Collaboration Practices within Personal Information Space

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ABSTRACT

Each one of us has our own way of managing personal information. We have to decide on organizational structures and among other things about placement and naming of information items. Most of the knowledge behind information management decisions is only known to its owner. Most of it is also lost in formal organization structures and cannot be deciphered by an outsider. However, even if personal space of information holds our own personal note, it still carries a lot of collaboration activities as tasks and projects often involve other people. In our study on the difference between how people manage project-related information and how they perceive and visualize it (tacit knowledge), several collaboration practices emerged. We grouped our observations of collaboration into three categories: (1) the creation of a personal information collection out of shared information, (2) the use of email as an essential tool for file distribution and (3) the linkage of project collaborators to their files rather than projects.

Categories and Subject Descriptors

H.5.2 [**Information Interfaces and Presentation (e.g. HCI)**]: User Interfaces

General Terms

Design, Human Factors

Keywords

information sharing, project management, collaboration

1. INTRODUCTION

Personal Information Management (PIM) plays an important role in our lives. We manage information for various purposes, one of which is managing information for projects. Jones states that project management and personal information management are two sides of the same coin [6]. Indeed, several studies revealed that the project management is often carried out in the file hierarchy [6][4]. Project folders help their owners to understand the project and its components, and folder structures often reveal problem decomposition. Although a folder structure can reveal some of the knowledge behind the project, it hardly ever reveals anything else (such us the knowledge about other people involved).

PIM is a set of four major activities: keeping, finding, organizing and maintaining [7]. Besides these, there are also others that support information-related decision-making. Supporting activities include taking care of the privacy, evaluation of the personal information space and information sharing or distribution [7]. Several PIM research prototypes took collaboration into account. Email often serves many purposes such as a task and project management tool [12]. This was exploited in Raton Laveur and Taskmaster [1], which integrated email with other information types (in particular, files and contacts) in support to task management. This approach was criticized mainly because different information types have different management needs [8][4]. Another approach of converging contacts with personal information was attempted with Contact map [11], where information items could be associated with people. However, the tool did not support project management even though it allowed forming (project) groups of contacts.

Recent research prototypes and ideas such as ACTA [2], ProjectFolders [3] or Giornata [10] tried to integrate various information types into one environment while preserving uniqueness of each type within. However, several participants noted that maintaining (sub)project-related groups was difficult and time-consuming and that people within one (sub)project were likely to be associated with other (sub)projects as well. It was also reported that several of these tools increased collaboration awareness.

While PIM tools focus on one person only, Computer Supported Collaboration Environments have to support many. Such tools often feature a shared file space (often called Document Repository or Shared Folders) [9]. Despite the high number of commercial and open source tools, people still carry out a lot of collaborative work within their personal space of information. These space represents a whole set of accumulated information and information collections trough ones life [7].

Our goal in this study is to reveal the tacit knowledge behind the difference of how people organize and think about project-related information. However, during the course of

the study the collaborative aspects emerged in the analysis as well. This paper presents observed collaborative practices within PIM.

2. METHOD

The main goal of the study is to capture the differences between how people manage their personal information, how they talk about it and how they visualize it in relation to their projects. We particularly look for the knowledge that is not captured by PIM applications. For this purpose we carry out semi-structured interviews using a questionnaire focusing on two levels of the project management:

- Description of most important projects in the past two weeks (start, end, people involved, etc.);

- Description of information related to each of the mentioned projects, its location, type of acquisition (created, received, found and automatic, semi-automatic, manual), why is information valuable.

The interviews are repeated four times. The first three interviews are conducted with a two-week gap in between. At each subsequent (second and third) interview we ask participants to (I) describe again all projects and information they mentioned in the preceding interviews and (II) projects they worked on in the past two weeks. At the end of each interview we ask participants to sketch how they visualize the described projects in relation to the information items used in it. Three months after the third interview we conduct one more, during which we asked them to describe the previously mentioned projects and related information. The participants are also shown the sketches and descriptions of their projects, and asked about the differences that occurred up between particular interviews. The time gap between the interviews was chosen based on observations of duration of projects that can last for days, weeks, months or even years, and that are often worked on sporadically with many interruptions affecting their course [5][6]. We hypothesised that more frequent interviews would not capture the changes in project dynamics.

2.1 Participants

The study is still underway, however, six participants have already completed it. Thus we will only present the findings based on these participants. All six of them were recruited through convenience sampling from different departments at the university. The participants were all PhD students (five females), aged from 23 to 36. Described below are the profiles of our participants. For the purpose of this paper and to preserve participants' privacy, their names have been altered.

