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Planning your way to a more usable web site

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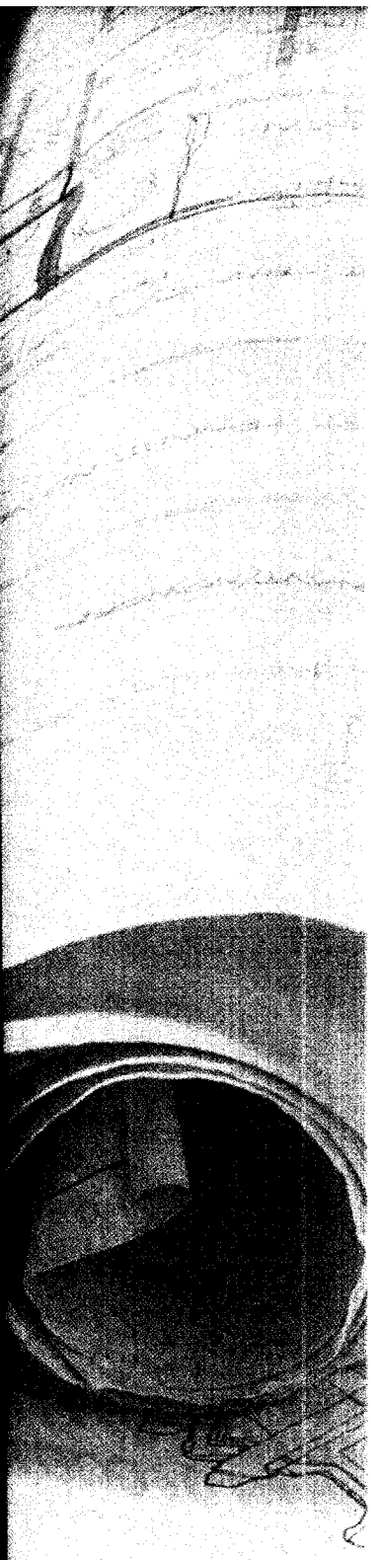

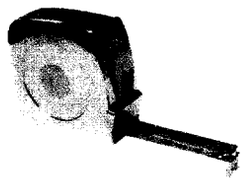

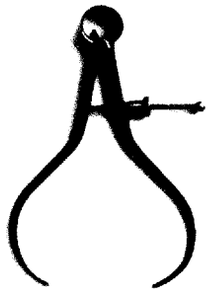

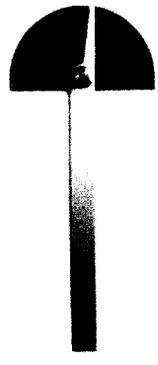

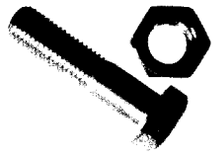

Books and articles abound on the topic of developing Web-usable sites. In fact, there was one in the last issue of *ONLINE* (Thomas Pack, "Fiddling with the Internet Dials: Understanding Usability" March/April 2003, pp. 36-38). Many of us have studied the literature, implemented best practices, and worked hard to create sites that we anticipate will be easy to use. Usability assessment measures the result of those efforts, providing important information that can be used to identify Web site improvements that need to be made. As the site changes, however, some or all of the test results may not apply, and more assessment will be necessary. Planning for long-term periodic usability assessment is therefore as important as adding regularly fresh content and tracking usage.

Like many corporate libraries, Hewlett-Packard's Global Library & Information Services has developed a substantial intranet Web site of about 4,000 pages for use by any of HP's 140,000 employees. Anticipating an influx of new users after HP's merger with Compaq, library staff prepared for a major site redesign. Staff expected to implement changes over several weeks to months, with ongoing need for additional changes due to new content and services.

Ongoing usability assessment made sense, and Sandy Hirsh, GLIS's usability expert, set out to develop a long-term plan. Believing a model plan or case study would be a good start, project manager Pam Gore attempted to locate one without success. GLIS's experienced research analysts were also unable to turn up even one sample plan in the wealth of literature on usability assessment Web sites and computer products, although models for individual tests were easily found. A few authors referred to the importance of ongoing testing, but only a couple, including Fraser and Rubin, discussed the topic at any length [1, 2]. Based on the literature and our own experience, this article discusses issues to consider in the usability assessment planning process and identifies key components of a usability assessment plan.

