

Microblogging Adoption Stages in Project Teams

Martin Böhringer, Lutz Gerlach

(Chemnitz University of Technology, Chemnitz, Germany
{martin.boehringer|lutz.gerlach}@wirtschaft.tu-chemnitz.de)

Abstract: Social Software shows a fascinating range of usage possibilities in enterprises. Such tools are very simple and provide individual users with high degrees of freedom. This implies the need for a negotiation process, where users develop a shared understanding of how to use the tools in order to work together towards a common goal. In several case studies on organisational usage of microblogging we found that these adoption processes can be described by using Tuckman-Jensen's model of group development, proposing five generic stages: forming, storming, norming, performing and adjourning. We apply this model to describe and interpret observations of microblogging adoption and argue that this process is mainly driven by social interactions rather than technical constraints.

Keywords: Social Software, User Adoption, IS Appropriation, Microblogging, Enterprise 2.0.

Categories: H.4.3, H.1.1, J.4, K.6.1

1 Introduction

Information systems (IS) research has a rich body of knowledge on IS adoption processes. However, these studies often have classical software systems in mind. Here, the question is whether the system is actually used or not and therefore the subject of interest can be found in the individual user with her motives, threats and attitudes [Lamb, 03]. However, due to complex and quickly changing requirements in many organisational contexts, this classical approach of software design can be questioned [Truex, 99]. It can be argued that in many use cases we need more flexible information systems, which can be shaped by the users to meet their special needs. Social Software applications are an example of such tools, which are not designed for a special use case but with flexibility in mind. Hence, O'Reilly characterises them as being "platforms" rather than "applications" [O'Reilly, 05]. As our information systems become more flexible and show less structure, we can expect significant effects on the adoption process. The aim of platform applications is to give users opportunities to adopt the software to their special needs. However, in thinking of information systems used by a network of several people, they would have to negotiate together on how exactly to use these tools.

During several case studies on microblogging usage in project teams, we found evidence for such informal negotiation. While following the Web 2.0 approach, no formal rules existed at the beginning of the adoption process. However, the teams step by step created usage patterns which can be seen as their informal usage rules. We use Tuckman-Jensen's widely accepted model of group development proposing stages of forming, storming, norming, performing and adjourning as framework to discuss these observations ([Tuckman, 65], [Tuckman, 77], [Bonebright, 10]).

2 Cases of Microblogging Adoption in Project Teams

The first case, *Arinia*, is a unique case being a custom-made microblogging-like collaboration tool which is in use for over 10 years at medium-sized company Megware. The history of *Arinia* dates back to the 1990s when Megware was in the retail business and ran more than 30 subsidiaries in different German cities. At this time, the tool was developed as a fast and secure internal alternative to email. Accordingly, email-like direct messages were the main functionality of the program. However, *Arinia* had another feature: the so-called 'pinboard'. This was meant for the broadcasting of announcements to staff. While this played a secondary role at the beginning, the share of usage of the pinboards increased substantially until a steady equilibrium of equal usage was reached between direct and public messages. While the use of pinboards (that is, microblogging) is part of the company's policy today, its rising adoption was user-driven. Today, *Arinia* includes more than 100.000 postings. For a more detailed discussion of the case see [Barnes, 10].

The next case describes a microblogging scenario at *Communardo*, a medium-sized vendor for software solutions and consultancy in the context of knowledge management and team collaboration [Böhringer, 09]. As *Communardo* itself works in the area of Web 2.0, its employees are affiliated with the early adopters of new web services. In spring 2008 they suggested a Twitter-like tool for the company's project teams. As they did not find a suitable tool for internal microblogging, *Communardo* created its own microblogging application called *Communote*, which they later also began to market as software product. The first postings date to the end of September 2008. *Communote* was published internally as quickly as possible and was available to everyone via the existing LDAP logins. The tool was not officially promoted, nor were there training sessions. Usage adoption started with the project team itself and expanded virally throughout the company. Today, it is used as central information hub of the company.

