

BUSINESS
SCHOOL



THE UNIVERSITY OF
SYDNEY

BUSINESS INFORMATION SYSTEMS

Business Information Systems (BIS) is an exciting, fast changing field. In today's world BIS professionals and graduates play a key role in enabling organisations to meet their strategic goals, drive business innovation and assist businesses to comply with increasingly complex legal requirements.

An understanding of BIS is important to the work of all business professionals including: executive managers who determine the organisation's strategic direction; information professionals who design and deliver new information services; accounting and financial managers who use information systems for financial management and business reporting; and marketing and sales managers who use information systems to track customer buying patterns and to promote new products.

Employers are looking for employees who understand both business and technology issues and have the skills and knowledge to contribute to the shaping of their organisation's BIS strategy and planning.

Established in 2002, the Discipline of Business Information Systems at the University of Sydney Business School, is a multidisciplinary team with a strong commitment to practice based industry-relevant teaching and research.

Our research focuses on:

- Information systems strategy
- Project & change management
- Information policy and knowledge management
- Information risk, assurance and Governance
- Enterprise systems and business
- Process management
- Technology driven business
- Innovation
- Government information systems
- Decision support and business intelligence systems.

We offer degree programs at both undergraduate and postgraduate level that are accredited by the Australian Computer Society (ACS).



The Business Information Systems Working Paper Series at the University of Sydney is a publication of the Discipline of Business Information Systems in the University of Sydney Business School. Its mission is to foster research relating to the management of Information, Systems and Processes. All BIS Working Paper Series authors retain copyright in accordance with the University of Sydney's applicable policies. For further information about the Series or to submit a paper for potential publication, please contact biswps@econ.usyd.edu.au or the Discipline of Business Information Systems on +61 2 9036 9432. http://sydney.edu.au/business/information_systems/research/working_papers.

**BUSINESS INFORMATION SYSTEMS
WORKING PAPER SERIES**

ISSN 1837-1744

**The role of groups as local context in large Enterprise Social Networks:
A Case Study of Yammer at Deloitte Australia**

Kai Riemer⁺, Asin Tavakoli[^]

⁺ The University of Sydney, [^] The University of Münster

BIS WP2013-01

The role of groups as local context in large Enterprise Social Networks: A Case Study of Yammer at Deloitte Australia

Abstract

Enterprise Social Networking, the application of popular social networking techniques to the workplaces of organisations, is an increasingly common phenomenon. But its nature, benefits and proliferation are not yet fully understood. In this study we investigate ESN communication at the micro-level. We focus on the role of the group feature in structuring and providing context for communication in large ESNs. Our case study is Yammer at Deloitte. In contrast to previous studies we carry out an analysis of communication at the thread (conversation) level, rather than at the level of single messages. This allows us to provide a more contextual understanding of the group aspects of communication. We find that information sharing underpins the majority of communication threads, which speaks to the usefulness of ESN, in particular in the context of knowledge-intensive work. We further uncover differences between network-wide and group-centred communication and derive a framework of four group archetypes, based on different group communication patterns. Our findings are useful for decision-makers in providing a better understanding of the role of groups in providing local contexts for users in large ESNs.

Keywords: Enterprise Social Networks, Microblogging, Communication, Groups, Yammer, Deloitte

Introduction

Enterprise Social Networking (ESN) refers to the application of social media platforms that facilitate short message communication and the establishment of social connections within organisations. Much like Twitter and Facebook on the public Internet, ESN allows organisations to create spaces in which people can connect, communicate, collaborate and exchange information. ESN has spread rapidly and many organisations today have run pilot projects or even fully deployed such technologies to their employees' workplaces.

At the same time however, there appears to be significant uncertainty among adopting (or hesitant) organisations as to the nature of ESN, its benefits and what the outcomes of creating such a space for social interaction might be. Despite some existing research that illustrates potential use cases and ESN benefits (e.g. Riemer, Diederich et al. 2011; Riemer, Richter and Seltsikas 2010), the role of these platforms for organisations and its patterns of adoption remain under-explored. In particular, more research at the micro level is needed to unpack how ESN becomes integrated with organisational work practices; in essence, what ESN looks like on the ground.

Against this backdrop our study aims to address the following research questions: 1) How do communication and communicative work practices proliferate within ESN? 2) In particular, what is the role of groups in providing context for communication in ESN? In other words, we aim to gain a more differentiated understanding for communication in ESN, especially in large networks. In doing so, we aim to derive insights into the role of the group feature as vehicles for creating local contexts and to identify different types of group-based communication in ESN.

We investigate a large and well-established ESN: Yammer at Deloitte Australia. We carry out a genre analysis at the thread level. This analysis differs markedly from existing analyses that have focused on the single message level, such as our own earlier analysis of the same network (Riemer and Scifleet 2012). A thread level analysis is more resource-intensive and time-consuming, but also more meaningful in uncovering the social group aspects of communication. It shows unfolding communication practices at the group level, not only the intentions of individuals in posting into the space. While message-level analyses are useful for gaining an initial overview of why and for what purpose people use ESN, a thread-level analysis provides a more contextual understanding of how ESN enables groups to communicate as part of their work. In order to investigate the role of groups in ESN we apply a two-step analysis: 1) We use the results of the genre analysis to compare communication patterns in a selected number of well-established groups that were created on the Yammer network with the network-wide communication in the so-called 'All Company' stream. 2) We carry out a cluster analysis to identify different archetypes of groups based on their genre patterns.

Our findings are threefold. Firstly, our thread-level analysis uncovers a surprisingly high degree of information sharing (~65% of threads contain some form of information input) compared with prior message-level analyses where only about 20% of messages provided information input. This tells us that while the relative number of information sharing messages might not be that high a majority of conversation threads revolves around some form of information sharing. Secondly, we find differences between network-wide communication and local engagement in groups. We find that groups provide a focused environment for topic-centred information sharing and problem-solving. Finally, using cluster analysis we distinguish four group archetypes that exhibit different kinds of communication patterns, some more discussion focused, others more problem-solving and information focused.

Our study contributes another building block in the quest to better understand ESN and to reduce uncertainty for managers who need to make ESN adoption decisions. We unpack two previously unexplored phenomena: We add an important perspective by carrying out a genre analysis at the thread level, which demonstrates the importance and central nature of sharing information and providing new input to the ESN as the nucleus for knowledge work and conversations. We further explore local communication pat-

terns at the group level which yields interesting insights in terms of distinct group types, each of which brings to the fore an important use case and thus benefit of ESN for large (knowledge-intensive) organisations.

Research background: Enterprise Social Networking

Following the success of Web 2.0 on the public Internet (O'Reilly 2007), companies have invested in and adopt social media platforms like wikis and blogs for internal purposes and workplace usage (McAfee 2006b). Accordingly, the term Enterprise 2.0 has been coined, defined as "the use of emergent social software platforms within companies, or between companies and their partners or customers" (McAfee 2006a). In this context Enterprise 2.0 is referred to as a phenomenon enabling a new participatory culture of communication and information sharing within the organisation. Although it builds on the implementation of social media, a large portion of success is dependent on the accompanying cultural change that brings about participation, inclusion, and a culture of sharing (Richter, Riemer, et al. 2011). Consequently social media in the enterprise often follows a bottom-up principle of implementation, a more inclusive and emergent approach (Riemer and Johnston 2012; Schneckenberg 2009). The bottom-up approach is a major difference between Enterprise 2.0 and traditional applications of IT systems, especially in the context of knowledge sharing (Cook 2008).

