

Personal and Collective Knowledge Management in the Web 2.0: Two Faces of Knowledge Management?

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Abstract: Web 2.0 has reinvented the concept of Knowledge Management towards a vision aiming at facilitating interaction, cooperation and knowledge exchange of individuals, groups and communities. This article tries to answer two questions: Can Web 2.0 tools be applied for managing knowledge at the individual and collective level? and How effective are Web 2.0 tools for supporting Personal Knowledge Management? After introducing the concept of Personal Knowledge Management (PKM), Collective Management (CKM) and Web 2.0 phenomenon, this paper surveys different Web 2.0 tools and compare their role for supporting CKM and PKM. The conclusion of this study appears to confirm that the individual and collective dimension are not conflicting, but on the contrary represent two different facets of complex knowledge management process. Furthermore this study indicates a number of pitfalls such as: the level of complexity and fragmentation of these tools makes the optimal usage difficult, or/and the privacy risks that originates from the difficulty to separate the 'personal sphere' from the 'collective sphere'.

1 Introduction

The advent of the Web 2.0 has revitalized the field of Knowledge Management, by providing a new perspective and tools based on the idea supporting people cooperation and participation, acknowledging the importance of the social process in the way that the knowledge is created and managed [McA06]. In the Web 2.0 era, knowledge management, or Knowledge Management 2.0 (KM 2.0) or Enterprise 2.0 as coined by Patrick McAfee [McA06], can be associated with a set of processes and tools aiming at creating a "communitarian" environment in which people socialize, collaborate and thus collectively participate to the creation and exchange of knowledge. More generally, the management of knowledge has evolved from the initial idea of extracting, crystallizing and storing knowledge in databases in a form that can be easily exploited by organizations, to the idea of creating the conditions supporting and augmenting the capabilities for people to interact with each other. Today, the primary role of knowledge management is to create the conditions and climate in which collective intelligence is fostered.

This phenomenon has somehow obfuscated the idea that knowledge also includes a profound individual dimension. Ultimately knowledge is managed by the individuals who create it, process it, put it in application, but also exchange with the others. The management of knowledge at the individual level represents a very important issue for the knowledge workers. Ignoring this aspect is probably an important reason of the failure of a first generation knowledge management which was expecting from their employees an altruistic attitude, and in particular that they would made available to the whole organization the 'precious' personal knowledge that they had accumulated as part of their daily activities [Ed03].

Curiously, this individual perspective of knowledge management, which can be associated to Personal Knowledge Management (PKM), appears to have received relatively little attention. More specifically, a review of the literature indicates that the term "personal knowledge management" is relatively new, even though its origin can be traced in a working paper from Frand and Hixon [FH99]. The underlying idea of supporting knowledge management at the individual level is therefore recent and not very elaborated. A review of literature also indicates that the influence and impact of PKM has remained quite limited: few articles in the literature appear to cover personal knowledge management, acknowledging a little interest in the knowledge management community. The reasons for this limited interest may originate from the difficulty to support people managing their knowledge at the individual level, or from the difficulty of organizations to help individuals in this particular aspect. Another answer would be that individual knowledge management is already largely present and supported by the numerous individual tools that employees use on a daily basis such as word processors, calendars, or other Personal Information Management (PIM) tools [JT07], [Ap04].

Web 2.0 has made available a variety of new tools that may transform this vision. First, many of these participatory tools can also be considered according to an individual perspective. Second because the usage of these tools at the collective level has some implication for the individual. After all, even in a social context, the individual perspective is also present, and for instance, according to the social exchange theory [TK59] people interact with others because they expect a personal benefit. More interestingly, with the new tools, the individual and collective aspects of knowledge management should not be considered as totally separated but part of a same global process: in the Web 2.0, the individual knowledge and the collective knowledge are the same knowledge. For instance in the case of social bookmarking, a user bookmarks a resource initially for his personal use, but this bookmark, individual knowledge, is then also automatically made available to others and become at the same time collective knowledge. This collective knowledge will later evolve via the community process contributing to enrich back the individual knowledge.

The objective of this paper is to investigate the implication of the Web 2.0, also referred to as the Social Web, on PKM. Furthermore, the article explores the relationship between Collective Knowledge Management (CKM) and PKM and in particular the role of PKM on the Social Web. This article explores whether Web2.0 applications are effective tools for managing personal knowledge and discusses the current roadblocks and opportunities. In order to conduct these investigations, a review of the different Web 2.0 tools is complemented with a literature review of PKM related articles. The second part of the article classifies Web2.0 tools according to their specific role to support PKM and discusses the relationship PKM and CKM.