USABILITY ASSESSMENT DEFINED

With all that's been written and said about designing usable sites, most of us are aware at some level of the meaning of usability assessment. A simple definition comes from Usability First [www.usabilityfirst.com]: "...any of a variety of techniques for measuring or comparing the ease-of-use of a computer system." For the purposes of this article, the phrases usability testing and usability assessment will be used interchangeably. Usability testing may connote a formal process using hired experts and labs, while usability assessment is a broader term, encompassing techniques such as online surveys and informal questioning using prototypes as well as formalized testing.

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Many imagine usability assessment as a major undertaking, a behemoth in scope and cost, and therefore to be done infrequently. Fortunately, usability assessments need not be time consuming or expensive, unless your site is large and complex and you want to test it thoroughly each time. You can perform assessments ranging from simple to complex depending on your goals and resources.

IMPORTANCE OF USABILITY ASSESSMENT

"If you want a great site, you've got to test," states Steve Krug in *Don't Make Me Think: A Common Sense Approach to Web Usability* [3]. Being immersed in your site can temporarily blind you to the user's perspective, because as Krug says, "you know too much." It's easy to shift focus from the user to the site. Testing the usability of your site can open your eyes to problems and possibilities you never thought of before. Knowing how and why users become frustrated while using your site helps you to make improvements that better meet their needs and keep them coming back. Furthermore, identifying needed changes based on user testing, implementing them, and then testing again to show measured improvement can impress your sponsors.

In the practical sense, usability assessment can reveal problems in the design, navigation, layout, or labeling that prevent users from finding what they need quickly. It will provide information on how your users actually interact with your site (rather than how you think they interact with it). Repeated testing can enhance that knowledge as you become more familiar with your users by asking them to interact with varying parts of your site. Another possible benefit is an earlier indication of changing trends in user needs and desires.

BENEFITS OF LONG-TERM PLANNING

Planning for periodic usability assessment is not difficult and well worth the effort. The benefits of such an approach as opposed to sporadic testing include the following:

- Development of momentum for ongoing testing.
- Creation of a "culture of usability"[1] that makes usability assessment part of the evolution of your Web site.
- Knowledge on the part of your sponsors and funders that your Web site is useful to its users and that you're interested in making continuous improvements to ensure continued satisfaction.
- The ability to proactively budget for any associated costs and resources.

Before you begin planning for ongoing usability assessments, there are several issues to consider:

How to cultivate a "culture of usability."

Janice Fraser discusses the importance cultivating a "culture of usability" in your organization. It is critical that usability testing be an iterative and integrated part of ongoing improvements to your Web site—not a separate appendage that doesn't quite fit within the Web development cycle.

Plan for it, or it may not happen.

Scheduling usability testing at specific points in the Web development cycle ensures that usability testing will take place on a regular basis and that the results will be integrated into the process. This does not preclude any ad hoc usability testing (through mock-ups or other techniques), but guarantees that usability will not be overlooked.

Timing is everything.

If your Web site has regularly scheduled releases, it is best to coordinate the timing of usability testing to take place in advance of the release—far enough in advance so that results of the testing can be integrated into the release. This may not always be possible for a number of reasons, including the lack of extra servers for pre-testing the Web site before moving to a production server, limited staff resources for completing usability testing, and making improvements to the Web site with tight turn-around times. In these cases, you may want to consider testing after the release, incorporating the findings and improvements into the next release.

Be clear on what you hope to learn.

Your goals for each specific usability test are likely to change in focus, depending on what you hope to find out at that particular point in time. However, over the long term, looking at usability assessments in general within your organization, you should consider what you hope to learn. This may include how well the site works in terms of navigation, labeling, look and feel, design, and language; how much the site has improved with each release over time; where the trouble spots are; how people are using the site; what people are looking for and using; what works on the Web site; and how well the site meets usability standards (including standards for disabilities).