Revolving around the principle of microblogging (the sending of short text messages) ESN are typically used within organizations to support a broad range of communication, coordination, and information sharing practices (Riemer, Richter, and Böhringer 2010). Decision-makers however are often concerned that such microblogging communication within the organization is similar to that witnessed on the public Internet. That it may result in procrastination or hedonistic use, chatter on the platform, or literally time-wasting (Riemer, Richter, and Seltsikas 2010). Studies however have shown that microblogging facilitates the publication of news and discussion of problems rather than mere chatting and self-presentation (Zhang et al. 2010).

At the same time ESN platforms are classified as open infrastructure technologies, allowing for a variety of appropriation and usage patterns (Riemer, Richter, and Böhringer 2010). This is also termed 'Nutzungsoffenheit' (Riemer, Altenhofen, et al. 2011), a property of many social media tools, which makes exploratory research necessary to uncover their specific uses and utility in various organizational contexts.

Existing research on ESN

In recent years a range of studies have been carried out looking into various aspects of social media use in general and the application of social networking and microblogging in the enterprise more generally. One of the first studies on Twitter microblogging was conducted with the aim to take a closer look at user intentions and community structures (Java et al. 2007), while others investigated the continuance intention to use Twitter (Barnes and Böhringer 2009; Liu et al. 2010). In an organisational context, academics explored how microblogging impacts on informal communication at work (Zhao and Rosson 2009), or how it can be used in education, e.g. for informal learning (Ebner et al. 2010). Other studies focused on knowledge management (KM), for instance the integration of microblogging in software engineering platforms to support knowledge sharing (Reinhardt 2009) or semantic microblogging as a lightweight KM tool (Panella et al. 2011). In parallel to these studies, a variety of researchers analysed how microblogging platforms are appropriated and made useful in organisations. Zhang et al. (2010) show that enterprise microblogging can support knowledge sharing as well as communication, due to being lightweight and easy-to-use. In previous work we have shown, that microblogging can facilitate useful enterprise-wide discourse (Riemer, Diederich, et al. 2011), play a role in knowledge-intensive work (Riemer and Scifleet 2012) and generally be appropriated quite differently in a wide range of contexts (Riemer and Richter 2012). Table 1 gives an overview of prior studies on Enterprise Social Networking and Enterprise Microblogging.

| Publication | Case Organization | Platform | Research method | Object of analysis |
|-----------------------------------|--|--------------------------|--|---|
| (Zhao and Rosson 2009) | IT firm (name disguised) | Twitter (free, public) | Semi-structured interviews | Interview transcript |
| (Ebner et al. 2010) | Higher education (University of Applied Sciences of Upper Austria) | Identi.ca (Open source) | Categorization | Posts/messages |
| (Ehrlich and Shami 2010) | IT consultancy (IBM) | Blue Twit (internal) | Content analysis, semi-structured interviews | Interview transcript, posts/messages |
| (Riemer and Richter 2010a, 2010b) | Software development firm (Communardo) | Communote (freemium) | Genre analysis, semi-structured interviews | Interview transcript, posts/messages |
| (Zhang et al. 2010) | Fortune 500 company (name disguised) | Yammer (freemium) | Content analysis, survey | Messages, log file, profile, HR information |
| (Müller and Stocker 2011) | Buildings and infrastructure firm (Siemens Building Technologies) | References@BT (internal) | Quantitative data analysis, user surveys | Descriptive analysis, interviews |
| (Riemer, et al. 2011) | IT consultancy (Capgemini) | Yammer (freemium) | Genre analysis | Posts/messages |
| (Riemer, et al. 2012) | Professional service firm (Deloitte Australia) | Yammer (freemium) | Genre analysis | Posts/messages |
| This study | Professional service firm (Deloitte Australia) | Yammer (freemium) | Genre analysis, semi-structured interviews | Interview transcript, thread |

Table 1: Selected studies on Enterprise Social Networking and Enterprise Microblogging

Limitations of existing studies

Existing studies present two major limitations. Firstly, using content analysis prior studies have focused mainly on the interpretation and coding of single messages (posts). Typically, genres are assigned to each single message according to the communicative purpose of that message. While useful, such analyses are limited in facilitating more complex, contextual understanding of the proliferation and embeddedness of ESN and microblogging. Secondly, existing studies (see table 1) have demonstrated how microblogging platforms are appropriated within organizations, but not explored how communication proliferates differently within the respective platforms. In this study we take a more granular level of analysis, with the aim to identify usage patterns within the platform, comparing communication in groups with the main network stream.

Against this background, we opted to conduct a so-called genre analysis based on threads rather than single messages. Genre codes are assigned to the entire thread based on the communicative purposes comprised in the thread. Furthermore, we analysed communication in the main network channel (“All Network” stream) vis-à-vis communication in specific groups on the network. Consequently, with this study, we aim to contribute another building block toward a more differentiated understanding of usage patterns and communication practices in ESN. In doing so, we investigate the role of groups as vehicles for providing local context in a large enterprise social network.

Study overview

In this section we outline our study. We give an overview of the ESN platform Yammer, the case company Deloitte Australia, our methodology, data sampling and analyses techniques used in this case study.

The Enterprise Social Network Yammer

ESN platforms have mushroomed in recent years. Prominent examples are present.ly, Socialcast, Jive, Tibbr and Yammer. Yammer is the platform used at Deloitte Australia. Yammer is an online platform

BIS WP2013-01 The role of groups as local context in large Enterprise Social Networks (Yammer@Deloitte AU)

developed, distributed, and hosted in the USA by Yammer, Inc., which is now owned by Microsoft Inc. Yammer has more than four million users in 221 countries worldwide. In total 200,000 organisations created a Yammer network on the platform. Yammer operates under a so-called “freemium” business model: Networks can be setup for free with a basic feature set; a wider set of features is available for a fee.

Initially the platform layout made reference to Twitter with a strong focus on the short message stream – hence the early name Enterprise Microblogging. Over time the provider has positioned it more and more in reference to Facebook so that the service is now known under the label Enterprise Social Networking. While the service does indeed provide typical social networking features (profiles, member list, follow/unfollow), the central feature of the platform is still microblogging, reflected in the message feed. In contrast to Twitter, on Yammer groups can be created in order to facilitate a focused discussion about a certain topic. Messages in Yammer are not restricted to text, but can also include audio, video, file attachments, events or surveys. Besides, text messages are not length-restricted. Figure 1 provides an overview of the variety of available user clients and shows some Yammer functionalities.