2 Personal and Collective Knowledge Management and Web 2.0

This section aims to provide a background for our research study. It first surveys existing work in the field of PKM, CKM and Web 2.0 tools.

2.1 Personal Knowledge Management (PKM)

Knowledge is personal. It constitutes an intangible asset for individuals. Knowledge is defined by what we know, it consists of truths, beliefs, judgments, 'know how', methodologies, etc. Polanyi [Po97] emphasizes that the most important type of knowledge is personal and hard to articulate. Knowledge is also personal in the sense that people have different interpretations and different ways of reasoning. Personal knowledge can include knowledge gained from memories, readings books, notes, documents, photographs, intuitions, personal contacts and relationships, what one has learned from colleagues, and what a person knows about everything in the world [Ma00].

Personal knowledge management (PKM) consists in a collection of processes that an individual needs to carry out in order to gather, classify, store, search, and retrieve knowledge in his/her daily activities [Gr07]. Personal KM has been approached from very different perspectives; some authors focus on special aspects of knowledge work on how to better utilize a computer to help the knowledge worker to manage his/her knowledge effectively ([SMS02], [BS01], [Da05], [DAR06], [HT01], [Ko01], [Sch05]), while others focus on problem-solving skills or possibility of organizing ideas efficiently ([SMS02], [Al05], [AG06], [DG07], [ORS06]). Different frameworks and tools have been proposed taking into account specific characteristics of knowledge work addressing: the information overload problem ([AT03], [DE05]), personalization, contextualization and customization aspects ([HT01], [RA03], [Ra05]) or frameworks underlying the importance of knowledge sharing ([KK06], [RAN03]).

2.2 Collective Knowledge Management (CKM)

Whereas personal knowledge is concentrated on the individual, collective knowledge refers to knowledge that is common to all members of an organization [Gr96]. Baumard [Ba99] defines CKM as "knowledge of the unspoken, of the invisible structure". Collective knowledge is defined as knowledge of an environment of established rules, laws and regulations [Gr96].

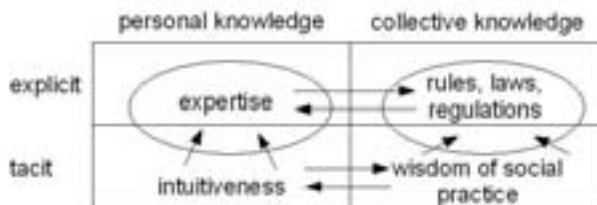


Figure 1: Types of Knowledge ([Ba99], p.66)

CKM refers to a set of tools and processes that are used to manage the collective knowledge of an organization. CKM has represented the main study subject of knowledge management, and it is usually associated with traditional knowledge management [AL01]. It should be noted that traditional knowledge management include both the management of tacit and explicit knowledge, but considered mainly according to a global perspective as can be illustrated by the SECI (Socialization, Externalization, Combination, and Internalization) model of Nonaka and Takeuchi [NT95]. This model proposes knowledge processes articulating and converting the explicit and tacit knowledge conversely.

2.3 Web 2.0 and KM 2.0

Web 2.0 [Ore05] refers to a new vision of the Web based on people participation and interaction, in contrast with the former vision that considered the Web only as a huge information space. KM 2.0 or Enterprise 2.0 ([Ka07], [McA06], [SK07]) refers to the adaptation of this vision to the management of knowledge in the enterprise, and focuses on knowledge exchanges and collaboration amongst the employees, the knowledge workers of the organization. This model tries to harness the collective intelligence while at the same time accelerate the circulation of knowledge amongst people. More specifically, its relies on the idea of helping companies to better exploit the intangible knowledge assets that is present in the people head by empowering the individuals, by making each of them a full contributor and by facilitating circulation of their knowledge.

Practically, Web 2.0 and Enterprise 2.0, has introduced a variety of tools to support this vision such as blogs, wikis, and social networks, as well as a number of mechanisms methods and principles to be used for supporting and encouraging collaboration. There has been a rapid adoption of Web 2.0 tools and applications across organization but with different adoption patterns depending of the geographical location or cultural factors [McK07], for instance some countries such as China being more interested in the use of social networks than others.

