

Distributed KM - Improving Knowledge Workers' Productivity and Organisational Knowledge Sharing with Weblog-based Personal Publishing

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Introduction / Abstract

Improving the productivity of knowledge workers is one of the most important challenges for companies that face the transition from the industrial economy to an economy based on information and knowledge (Drucker, 1999). However, most "knowledge management" efforts have failed to address this problem and focused on information management instead.

This paper briefly explores the failure of traditional knowledge management to address the problem of knowledge worker productivity and argues that a deeper understanding of knowledge work is necessary to improve it. It then explores knowledge work and how it is supported with information technology tools today, focussing specially on the email client as a knowledge work tool.

The paper introduces weblogs as personal publishing tools for knowledge workers and shows how personal publishing supports knowledge work processes, is personally beneficial to the knowledge worker and helps the dissemination of knowledge through an organisation.

The failure of "Knowledge Management" to improve Knowledge Workers' Productivity

Early "Knowledge Management" initiatives have approached the challenge of improving knowledge workers' productivity from an organisational perspective, treating knowledge as an object:

"Most of the traditional Knowledge Management Systems rely on the assumption that knowledge can be assimilated to objects that can be identified, separated from their initial context, and handled in information systems." (Nabeth et al., 2002)

This however was a fallacy: Knowledge is always bound to human beings and impossible to digitalise. Once it is "explicated", it becomes information.

Information	Knowledge
Static	Dynamic
Independent of the individual	Dependent on individuals
Explicit	Tacit
Digital	Analogue
Easy to Duplicate	Must be re-created
Easy to broadcast	Face-to-face mainly
No intrinsic meaning	Meaning has to be personally assigned

Figure 1: Distinguishment between Information and Knowledge (Sveiby, 1997, as cited in Miller, 2002)

Following this definition of knowledge, "Computer support for knowledge management is (...) in a sense, impossible." (Stenmark 2002). This means that, "knowledge management" IT systems are not really managing knowledge but information and a large part of what is called "knowledge management" is largely information management under a new label (Wilson, 2002).

Information on its own is not useful however:

"Information (...) is simply the vehicle by which we attempt to provoke - or evoke - a human response. Information on its own is quite static and lifeless. It simply exists - on multimedia computer screens, in text books, magazines, movies, TV, CDs, reports, letters, emails, faxes, memos and so on - all waiting to be interpreted, all waiting to have meaning attached - by people." (Miller, 2002)

Information needs interpretation by people: By knowledge workers.

Only if we understand what knowledge workers do and in what way they use knowledge and information to create value, we can solve the problem of knowledge worker productivity. But despite all the efforts that have been put into knowledge management, our understanding of knowledge work, concrete approaches to improving knowledge workers' productivity and, strangely enough, even measurement for knowledge worker's performance are still lacking. (Davenport, 2003)

"When it comes to knowledge workers, we pretty much hire smart people and leave them alone. No quality measurements, no Six Sigma, no reengineering. We haven't formally examined the flow of work, we have no benchmarks, and there is no accountability for the cost and time these activities consume." (Davenport, 2003)

KM has been taken an industrial perspective, focussing on organisational goals, ignoring the needs of the individual knowledge worker:

"The fatal flaw in thinking in terms of knowledge management is in adopting the perspective of the organization as the relevant beneficiary. Discussions of knowledge management start from the premise that the organization is not realizing full value from the knowledge of its employees. While likely true, this fails to address the much more important question from a knowledge worker's perspective of 'what's in it for me?'" (McGee, 2003)

A better Understanding of Knowledge Work

If knowledge worker's productivity is to be improved, we need to better understand the nature of knowledge work. Then we can analyse what technological and organisational measures can be taken to improve it.

The Problem of Invisibility

A problem in the analysis of knowledge work today is that it is mostly invisible. Its observable end-products such as reports or decisions do not show from what process they have emerged clearly.