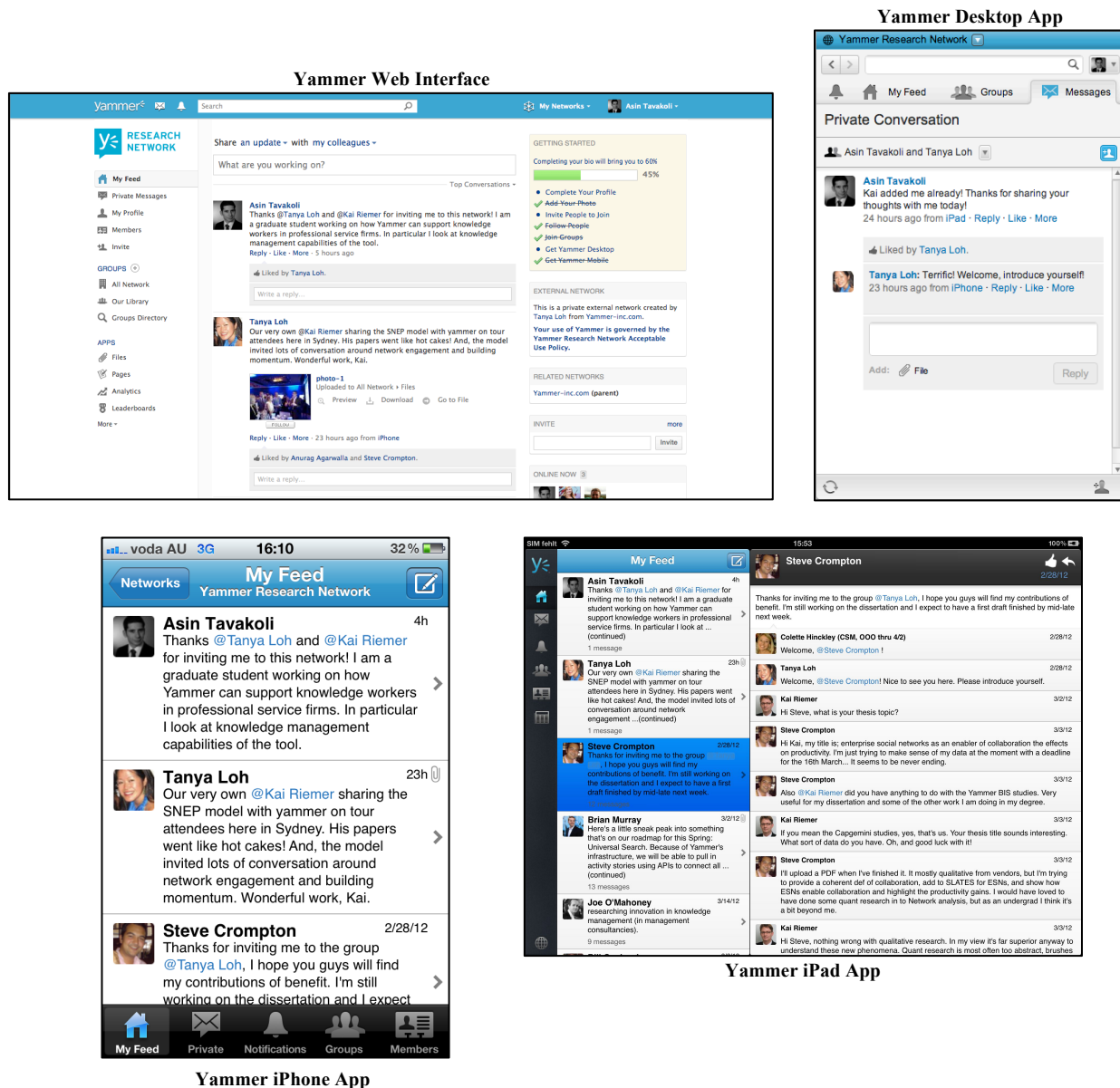


Figure 1: Screenshot of Yammer user clients.

Case Company: Deloitte Australia

Deloitte Touch Tohmatsu is a UK-based company that consists of several member firms, each providing services to their clients in a specific region. Each member firm is a distinct legal entity and subject to regional laws and regulations. In 2010 Deloitte Touche Tohmatsu operated in more than 150 countries and generated revenue of USD 26.6 billion. Deloitte Australia is the regional member firm of Deloitte Touche Tohmatsu. Structured as a partnership it generated revenue of AUD 935 million in 2011. Australia is covered with 16 offices spread throughout the country. As a professional service firm Deloitte offers services in the areas of accounting, assurance, advisory, tax, consulting, finance, and e-business. The services are provided for a variety of industries (Deloitte 2012).

Deloitte Australia uses various social media tools for different purposes. For external presentation of the organization YouTube and Facebook are used, in particular for recruiting purposes. The diffusion of Yammer was initiated in a bottom-up fashion in 2008 by users from an innovation team at Deloitte Digital. From very early on Yammer was legitimatised by the executive, at first by Deloitte Digital CEO Peter Williams and after a company-wide roll-out by Deloitte Australia CEO Giam Swiegers. Deloitte Australia leads the way for Deloitte's global social media initiative (Deloitte 2010).

Methodology: genre analysis

In this study, microblogging messages are treated as traces of existing work practices within an organisation. Existing research has shown that any fully adopted technology in the work environment becomes an inherent part of procedures, routines, and business processes (Riemer, Scifleet et al. 2012). Genre analysis, a particular type of content analysis, can help to expose Yammer communication practices by analysing the threads and messages captured on the platform.

Genre analysis is used to analyse “the relationships between communication practices and technologies within organizations and to trace technology adoptions and patterns of communication that emerge in the process” (Westman and Freund 2010, p. 323). Originally, the term genre referred to popular media and is still used to categorise books, music, and movies. Bakhtin (1986) was the first to use it in the context of communication; Yates and Orlikowski (1992) applied it to the Information Systems field. They investigated organisational communication and considered genres as “recurring communicative actions embedded in social processes rather than results of isolated rational communicative actions” (Yates and Orlikowski 1992, p. 299). In the IS discipline several definitions and approaches to identify genres exist (e.g. Shepherd and Watters 1999; Yates et al. 1999; Yoshioka et al. 2001). Most notably, genres are 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, p. 84). Genres evolve and change over time in “reciprocal interaction between institutionalized practices and individual human actions” (Yates and Orlikowski 1992, p. 299). They alter the communicative actions of community members through their use and shape social activity by serving as templates (Kwasnik and Crowston 2005). For investigating communication practices the aim is to elicit from the data analysis a comprehensive set of genres, called the genre repertoire. According to Swales (1990) a genre consists of multiple communicative events that share the same communicative purpose, i.e. “not the individuals private motive for communicating, but a purpose constructed and recognized by the relevant organizational community” (Yates et al. 1999, p. 84). In accordance with Askehave and Swales (2001) in this study we use communicative purpose as the primary criterion for identifying genres.

Data Sampling

Deloitte Australia provided its entire data set of Yammer messages that were exchanged and thus captured on the platform between September 2008 and April 2011, which comprises 44,588 messages in 21,275 threads posted by 5,213 users.

Besides the (text-) body of the messages, the columns of the Excel file comprise the following (meta) information: a reference to the message it replied to, a thread unique identifier (UID), the timestamp, a group name, a user UID and a number representing whether a file was attached or not. In order to understand the role of these fields, it is necessary to understand how Yammer organizes its messages. Every message has a UID and is automatically part of a thread. If it is not a reply message a new thread UID is created. All messages in a thread share a common thread UID. Due to the possibility to comment on other comments, they can also hold the UID of the message to which they reply. Please note that for confidentiality reasons users are only identifiable by their UID. Moreover, the company curated the dataset by removing all client names in order to ensure anonymity.

As the data set provided was too large for content analysis we had to derive a sample. A two-step sampling strategy was taken. Firstly, we analysed public threads in the enterprise stream covering a certain period of time. Secondly, group threads were taken into account and all threads posted in a specific group were extracted, independent from the period they were posted in.

Public-thread sampling. Prior work on the adoption of ESN has shown that the degree of adoption varies with the time the platform has been active in the enterprise (Riemer, et al. 2012a). The study revealed that the focus of conversations shifted from talking about the platform itself, to work-related conversations. In later stages, the platform was embedded and became an inherent part of the company's work practices. Following these insights we therefore considered only messages from later periods reasoning that they represent best the role of ESN as part of unfolding work practices. These are all threads in the 'All company' stream posted in the first 16 weeks in 2011 starting 01/01/2011 2:23h and ending 11/04/2011 10:49h.

Group-thread sampling. The provided data set contains 271 public¹ groups of which 13 were chosen for analysis. In order to gain an overview about the different types of communities we categorized them according to their main purpose. In a next step, the top three categories according to their relative number of threads were chosen: Service line (18.72%), Regional (13.98%) and Industry (8.85%). Three groups were chosen out of each category, based on the highest amount of threads per group category.

