

# Designing Interfaces to Enrich Personalization

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## ABSTRACT

Peripheral awareness systems offer significant promise to help people to manage the abundance of information available to them without placing significant additional demands on attention. *Rich personalization* is essential to enabling these systems to provide relevant information to a particular person's individual needs in their own particular situation. I focus on rich personalization and its implications for the interfaces that can enable it.

## ACM Classification Keywords

H5.2. Information interfaces and presentation (e.g., HCI): User Interfaces.

## GENERAL TERMS

Design, Human Factors.

## INTRODUCTION

Peripheral awareness systems offer the exciting potential to help people manage the onslaught of information and the resulting demands on attention [2] caused by increased information availability. Tickers, toolbars, portals, ambient displays, and peripheral displays all aim to promote the user's awareness while limiting the demands placed on his or her attention.

Information, however, is individual in nature. What is relevant to one person may not be relevant to another. To help an individual manage his or her information, an awareness system must offer the ability to express just what information is potentially of interest. Most existing awareness systems offer at least some degree of personalization. Web Portals (such as "my Yahoo"), for example, allow the user to choose which high-level content appears on the screen: weather, movies, news headlines, etc. The user can also select basic properties of the content: locations for the weather and movies (e.g. city names or zip codes) and which news headlines the user is interested in (e.g. world news headlines and gossip). Few systems, however, offer rich personalization: the ability to extensively tailor the system to the individual's

own needs or interests. And for good reason: supporting rich personalization can have significant impacts on the design of the system, from the interface that enables the user to express her interests to the software architecture that backs the interface.

Sideshow [1] is one system that offers rich personalization. Users can select from a collection of available "tickets," mini-tickers that dock into a sidebar on the desktop. Additionally, it offers a plug-in API through which programmers can write new tickets. Although Sideshow caters to both casual users and to programmers, it does so by providing two distinct interfaces for interaction: casual users can add pre-fabricated tickets and adjust properties (e.g. to specify an email account to monitor). Programmers can write new code to define entirely new behaviors using the Sideshow SDK, but there is no blending of the two roles of interaction. A casual user must drop out of the Sideshow interface and switch into an entirely different mindset to interact with the system.

This problem is not peculiar to Sideshow. MacLean *et al* identify this difficulty in their work with Buttons, customizable widgets for the desktop [5]. They describe different classes of users: workers, tinkerers, and programmers, each who possesses different skills and motivations. Gantt and Nardi independently identify similar classes of users [3] as well as the notion of a gardener or a guru, who bridges between the workers and the programmers. MacLean *et al* describe the workers as living in the valley, tinkerers as living in the foothills, and the programmers as living in the mountains. In this metaphor, there are steep cliffs between the various hill-folk. Each of these studies has demonstrated the difficulty for users in one class to perform tasks from another: the slope is not gentle; there are cliffs in the way [4]. A goal of a personalization system, therefore, is to smooth out the hills and turn them into a gentle slope. Thus, a casual user who desires to make somewhat more extensive changes would need only to expend somewhat more effort.

While these works have presented the notion of different classes of users, one of the guiding premises of this research is the notion that these distinctions are fluid. Rather than classes, we should think of them as roles. The particular role a user assumes will depend on a combination of the individual skillsets of the user, the user's motivation, and the specific task. Thus, a user who may typically fall under a worker role will, with motivation and the absence of insurmountable barriers, take on the role of a tinkerer or a programmer. Likewise, a programmer by trade may typically take on the role of a worker, as in the Unix guru on a Mac.

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Thus, the design of a richly personalizable system must facilitate as simple as feasible a transition between different degrees of customization. The design should not present artificial barriers to keep a casual user from, for example, creating a brand new “ticket.” Eliminating these artificial barriers poses various design challenges: the interface must be sufficiently simple as to allow a casual user to perform straight-forward tasks easily. Meanwhile, advanced users should still be able to perform their tasks with an appropriate additional expenditure of effort. Such support goes beyond separating the distinct levels of complexity into different interfaces; the connections must be made clear. Thus, a casual user who wishes to accomplish a slightly more complex task should see clearly the path to take. Just as user roles are fluid, so, too, must the interfaces be fluid.

### APPROACH

I am focusing on providing interfaces and designs that support the user in personalizing their software. This approach uses the idea fluid user roles to drive the design of these interfaces. Two systems help situate this exploration: What’s Happening [6] and The Buzz. What’s Happening is a community awareness system that does not support customization. The Buzz uses the awareness approach of What’s Happening, but strives to provide a richly personalizable information awareness system. This personalization can take a variety of forms, depending on the roles the user may assume.

In keeping with its community-oriented goals, What’s Happening follows a one-size-fits-all approach to presenting information: what one user sees is what all users see. Each minute, the system displays an information collage automatically generated from some particular data source. For What’s Happening, these sources are about or by the community (primarily from the College of Computing web server; see [6] for more details). Additionally, the system also presents “value-added” collages. These are collages of information that is neither by nor about the community, but which is likely to be of interest to most of the community. The Buzz focuses on these value-added collages and presents them on a secondary display on the desktop or on a large, public display. While What’s Happening’s community-oriented nature precludes user-customization of these collages, such customization lies at the heart of The Buzz’s design.

### CONTRIBUTIONS

I hope to identify interface designs and techniques that support the user in fluidly migrating between these various roles. Although this work is motivated by a specific information awareness system, I expect that many of these findings will generalize to many other sorts of personalization applications. How can the interface offer simplicity to the casual user, while not only enabling the advanced user to accomplish advanced tasks, but also giving the casual user a glimpse of the path he or she might take to accomplish a more advanced task. This research will suggest specific interfaces and techniques and provide a qualitative evaluation of their

success. How do these interfaces foster (or not) the fluidity of user roles? What principles can future designers follow to support personalizable interfaces?

### STATUS OF RESEARCH

I have conducted interviews with past users of What’s Happening and with potential users of The Buzz to identify their specific information foraging habits. This information helped to identify the various design requirements of the system—the sorts of information the system should support and what elements people may desire to tailor. Currently, I am implementing the interface-independent infrastructure to support these tasks. The challenge lies in designing interfaces to support the user in tasks as simple as choosing interesting tickets from a selection of available tickets, configuring properties of tickets or their appearance, to defining entirely new tickets and even new behaviors. Upon settling on a particular promising design, I will deploy the system to the College of Computing (and the Internet at large) for evaluation.

Evaluating these personalization capabilities poses some challenges. I currently plan to augment the system with logging capabilities to record when key events occur, such as selecting tickets, changing properties of tickets, creating new tickets, etc. In follow-up interviews, I will probe how these capabilities were (or were not) being used. What about the interface might have prevented the user from taking advantage of some capabilities? Did the user know the capability was there and choose not to use it?

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