ABSTRACT
The desktop metaphor is beginning to show signs of strain in supporting modern knowledge work. Our research seeks to demonstrate how the traditional desktop metaphor can be re-envisioned, replacing a focus on documents and applications with user interaction based upon semantically meaningful activities.

In this demonstration, we present Giornata, an application that augments the OS X desktop with interface components that emphasize the role of activity in knowledge work. Giornata provides a number of innovative features not present in other systems, including activity-based resource storage, a mechanism for incrementally tagging activities, and integrated tools to foster collaboration within activities.

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General terms: Design, Human Factors

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INTRODUCTION AND MOTIVATION
The desktop metaphor is beginning to show signs of strain in supporting modern knowledge work. The traditional desktop interface includes support for multitasking only on a very low-level, per-application window basis and support for collaboration is delegated to other applications and tools rather than being integrated into the desktop directly. Resource organization is becoming increasingly difficult, partially due to an increase in the volume and types of information referenced in modern knowledge work and partially due to limitations inherent in the desktop user interface design based on decades-old assumptions about the ways that computers are used.

Through Giornata, we demonstrate how the traditional desktop metaphor can be re-envisioned, replacing a low-level focus on documents and applications with a user interface based upon the creation of and interaction with user-declared, semantically meaningful activities. This activity-based interaction paradigm more closely matches observed knowledge work practices (e.g., [2]) and reflects theories of cognition that describe the ways people manage multiple complex tasks (e.g., [1]).

With Giornata, we seek to extend the desktop metaphor, because it provides a familiar and intuitive means of interacting with applications and files. At the same time, we aim to provide better support for contemporary knowledge work practices by emphasizing activity as a primary organizing principle in the interface (Figure 1).

USER INTERFACE DESIGN IN THE GIORNATA SYSTEM
Giornata is an Objective-C application that augments the existing capabilities of the Mac OS X desktop user interface. Like other activity-aware systems (e.g., Rooms [3] and GroupBar [4]), Giornata allows users to view and manipulate open windows in clusters that correspond to higher-level activities, since accomplishing one task often requires the use of information resources spanning multiple applications and documents [2]. However, Giornata goes beyond rudimentary virtual desktop management by providing activity-based resource storage, a flexible tagging system that allows users to incrementally annotate activities with meaningful descriptors, and integrated tools to foster collaboration within ongoing activities.

Activity-Based Resource Storage
In Giornata, the enhanced desktop serves not only as a display space for application windows, but also an active, ready-at-hand folder for documents and shortcuts associated with the current activity. Any file saved to the desktop (by dragging and dropping or by invoking the standard “save” menu item within applications) is automatically associated with the current activity; as the user switches among ongoing activities by toggling between virtual desktops, these resources are “swapped out” along with application windows and temporarily stored elsewhere on the hard disk until the activity is resumed. This combination of capabilities scopes the information displayed on the screen at any one time to the most relevant applications, information resources, contacts, and communications when the user is immersed in a particular activity.
Activity Tagging

Each activity created in Giornata can be annotated with optional, freeform tags to describe the semantics of the activity. Activities are initially created without tags; the ability to create and work in an unnamed activity allows work to proceed even when the user might not know the significance or eventual meaning of an activity at its outset. When an activity has one or more tags associated with it, these tags are transferred to each file that the user touches over the course of working in that activity. This design serves to “stamp” files with information about the context in which they were created or edited. This also allows documents that are shared across multiple activities to “inherit” the tags of all the activities. Because Mac OS X’s built-in Spotlight search framework indexes these tags automatically, users can quickly find information resources by initiating a search on any combination of the files’ contents or the activity tags.

Activity-Aware Collaboration Support

Giornata provides two features to support activity-aware collaboration. First, Giornata integrates a subset of the sharing palette interface [5] to enable lightweight collaboration. This “Contact Palette” component provides a persistent visual summary of those individuals and groups the user has associated with the current activity. Files can be dragged and dropped directly on the Contact Palette to share a file with a particular contact or group.

Giornata’s desktop also includes a “shared files” region, which provides a persistent, spatial connection among collaborators’ activity desktops. When files are dragged into this region, they are automatically replicated on each of the collaborators’ desktops and updated each time the files’ contents are changed.

CONCLUSIONS AND FUTURE WORK

Giornata demonstrates how re-envisioning the desktop interface could provide a variety of benefits, including better task awareness, simpler multitasking, more natural organization of information, and improved collaboration while retaining desirable aspects of the existing metaphor.

We have deployed Giornata to a variety of knowledge workers and are currently evaluating its usage in the context of these users’ everyday work practices. We anticipate presenting the results of this deployment and further iterations of Giornata as future work.

REFERENCES