

Recent Shortcuts: Providing Quick Access to Recently Used Computer Objects to Support Shared Activities

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ABSTRACT

We have designed a tool called Recent Shortcuts, which helps manage coordination by making recently used objects easily accessible. Recent Shortcuts enables quick access to files, file folders, received attachments, people, and groups of people that the user interacted with recently for re-use in the user's current context. The design of Recent Shortcuts was informed by an empirical study of teams, which revealed the amount of extraneous work users do to coordinate with others in finding references to other people, finding files to attach to email, and managing incoming email attachments. Much of this work involves finding recently accessed objects that are needed again in the user's current task focus. Recent Shortcuts supports this access by displaying a list of recently used objects from which users can open or copy and paste objects to include in their current task.

Categories and Subject Descriptors

H.5.3 [Group and Organization Interfaces] Computer-supported cooperative work, H.5.2 [User interfaces] User-centered design.

General Terms

Human Factors, Design.

Keywords

Coordination, recent context, recent documents, Recent Shortcuts, empirical study, activity-centric computing.

1. INTRODUCTION

Recent research has drawn attention to the problem of information fragmentation, pointing out how much of our work with computers involves switching among, and integrating across, several applications and files [4]. Yet current computer systems provide poor support for activities that require access to multiple applications and resources scattered across the computer desktop.

This lack of support has given rise to a research approach that explores organizing users' interactions with their computers according to the *activities* and *tasks* that users want to accomplish, rather than the applications and files that the computer desktop typically manages [1, 3, 5, 6].

2. EMPIRICAL STUDY

We first empirically studied existing collaborative work practice to understand how people currently accomplish their shared activities through the computer. We focused on how people integrate resources across computer tools to accomplish activities that they coordinate with others. We conducted three rounds of data collection where we observed teams of knowledge workers as they prepared for a specific event, such as planning a presentation or an experiment. We used Camtasia Studio screen recording software [2] to unobtrusively capture video records of users' interactions with and through their computers [7].

From our analysis, we noticed the amount of extraneous work currently involved in exchanging information through email, instant messaging, and shared access to data, as people coordinate working together on activities that they share. Our empirical observations identified the extraneous work users currently do to:

- find references to people
- find files to attach to email
- manage attachments that are received in email

One common theme that emerged from our empirical study is the value of providing easy access to *recent interactions* in supporting the current task. Our empirical observations led to the design of *Recent Shortcuts* to provide easy access to recent interactions.

3. RECENT SHORTCUTS

Recent Shortcuts tracks the use of recently used computer objects and presents them in a list which is organized into three sections (Figure 1), based on the types of objects we saw people frequently searching for in our empirical study. The number of objects in each section can be set by the user.

The *Attachments* section shows the last 5 (by default) files that have been received as attachments in email messages that the user has recently viewed. The user need not have opened the attachment for it to appear in Recent Shortcuts; they just have to have viewed the email to which it is attached. These file attachments can be opened by double-clicking or copied via drag and drop. Recent Shortcuts gives users access to attachments

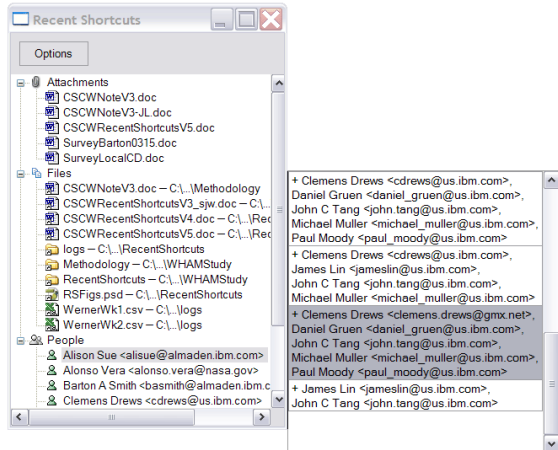


Figure 1. Recent Shortcuts displaying email attachments received, files and their containing folders, people, and groups of people associated with the selected person.

without having to explicitly save the attachment or navigate back in email to find the message that contains it.

Similarly, the *Files* section shows the last 10 (by default) files that the user has interacted with in the Windows desktop. We draw this list from the same source that Windows uses for its “My Recent Documents” feature. We also display the folder in the file hierarchy that contains each file, as the folder is often a quick way to get to files related to those that have been recently used. Files and folders can be opened by double-clicking, and files can be copied by drag and drop. In this way, Recent Shortcuts affords a quick way of accessing a file that was just saved to attach it to an email, making it easier to share information with others.

The *People* section lists recent people with which the user has interacted via email (the default is the last 10). This list includes anyone that appears in the From, To, and cc fields in recently viewed email messages. Selecting any person expands a sub-window that shows the groupings of people that appear together with that person on an email message among the From, To, and cc fields. Figure 1 shows one person selected and the list of groups associated with that person. Double-clicking on a person or group will bring up an email compose window addressed to that person or group. In this way, Recent Shortcuts makes it easier to communicate and share information with others via email.

Recent Shortcuts is easily available from anywhere on the computer desktop through a special function key. The list that appears in Recent Shortcuts is dynamically updated as the user

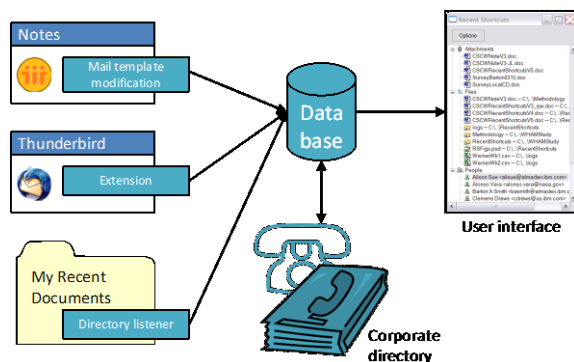


Figure 2. The architecture of Recent Shortcuts.

interacts with files and email messages. It takes advantage of the user’s recent history of computer interactions to support their current activity without requiring any additional user effort. This design is based on the *temporal grouping* of activities that we observed in our empirical study where users often re-used objects that they had recently interacted with in their current activity.

4. IMPLEMENTATION

The Recent Shortcuts prototype runs on Microsoft Windows and consists of several components (Figure 2). Plugins for supported email clients, currently Lotus Notes and Mozilla Thunderbird, observe which email messages are read. The attachments and people associated with these messages are stored in a database. Extra information about the people is retrieved from our corporate directory and stored in the database. The user interface reads the database, plus the contents of My Recent Documents, to display to the user.

5. CONCLUSION

The design goal of Recent Shortcuts is to integrate access to a wide range of recently used computer objects into a single, easily accessible interface mechanism without requiring additional user effort. Our empirical studies found that having quick access to objects that have been worked on recently is likely to be helpful in accomplishing the current activity. Our focus on how people coordinate with others on shared tasks enabled us to see the importance of including people and groups with which users recently interacted. We see the integration of people into Recent Shortcuts as a distinguishing factor from most prior prototypes that have focused on improving individual productivity.

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