3 Web 2.0 Tools for Supporting PKM and CKM

In the following survey, we will investigate how Web 2.0 applications such as blogs, social networking tools or wikis can contribute to the management of personal and collective knowledge.

3.1 A Survey of Web 2.0 Tools

The result of this survey consists in an inventory of Web 2.0 tools, and their applicability for the management of personal and collective knowledge.

Practically the methodology adopted for conducting this survey has started by a literature review of articles considering the use of Web 2.0 tools in an enterprise context, e.g. [OVB06]. This first phase was useful to identify the different categories of Web 2.0 tools such as of wikis or blogs [De07] that are used to support the knowledge management process in enterprises. We have searched and classified Web 2.0 tools that can be used for PKM and CKM. In a previous article we interviewed employees from different companies related to the use of Web 2.0 tools in organizations and discussed new forms of interaction and knowledge sharing [KRS08]. The investigated case studies were mainly IT businesses and made us draw the preliminary conclusion that the early adopters of KM 2.0 are mainly IT businesses.

We have analyzed these tools according to three main dimensions: the support of knowledge workers tasks, their main functionalities and their role in the context of PKM and CKM. Table 1 provides a classification of the different categories of Web 2.0 tools, and defines their role in the context of PKM and in the context of CKM.

| Web 2.0 tools category | Examples | Role in PKM context | Role in CKM context |
|--|--|--|---|
| Aggreg: Personalized web pages and information aggregators | Netvibes/Ginger: www.netvibes.com , PageFlake: www.pageflakes.com , iGoogle: www.google.com/ig , MyYahoo!: my.yahoo.com | Aggregate different sources of information <u>relevant to the individual</u> in a single place (reduction of complexity) | Aggregate different sources of information <u>relevant to the community</u> in a single place |
| PSearch: Personalized search portals | Swicki: www.swicki.com | Quick personalized search for topics | Share knowledge with the others |
| VCom: Personalized live discussion forums and communities | Tangler: www.tangler.com | Create own discussion forums, collect opinions, assess information on reputation | Share knowledge and opinions with the others |
| VWorld: Virtual worlds | Second Life: secondlife.com , Vastpark: www.vastpark.com , Qwaq: www.qwaq.com | Organize and visualize content | Allow to experiment and interact with the others |
| Blog: Weblogs | Blogger: www.blogger.com , WordPress: wordpress.com , Typepad: www.typepad.com | Record personal experiences and provide the opportunity to formulate opinions | Collect, share experiences and opinions |

| | | | |
|---|---|--|---|
| Wiki | MediaWiki: Wikipedia.com, MoinMoin Wiki: moinmo.in, Brainkeeper: www.brainkeeper.com, ThoughtFarmer : www.thoughtfarmer.com | Allows to re- cord and organi- ze personal knowledge | Create and ma- nage informa- tion collaborati- vely using hyperlinked structures |
| Tag: Social book- marking | Del.icio.us: delicious.com, StumbleUpon: www.stumbleupon.com, Digg: digg.com, CiteULike: www.citeulike.org | Collect, annotate references | Collect and share references with others |
| OSN: Online social networking | LinkedIn: www.linkedin.com, Facebook: www.facebook.com, Ning: www.ning.com, frame- works such as OpenSocial code.google.com/apis/opensocial/ Friend Connect: www.google.com/friendconnect | Manage perso- nal and profes- sional relation- ships, make the own expertise more visible (social capital) | Connect with other people, develop an on- line identity |

Table 1: Overview of Web 2.0 PKM tool groups

In our survey we found a variety of tools supporting a large diversity of processes and functionalities, as described in Table 1. No single system covers the whole range of personal knowledge management processes. This situation partially originates from the very modular and distributed nature of these tools. Whereas the role of the tools in PKM is on the individual level but also supports collaboration, their role in CKM is concentrated on collaboration.

3.2 Analyzing the Effectiveness of Web 2.0 Tools for Supporting PKM

To further complete our analysis, we looked at which extend the different Web 2.0 tools support the different PKM processes. We would like to demonstrate here that Web 2.0 "social" tools can also be applied at the individual level, and actually represent very valuable PKM tools.

