that determine what the network is for. Our genre analysis demonstrates that it is the praxis of communication that makes the platform meaningful. Importantly, this finding advances our understanding of the characteristics of knowledge-intensive work in PSFs that we presented in table 1. Sharing corporate knowledge is dependent on external consultable stores of memory (Debray, 2000). Similarly, knowledge-intensive PSFs require an infrastructure for acquiring, recording and distributing information. However, knowledge sharing requires the organisation of more than a facilitating environment. It is the organisation of the institutional conversation in practice that allows what is known to be communicated and grown. What we observe through the ESN is the materialisation of that institutional conversation.

There is an often mooted dialogue between the records of what we know, the information infrastructure and the activity of knowledge work as we practice it, yet rarely are frameworks presented that successfully capture all these dimensions. In order to position ESN in the space of ICT for supporting collaboration and knowledge work, we have drawn on the well-known '3-C' model for classifying systems, comprising *communication, coordination and collaboration* as a suitable approach (Yu & Yen, 2000, Bhatt et al., 2005). As a result of our analysis we propose to add to this model two further 'Cs' that extend the model to a contemporary representation of knowledge-intensive work, adding *Capture & storage* to the model to account for the traditional 'knowledge as object' perspective describing the storage of valuable content in a knowledge base, and *Conversation* to capture the social role of ESN (our resulting 5-C model positioning ESN is depicted in figure 3). We regard this framework as a core contribution of this study. It aims to serve both as witness to our analysis and as a useful vehicle for understanding the role of ESN in research and practice:

- *Communication, conferencing and messaging*: Communication is an essential part of all collaborative knowledge work. While in a wider sense all activities in collaborative work are based in one way or other on communication, 'communication' in this model is meant in a narrow sense, typically describing messaging, point-to-point communication or team conferencing. Typical technologies are Email, Instant Messaging, and A/V Conferencing systems.

- *Coordination of projects and tasks*: All joint work needs some form of coordination. Projects require management and coordination and so do shared tasks where task hand-over or parallel work between people needs to be coordinated. While microblogging might be useful in certain contexts (and on a smaller scale) to support such coordination (Riemer & Richter 2010) or even to coordinate projects to a certain extent (Riemer et al. 2011), this is typically the space for dedicated project management software or platforms for task coordination such as Basecamp.

- *Collaboration on joint content objects*: As we discussed earlier, the outcome of knowledge-intensive work often results in the creation of intellectual objects comprising content, documents, ideas etc. Consequently, supporting the joint work on shared content objects is an important part of this model. Typical technologies in this space include Wikis, group editors and systems to enable work on Office documents, such as MS Sharepoint.

- *Capture and storage of knowledge objects*: In order to complement the 3-C model we propose that the systems class of traditional knowledge management that has as its main aim the capturing, archival management and dissemination of knowledge objects (e.g. content, documents) must be represented. Enterprise content management (ECM) systems also fall in this category. Adding this category allows us to integrate the 'knowledge-as-object' perspective into the model, putting on the agenda for ESN analysis the significant role that Cloud computing now plays in capture and storage.

- *Conversations*: As a space for enabling multiple participants to engage in, widely transparent conversations the main role of ESN is to enable shared contexts and social relationships to emerge as the communicative practice that binds together the other 'C' activities. Moreover, by enabling the crowd sourcing of ideas, incorporating external inputs and allowing people to come together and talk about what they know for ad-hoc problem-solving, this conversational space feeds into the actual collaborative knowledge work of the professional service firm. This is depicted in figure 3.