The following two cases are affiliated with Chemnitz University of Technology, where microblogging is used in two independent research teams. The first, *IREKO*, is using microblogging for project communication. Especially interesting is the heterogeneous background of the different project members including social scientists and engineers, which led to different expectations towards a communication tool. By March 2010, 23 users shared over 900 status messages about their work, research interests and project administration issues. Qualitative data in this adoption case is conducted by participant observation and by text analysis; more details on the case are reported in [Gerlach, 10]. The second case is the business information systems research team *WI2*, which uses microblogging since the beginning of 2009 for mainly two use cases [Gerlach, 10]: The first use case is team-internal collaboration within the various projects, the second application of microblogging in the research group is a special type of project spaces for student projects (i.e. master theses, seminar works). Within the first year, 57 users consisting of researchers, students and external stakeholders posted 3365 notices in 105 thematic groups.

3 Discussion: Stages of Microblogging Adoption

The Tuckman-Jensen model of team development describes a staged developmental process leading to team performance ([Tuckman, 65], [Tuckman, 77], [Bonebright, 10]). Each stage is characterized by specific interpersonal activities on the one hand and by specific task oriented activities on the other hand. Interpersonal behaviour is about establishing the group as a cohesive social entity by building interpersonal relationships, cultivating a shared language, setting communication rules, defining role models and values. Task oriented behaviour is aimed at effective group task completion. This includes problem solving, shared responsibilities, knowledge transfer and mutual support. From a general point of view, every team needs to go through phases of testing, conflict and cohesion from a social as well a task-related view in order to achieve performance. Depending on the configuration of social and task oriented group behaviour at a given point of time, the five typical stages of “forming”, “storming”, “norming”, “performing” and “adjourning” can be described. Given the openness and flexibility of social software platforms, our hypothesis is that these generic mechanisms of team development will strongly influence also social software adoption processes. Thus, phases of forming, storming, norming and performing should be empirically observable. By cross-checking four cases of microblogging adoption, we discuss our observations of microblogging adoption.

3.1 Forming

The initial stage of “forming” is characterized by careful orientation and testing. During this stage, each member of the team tests very carefully what interpersonal behaviour is acceptable in the group, based on the reaction of the other members. Also, first task orientation is taking place. The group members try to identify and describe the task and establish “ground rules”. While doing so, everybody tries to avoid conflicts. The IREKO case shows similar behaviour in the beginning of microblogging adoption. Avoiding all sorts of criticism and conflict, users did set up user profiles and begun to post neutral and unemotional content, such as questions about the microblogging system itself and about administrative issues. Also some simple ground rules were defined, e.g. user names and some simple tags (e.g. #support). Similar behaviour could be described in the Communardo and WI2 case. While in these three cases microblogging functionality already existed, in Arinia the forming stage included also the “discovery” of this feature.

3.2 Storming

The time of careful orientation and testing ends with the “storming” stage. Group members often disagree and conflicts arise, affecting both social and task oriented behaviour. This storming stage is very similar in all four cases. Once familiar with the platform, users start groups, write postings and generally test boundaries and use cases of the system. In the WI2 case for example only half of the originally created groups in the storming stage have been adopted in long-term usage. Further, IREKO shows that after three weeks of active microblogging, users explore the discussion feature more heavily to address each other in a direct and in the same time public way. In general we identified two types of users: the focused structure-oriented vs. the

broad generalist. The structure-oriented type tries to shape the communication by well defined rules of commitment. The generalist on the other hand understands microblogging as a broad information flow with no need to read and respond to every single posting. These two positions are not compatible and led to group polarisation. Due to its heterogeneous project structure, IREKO showed these characteristics most clearly. However, all cases give evidence for “hot” (in discussing behaviour explicitly) or “cold” (in just stopping system usage or ignoring others) fighting for implicit rules.