We based our analysis on the work of Avery et.al. [AB01] which define seven personal KM main characteristics or skills that are useful for supporting personal knowledge management:

- Retrieving (searching and identification)
- Evaluating (assessing the quality and relevance of information)
- Organizing information
- Collaborating around information
- Analyzing and making sense of information
- Presenting information

- Securing information (or memorizing information)

More specifically, for each category of tool we tried to determine which personal KM characteristics were supported. Table 2 summarizes the characteristics of each category of tools taking into account the Avery classification [AB01]. (X indicates a characteristic is strongly supported, whereas an x indicates a characteristic is supported at a certain level only).

| PKM Skills | Aggreg | PSearch | VCom | vWorld | Blogs | Wiki | Tag | OSN |
|------------------------|--------|---------|------|--------|-------|------|-----|-----|
| Retrieving information | x | X | | | x | x | x | x |
| Evaluating information | | | X | | | | x | X |
| Organizing information | X | | | | x | X | X | X |
| Collaborating | x | x | x | x | x | X | X | x |
| Analyzing information | | | X | x | X | x | | |
| Presenting information | X | | | x | | X | | |
| Securing information | | | | | X | X | x | x |

Table 1: Support of the PKM skills by the different categories of Web 2.0 tools

All these categories of Web 2.0 tools support collaboration and a certain social interaction with people which explains why Web 2.0 is often referred to as the Social web. With Web 2.0 personal knowledge is retrieved, analyzed and presented not only for an individual use, but it is also available at the community level for a collective use. The individual knowledge can be developed further by other participants, increases the knowledge of the individual and the community and helps to build a collective intelligence.

However it should be noted that the nature of the information that is referred to is very different from a category of tool to another. For instance, in the case of the Wiki or Tag this information consists mainly in documents, whereas in the case of OSN, this information refers to people profile information.

4 Discussion and Outlook

Web 2.0 plays a multifaceted role for communication, collaboration, knowledge sharing and knowledge management. Web 2.0 tools enable a new model of personal KM that harnesses the collective knowledge through formal and informal communication, collaboration and social networking tools. This new personal KM facilitates interaction, collaboration and knowledge exchanges on the Web and in organizations. KM 1.0 was essentially relying on the idea of extracting knowledge from the people and making it available to the group, and thus disregarding the very personal nature of knowledge. The authors of this article believe that the management of knowledge relying Web 2.0 principles follows a radically different path that can potentially make the management of knowledge more efficient both at individual and at collective level. In particular, this paper has shown that the management of personal knowledge and PKM are not in opposition or ignorant to the social vision brought by the Web 2.0, but is able to support it more effectively.

This paper has overviewed the use of Web2.0 tools for the management of personal knowledge and collective knowledge. In particular we have analyzed different Web 2.0 applications such as Blogs, Social Networks, Wikis, etc., and we have classified them based on the specific role or functionality they support as represented in Table1 and Table 2. Web 2.0 tools encompass a variety of tools, each category contributes to support a particular aspect of the personal knowledge management. Web 2.0 tools cover well the different facets of PKM as indicated in table 2. A variety of tools may be used to better manage the social capital (with social networking systems such as LinkedIn), to help to communicate more effectively with others (with personal blogs, instant messaging systems) and/or to harness collective intelligence (with systems such as Wikis and social bookmarking). Although Web 2.0 tools have been designed and are generally associated to support CKM, they can also be effective at supporting PKM, and in particular the management of knowledge at the individual level.

However actual Web2.0 tools have a number of limitations as well. Web 2.0 tools encompass a set of separated tools dedicated to support specific functionalities, but so far no system integrates all identified functionalities. People have to learn a special syntax (e.g. in Wikis) or have to install the software for their usage in the intranet. And over time, it is still a problem to organize and classify your own contributions in order to be able to retrieve them for later use. Many users who collect and manage their knowledge with Web 2.0 tools are unaware that this knowledge could be further used by others. Other people or enterprises could reuse it, misuse it or collect information about the users. Future KM system will support both the individual and the collective dimensions, and will be able to articulate harmoniously these two dimensions.

Using tools both for an individual and a collective usage also raises an important issue related to privacy. There is the risk that knowledge that is originally managed at the individual level only, 'leaks' from the personal sphere to the collective sphere and is made available to the others without the knowledge of the person. For instance several stories have been reported of people having lost their job after writing on their 'personal

blog' [Vié05], the persons having forgotten that the information published in their blog was also accessible by their employer. Online social network are also places representing certain risks to their user, related to the disclosure of personal information [Gr05]. There is no guaranty that their utilization in an intranet in the context of a corporate knowledge management infrastructure may totally alleviate this problem. For instance, there are some risks that information about social relationships that a person records for its personal usage, or for a closed cycle of friends, is made available to a larger audience because of some inadequate configuration and /or a wrong feeling of security.