"Much of the work of finding, interpreting and connecting relevant pieces of information, negotiating meanings and eliciting knowledge in conversations with others, creating new ideas and using them to come up with a final product, happens in the head of a knowledge worker or as part of communication or doing work." (Efimova 2004)

It is a pity that km research has only lately began to study knowledge work, because its invisibility does not lie in its nature but seems to be an effect of digitalisation: Manipulating digital documents and creating abstract digital works has replaced tangible intermediate products of knowledge work, such as paper notes and drafts (McGee, 2002). When looking at notebooks of knowledge workers like Leonardo da Vinci (see British Library, n.d.) or Thomas Edison (see McAuliffe, 1995) it is easy to see traces of different processes that make up knowledge work and get a feeling for what "knowledge work" is: A complex combination of different processes around knowledge, information, learning, thinking, reflecting, creativity and communication.

Knowledge Work Processes

I will base my assessment of knowledge work processes on the Framework for Knowledge Work Analysis developed by Lilia Efimova (Efimova, 2004). It has to be noted that Efimova's work is based on a study of knowledge workers who use weblogs; it is therefore natural that her analysis returns especially those knowledge processes that become visible through

weblogging and it may be possible that it overlooks other processes that are not supported by weblogs. However as her work is firmly grounded in literature and in my opinion gives an encompassing view of knowledge work, I believe it is completely suitable as the base of this analysis. See (Pollard, 2004) for a different but resembling view of "knowledge activities".

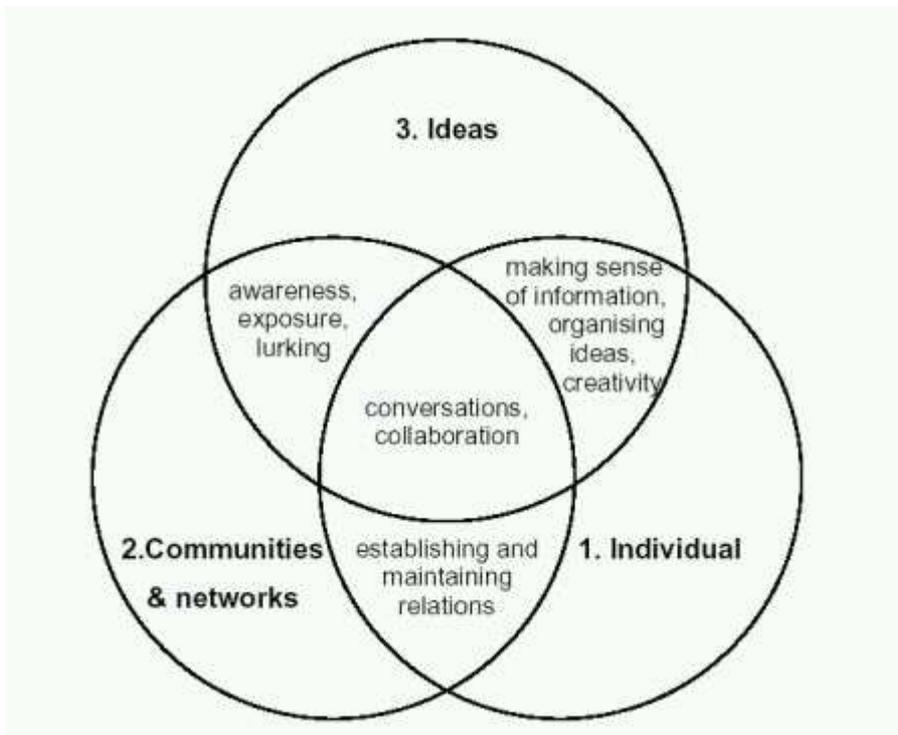


Figure 2: Framework for Knowledge Work Analysis (Efimova, 2004)

From this framework the following processes can be identified:

- Organising personal information ("Personal Information Management")
- Making sense of information (personal)
- Negotiating meaning (social)
- "Creating" new ideas
- Establishing and maintaining a personal network
- Collaborating in communities

I add

- Finding (codified) information

to the list to account for the importance of information seeking, which I believe also is a key process in knowledge work.

Knowledge Work Processes
Finding (codified) Information
Organising Personal Information (PIM)
Making Sense of Information
Negotiating Meaning
"Creating" new ideas
Establishing and maintaining a personal network
Collaborating in Communities

Figure 3: Knowledge Work Processes (own illustration, based on Efimova, 2004)

Interrelatedness of Knowledge Work Processes and Social Context

Knowledge work processes are interrelated and often cannot be separated: Finding a piece of information and putting it into context might start off another search for more information. In a conversation with a colleague, a knowledge worker might ask for the location of codified information, negotiate the meaning of a concept and have a new idea at the same time, all while maintaining the personal relationship.