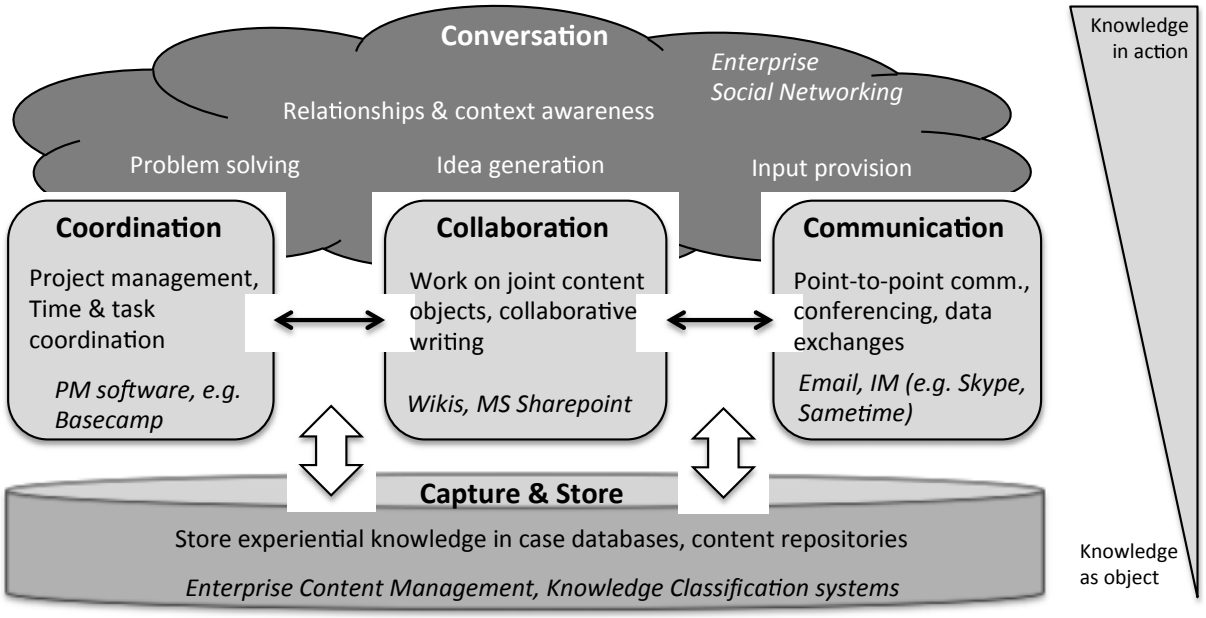

Figure 3: The 5-C model: Placing ESN among established concepts and ICT for supporting knowledge work

It is worth mentioning again that ESN such as Yammer can be appropriated to support the traditional 3-C activities directly, as existing cases on the appropriation of microblogging for team work have shown (e.g. Riemer & Richter 2010, Riemer et al. 2011). This is allowed for in figure 3 by extending the institutional conversation into the three C-pillars. However, we suggest that the unique value add of ESN is indeed the free conversation between people that ESN allows. It is the link that ties together existing knowledge work activities in our PSF case.

CONCLUSION

In this paper we have reported on a study we undertook investigating the nature or Enterprise Social Networking (ESN), in particular Enterprise Microblogging (EMB), at Deloitte Australia. We began by exposing the knowledge-intensive nature of professional service work. Our study is based on a genre analysis of actual communication captured on the EMB platform Yammer. Our analysis reveals a repertoire of genres that reflect the communicative practices that have emerged on Yammer in Deloitte Australia.

Yammer in Deloitte Australia provides a typical example of what has been described as the knowledge in action (or knowledge in practice) perspective to knowledge, where the "focus is on dialogue between individuals, not knowledge objects in a database" (Hansen et al. 1999, 2). Moreover, it is a typical example of a second wave enterprise social media service, where the focus is on conversation, rather than work organisation or shared work on formal content (like reports). Yammer has been appropriated and found its place within Deloitte Australia as 1) an information-sharing channel, 2) a space for crowdsourcing ideas, 3) a place for finding expertise and solving problems and, *most importantly*, 4) a conversation medium for context and relationship building. Other means exist within the company that enable task coordination, project management, collaboration, sharing content and capturing knowledge objects in a database.

We have reflected on our findings against the background of knowledge-intensive professional service work. In doing so, we contribute to a better understanding of the role of ESN in knowledge-intensive work contexts, of which professional service work is a typical example. In more general terms, our study contributes to a better understanding of Enterprise Social Networking as we add to the literature another case of ESN and microblogging use. Finally, we have proposed a model that positions ESN in the well-known 3-C model as a means for conversations, context and relationship building. This model is the main contribution of this study.

Our case study has practical implications, because it furthers our understanding for the role of ESN as a space for enabling relationship and context building to foster knowledge-intensive work. It further demonstrates the power and value of the organisation's crowd for solving problems and developing new ideas. From the perspective of an active participant the Yammer crowd can be relied on for solving specific problems, for answering one's questions, for providing access to experts in the field and for gathering and developing new ideas.

Our study has certain limitations that open up space for future research. With regards to the case presented here, by analysing the communication on the platform, we have as yet only investigated what messages are sent on Yammer, but not how and to what extent they are being read and drawn into everyday work. Interviews with

Yammer users will likely reveal a more comprehensive picture of the role of Yammer within the company and, importantly allows us to include the voices of passive participants and non-users. Another limitation is that the findings presented here are only based on one case. With more organisations adopting the new technology, and with more case studies appearing in the research space, comparing findings across cases becomes more feasible. This will allow us to contribute to more generalised findings and a more valuable understanding of the role of EMB in particular, and social media in general. Finally, we would like to point out that Yammer as a platform is changing. Similarly, many of the Enterprise Social Media platforms are evolving from simple platforms (e.g. for microblogging) to more comprehensive collaborative environments with wiki-like features, document sharing spaces and more structured content management options. It remains to be seen how emerging knowledge work practices will change and adapt or simply ignore these emerging features and to what extent ESN, once they are established spaces within organisations, will take over some of the 3-C activities traditionally carried out with specialist ICT solutions.

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