Chart the political landscape.

In planning for usability assessment over the long term, you should think carefully through the issues of buy-in, ownership, resource allocation, and competing interests.

- *Achieving buy-in.* You may encounter some resistance from management to the idea of ongoing usability testing, especially if your organization has not yet adopted a culture of usability. One way to demonstrate value is by highlighting cost-savings and improved functionality that may result from ongoing usability testing.
- *Who owns Web design and usability?* Does IT own Web design and

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usability in your organization? Do librarians? Are the responsibilities divided in some way between IT and librarians? This will vary by organization. It is critical that the different constituencies in your organization work together, foster open communication, and establish good working relationships.

• *Go where the resources are.* Where within your organization are the resources that you can use to assist with usability work? You may want to leverage the expertise that exists in other units within your organization, for example, to bridge a gap in expertise levels in your team, and/or to relieve staff members who may be busy with other projects. In our experience working on a library and information science portal within a corporation, we leveraged the employee portal team's expertise with Web-based survey methodology and technology to assist us with conducting our own User Acceptance Testing.

• *Manage competing interests.* Web design is a balancing act, requiring that you first and foremost address the needs of your users and key customers. This means that you must move beyond their stated "wants" and develop a clear understanding of what their underlying needs are. In addition to addressing user needs, key stakeholder expectations must be managed. Some stakeholders may request a particular feature, specific content, or a design, which may not be compatible with user interests and usability findings. Additionally, user and stakeholder needs must also be balanced with library staff interests and sensitivities.

Understand your organizational context.

It is critical to understand how your Web site relates to and supports the mission and key business objectives and strategies of your organization. One way to demonstrate this is to incorporate and/or use company standards for Web sites, such as a common navigation framework, consistent vocabulary and language, and similar look and feel.

Assessment Tests

Technique	What it measures	What you can learn	Limitations
Focus Groups	User Perceptions	How users view and experience your site; particularly useful early in site design process.	One person can dominate or sway the rest of the group; doesn't evaluate actual user behavior.
Survey (User Acceptance Testing)	User Perceptions	How satisfied and useful users "say" your site is; captures user preferences and attitudes.	Not tied to actual user behavior; may be unable to follow up on responses.
Usability Benchmarks and Heuristics	Site Analysis	How your site measures up against accepted usability guidelines.	Not tied to actual user behavior; user guidelines/expertise may not be relevant to your organizational context.
Prototypes (Includes Paper Mockups)	User Reactions to Prototypes	How early design sketches of specific pages will be received by users.	Not usually interactive due to its use early in the design process.
Usability Walk-Throughs	User Reactions to Prototypes	How typical tasks in a more developed prototype will work; allows design team and end users to walk through design.	Can be interactive when using wire frames, but may be hard to predict actual user behavior in completed site.
Formal and Informal Usability Testing	Actual User Behavior	How real users react while performing tasks; provides insight into design.	Limited in number of people that can participate; challenging to include users across geographies.
Server Log Analyses	Actual User Behavior	Yields records of Web server activity, specifically who is coming to your Web site, what information your users are requesting, user navigation and behavior.	Unable to determine what motivated user actions; can't ask, "Why?" Tools are not yet adequate to provide detailed patterns of user behavior.

For more detailed information on how to perform specific usability tests, see, for example, Covey and Rubin [2, 4].

You should also be sensitive to the organization's philosophy of spending and any budgetary constraints that may be in effect. Understanding spending practices in organizations will give you clues about the best way to plan for usability testing on an ongoing basis. For example, does your organization typically hire consultants and external expertise to work on projects? In this case, you may be able to convince management to hire in expertise to conduct regular usability testing. However, if your organization focuses on saving as much money as possible—even when times are good—you may need to look inside your organization for the resources to apply to ongoing usability assessments.