If we look at the tools that knowledge workers are provided with today, we can see that few tools exist that account for this interrelatedness of processes. Document management systems only help in finding information. Using information, sharing it, making meaning of it and discussing it is done elsewhere. Cognitive Tools, such as mindmapping software, other visualisation tools or personal information management tools are designed for the solitary worker and are not addressing the social context of knowledge creation (Haller, 2002, Efimova 2004). Still, one tool has become the dominant support for knowledge work: The email client.

The Email Client as a Knowledge Work Tool

Today, the email client arguably has become the most intensively used knowledge work tool. It is being used for a multitude of different processes that have stretched far from "simple message transfer" ("SMTP", the most widely used protocol for sending emails, stands for "Simple Message Transfer Protocol") and range from storing documents and contact information, to filing bookmarks, literature references and contact information to managing tasks and reminders (Venolia et al., 2001).

"Email is often described as "the killer application of the Internet". Based on our research, we think it is possible to be even more emphatic; email is a serial-killer application! It is seriously overloaded and has been co-opted to manage a variety of tasks that it was not originally meant to support." (Ducheneaut & Bellotti, 2001)

The reason for this is email's embeddedness in communicative processes:

"Communication is a central part of organized work. Consequently, as email captures an increasing share of an organization's total communication volume, individuals progressively appropriate their email client as a habitat in which they spend most of their workday." (ibid.)

A recent study (Swaak et al., 2004) also reaffirms the importance of email and gives another interesting perspective: When "searching for knowledge" (Swaak et al. use this term to mean "searching for information and for people within an organisation in order to obtain knowledge"), the knowledge workers who were subject to the study would rather ask colleagues, search their mailbox, their personal paper archives and their local disk than use document management systems.

Besides reaffirming the importance of communication this indicates that there is another component to the issue of which tool knowledge workers chose to support their work: They prefer to user personal tools, that is: Tools that they can control and customize to their own needs.

In my view, email has two characteristics that are its success factors for becoming a "serial killer app":

1. It embeds managing information with communication
2. It is personal (it belongs to the user), private (no one else can access it if it is not shared) and personalisable (it can be configured to ones personal needs and work style).

Or, to put it differently: Email is successful because it is personal and social at the same time.

Conclusions for the Development of Knowledge Work Tools

Analysing email as a central tool for knowledge workers today and asking the question of how it can be improved leads to two different conclusions:

- We either need to improve email-clients, which would overload email even more (Venolia et al., 2001).
- Or we need to develop other tools that support knowledge processes better than email.

What can be learned from analysing email is that knowledge work tools must support communicative processes and must be personal and personalisable.

Personal Publishing: Weblogs

Weblogs are personal journals published on the World Wide Web or an Intranet. Technically they are very simple content management systems: They enable individuals to publish text and images in a very easy way. Every entry receives a permanent URI through which it can be addressed later, and is archived in a searchable repository.

Through RSS, an XML-based format which is used to aggregate streams ("feeds") of continuously updated content, it is easy for readers to follow the stream of published information. (Richards, 2004)

Interaction between weblog-writers and -readers is made possible through "commenting": Readers can attach comments to individual entries which appear on the weblog visible for the author and other readers.

Knowledge workers use weblogs to capture and annotate information, to document current thoughts, to reflect and to converse with others. This way, some of their "hidden" processes become visible again.

Weblogs as a Personal Filing Cabinet

A weblog can serve as a personal "filing cabinet" of information (Pollard, 2003a). By "blogging" items - that is: referencing and citing pieces of information, annotating them and publishing them on a weblog - a weblog author ("blogger") can build up his own personal information repository. The simplicity of the weblog system encourages filing and annotating things that were previously left unfiled. This structure of hyperlinks and free text and the absence of imposed hierarchy makes it possible to archive items that could not be organised well in file systems.

