

The Personal Project Planner: Planning to Organize Personal Information

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ABSTRACT

Prototyping and evaluation combine to explore ways that an effective, integrative organization of project-related information might emerge as a by-product of a person's efforts to plan a project. The *Personal Project Planner* works as an extension to the file manager -- providing people with rich-text overlays to their information. Document-like project plans provide a context in which to create or reference documents, email messages, web pages, etc. that are needed to complete the plan. The user can later locate an information item such as an email message with reference to the plan (e.g., as an alternative to searching through the inbox or sent mail). Results of an interim evaluation of the Planner are very promising and suggest special directions of focus for limited available prototyping resources.

Author Keywords

Personal information management, PIM, project planning

ACM Classification Keywords

H5.m. Information systems: Information interfaces and presentation (e.g., HCI): Miscellaneous.

INTRODUCTION

In an ideal situation of personal information management (PIM), people have the right information at the right time, in the right place, in the right form, to perform their current activity[8]. The reality is often far from this ideal. The information needed to complete an activity may be scattered by location (home vs. work) and device (e.g., mobile phone or "my other computer").

Even on a single computer, information may be scattered across separate organizations of files, email, web references, notes, etc. so that the assembly of information

needed to complete a task is time-consuming and error-prone. This problem of *information fragmentation* is often made worse by the very tools designed to help. New tools may introduce new forms of organization to be maintained in addition to, rather than instead of, existing organizations [2]

Certainly, desktop search facilities can help but only to the extent that information -- in its content or its associated metadata -- already provides an implicit mapping to the tasks for which the information is needed. Tagging of information items regardless of their form (e-document, email message, web page) according to tasks for which they will be needed is still poorly supported and will be an important step towards better support of PIM [10]. But people are constantly switching between tasks in typical day [6, 11]. This "multi-tasking craziness" [7] makes it troublesome for people to tag manually. Even sophisticated schemes of automated tagging [13] are limited by a basic tradeoff between error rate and coverage and may not be able to keep pace as new tasks emerge or old tasks are re-defined.

Is there a simple way to establish a mapping between tasks and information without making unrealistic demands -- either on tools of automated tagging or on people to tag manually even as they rush to complete the many tasks of a typical day?

THE PERSONAL PROJECT PLANNER

This paper describes research on a prototype called the Personal Project Planner[9]. The Planner draws inspiration from an ideal that can be traced back to Vannevar Bush's notion of "associative indexing" [3] wherein items currently in view or accessed in sequence can be associated with one another so that their combined use later is made easier. Stated another way, the ideal is that information is tagged, organized, and inter-connected as a by-product of its use.

In the Planner, the basis for an association of information is the project and the planning involved in its completion. To live and be active is to have projects. Some projects are professional or work-related; others are not (re-model the house, plan a family vacation). Projects involve

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planning and, as people plan, they often create supporting external representations [12] ranging from simple to-do lists to elaborate planning documents [9]. External representations serve as powerful complements to a person's often fallible internal memories.

The Planner supports the creation of a rich-text *project plan* as an external representation that organizes not only component tasks (e.g., “find out what the budget allows”), but also the information needed to complete these tasks.

Two principles are key to the Planner's design:

- No new organization.** Project plans are simply an alternate way to view and work with a folder hierarchy in the file system. The headings/subheadings of a plan correspond to folders/subfolders in the file system.
- Organize incidentally.** Project-related information is organized as a by-product of a plan's elaboration.

Planner features in support of these two principles are illustrated in a scenario where the Planner is used to plan a house re-model (Figure 1). A user can begin top-down by building an outline where major headings like “kitchen” or “media room” represent high-level project components. Or a user can start bottom-up by typing in notes and gathering bits and pieces of information from web pages, email messages and e-documents.

As a project plan develops, two features support its use to interconnect and hyperlink task-relevant information.

- Drag & Link (D&L)**
- In-Context Create (ICC)**

D&L works like a variation of drag & drop. Select a line or two of text from a web page, email message or electronic document. Drag to the project plan and drop on any line. A link is automatically created back to the source.¹

Using ICC, documents can be created and email messages composed and sent from within a plan. These items are created as they would be normally (e.g., in separate windows managed by supporting applications such as Microsoft Word and Microsoft Outlook). However, the Planner places a hyperlink to the document created or the email message sent at the insertion point in a project plan.

