

Timely Reminders: A Case Study of Temporal Guidance in PIM and Email Tools Usage

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ABSTRACT

We describe our research in progress that explores the use of *personal information management* (PIM) tools in time and attempts to establish temporal attributes of information. We report on a short field study undertaken to examine relations between tools and information life-cycle. We propose four information types: prospective, ephemeral, working and retrospective. We outline relationships between PIM tools, email and different types of information. We use this framework to explain problems observed with handling information.

Keywords

Personal Information Management, Email use, Field study, Information Types, Temporal attributes of information.

INTRODUCTION

An on-going research project is exploring the use of PIM tools in time, and attempts to establish temporal attributes of information. Many researchers have studied how people organize information [3], [5], [1], use email [7]. One commonly recognized problem is scattering pieces of related information across different computer applications and other media (e.g. paper notebooks). We suggest that this is due not only to weak integration of tools, but also due to the traditional use of PIM tools. Different PIM tools are in effect used for different types of information.

Extending the three types of information (ephemeral, working, and archived) suggested earlier in the literature [5] and borrowing terms from the human memory research, we propose that, it is useful to conceptualize personal information as: prospective (future), ephemeral (current short-lived), working (current medium-span) and retrospective (past). This typology is determined by the usefulness of information in time. Here we provide only a definition of prospective information, as definitions of

other types, can be found elsewhere [5]. Prospective information is characterized by its reference to a specific time in the future, for example, to a future meeting. An

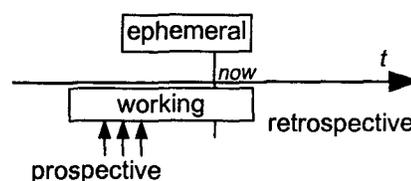


Figure 1. Four types of information

important distinction between prospective and ephemeral information is that the former retains value as time passes as an information about past events (now retrospective information), while the latter does not.

In contrast with PIM tools, email is used for all types of information. We argue that problems with handling information in PIM tools and email are caused by the lack of time awareness in tools. The lack of time awareness has in the two cases different nature. For PIM tools, it is due to the lack of their integration, which means that flow of information across time is not supported. On the other hand email has not been designed to handle prospective and ephemeral information.

METHOD

We conducted a short field study of PIM tools use, recognizing that it was possible to sample just a few of many information organization styles that are used. 12 participants were interviewed in person of those 8 received distributed electronically a personal information organization questionnaire consisting of 25 questions, and a web-based personality questionnaire (provided by Keirse [2] and based on Myers-Briggs Type Indicator [4]). All interviews were audio taped. Participants of our study worked in diverse organizations acting in a variety of roles: an office manager, three business owners (finance, web site design, hi-tech), two working grad students (engineering manager and interface designer), and two consultants (research and information visualization).

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RESULTS AND DISCUSSION

Due to the huge diversity of organizational environments, positions and personal styles we focused on the types of tool uses. In the following table we list the possible uses of tools that were given by subjects in our study. Email was used both to transmit and as a working environment for all types of information.

Information type	Email	PIM tools				
		date book	to-do	addr	loose notes	file folders
prospective	✓	✓	✓			
working	✓					
ephemeral	✓				✓	
retrospective	✓			✓		✓

Table 1. PIM tools use for different information types.

Information Links

The most interesting links that we observed in the study were between prospective information and working or retrospective information. These types of links usually correspond to relating events and documents. Study reported in [1] found that users would like to organize information around events, but cannot do it because of the lack of support from tools. We found no explicit links of that kind. Implicit links were created by contextual information recorded in tools or remembered by the user. The links were used not to organize information around events, but to facilitate information retrieval. Lack of explicit links was especially symptomatic in the case where such links were supported by a tool. One subject using a PDA to enter short meeting notes could have done it in a calendar utility, creating automatically an explicit link, but instead have chosen to enter them into a separate application adding dates manually. Subject motivated the decision with the lack of an overview feature of all notes added to calendar events. We speculate that an additional reason was an untypical use of calendar.

Email Use and Prospective and Ephemeral Information

Based on our observations email was used not only to transmit prospective and ephemeral information but also as a working tool for both these information types. Email applications have not been designed to deal easily with these cases. Dealing with prospective information (mostly to-dos) in email messages requires users to periodically go through lists of messages. Participants dealt with this situation by flagging messages. If messages had already been read, they were often flagged either again as unread or using another flag. Ephemeral information was, in some cases dealt with as prospective information, which created an additional cognitive load, since more distinctions between messages needed to be made. In other cases, users dragged an email message or saved an associated

attachment to their computers desktops, to create a visual reminder.

CONCLUSIONS

Email is a true chameleon, it is often used for purposes it was never designed for. Email system designers should take the new uses into consideration. On the other hand, use of PIM tools, which have been long in use and have traditional information types associated with them, seems to be largely in tune with the traditional divisions of functionality and with the four information types.

We observed some relation between personality styles and the use of email folders. Further studies are needed to uncover dependencies between personality style, organizational environment, user roles, and email use.

PIM tools and email organize people's external memories, they are "knowledge in the world" [6] and, thus, they should be designed to reflect the actual life-cycle of information in different tasks. Further research is needed to fully understand information life-cycle so that information is managed according to the time flow and the tools guide users in time.

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