3.3 Norming

The third stage of team development is “norming”. This stage is primary about developing group cohesion to establish the group as a social entity and ensure the group’s existence. On a task level, the group members discuss opinions very openly and tolerantly, task conflicts are avoided. IREKO shows some signs of a norming stage right after storming. Discussions were more tolerant, constructive feedback and self organising took place. A project language finally emerged, accepted by structure-oriented users as well as by generalists. On a task level, knowledge sharing increased a lot, and more complex rules were tested to organise complex tasks (such as special subjects, more tags and direct links to wiki and shared devices).

Besides this general way of using the tool, an important matter of norming in the case studies is structuring of information. While Arinia uses a more static category-approach, the other cases leverage bottom-up tagging using #hashtags which lead to folksonomies. From previous research we already have some knowledge about emergence and shared vocabulary building in folksonomy systems. Muller reported from four tag-based systems in an enterprise and found that tagging use is only consistent inside one system [Muller, 07]. Interestingly, same people used different tags in different systems, which provides evidence for user's possibilities of adapting certain rules in special contexts. Other researchers found similar patterns and describe folksonomy building as “negotiated process of users” [Paolillo, 07] and “self-organizing systems towards a shared vocabulary building” [Maas, 07] which develop towards a group consensus [Robu, 09]. In our cases we found a rich spectrum of different approaches for norming tag usage. Examples range from emerged tag patterns (WI2), team-related tag norming (Communardo, IREKO) to usage standardization by management order (Arinia).

3.4 Performing

The fourth phase of team development is labelled as “performing”. On a social level, performing means that the social entity created in the prior stage now can be used as instrument for problem solving. Members can now rely on strong and flexible role models accepted by the group. In a task oriented development view, the group shows constructive action, channelled to the task. After three months of usage, IREKO has not reached the performing stage yet, but some stable behaviour can be described as potential patterns of performing. Using the tag “#jourfixe”, the team collects issues that need to be discussed in the weekly meeting. During the meeting, postings tagged with #jourfixe are visualised using a projector. They also use the “@user” operator to distribute tasks to specific group members. We expect more complex performance

patterns to emerge during further project work. The other three cases have stabilised in the performing stage. In the Arinia and Communardo case microblogging can be considered the central information sharing hub which internally substituted email. WI2 shows that storming stage also can lead to a lower usage of microblogging. While it is accepted part of the research group's communication infrastructure, other mediums like email and phone still are relevant. Interestingly, even in these settled systems, there are constantly evolving new forming-storming-norming-performing processes, e.g. when a new group is created or new kinds of tasks occur.

3.5 Adjourning

The fifth and final stage in Tuckman-Jensen's model is "adjourning". Based on the idea of a lifecycle concept, they propose a phase of group termination, resulting either because of task competition or simply members leaving the group. Due to these events the group's existence as a social entity and therefore its characteristics as effective task solving instrument ends. Team members now share their experiences and improved processes with others, starting a new life cycle of team development. We are not aware of any case studies on successfully implemented, yet already finished microblogging cases. However, we can derive assumptions based on effects like the termination of certain project groups in studied microblogging systems. In such cases, microblogging postings become part of the project documentation and are exported in order to archive them. Though, project-internal rules (e.g. tag norming) lose their existence.

4 Conclusions

The aim of our discussion was the motivation of a new view on the adoption process of social software tools beyond classical IT adoption models. While being limited in terms of the small sample size, our cases provide some insights into microblogging adoption and strongly suggest understanding adoption processes as a matter of team development rather than a matter of individual software adoption. This finding is based on the observation, that in microblogging platforms users are forced to develop shared norms, opinions and role models in order to collaborate in a productive way - just like in "real life" settings. From a management point of view, identifying stages and managing stage transitions seem to be highly important tasks. Based on the Tuckman-Jensen's model we know that especially the shift from storming to norming is considered to be the most critical step. Therefore, software design should support this step with functionalities like tag management or the offering of standard-tags in the user interface.