By linking to older entries in one's own weblog or to other items found elsewhere, the user can build his own personal information structure that is tailored to his needs. When working on a specific task the weblog becomes the starting point of a search for information.

Weblogs as Knowledge Journals

Journal writing has always been an important task of learners and knowledge workers. Taking notes of things learned and expatiating thoughts is an important process to intensify learning (Kerka, 1996). Weblogs can serve as a medium in which to record ideas and thoughts and reflect on current work and things learnt. They become "representations of patterns of meaning" (Fiedler, 2003) or: representations of knowledge.

Weblogs and Feedback

Weblogs are published in public or at least to a defined audience. Weblog-authors are therefore not only using weblogs as personal journals but also to get feedback on their thoughts. Often, weblog-authors will publish "half-baked ideas" to get feedback on them and develop them into something more meaningful. Also, readers will often help an author with tips on where to find more information on a topic blogged about.

Weblog-Conversations

Weblogs form networks between each other: Webloggers read other weblogs and will often use this material to write up own pieces. A free-flowing conversation ensues between the authors and members of the audience who chime in. Technologies such as "TrackBack" (which displays "inbound links" to a particular post, that is: references to a particular post from other entries in other locations that reference it) or referrer-lookup (analysing where traffic came from, made possible by analysing server-logfiles or special web-based tools, such as technorati.com) make it possible to track these discussions across multiple weblogs. New participants can join the discussion anytime by commenting or writing an entry on their own weblog. These conversations are self-organising and only moderated decentrally by the individual weblog-authors.

Weblogs and Networking

By reading someone else's weblog readers get to know the writer very well. It can be seen that webloggers who read each other and use their weblogs to converse with each other are building up trust. As a consequence, they are collaborating and forming networks (see Zijlstra, 2003).

Weblogs can be seen as a "Personal Presence Portal": They are an online representation of a knowledge worker's presence and serve as an access point to his work and thoughts. Also, they provide access to other forms of getting in contact, such as email, instant messaging or meeting face-to-face. (Zijlstra, 2004)

Individual Benefits of Publishing Weblogs

After a more general analysis of what weblogs are and what they do I will now look at how they support knowledge work processes.

Organising Personal Information

Weblogs, as searchable personal "filing cabinets", can provide an effective way of organising and storing personal information. Their simplicity relieves the user from the overhead of thinking "where to put things".

Additional to storing information, weblogs also capture annotations by the self and by others. The content is augmented by conversations that ensue around it. This gives more context to the information stored and lets it be more easily retrieved.

Making Sense of Information

"I must find a truth that is true for me" (Søren Aabye Kierkegaard)

Weblogs support the process of reflection. By connecting recently blogged items to older thoughts they contextualise new information and so help in making sense of it. Commentary by other people adds to the context.

Negotiating Meaning

By letting conversations ensue about topics that are relevant to the organisation, weblog provide an "Information Ecology" of different points of view, different opinions and different beliefs. They make it possible to test hypotheses against the organisation's "truths" and let pieces of information be interpreted in a way that has meaning to the knowledge worker who is using it.

Building and Maintaining Personal Connections

By publishing weblogs, knowledge workers can be discovered by other knowledge workers who have similar interests. The barrier to start communicating is very low. This way, loose connections can develop into deeper relationships.

By following what others post to their weblogs, knowledge workers can stay updated on what they do. This makes it easier to follow up on conversations, even if there has been no face-to-face contact or no direct personal conversation for a longer time.

Collaborating in Communities

It has been pointed out above that networks develop between weblog-authors. On the basis of shared understanding and common goals that have been negotiated through weblog-conversations, these networks can develop into communities of practise. Working together in these communities can be supported by individual or group weblogs (Dugage, 2004; Röll, 2003).

Weblogs as Personal Publishing Tools - Summary

"I should probably (...) organize a better paper- and hard-drive-filing structure, create some e-mail folders, study how to do better Web searches, get a business card scanner and spend my airplane time keying phone numbers into my cellular phone list. I have three problems with these virtuous activities, however. One, I find such tasks exceedingly boring. Two, I'm not convinced they would make me more productive; (...) Three, some of these things I just don't know how to do." (Davenport, 1998)

Today Tom Davenport can be helped: The analysis has shown that weblogs support a multitude of knowledge work processes: They integrate personal information management and communication, making them an alternative to using the email client as knowledge repository. With personal publishing, knowledge workers can get feedback on their work without having to interrupt colleagues and without having to know in advance whom to ask. By making thought processes "visible" to others they encourage communication between knowledge workers and open up new possibilities of collaboration.

