Chapter 1.14
User–Centered Evaluation of Personalized Web Sites:
What's Unique?

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ABSTRACT

In addition to traditional usability issues, evaluation studies for personalized Web sites and applications must consider concerns specific to these systems. In the general case, usability studies for computer-based applications attempt to determine whether the software, in actual use, meets users' needs; whether users can accomplish their goals in using the software; whether users can understand and use the application (whether they comprehend what they can do and how); the rate, frequency, and severity of user errors; the rate of and time duration for task completion; and so on. But in the case of user-centered evaluations of personalized Web sites, there are additional questions and issues that must be addressed. In this paper, we present some of these, based on our experience in usability studies of a personalized e-commerce site.

INTRODUCTION

Personalized Web sites attempt to adapt and tailor the user experience to a particular user's preferences, needs, goals, interests, knowledge, or interaction history. A personalized site adapts its content, content structure, the presentation of information, the inclusion of hyperlinks, or the availability of functionality to each individual user's characteristics and/or usage behavior. Such a site may place specific information, which it "thinks" you will be interested in, at a distinguished or obvious location on a Web page. Another personalized site may choose to add or

elide specific content or hyperlinks to additional information based on what it "knows" about the current user's knowledge or interests. An e-commerce site that knows what model laptop you own may only show accessories compatible with that model. A site that displays information about movies and theater schedules may use knowledge of the user's postal code to display only theaters within n miles of the user's location. A personalized news site may elect to show (or not) today's baseball scores, depending on whether the user has viewed this sort of information in previous site visits. A book seller may use knowledge of the books you have ordered in the past to recommend new works by the same author or other authors of the same genre, or may suggest additional books purchased by other users that have bought the same book as you are now ordering. Data about the user, used to drive the site's personalizations, may be obtained by information explicitly provided by the user and by inferences made by the system based on previous user interactions.

The personalization approach begs many questions, Do personalized Web sites actually improve the user's experience when using such sites? Do specific personalization features improve and others detract from user experience? Does personalization actually add value to users? Is the site not only usable but acceptable, attractive, and desirable to users?

Personalized Web sites are a specific example of the more general field of adaptive systems. The literature of the evaluation of adaptive systems is replete with evaluative studies of how well the "system" works. These evaluations have focused on algorithms and user model representations for programmatically "implementing" the systems' adaptive behavior, including determining how well the detection and gathering of implicit information about users' functions, how appropriately are inferences drawn about users, and how robust are the systems' techniques for using such information to provide some type of adaptive functionality. For example, evaluations

of adaptive systems might consider whether the system's inferences about the user indeed coincide with the user's prior behavior (Weibelzahl & Weber, 2003). As another example, "evaluators need to check if [the system's] inferences or the conclusions drawn by the system concerning the user-computer interaction are correct since it is not necessary that there will be a direct one to one mapping between raw data and their semantically meaningful counterparts" (Gupta & Grover, 2004). Thus many adaptive system evaluations focus on how well the system functions in an (objective) application-centered sense. Many such studies focus on an individual personalization technique, such as recommender systems or collaborative filtering (e.g., Mobasher, Dai, Luo, & Nakagawa, 2001; Zhu & Greiner, 2005). Still others have focused on success of a personalized site as measured by the number of site visits and return visits, number of purchases on an e-commerce site, click-throughs to suggested content, and so forth.

Of course, many of these measures are useful and must be considered in the evaluation of a personalized site. However, evaluations of personalized Web sites must also consider the more subjective user-centered perspective, and the literature is considerably sparser in this regard. User satisfaction is only partially determined by the accuracy of the algorithmic implementation and, further, user satisfaction may not be achieved even in systems that do provide accurate information (Swearingen & Sinha, 2001). In a user-centered design approach, design decisions are based on the experimentally validated value to users of a system's features and facilities (Vredenburg, Isensee, & Righi, 2001). Thus user-centered evaluations must involve the testing of the system by (and for) users. Some of the existing evaluation literature has suggested using an evaluator who attempts to take the role of a "typical" user of the system; but we have learned from experience (Alpert, Karat, Karat, Brodie, & Vergo, 2003; Karat, Brodie, Karat, Vergo, & Alpert, 2003)

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