The groups chosen are: 'accountingtechnicalgroup', 'actuariesconsultants', 'consultingtechnology', for the category 'Service line', 'adelaideoffice', 'melbourneconsulting', 'sydneycbtmt' for the category 'Regional' and 'ehealth', 'financialservicescoi', and 'oilgas' for the category 'Industry'. In addition knowledge related categories have been chosen, here 'Innovation' (5.76%) and 'Learning' (3.88%). Again all threads of two groups per category were included in the analysis: 'deloitteinnovationacademy' and 'emergingleaderscouncil' for the category 'Innovation', as well as 'dacademy2011' and 'innovationseriousgames' for the category 'Learning'.

In total 2,978 threads were included in this study. Table 2 depicts how many threads belong to their respective sample group and provides further statistics. It needs to be mentioned that all threads that were automatically created by the platform, e.g. for a user joining the platform or a new group being created, are out of scope of the content analysis, as they do not represent a reoccurring communication genre. These threads/messages were deleted from the sample data set and are labelled as 'Deleted' in Table 2.

¹ Public groups are all those groups, which are accessible by every user. In private groups users need to be granted access in order to participate. For privacy reasons this study covers only public groups.

| | | Messages | Threads | Messages per thread | Genres (analysed) | Genres per thread (analysed) |
|-----------------------|-----------------|----------|---------|---------------------|-------------------|------------------------------|
| Group-threads | Analysed | 2,379 | 1,180 | 2.02 | 2,334 | 1.98 |
| | Deleted | - | - | - | | |
| Public-threads | Analysed | 5,030 | 1,798 | 2.80 | 3,417 | 1.90 |
| | Deleted | 893 | 893 | 1.0 | | |
| Total | Analysed | 7,409 | 2,978 | 2.49 | 5,751 | 1.93 |
| | Deleted | 893 | 893 | 1.0 | | |

Table 2: Data set statistics

Data Analysis

Data analysis was conducted by one researcher with a second experienced researcher acting as a discussant. The initial set of genre categories was adapted from existing studies (see research background) in order to have a starting point. The resulting set of genre categories emerged bottom-up and was continuously refined during multiple coding iterations. Whenever a thread did not fit into the initial genre categories, either a new genre category was created that best describes the communicative purpose or existing genre categories were refined. Consequently, all previously coded messages were reviewed and recoded with the new set of genres. Microsoft Excel was used to organise and then code the data. The object of analysis was always an entire thread (which contains multiple messages that constitute a conversation).

Findings (1): Genre analysis at the thread level

In this section we report briefly on the resulting genre repertoire as the basis for our further analyses. This analysis is based on the total data sample, including all threads from the network-wide stream and the groups selected for this analysis.

Genre analysis: genre categories

Overall the data analysis revealed nine genre categories. Within these categories 30 sub genres were identified. Table 3 gives a brief overview of the categories, the respective sub genres, and provides a short description of the associated meaning of the genre category. Figure 2 visualizes the genre distribution.

The top three genre categories that emerged from our analysis are: ‘Information sharing’ with ~65%, which means that about 65% of all analysed threads contain some form of information sharing messages. Such threads include messages that share work-related links, videos, pictures, files, etc. Interestingly, the category ‘Social & Praise’ is represented by ~29% of all threads. This allows us to characterise Deloitte Australia’s Yammer network as a very friendly and polite network in which users thank and praise each other for their contributions. There are also a healthy number of threads that include not directly work-related messages. The third highest amount of threads is found in the category ‘Discussion’ (~21%), where users express their opinions and provide clarifications, while ‘Problem-solving’ messages can be found in nearly 20% of all threads.

| Genre category | Sub genres ² | Description |
|--------------------------|--|--|
| Coordination | Task coordination; Time coordination | Threads with this genre include coordination activities of collaborating users. In general, this can be project management, or in particular coordination of specific activities. |
| Discussion | Discuss (clarification) +; Discuss (opinion) +; Discuss (speculation) + | A specific topic is discussed, taking different forms of discussions into account. Users clarify certain statements, tell others their opinion or speculate about future happenings. |
| Idea generation + | - | Users generate ideas to solve problems or innovate in certain areas, often through creative thinking. |
| Information sharing | Information sharing (event); Information sharing (file); Information sharing (group); Information sharing (link); Information sharing (picture); Information sharing (powerpoint); Information sharing (content); Information sharing (video) | An information object is shared. This can be a file, link, event invitation, etc. |
| People | Contact identification +; Expert identification | Threads include finding or providing information related to certain people. |
| Problem solving & advice | Problem solving +; Story telling (experience) +; Story telling (how to) + | Threads contain conversations about a situation. This can be represented by a simple problem, rich experiences, or detailed 'how-to' explanations. |
| Social & praise | Fun; Praise; Social conversation | Threads of this genre contain, among other social conversations, work un-related messages, jokes, or praise of any kind. |
| Update | Status update; Task update | Threads of this genre contain updates about either tasks or statuses. |
| Other | - | All threads that cannot be assigned to a specific genre are tagged as 'Other'. The majority of threads with this label are single messages and do not represent a genre as they are no recurring pattern of communication. |

Table 3: Genre categories and sub genres

Genre analysis of the analysed data set

Relative # of threads containing the respective genre

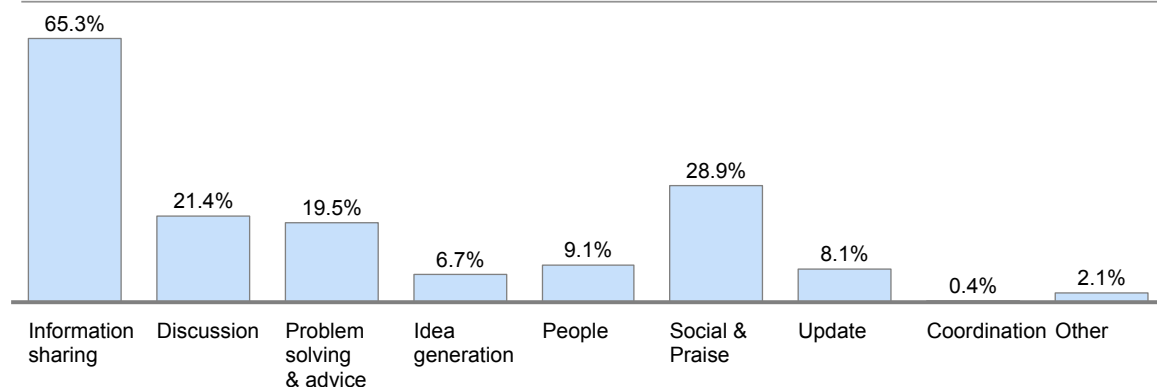


Figure 2: Genre distribution – total (based on the entire sample: network-wide and groups)

² A '+' means that the genre subsumes two sub-genres of the same kind, either with the suffix 'provide' or 'ask'.

Comparison: thread vs. message-level analysis

The results of this study must not be confused with those by Riemer, Scifleet et al. (2012) which was based on the same data set. First of all, the level of analysis in this study is the thread, while in the prior study single messages were coded according to their purpose in the context of a thread, but not the thread itself. Besides, the sampling approach differs substantively. In this study 7,409 messages in 2,978 threads were analysed, while Riemer, Scifleet et al. (2012) analysed 1,809 messages from two weeks only. The comparison of genre analyses on thread and message level, based on the same data set (two calendar weeks in April 2011) shows that different conclusions will be drawn depending on the analysis technique, and that only by combining the two can we derive a better understanding of ESN.

For example, figure 3 reveals a strong discrepancy in the category ‘discussion’, where the single-message analysis reveals a large portion of discussion messages. To the contrary, the thread-level analysis reveals a smaller portion, which is largely due to the fact that unfolding discussions are often long threads and thus composed of several messages, which are however aggregated to a single thread in our analysis.