More generally, it can be questioned if such user-driven adoption processes are acceptable at all. Davern & Wilkin state that user innovation of information systems might be "functional at an operational level but dysfunctional at a managerial level" [Davern, 04]. However, current economic developments and trends in information systems clearly show that in many parts of our enterprises emergent bottom-up systems might be the only suitable solution for user support [Hagel, 08]. Therefore, recognising possible mismatches of such applications with strategic goals, we have to find ways to manage these user-driven adoption processes without destroying them.

To sum up, Tuckman's model is the foundation for a rich body of knowledge in organisational studies on group initiation and methods of influencing these processes. Based on this paper's findings we suggest that in a world with a rising number of social IS, we have to increase equivalent research in the IS context in order to learn about conditions and consequences of this development. Existing organisational research could provide a rich body of knowledge for this task.

References

- [Barnes, 10] Barnes, S. J., Böhringer, M., Kurze, C., Stietzel, J. (2010). Towards an understanding of social software: the case of Arinia. Proceedings of the HICSS-43.
- [Bonebright, 10] Bonebright, D. (2010). 40 years of storming: a historical review of Tuckman's model of small group development. *Human Resource Development International*, 13(1), 111-120.
- [Böhringer, 09] Böhringer, M., Richter, A. (2009). Adopting Social Software to the Intranet: A Case Study on Enterprise Microblogging. Proceedings of the Mensch & Computer 2009.
- [Davern, 04] Davern, M., Wilkin, C. (2004). Innovation with Information Systems: An Appropriation Perspective. In Proceedings of the Fourteenth Australasian Conference on Information Systems (ACIS).
- [Gerlach, 10] Gerlach, L., Hauptmann, S., Böhringer, M. (2010). 'What are you doing' im Elfenbeinturm? - Microblogging im universitären Einsatz. Erfahrungen aus zwei Pilotprojekten. Tagungsband der Multikonferenz Wirtschaftsinformatik 2010, 1485-1491.
- [Hagel, 08] Hagel, J., Brown, J. (2008). From push to pull – emerging models for mobilizing resources. *Journal of Service Science*, Third Quarter, 1(1).
- [Lamb, 03] Lamb, R., Kling, R. (2003). Reconceptualizing Users as Social Actors in Information Systems Research. *MIS quarterly*, 27(2), 197–236.
- [Maas, 07] Maass, W., Kowatsch, T., Münster, T. (2007). Vocabulary Patterns in Free-for-all Collaborative Indexing Systems. In International Workshop on Emergent Semantics and Ontology Evolution, 45-57.
- [Muller, 07] Muller, M. J. (2007). Comparing tagging vocabularies among four enterprise tag-based services. Proceedings of the GROUP '07, 341.
- [O'Reilly, 05] O'Reilly, T. (2005). What Is Web 2.0, <http://www.oreilly.de/artikel/web20.html>.
- [Paolillo, 07] Paolillo, J., Penumarthy, S. (2007). The Social Structure of Tagging Internet Video on del.icio.us. Proceedings of the HICSS-40, 85-85.
- [Robu, 09] Robu, V., Halpin, H., Shepherd, H. (2009). Emergence of consensus and shared vocabularies in collaborative tagging systems. *ACM Transactions on the Web*, 3(4), 1-34.
- [Tuckman, 65] Tuckman, B. W. (1965). Developmental Sequence in Small Groups. *Psychological bulletin*, 63(6), 384-99.
- [Tuckman, 77] Tuckman, B. W., Jensen, M. A. C. (1977). Stages of Small-Group Development Revisited. *Group & Organization Management*, 2(4), 419-427.
- [Truex, 99] Truex, D., Baskerville, R., Klein, H. (1999). Growing systems in emergent organizations. *Communications of the ACM*, 42(8).