References

- [AB01] Avery, S., Brooks; R., Brown, J., Dorsey, P., O' Conner, M.: Personal Knowledge Management: Framework for Integration and Partnerships. In ASCUE, 2001.
- [AG06] Apshvalka, D., Grundspenkis, J.: Personal knowledge management and intelligent agent perspective. In (ed. Nilsson, A. G. et al.) Proceedings of the 14th international conference on information systems development, Karlstad, Sweden, 2006.
- [AL01] Alavi, M., Leidner, D.E.: Review: Knowledge Management and Knowledge Management Systems, MIS Quarterly (25:1), March 2001, pp. 107-136.
- [Al05] Alpert, S. R.: Comprehensive mapping of knowledge and information resources: The case of Webster. In Knowledge and Information Visualization: Searching for Synergies, 2005.
- [Ap04] Apshvalka, D.: Personal Knowledge Management. In: REMENYI, Dan (eds.): Proc. of 11th European Conference on Information Technology Evaluation, Royal Netherlands Academy of Arts and Sciences, Amsterdam, the Netherlands, 11 - 12 Nov., European Conf. on Information Technology Evaluation. Reading, UK : Academic Conferences Limited, 2004, pp. 17-22.
- [AT03] Alvarado, C., Teevan, J., Ackermann, M.S., Karger, D.: Surviving the Information Explosion: How People Find Their Electronic Information, ed. AI Memo 3002-006: Massachusetts Institute of Technology, Artificial Intelligence Lab., 2003.
- [Ba99] Baumard, P.: Tacit Knowledge in Organizations, Sage, London, 1999.
- [BS01] Benson, S., Standing, C.: Effective knowledge management: Knowledge, thinking and the personal corporate knowledge nexus problem, Information Systems Frontiers 3(2):227-238, 2001.
- [DE05] Dalsgaard, P., Eriksson, E., Koefoed Hansen, L.: Rethinking information handling: designing for information offload, In Proceedings of the 4th decennial conference on Critical computing: between sense and sensibility. Aarhus, Denmark: ACM, 2005.
- [Da05] Davenport, Th. H.: Thinking for a Living: How to Get Better Performance and Results from Knowledge Workers, Boston: Harvard Business School Publishing, 2005.
- [DAR06] Davies, S., Allen, S., Raphaelson, J., Meng, E., Engleman, J. King, R., Lewis, C.: Popcorn: the personal knowledge base. In Proceedings of the 6th conference on Designing Interactive systems, University Park, PA, USA: ACM, 2006.
- [De07] Dearstyne, B.W.: Add Added Blogs, Mashups, & Wikis Oh, My!. The information management journal, 41:24-33, 2007.
- [DG07] Diaz, A., Gervas, P.: User-model based personalized summarization, Information Processing & Management 43(6):1715-1734, 2007.
- [Ed03] Edler, J.: Knowledge Management in German Industry. Karlsruhe: 2003.
- [FH99] Frand, J., Hixson, C.: Personal Knowledge Management: Who, What, Why, Where, When, and How, Working paper, December 1, 1999. www.anderson.ucla.edu/faculty/jason.frand/researcher/speeches/PKM.htm