It is also a good idea to understand where you "fit" within the organizational structure. Where does usability take place within your organization and to whom does it report? Does an individual, small team, or large team conduct usability work? Are they dedicated to usability work or does usability comprise a smaller percentage of their work schedule? Balancing the needs of global versus local should also be considered where applicable. How will organizational requirements regarding navigation, terminology, and labeling impact local sites? At what point are the needs of the local site outweighed by the requirements of the organization to which it reports?

Hire or develop usability expertise.

You may already have the expertise to perform usability assessments in your organization. However, if you do not, you have a couple of choices, depending on the resources you have at your disposal and what makes the most sense within your organization. You can cultivate the expertise in house by attending workshops on how to perform usability testing, reading books and articles, and reviewing usability Web sites. Another alternative is to hire consultants who can either perform the entire usability assessment (including a detailed report with recommendations) or perform specific parts of the usability assessment.

Beware of bias.

Bias can creep into the usability assessment process at different stages, such as during development of survey questions and interview scripts, facilitation of focus groups, and performance of in-depth usability testing. Advance planning can help you avoid bias. For example, a good rule of thumb is to keep the Web site designers separate from those who are conducting usability assessment because designers are often too close to the development of the Web site to be objective. While this may not always be possible due to limited staffing resources, awareness of potential biases can help to avoid this pitfall.

KEY COMPONENTS OF A USABILITY ASSESSMENT PLAN

After analyzing your environment and setting the stage for ongoing usability assessment, it is time to develop the usability assessment plan, which will serve as your blueprint for usability assessment activities and how these activities relate to the Web design process.

1. Goals and Objectives

A long-term plan should include overall goals and objectives as well as for the individual tests. It is important to clearly state the goals of the overall plan to provide the big-picture perspective. Goals and objectives will vary from organization to organization and may include determining changes to be made that will increase user satisfaction and/or usage, or minimization of costs associated with usability problems, such as staff time spent helping users who cannot find information they are searching for or who underutilized premium services they cannot locate or figure out how to use. In some organizations, a governing group requires periodic testing; meeting that requirement is a legitimate objective.

Goals and objectives of individual tests will be more specific, for example, to test the usability of a particular part or feature of the site or an aspect such as its navigation or labeling. For a long-term plan, goals and objectives will naturally be broader and may change as problems and issues are revealed. This big-picture goal and objectives should help plot a direction while acting as an umbrella for the goals and objectives of individual tests.

2. Target Population

In most instances, testers normally aim for a good representative cross-section of users. It is best to do this the first time you test to provide a base line. Subsequently, different populations may be tested—Sales & Marketing users for one test, IT users for the next—or broken down by geography, East Coast the first time, West Coast the next. Whatever you decide, succinctly state the reasons for testing those populations when necessary. You may also want to consider balancing your target population in terms of people who have used your site before and those who have not: By contrasting users and non-users, you can gain an understanding of how usable your Web site is based on user experience levels.

3. Type of Assessment

Choosing the appropriate usability method depends on a number of factors, including your goals and objectives for the usability assessment, which phase of the design/redesign process you are in, evaluator expertise and experience, availability of representative end users for testing, and available time and budget. You may choose to use one type of assessment or a combination to round out your long-term plan. Different types of tests are listed in the table on page 24 along with a brief description of what is being measured, what you can learn from the test, and limitations of the testing technique. Since considerable information is available, this is not meant to be an exhaustive survey. It is meant to put this component in

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perspective in the context of your long-term plan.

4. Frequency

The frequency of testing depends in part on the usability methods you selected, the release schedule developed for your Web site, and your resources (time, staffing, money). Regardless of which methods are selected, it is critical to think about usability as an iterative process—as a constant consideration throughout the design process. Some methods, like in-depth usability assessment, may be performed on a less-frequent basis due to the time-consuming nature of this technique and the cost associated with getting representative users when working in a global setting. Other assessment methods, like User Acceptance Testing, may be performed more frequently because certain aspects of the testing (such as the data collection) can be automated.