The other notable difference is the ‘information sharing’ category. Even though the number of actual information sharing messages might be much lower, as shown by the prior study, our analysis reveals the importance of information sharing, because two-thirds of all threads contain some form of information sharing. In fact, an information object being shared by someone is quite often the trigger for a more elaborate discussion among ESN members. Hence, many discussion threads also include information sharing, but not every information sharing thread initiates a discussion.

In summary, the thread-level analysis shows unfolding communication practices based on a combination of several genres per thread, in that individual messages of the same type are aggregated to one genre instance for their respective thread. Overall, the purpose of social media platforms like Yammer is to help people engage with each other. While useful to provide an overview of what motivates individuals to post on the platform, a message-level analysis somewhat disregards the social nature of communication, as relations among several messages in a thread are not taken into account.

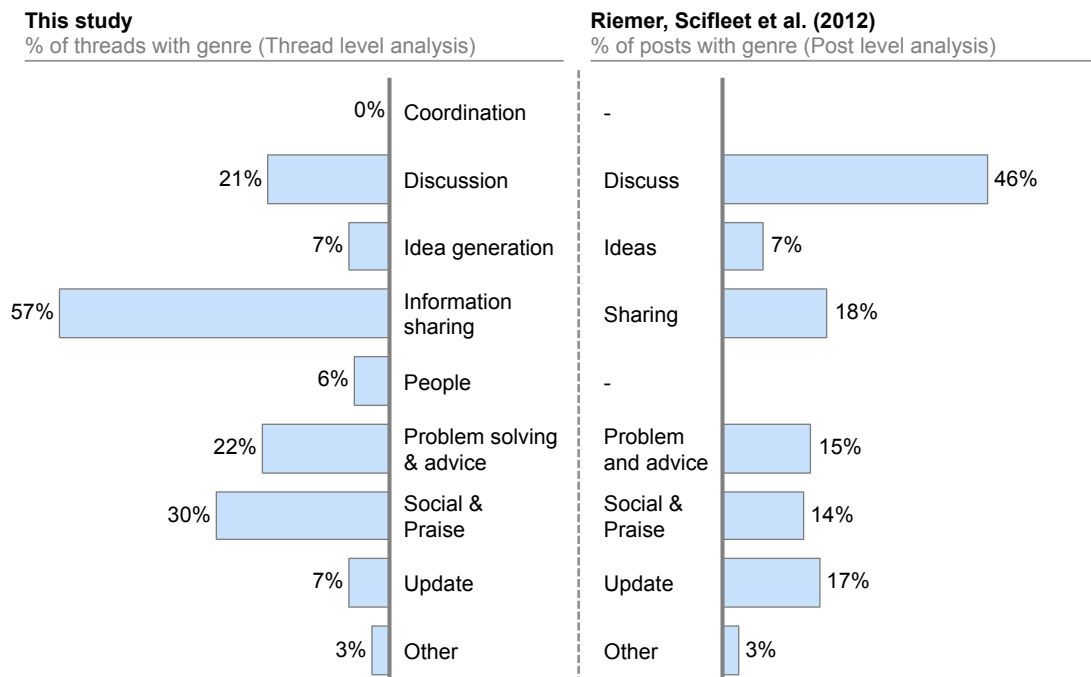


Figure 3: Comparison of thread and message-level analyses [restricted to same two-week data sample]

Findings (2): Analysis of group-based communication in ESN

In this section we take a look at the differences in ESN engagement between network-wide communication in the ‘all company’ stream and communication in groups created on the Yammer platform. We then focus on groups and perform a cluster analysis based on genre distributions. The results of this analysis allow us to name four group archetypes that emerged from the analysis.

Comparison: network and group genres

A descriptive analysis of network-wide versus group threads reveals the following differences:

- Network-wide threads are **longer** than group threads in terms of messages per thread (2.80 vs. 2.02).
- Network-wide threads are composed of a **slightly less diverse** set of genres than group threads using the measure of genres per thread (1.90 vs. 1.98).
- Messages contained in network-wide threads are **shorter** than those within group threads in terms of average characters per message (208 vs. 384).

Group threads are all threads that were posted within one of the 13 analysed Yammer groups. All group threads were aggregated to a joint set of threads. ‘Information sharing’ is the most common genre with an amount of ~74%, followed by ‘Social & Praise’ (~24%), ‘Problem solving & advice’ (~23%), ‘Discussion’ (~21%) and ‘People’ (~7%). All other top-level genres have lower occurrences.

In contrast, network-wide threads are publicly posted in the ‘all network’ stream (Yammer terminology), and can therefore be read by all users. The top five categories are ‘Information sharing’ (~60%), ‘Social & Praise’ (~32%), ‘Discussion’ (~22%), ‘Problem solving & advice’ (~18%), and ‘People’ (~10%).

Differences and similarities

Figure 4 provides a side-by-side comparison of the genre distribution in all-network and group communication. On the surface, the network-wide stream and the group sample show a similar distribution of genre categories, albeit with some noteworthy differences. Those differences are as follows:

- ‘Discussion’ threads occur relatively more often in the network-wide stream than in groups. A possible explanation is that the amount of attainable replies to requests for opinion, clarification, or speculation will be higher due to the larger audience.
- ‘Information sharing’ can be observed more frequently in groups. As most groups are organised around a certain topic or industry, users post information related to this topic, being useful only for a limited user group. Hence, information sharing in groups can be more targeted and thus more useful. An example for this is the ‘ehealth’ group, where a large number of users post industry-relevant information.
- ‘People’-related messages (especially the sub genre ‘Contact identification’ and ‘Expert identification’) are more prevalent in the network-wide stream. This can be explained by the wider reach of this stream as compared to groups that have smaller numbers of members and thus potentially helpful contacts for a broad set of issues.
- ‘Social & Praise’ shows a relatively higher amount in public threads (sub-genres are nearly equally distributed). This can be due to higher visibility of praises (reputation building) and a possibly wider amount of participants in social conversations, which are also typically of a general nature.
- ‘Problem solving & advice’ can be found in groups more than in the network streams. It makes sense that groups, which often focus on certain topic areas, are more often used to solve problems.

Genre analysis – group vs. network threads

Relative # of threads containing the respective genre

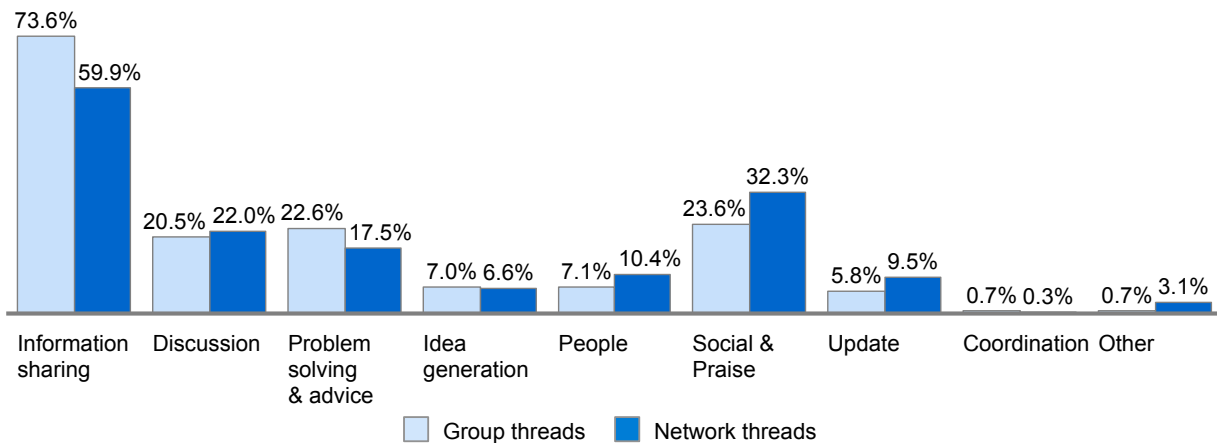


Figure 4: Comparison of genre analysis of threads in network-wide stream and selected groups