As an example of ICC, the user might see the heading for the task “Find out what the budget allows” and decide to send an email message (“quick question about the budget for countertops...”) to the contractor (Figure 1). The project plan then provides a context in which the email message can be located again later (e.g., as an alternative

to trolling through sent mail) in order to answer questions like “Did the contractor ever respond? What did he say?”

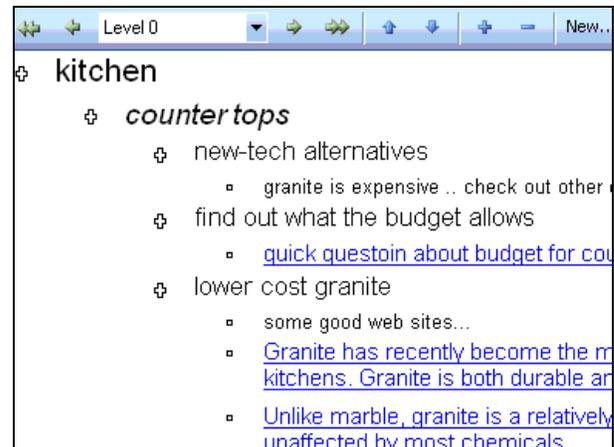


Figure 1. An outline built in the Planner organizes project-related information

Users can work with a project plan much as they would work with an ordinary document using their word processor in the outline view. Users can:

- Outline** to structure a project as a hierarchy of sub-projects and basic tasks.
- Re-order** elements of a plan via a simple drag & drop so that, for example, higher priority tasks come first.

The project plan provides a basis for grouping task-relevant information and connecting this information to important dates and times:

- Folders as tasks.** Headings representing tasks in a plan correspond to file folders, which serve to group together task-related information. When the user creates or modifies a heading, a corresponding file folder is automatically created or modified. Hyperlinks under a heading correspond to shortcuts in a corresponding folder.
- Task management.** A folder can be associated with “remind by” and “due by” dates that appear as appointments in the Microsoft Outlook calendar. The appointment includes a link back to the folder for easy access to information required to complete a task.

Features of the Planner combine to support an integration of information regardless of its form:

- Information Integration.** The hyperlinks in a plan (corresponding to file system shortcuts) point not only to documents (files) but also to email and web pages.

Implementation of the Planner

The goal is for the Planner to integrate fully into the file manager to provide a new “Project” mode of interaction as an alternative to “Classic” file system views such as

¹ In future versions of the Planner selected text and its source might also be analyzed for more meaningful relationships to the current plan possibly with reference to an underlying ontology for the project (e.g., [5])

“details”, “list” and “icon”.² The Planner, in its current version, takes the first critical few steps towards this goal. The Planner is currently written as a stand-alone .Net 2.0 application which is accessed as a context menu option for any selected file folder.

The Planner works under Microsoft Windows and integrates with Microsoft Outlook, Word, and other Microsoft Office applications. However, the Planner’s approach, with its support for D&L and ICC extends to other software applications with interfaces through which to address project-related information items.

The Planner architecture supports its document-like views by distributing XML fragments, one per folder. When invoked for a selected folder, the Planner “walks” a folder’s subfolder hierarchy to assemble fragments into a coherent view that includes notes, links, and an ordering of subfolders.

Integration with the file system is currently “one-way”. For example, headings created in a project plan result in the creation of corresponding file folders. But if the folder is later deleted through the file manager or if subfolders are added, the project plan is not automatically updated to reflect this change. A later version of the Planner will include “compare versions” support for the detection and resolution of differences between a plan and the underlying state of files and folders it portrays.

AN INTERIM EVALUATION

An interim evaluation was completed to assess the perceived frequency of use and overall usefulness of Planner features.

Procedure

In preparation for the evaluation, participants first watched a 5-minute video (available on the Web) that described the Planner and its features. The evaluation itself took 40 minutes and included the following steps:

1. The planner was installed on the participant’s computer.
2. The participant selected a project they were currently working on or had recently completed.
3. Using the Planner, the participant created a rough outline for the project and then tried out each of six other Planner features described above.³
4. The participant rated each feature on a one to five scale for estimated frequency of use (1=never use;

² In a similar spirit of integration is the support of an “Activity” in Microsoft Outlook [1]

³ Folders-as-tasks and information integration can’t really be “tried out” like the other features. Instead, the participant was asked first to switch to the file manager to note that a folder was created for each heading created in the Plan. The participant then noted that a plan could contain references to several forms of information (e.g., documents, email messages and web pages).

5=constant/daily use) and overall usefulness (1=not at all useful; 5=very useful).

Participants.