Whilst they do not "automate" knowledge work processes, weblogs do support them in the sense that they make processes that today are not or unsuitably supported by IT tools more efficient. By giving a direct benefit to the user, they do not have to be "forced" into using the tool: Using them personally reading and integrates well into daily processes. (See (Doctorow, 2003) for a personal story of this.)

Knowledge Work Process	Support through Weblogs
Finding (codified) Information	Searching weblog content Receiving tips from readers
Organising Personal Information (PIM)	Personal "filing cabinet"
Making sense of information	Contextualisation Feedback from others
Negotiating meaning	Weblog-Conversations

"Creating" new ideas	
Establishing and maintaining a personal network	Finding people of similar interest Following other people's weblogs.
Collaborating in Communities	Weblogs as team communication platforms

Figure 5: Knowledge Work Processes and Support for them through Weblogs

Organisational Benefits of Personal Publishing

Improving Information Management Systems

Using distributed weblog-based personal publishing systems has several advantages:

1. More knowledge is explicated and thus available for sharing in IT systems
2. Information on the organisation's intranet is more current and complete
3. The context of information is more apparent and hence richer
4. Information is easier to find
5. Less effort is needed to persuade individuals to share knowledge
6. Individuals can receive updates on new information from others

(Adapted from Pollard, 2003b)

Content of weblogs is also a source of metadata for search engines: The links pointing from weblogs to other information resources can be mined and used to improve search. Items that are referenced often are likely to be of high relevance.

The content of weblogs themselves is a rich information base. It should be made available for intranet search engines.

Locating Experts

By searching weblog networks it is possible to locate experts on given subjects. Analysing references to an expert's weblog can help to assess his reputation.

Social Network Analysis

Links between weblogs, comments and other data that accrues in weblogs can be used for social network analysis.

Reducing Misunderstanding

Weblog discussions around pieces of codified information improve clarity and shared meaning: By discussing, asking and answering questions, the members of an organisation can develop a shared understanding of what a piece of information means. Where it is clear that a piece of information only has one "true" meaning this can be pointed out and errors in its application can be reduced. Where information is ambiguous, this can be identified and explored in detail to prevent misapplications.

Organisational Learning

By following weblogs of colleagues, members of the organisation can learn from each other: A novice can follow the stream of thought of a more experienced worker without having to interfere into his work and without having to be physically present. Additionally readers can learn from the reactions that a weblog post created.

"Today you can be reading a quasi-guru and become enlightened not by what the master says, but by the sum of the reactions the what of what was said creates in the great pool." (Murphy, 2003)

Weblogs capture experiences of the organisation's members and can so convey corporate culture, which is especially valuable for new members joining the organisation. (see Bausch et al., 2002).

Knowledge Sharing through Storytelling

Storytelling has been identified as a powerful concept for knowledge sharing in organisations. Stories not only disseminate information at a high speed but also convey meaning at a high level of understanding (Gill, 2001). Weblogs are an ideal medium to spread stories: They are written in a human voice, they encourage conversation, and they give context which conveys emotion and meaning. (Nichani & Rajamanickam, 2001)

Conclusion

Traditional knowledge management has failed to address the problem of knowledge worker productivity. Tools that have been developed in KM focused on information management and do not support many of the key knowledge work processes. Knowledge workers have therefore adapted the email client to suit their needs. It has become the most successful knowledge work tool because it combines personal control with personalisability and integrates communication.

Weblogs support knowledge work by providing a space to capture information, annotate it, reflect, get feedback, share, discuss and network with others. Additionally they provide organisational benefits: They improve data on the intranet, capture experience, make it visible and disseminate it through storytelling. They help to provide the grounds for a learning organisation and support the forming of networks and communities of practise.

Weblogs in organisations need not replace other KM and information management systems. They should be seen as a complement to and an augmentation of existing systems.

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