It is a good idea to put together a Master Calendar that presents the key design events over the calendar year. This calendar can include specific usability assessment milestones, including the types of assessments performed in relation to the release schedule and freezing of changes to the Web site. A Master Calendar can be a useful tool in the long-range planning process, enabling you to track the frequency of your usability assessments, as well as how the assessments fit within the big picture.

5. Test Environment/Equipment Requirements

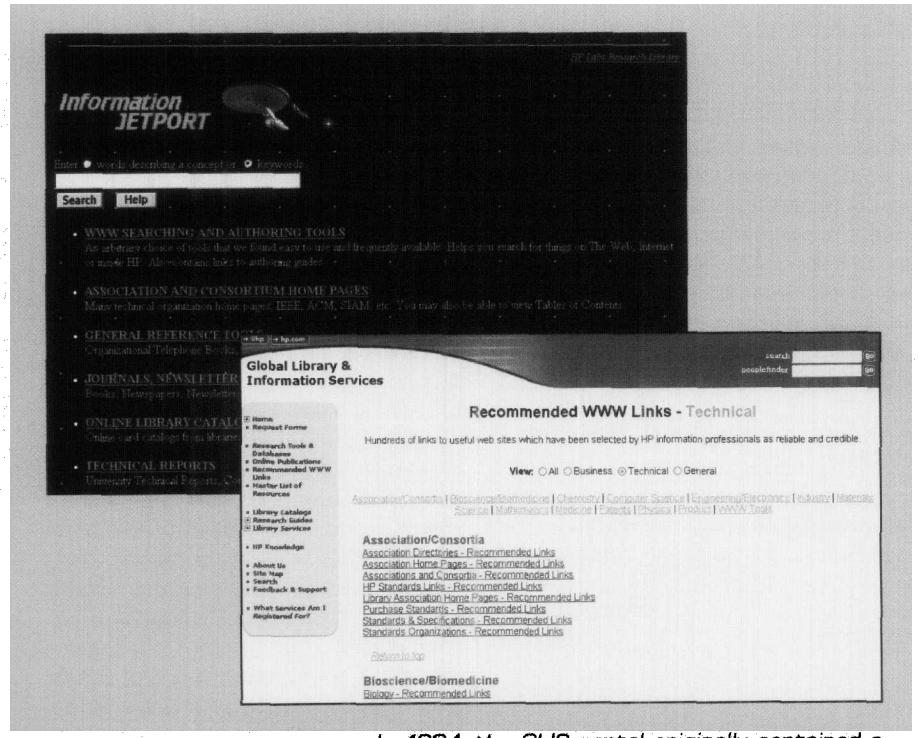
One aspect you will want to consider as you develop your usability plan is the test environment. Is it a conference room, library, desk, usability lab? How many people are needed to conduct testing? What equipment, software, and other technology will you require?

- *Test Environment Requirements:* Determine whether you will perform testing in an on-site usability lab (an on-site usability lab usually has one-way glass mirrors, video recording equipment, and computers with logging software) or at the user's desk. Performing tests at the user's desk has the advantage of seeing the user in his natural work environment. In our usability testing research, we found it useful to see how users accessed, displayed, and utilized our Web site [5].
- *Staffing Requirements:* When performing in-depth usability testing, it is best to have two people conduct the testing, with one person serving as facilitator—asking questions, observing, and taking some notes—and the other person devoted to unobtrusive observation and detailed note-taking. It is difficult for a single person to perform both the facilitator and observer roles, but your situation may require that one person do both.
- *Equipment and Software Requirements:* For in-depth usability testing, you may decide to capture the usability test sessions on audiotape and/or videotape for later review. This step has both financial (purchasing the equipment and tapes) and staffing (reviewing and analyzing tapes is time-consuming) implications. If you need to perform remote usability testing, which is necessary when the user and the usability tester are in different places, you may need to use a combination of equipment/technologies (multiple computer workstations with Internet connections, NetMeeting software, multiple telephone connections).

6. Results and Recommendations

Your usability assessment plan should address how the results from ongoing usability assessments will be presented and how the recommendations will be prioritized and implemented. The following are some of the steps you may want to plan for and include in your usability assessment plan at this final stage of the planning process.