- [Gr96] Grant, R.M.: Toward a knowledge-based theory of the firm. *Strategic Management Journal* 17, pp. 109-122, 1996.
- [Gr05] Gross, R., Acquisti, A., Heinz, H. J.: Information revelation and privacy in online social networks. In *Proceedings of the 2005 ACM Workshop on Privacy in the Electronic Society* (Alexandria, VA, USA, November 07 - 07, 2005). WPES '05. ACM, New York, NY, 71-80
- [Gr07] Grundspenkis, J.: Agent based approach for organization and personal knowledge modelling: knowledge management perspective, *Journal of Intelligent Manufacturing* 18(4):451-457, 2007.
- [HT01] Hicks, D., Tochtermann, K.: Personal digital libraries and knowledge management, *Journal of Universal Computer Science* 7(7):550-565, 2001.
- [JT07] Jones, W., Teevan, J.: *Personal information management*. Seattle, Wash.: Univ. of Washington Press, 2007.
- [Ka07] Kakizawa, Y.: In-house use of Web 2.0: Enterprise 2.0, *Nec Technical Journal* 2(2):46-49, 2007.
- [KK06] Kim, D. H., Kim, S. J.: Framework for collaborative knowledge sharing and recommendation based on taxonomic partial reputations, In *Knowledge Science, Engineering and Management*, 2006.
- [Ko01] Kohl, F.: Individual knowledge management - Strategies for personal handling of information and knowledge at the workplace, *Psychiatrische Praxis* 28(2):74-74, 2001.
- [KRS08] Kirchner, K., Razmerita, L., Sudzina, F.: New Forms of Interaction and Knowledge Sharing on Web 2.0, In: Lytras, M., Damiani, E., Ordonez De Pablos, P. (eds.): *Web2.0: The Business Model*, Springer Science and Business Media, USA, 2008.
- [Ma00] Martin, J.: *Knowledge Management. The Basis of Corporate and Institutional Knowledge Management*. ed. Martin, J., Wright, K., 2000.
- [McA06] McAfee, A. P.: Enterprise 2.0: The Dawn of Emergent Collaboration, *Sloan Management Review*, Spring 2006, Vol. 47, No. 3, pp. 21-28, 2006.
- [McK07] McKinsey, How Businesses are Using Web 2.0, *McKinsey Quarterly*, March, 2007.
- [NT95] Nonaka, I., Takeuchi, H.: *The knowledge-creating company*. New York, Oxford: Oxford University Press, 1995.
- [OVB06] Oren E, Völkel M, Breslin JG, Decker S. Semantic Wikis for Personal Knowledge Management. 17th International Conference, DEXA 2006, Krakow, Poland, September 4-8, *Proceedings. Berlin Heidelberg: Springer*; pp. 509-518, 2006.
- [Ore05] O'Reilly, T.: What Is Web 2.0 Design Patterns and Business Models for the Next Generation of Software by Tim O'Reilly, 09/30/2005, 2005, www.oreillynet.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html
- [ORS06] O'Riain, S., Spyns, P.: Enhancing the business analysis function with semantics, In: *On the Move to Meaningful Internet Systems 2006: Coopis, Doa, Gada, and Odbas, Pt 1, Proceedings*, 2006.
- [Po97] Polanyi, M. ed.: *Personal Knowledge: Towards a Post-Critical Philosophy*, Routledge, 1997.
- [RA03] Razmerita, L., Angehrn, A.A., Nabeth, T.: On the role of user models and user modeling in Knowledge Management Systems, Volume 2 of *Proceedings of HCI International*, published by Laurence Erlbaum Associates, Greece, pp. 450-456, 2003.
- [Ra05] Razmerita, L.: User Modeling and Personalization of Knowledge Management Systems, In Chen, S.Y., Magoulas, G.D. (Eds.) *Adaptable and Adaptive Hypermedia* (pp. 225-245): Idea Group Publishing, 2005.
- [RAN03] Roda, C., Angehrn, A.A., Nabeth, T., Razmerita, L.: Using conversational agents to support the adoption of knowledge sharing practices. *Interacting with Computers*, Elsevier 15(1):57-89, 2003.

- [Sch05] Schwarz, S. A context model for personal knowledge management applications, In. Roth-Berghofer, T.R., Schulz, S., Leake, D.B. (Eds.): *Modeling and Retrieval of Context*. MRC 2005, LNAI 3946, pp. 18–33, 2005.
- [SMS02] Sellen, A.J., Murphy, R., Shaw, K.L.: *How knowledge workers use the web*, In *Proceedings of the SIGCHI conference on Human factors in computing systems: Changing our world, changing ourselves*. Minneapolis, Minnesota, USA: ACM, 2002.
- [SK07] Shimazu, H., Koike, S.: *KM2.0: Business knowledge sharing in the Web 2.0 age*, *Nec Technical Journal* 2(2):50-54, 2007.
- [TK59] Thibaut, J. W., Kelley, H. H.: *The social psychology of groups*; New York: Wiley, 1959.
- [Vié05] Viégas, F. B., *Bloggers' expectations of privacy and accountability: An initial survey*. *Journal of Computer-Mediated Communication*, 10(3), article 12, 2005.