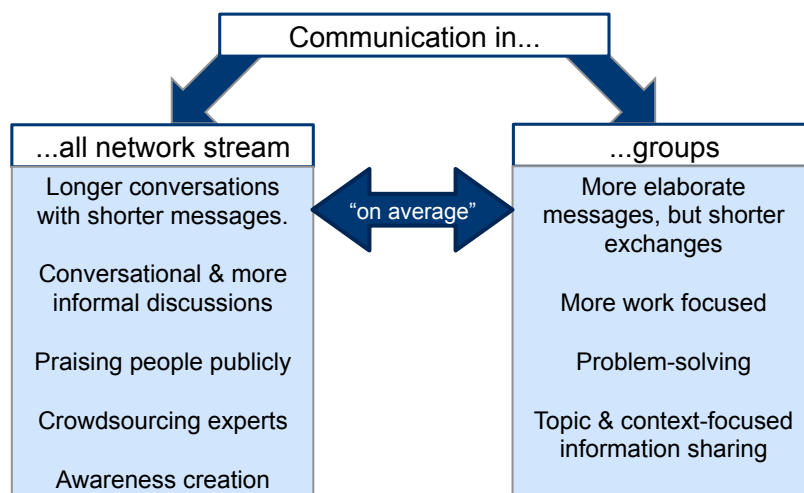


Figure 5: Comparison of communication in network-wide stream and groups

Cluster analysis of groups

In order to discover patterns in communication across the groups and thus to identify different types of groups we conducted a cluster analysis. Cluster analysis is simply defined as “the grouping of similar objects.” (Hartigan 1975, p. 1) In doing so, similarity is measured by analysing the distance between the objects being clustered (e.g. Yammer groups) based on their properties (e.g. their genre distribution). Overall, two clustering methods exist, agglomerative (grouping all objects until a comprehensive group is created) and divisive clustering (grouping objects into a pre-given number of groups) (Everitt et al. 2011; Hartigan 1975). For this analysis, hierarchical agglomerative clustering was chosen. Empirical studies on hierarchical clustering have shown that Ward linkage leads to well interpretable results in most cases. It is also known for creating balanced clusters with even numbers of entries (Everitt et al. 2011). Consequently, our cluster analysis has been conducted using the following configuration: hierarchical, agglomerative clustering using Ward linkage with squared Euclidian distance. Employing the software package IBM SPSS 20 Statistics we identified four clusters with a homogeneity level of 3 (SPSS rescaled distance).

Figure 6 visualizes the genre distribution within the four identified clusters and presents the cluster affiliation for each group. In detail, the clusters are:

- *Cluster 1.* Taking the average occurrence of each genre category per cluster into account, cluster 1 has the highest amount of ‘Coordination’ (~2%) and ‘Social & Praise’ (~30%) threads. Groups of all above identified categories, except ‘Industry’, are included. In general, cluster 1 represents groups containing threads focused on conversations, being both social (highest amount of ‘Social & Praise’) and work related (second highest amount of ‘Discussion’).
- *Cluster 2.* From a statistical perspective cluster 2 has the highest amount of ‘Discussion’ (~27%) and ‘Problem solving & advice’ (~14%) threads. The cluster consists of three groups from the ‘Industry’, ‘Innovation’, and ‘Service line’ categories. Taking a closer look at the nature of communication, it turns out that this cluster represents groups with strong solution-oriented conversations.
- *Cluster 3.* The third cluster contains ‘Learning’ and ‘Regional’ groups. Compared to the other clusters it has the highest amount of ‘Idea generation’ (~10%), ‘People’ (~12%), and ‘Update’ (~3%) threads. We conclude that groups in this cluster represent people-centered crowd sourcing spaces.
- *Cluster 4.* Members of this cluster are groups, which have previously been categorized as ‘Industry’ or ‘Service line’. The predominant genre in these groups is ‘Information sharing’ (~64%). Threads are rather short and mainly contain links and files related to the group topic or noteworthy conferences, meetings, etc.

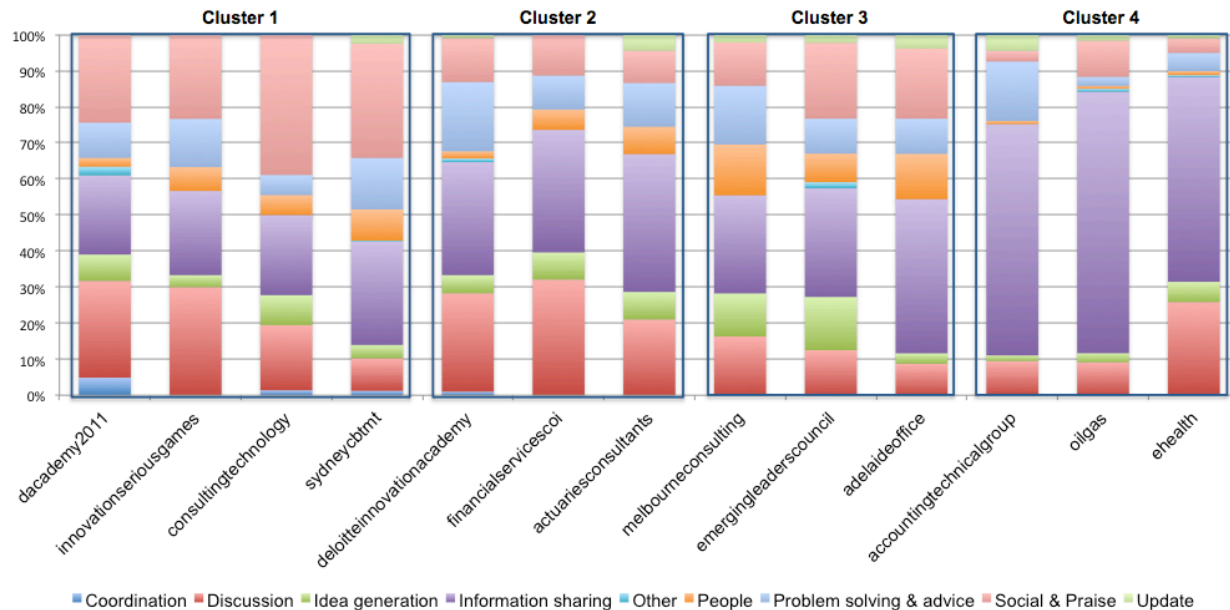


Figure 6: Group-thread genre comparison by cluster

In summary, the cluster analysis reveals four archetypes of groups: (1) conversational groups, (2) solution-oriented groups, (3) people-centered crowd-sourcing groups, and (4) information sharing groups. We would like to note certain limitations of this analysis step. The small number of analysed groups (only 13 of 271 were analysed) prevents an in-depth analysis of differences among group categories and commonalities among groups. Further data will have to be collected in future follow-up studies, e.g. regarding group descriptions. Notwithstanding, the results are somewhat robust and a comparison of group and public communication is also feasible, because the amount of analysed threads across these 13 groups represents ~21% of all group threads (~20% of all group messages), as most groups that were not included in the analysis are small and not very frequented.