Twenty-one participants (twelve males) took part in the evaluation. Participants’ ages ranged from 25 to 61 (average age = 42). We deliberately sampled beyond a readily available population of students and faculty to include people with information intensive jobs and non-work activities. Fifteen participants had no affiliation with the university. Participants represented a range of occupations: Seven managers, two homemakers, three teachers, three people in administrative positions, two graduate students, one physician, one engineer, one flight attendant and one consultant.

Results

Although participants’ ratings were high overall (Figure 2), they did not rate all features equivalently for estimated frequency of use (Friedman Chi sq= 34.35 (df=6), p< 0.001) or for overall usefulness (Friedman Chi sq= 33.02 (df=6), p<0.001). In general, findings from paired comparisons of participant ratings between features demonstrate that Folders as Tasks and Task Management were rated significantly lower than each of the other features (Wilcoxon signed-rank test, p<=0.05)

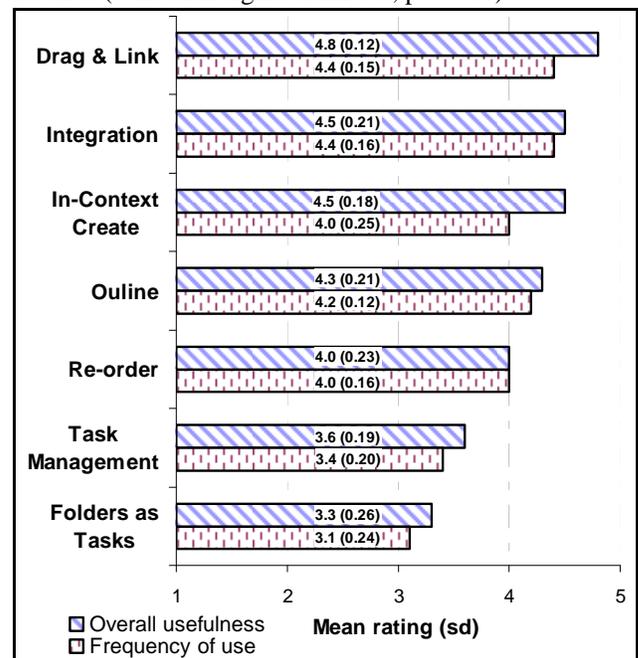


Figure 2. Mean participant ratings of overall usefulness and estimated frequency of use for features of the Planner .⁴

As important to us as the ratings were, we also gained value from participants’ comments such as the following:

⁴ Corresponding median scores of overall usefulness for features as listed in Figure 2 were: 5, 5, 5, 5, 4, 3, 3. Corresponding median scores of est. frequency of use for features as listed in the figure were: 5, 5, 4, 4, 4, 3, 3.

“That’s’ all I do all day long is go back and forth back and forth between programs. How much time could I save [referring to having all project related documents together in an integrated whole]? One click and I am right there, rather than opening 4 or 5 folders and repeat the same things. The Planner will save me a lot of time.’

“I get lots of email. Sometimes it gets lost by the company so I need to re-find it. I get so much email that it is hard to go back and forth to figure out when I sent it. With the Planner, I could have all my email right there.”

CONCLUSION

As an antidote to pervasive PIM problems of information fragmentation (often made worse by our supporting tools), the Personal Project Planner is designed to support several kinds of integration:

□ **Integration of planning and organizing.** As project planning proceeds, project-related information is organized as an incidental by-product through the actions of Drag & Link and In-context Creation.

□ **Integration of different forms of information.** A plan brings together information otherwise scattered into different organizations (e.g., files, email messages, and Web references).

□ **Integration with the filing system.** The Planner is an alternate way to work with files and folders. Headings are folders. Hyperlinks are shortcuts.

□ **Integration with task management.** Information management and task management are often two sides of the same coin – we manage information to insure its availability for tasks we need to complete. In the Planner, folders, representing tasks, can be associated with “Remind by” and “Due by” dates that appear in the calendar.

□ **Leverage of existing skills.** In its use to create a project plan, the Planner works much like the “Outline” mode of a word processor such as Microsoft Word.

The Personal Project Planner with its support for situating a person’s interactions with information has done well overall in an interim evaluation and we’re encouraged to pursue its development. As guided by evaluation results, we will direct our limited prototyping resources first towards better, more complete support for the in-context-create and drag-and-link features.

Moving farther out in our prototyping, we hope to compare and contrast the outline view with other views into or overlays onto the information in a file system including “mind mapping” [4] and workflow views.

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