Liza studies languages (end of 2nd year into PhD) and she has never had a job before. However, she is a volunteer for a worldwide charity organization and often works on their projects.
Lilly studies environmental studies (two and a half years into PhD). She has also never worked in industry but her research includes work at private and public environmental companies.
Karen is a statistician and she had worked full time at two universities for four years before starting her PhD (end of

2nd year into PhD). She still does some ongoing research for both universities besides her studies.
Ines studies sociology (finishing PhD). During her undergraduate studies she held the position of the secretary of culture in the student union, while she still works as a proofreader for a journal and she has reviewed several sociology-related books.
Ella is doing her PhD in computer science (end of 2nd year). After finishing her masters and before starting a PhD, she had worked in the private sector for six years.
Thomas graduated in computer science and had worked for three years in the private sector before starting his masters and, later, PhD. He is studying part time (6th year into PhD and finishing) and has worked as a researcher for the last six years.

We recognize that the project information management may be of a particular kind given all PhD students, and will need further investigation with more participants to generalise. We are currently conducting interviews with participants outside academia. However, the kind of people studied was particularly broad, with participants of very different backgrounds and experiences. Their research areas ranged from computer science to languages, and some of them had never worked outside academia, while others up to six years in industry. All six participants had at least 10 years of PIM experiences, both academic and non-academic.

2.2 Data Analysis

The interviews lasted 60 minutes on average and were carried out in participants' own working environment either in their offices or homes. The interviews were filmed and transcribed. Using iterative comparative methods of grounded theory, we formed codes of the key problems or challenges and looked into approaches to solve them. The subsequent iterations helped with linking and grouping all these challenges around particular project-related problem solving, while the focal point of the final iteration was the ongoing ever-evolving, information requiring nature of project information management.

3. COLLABORATION WITHIN PIM AND PIM WITHIN COLLABORATION

Although the study primarily focuses on how participants visualized fragmented information items within their personal space of information to reveal tacit knowledge behind project management, several collaboration practices were revealed in the course of the study as well. We will focus on three major observations of collaboration practices: (I) the personal space of collaborative information environments, (III) the extensive use of email for file exchange and (III) the association of project collaborators with individual information items rather than projects.

3.1 Personalized space of collaborative environment

The participants organized their information by their own means and understanding of the project at hand. When participants received files from other collaborators on the same project, they saved them in their project space on their hard drives. We observed that after a while, the participants often forgot the content of the received files carrying the

names they were not familiar with. Liza, for example, tried to guess their content but later discovered she was wrong about almost all such files.

Apart from the unfamiliarity with other people's naming convention, the unfamiliarity with organizational structures also hinders collaboration. Thomas has been working on several projects for which a CSCW environment was set up. However, even if the structure and naming of the document storage have been agreed upon in advance, Thomas was not familiar with them and often struggled to find documents. He explained that at first, he tried to search for an appropriate email to find the right path to the desired documents (as for every new document placed in the storage, an email was sent to notify others). Then he decided to make a local personalized storage of project documents that were only relevant to him. Unfamiliarity was not the only reason for this. Other reasons include the availability of local files and quick access. Thomas explained that during the meetings, he often needed to access documents and the speed to achieve this was important. Likewise, he is afraid that the web content might not be accessible when he would most need it.

It seems vital that participants built their personalized space of project related documents. The familiarity with the structure, the quick access and the sense of control seems to be the three main reasons for this to happen. Also (I) making sense of information, (II) problem decomposition, (III) the roles and tasks within the project and (IV) the project evolution might differ with each collaborator and as such requiring the personalization of information management.

3.2 Email (un)importance for collaboration
In the last two decades the abundance of collaboration suites (groupware) flourished and one of the functionalities of such software is also file sharing. The ascent of internet storage services such us Dropbox also eased the exchange and versioning of files. To our surprise, such tools were not (primarily) used by our participants for information sharing. Email still reigned as the primary file exchange tool. Several studies observed this use of email among others (reminders, task management, personal file archive, scheduling) [12][1].

We observed two motives why email is still widely used as a file exchange medium.

- Widespread usage of email and ease of use
- Convenience to attach the file to conversations

The email usage can be described by Metcalfe's Law or 'network effect' as in the economics literature [?]. Collaboration tools are useful because other have them, and so there is a difficulty for new tools/products to become widely used even if they are better. Email's asynchronous communication possibilities make it an ideal tool for quickly sending notifications without disrupting the recipient. We observed this over and over in this study. When participants wanted to notify other collaborators of work being done, they always sent them an email. Attaching files to such emails seems to be the most convenient way of file sharing.