Discussion: Different forms of group-level engagement in ESN

The cluster analysis allows us to classify groups based on genre combinations. Groups of the same archetype contain similarly structured threads that often share the same communication elements, even though the make up across the groups does not vary widely. The following sections describe each archetype by means of the represented practice as well as the typical content that can be found in such groups. It allows us to unpack the particular nature of group-based communication in ESN in our case company and allows to put forward an initial set of group types that provide some insight into what ESN groups are used for:

1. **Conversational groups ('virtual water coolers')** contain a large share of threads in which individuals come together and discuss a certain topic. Therefore, threads are slightly longer compared to the other group archetypes. The analysed data set reveals that discussions are very friendly and polite and include single short appraisal messages like "Thank you" or "Well done". Compared to other group archetypes the highest amount of "Social & Praise" threads can be found. From a content perspective a further analysis reveals that overall participants do not focus on a specific kind of topic. Only the group context shapes the content. Although a variety of topics are covered, most of them are in some way work-related or specific to the case organisation. We conclude that this archetype resembles a form of 'virtual water cooler', where people meet to discuss a broad range of current work-related issues with intermissions of the occasional non-work related discussion.
2. **Solution-oriented groups ('innovation hot spots')** are characterised by lengthy conversations with a focus on problem-solving. Typically, users post a problem with related information and others reply, presenting their point of view of a possible solution or providing additional information that might be helpful. Over time (sometimes only several hours) lengthy conversions evolve. Even months later, interested users access these conversations and comment on the way the problem has been solved or provide additional input. Despite the fact that some parts of the conversation take place in bilateral talks, the Yammer thread provides a detailed insight into the discussion. Topics of such conversations are aligned to Deloitte's organisational matrix structure: On the one hand, groups deal with specific industry topics, e.g. how a benchmark in a certain industry can be created, which organisations should be contacted, how a questionnaire can be structured, etc. On the other hand, topics from the consulting service line are discussed. Besides, innovation groups, dealing with a variety of new and current topics are part of this archetype. In this case, participants do not only come from specific teams dealing with innovation, but from a variety of areas. They contribute and present their opinion. Usually, innovation topics are mostly not related to the participants' daily work, but due to the high interest in such topics, many people engage and provide new input, enabling Deloitte to innovate regarding internal processes or external markets and products.
3. **People-centred crowdsourcing groups ('networks of expertise')** have 'Idea generation' as a distinctive characteristic. While ideas are not always actually generated on Yammer, discussants often contribute contact details of colleagues for others to seek their expert advice. For example, consultants might ask for how they could apply methodology XY in industry YZ – something that might have never been done before. While some discussants contribute their ideas directly on the platform, others refer to knowledgeable experts from the worldwide Deloitte network. Overall, we perceived that the more complex the topic, less idea generation takes place on the platform, but is met with useful references to colleagues.
4. **Information sharing groups ('information streams')** are places for participants to share information of different kind, such as links to external web pages, figures, videos, animations and audio files. Moreover, Excel and PowerPoint files are shared containing client presentations or models created during projects. Overall, participants post new and useful information for their colleagues. Content however is often not discussed or commented further, but sometimes enriched by context information. Our cluster contains groups from 'industry' and 'service line categories. The groups are strongly content focused, meaning by definition of the group, messages only deal with or are related

to the group topic representing a specific industry (e.g. financial institutions) or service line (e.g. technology consulting).

In summary, even though the genre combinations representing the respective archetypes differ from each other, we discovered one major commonality: Similar to threads, the group archetypes all contain a certain amount of information sharing. We assume that all group archetypes evolve from this initial archetype. In essence, information sharing groups can be seen as the first evolutionary step of emerging groups and are, depending on the group topic, influenced by one additional genre that allows them to evolve into a second level group archetype. Figure 7 visualises this relationship and shows that all groups have some grounding in information sharing as their central characteristic. Additional research is required to corroborate this observation.

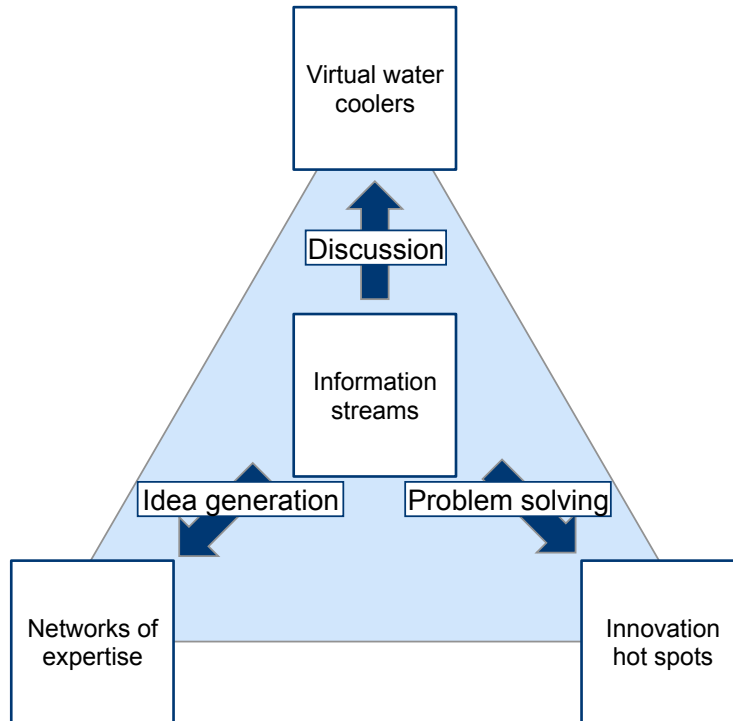


Figure 7: Group archetypes and their grounding in information sharing as a practice

Conclusion

In this study we have investigated ESN engagement at the micro-level with a focus on the role of the group feature in providing local context for communication in large networks. We have analysed Yammer at Deloitte and undertaken a qualitative coding of messages at the thread-level. By coding entire threads regarding their communicative purpose we are better able to capture the social aspects of communication compared with prior studies that were done at the message level and thus focused more on intentions of individuals.

Our analysis allowed us to uncover the importance of information sharing as a fundamental practice that underpins the majority of conversations in the Yammer space. We have further compared the nature of communication in the network-wide Yammer stream with communication patterns that proliferate inside Yammer groups. We find that groups provide a focused environment for topic-centred information sharing and problem-solving. Finally, using cluster analysis we distinguished four group archetypes that exhibit different kinds of communication patterns: 1) groups with conversational focus, 2) solution-oriented groups, 3) people-focused crowdsourcing groups and finally 4) information sharing groups.

Our study contributes another building-block to our ongoing research effort to understand the emerging Enterprise Social Networking phenomenon. In previous studies we have uncovered 1) the conversational nature of ESN in large networks (Riemer, Diederich, et al. 2011), 2) the role of ESN in knowledge work (Riemer, Scifleet, et al. 2012), 3) the ways in which ESN emerges in a bottom up way (Riemer et al. 2012b), and 4) through cross-case analysis developed a framework of ESN use cases as a guiding starting-point for ESN roll-out projects (Riemer and Richter 2012). These studies are available online for download³.