When participants used the internet based storage, such as Lilly and Thomas, they did not share it with other collaborators. Lilly used her internet storage as a backup for im-
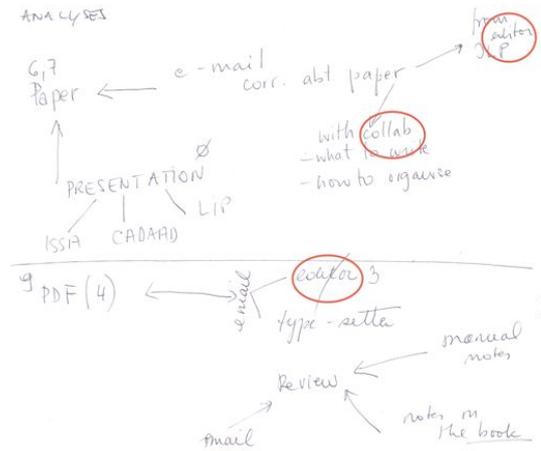

Figure 1: Ines: People (circled red) associated with information items in the project collection

portant files. She explained that organization of her backup would not be familiar to others, so she rather emailed out files. She even kept a folder named *To Send* on her desktop, where she put all files that needed to be distributed.

Thomas set up his own versioning system to be able to access the same files from different computers. He also did not share it with others, even though he had tried to do it once. He added one of his colleagues as a user, yet (1) the refusal to learn new tool and (2) the unfamiliarity with organization structure were the two main reasons why the other colleague did not use it. Thus Thomas sends files (that are at disposal on the server) via email.

Once files are saved to a file hierarchy, emails carrying them no longer important. The main role of such emails is document delivery and once document is safely saved, emails are disposed of. Such behaviour was observed with Karen, Lilly and Lisa. Thomas filed such emails under projects while others simply let such emails pile up the inbox (also serving as a backup).

3.3 People first belong to files and then projects
PIM prototypes often integrate contacts to projects (see Introduction). However, our observations revealed that all participants associated project collaborators to particular files or emails and not directly to projects. When describing project-related information, they often tend to mention the sender or recipient of a particular information item. This can be also observed in the participants' sketches as seen on Figures 1 and 2. When the names of people occur in these sketches, they always appear alongside information items.

When searching for files in the shared project environment, Thomas first tried to associate the file with the person who saved it in there. As explained earlier, the author of newly saved files in the shared project space (a hierarchy agreed beforehand by project participants with several files stored in weekly) had notified other collaborators of its path by email. So, Thomas searched for such notices by person in his email client and tried to find the path of the document. Although this is a well-known practice, it also shows how files can be initially associated with people.
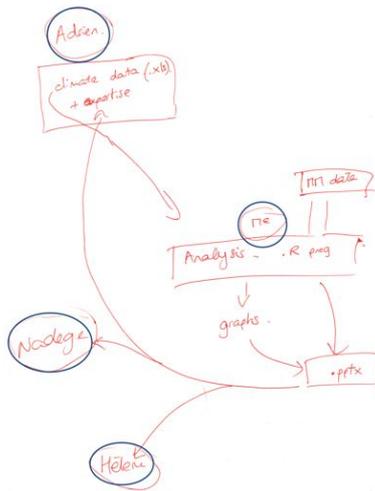
Figure 2: Karen: People (circled blue) associated with information items in the project collection

4. DISCUSSION

We touched upon the three different observations that dwell in between the two research areas: PIM and information sharing aspect of CSCW. One observation was about how are people first associated with files and later projects. Participants visualized this relation as:

Projects (Tasks) <—> Docs <—> People

rather than

Docs <—> Projects (Tasks) <—> People

which is mostly the approach PIM integration solution view it.

The participants talked about people in terms of *'I received this file from ...'*, *'These files have to be sent to ...'* or *'... gave me this document ...'*. Even so, address books are mostly associated with communication tools such us email, chat, IM or VoIP systems. A file hierarchy does not allow for storing such metadata (except maybe naming files and folders by people), whereas CSCW repositories usually store information about the user who posted a particular file or a list of users who committed changes to it. However, it has to be taken into account that different users might associate different people to the same file, depending on the view, role and the context.

Another observation was the use of email as a file distribution channel. While there might be no major problems if files are only exchanged between two persons, it can quickly get complicated if more people are involved and more than one of them are editing such files. Finding the latest versions can pose a challenge. Shared repositories usually have versioning and some even real time document editing incorporated. As achieving the popularity of email is almost impossible, email clients could have some standardized file sharing/editing/tracking incorporated to overcome today's exchange problems.

The last observation is the personalized project information space of shared information. We can assume that collaborators on the same project have different hierarchy structures of the same information in their spaces. CSCW solutions usually take a topdown approach in document management where users are made to use the predefined structures and naming conventions. This does not help them to decompose their own views and stages of the project. It also hinders the sense-making of information (as of how the pieces of information fit together, the underlying patterns, etc.) and it often results in two copies of the same information (local and remote). Instead of a top down approach, the shared information repositories should pull files from local personalized project information spaces, while keeping a generalized predefined abstract structure of such information.

5. ACKNOWLEDGMENTS

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