References

- Askehave, I., and Swales, J. 2001. "Genre identification and communicative purpose: A problem and a possible solution," *Applied Linguistics* (22:2), 195–212.
- Bakhtin, M. M. 1986. *Speech Genres and other late Essays*, Austin: University of Texas.
- Barnes, S. J., and Böhringer, M. 2009. "Continuance Usage Intention in Microblogging Services: The Case of Twitter," in *Proceedings of the 17th European Conference on Information Systems (ECIS)*, Verona, Italy, 1-13.
- Cook, N. 2008. *Enterprise 2.0: how social software will change the future of work*, Surrey: Ashgate Publishing.
- Deloitte 2012. "Deloitte - About us." Accessed 28/03/2012 from: http://www.deloitte.com/view/en_AU/au/about-us/index.htm.
- Deloitte 2010. *Social media at Deloitte - Participation, communication, transformation*, Sydney. Accessed 28/03/2012 from: <http://blog.yammer.com/blog/2010/06/deloitte-uses-yammer-to-drive-innovation.html>.
- Ebner, M., Lienhardt, C., Rohs, M., and Meyer, I. 2010. "Microblogs in Higher Education – A chance to facilitate informal and process-oriented learning?," *Computers & Education* (55:1), 92-100.
- Everitt, B. S., Landau, S., Leese, M., and Sstahl, D. 2011. *Cluster Analysis*, New York: John Wiley & Sons.
- Hartigan, J. A. 1975. *Clustering Algorithms*, New York: John Wiley & Sons.
- Java, A., Song, X., Finin, T., and Tseng, B. 2007. "Why we twitter: understanding microblogging usage and communities," in *Proceedings of the International Conference on Knowledge Discovery and Data Mining*, San Jose, USA, 56-65.
- Kwasnik, B. H., and Crowston, K. 2005. "Introduction to the special issue: Genres of digital documents," *Information Technology & People* (18:2), 76-88.
- Liu, I. L. B., Cheung, C. M. K., and Lee, M. K. O. 2010. "Understanding Twitter Usage: What Drive People Continue to Tweet," in *Proceedings of the Pacific Asia Conference on Information Systems*, Taipei, Taiwan.
- McAfee, A. 2006a. "Enterprise 2.0, version 2.0." Accessed 10/03/2012 from http://andrewmcafee.org/2006/05/enterprise_20_version_20/.
- McAfee, A. 2006b. "Enterprise 2.0: The dawn of emergent collaboration," *MIT Sloan management review* (47:3), 21-28.
- O'Reilly, T. 2007. "What is Web 2.0: Design patterns and business models for the next generation of software," *Communications & Strategies* (1), 17-37.
- Panela, V., Álvaro, G., Ruiz, C., and Córdoba, C. 2011. "miKrow: Semantic Intra-Enterprise Micro-Knowledge Management System," *Lecture Notes in Computer Science* (6644/2011), 154-168.
- Reinhardt, W. 2009. "Communication is the key – Support Durable Knowledge Sharing in Software Engineering by Microblogging," in *Proceedings of the SENSE Workshop, Software Engineering within Social Software Environments*, Genf, 1-12.

³ <http://ses.library.usyd.edu.au/browse?type=author&value=Business+and+Information+Systems>

- Richter, D., Riemer, K., and vom Brocke, J. 2011. "Internet Social Networking," *Business & Information Systems Engineering* (3:2), 89-101.
- Riemer, K., Altenhofen, A., and Richter, A. 2011. "What are you doing? - Enterprise Microblogging as Context Building," in *Proceedings of the 11th European Conference on Information Systems*, Helsinki, 1-13.
- Riemer, K., Diederich, S., Richter, A., and Scifleet, P. 2011. *Tweet Talking-Exploring The Nature Of Microblogging at Capgemini Yammer*, Sydney: BIS WP2011-02, <http://hdl.handle.net/2123/7226>.
- Riemer, K., and Johnston, R.B. 2012. "Place-making: A Phenomenological Theory of Technology Appropriation", *International Conference on Information Systems ICIS*, Orlando, United States, 19th December 2012
- Riemer, K., Overfeld, P., Scifleet, P., and Richter, A. 2012a. "Eliciting the Anatomy of Technology Appropriation Processes: A Case Study in Enterprise Social Media," in *Proceedings of 20th European Conference on Information Systems*, Barcelona.
- Riemer, K., Overfeld, P., Scifleet, P., and Richter, A. 2012b. *Oh, SNEP! The Dynamics of Social Network Emergence - the case of Capgemini Yammer*, Sydney: BIS WP2012-01, <http://hdl.handle.net/2123/8049>.
- Riemer, K., Richter, A., and Böhringer, M. 2010. "Enterprise Microblogging," *Business & Information Systems Engineering* (2:6), 391-394.
- Riemer, K., Richter, A., and Seltsikas, P. 2010. "Enterprise Microblogging: Procrastination or productive use?," in *Proceedings of the 16th Americas Conference on Information Systems*, Lima, Peru, 6-13.
- Riemer, K., and Richter, A. 2012. *S.O.C.I.A.L. - Emergent Enterprise Social Networking Use Cases: A Multi Case Study Comparison*, Sydney: BIS WP2012-03, <http://hdl.handle.net/2123/8845>.
- Riemer, K., Scifleet, P., and Reddig, R. 2012. *Powercrowd: Enterprise Social Networking in Professional Service work - a case study of Yammer at Deloitte Australia*, Sydney: BIS WP2012-02, <http://hdl.handle.net/2123/8352>.
- Riemer, K., and Scifleet, P. 2012. "Enterprise Social Networking in Knowledge-intensive Work Practices: A Case Study in a Professional Service Firm", *Proceedings of the 23rd Australasian Conference on Information Systems ACIS 2012*, Geelong, Australia, 5th December 2012.
- Schneckenberg, D. 2009. "Web 2.0 and the empowerment of the knowledge worker," *Journal of Knowledge Management* (13:6), 509-520.
- Shepherd, M., and Watters, C. 1999. "The Functionality Attribute of Cybergenres," in *Proceedings of the 32nd Hawaii International Conference on System Sciences*, Maui, 1-9.
- Swales, J. 1990. *Genre analysis: English in academic and research settings*, Cambridge University Press.
- Westman, S., and Freund, L. 2010. "Information interaction in 140 characters or less: genres on twitter," in *Proceedings of the 3rd symposium on Information interaction in context*, New Brunswick, USA: ACM, 323-328.
- Yates, J. A., Orlikowski, W. J., and Okamura, K. 1999. "Explicit and Implicit Structuring of Genres in Electronic Communication: Reinforcement and Change of Social Interaction," *Organization Science* (10:1), 83-103.
- Yates, J. A., and Orlikowski, W. J. 1992. "Genres of organizational communication: A structural approach to studying communication and media," *Academy of Management Review* (17:2), 299-326.
- Yoshioka, T., Herman, G., Yates, J., and Orlikowski, W. 2001. "Genre Taxonomy: A Knowledge Repository of Communicative Actions," *ACM Transactions on Information Systems* (19:4), pp. 431-456.
- Zhang, J., Qu, Y., Cody, J., and Wu, Y. 2010. "A Case Study of Microblogging in the Enterprise: Use, Value, and Related Issues," in *Proceedings of the 28th international conference on Human factors in Computing Systems*, Atlanta, USA: ACM, 123-132.
- Zhao, D., and Rosson, M. B. 2009. "How and Why People Twitter: The Role that Microblogging Plays in Informal Communication at Work," in *Proceedings of the ACM 2009 International Conference on Supporting Group Work*, Sanibel Island, USA, 243-252.

The University of Sydney Business School is committed to continuous quality improvement and achieving and maintaining international accreditations and engagements. It is currently the only business school in Australia accredited by AACSB International –

The Association to Advance Collegiate Schools of business – for both business and accounting programs. AACSB is the United States based global accrediting body for business schools.

The University of Sydney Business School also has EQUIS accreditation conferred by the European Foundation for Management Development (EFMD). EQUIS accreditation indicates that a business school is judged to be of international standing.

In 2008, the University of Sydney Business School was admitted to CEMS – The Global Alliance in Management Education, as their Australian member business school. In each country, only one institution is chosen to be part of the CEMS alliance.

Accredited by:

EARNED EXCELLENCE



THE BEST BUSINESS SCHOOLS
IN THE WORLD



International member of:



**BUSINESS
SCHOOL**



THE UNIVERSITY OF
SYDNEY

FOR MORE INFORMATION CONTACT

**The Discipline of Business Information Systems
The University of Sydney Business School**

University of Sydney NSW 2006

T +61 2 9036 9432

F +61 2 9351 7294

E business.biswps@sydney.edu.au

sydney.edu.au/business/information_systems

Provided by The University of Sydney Business School, University of Sydney.
The University reserves the right to make alterations to any of the information contained within this publication without notice.