- *Compile test data in a format that allows some flexibility in viewing it.* In GLIS's semi-annual online user surveys, the data is imported from WebGen into an Excel spreadsheet, where it can be calculated and sorted in various ways. Databases also work well for this purpose; word processing and slide presentation applications are better used for presenting results. Even in more interview-oriented assessments in which responses are not limited to finite choices, sorting and calculations will still be desirable, though to a lesser degree.
- *Analyze results carefully, thoughtfully, and accurately; minimize bias.* It is critical to put aside preconceptions and approach the data with an open mind. If results show that the feature, label, or icon you thought was so nifty actually confuses testers, pay attention, even if it hurts. In 1994, the GLIS



In 1994, the GLIS portal originally contained a Web page called "Information Jetport." Usability assessment showed the page was too confusing, leading to its redesigned, cleaner look today.

portal originally contained a Web page called "Information Jetport." It served as the jumping off point to GLIS's services and resembled a scene from the introduction to the *Star Trek* series. Staff believed that the upbeat sci-fi nature of the page would attract users and entice them to explore the site. However, user testing performed several years later showed that users were puzzled rather than intrigued as to its purpose and navigation.

• *Interpret results and make recommendations.* Consulting with in-house content management and/or information architecture experts will provide valuable perspectives based on their specialized experience and knowledge. Information architects at HP have supported results of GLIS assessments by enhancing recommendations beyond the obvious fixes and citing relevant external research.

• *Present recommendations in both written and graphic formats to the appropriate people in your organization.* Provide mock-ups of recommendations, if possible, for clarification purposes. Staff feedback regarding GLIS assessment recommendations showed that staff found the mock-ups at least as valuable as the written report.

• *Build a design process in which the recommendations can be clearly integrated into the process.* Making design recommendations that don't fit neatly into the design process will lead to failed adoption of the necessary changes.

• *Prioritize recommended changes, keeping in mind the overall goals and objectives, likely impact to users, and availability of time and resources.* Balance out "quick wins" with changes involving extensive time and effort. Defer or cancel changes that have low value, even if requiring minimal effort.

• *Identify in advance the ultimate decision maker with regard to design.* This person holds final authority to prioritize changes. Early in its portal redesign process, GLIS assigned decision-making responsibility to a project manager who collects and weighs all input and feedback and often is the only person to have all the pieces of the picture.

• *Assess benefits and risks to hiring a consultant when interpreting results and recommendations.* If you hire a consultant, the analysis of the results and the detailed report with recommendations will be done for you. However, the price you pay goes beyond the costs of the consultant's time—the consultant does not share your understanding of the organizational context, nor do you have detailed and experiential knowledge gained from conducting the assessment. Studying the final report and recommendations to ensure that both resonate within your organizational context and project goals is therefore critical.

• *Track the changes made to your site and take screenshots of the site before and after you make changes.* Tracing the evolution and improvement of your site is gratifying and demonstrates the reasons for all your hard work. You'll also have something to point to when someone suggests a change that is actually a reversion, with the data supporting why it didn't work.

PUTTING IT ALL TOGETHER

Creating a long-term assessment plan that fits your unique goals and circumstances will help to ensure user satisfaction. By planning for ongoing usability assessment and fully integrating the results of these assessments into the Web development cycle, your Web site will improve steadily over time and result in a more usable Web site that is responsive to user needs and behaviors.

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Additional Selected Resources

- ACM SIGCHI [www.acm.org/sigchi/]
- STC Usability SIG [www.stcsig.org/usability/]
- Usability Professionals Association [www.upassoc.org/]
- Webword.com [http://Webword.com/]
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- ACM SIGCHI CHI Companies listing [www.hcibib.org/hci-sites/COMPANIES.html]
- ACM SIGCHI HCI Consultants listing [www.hcibib.org/hci-sites/CONSULTANTS.html]
- Usability Professionals Association Consultant Directory [www.upassoc.org/html/consultant00.html]
- UsableWeb.com [www.usableWeb.com]
- The Usability Methods Toolbox [http://jthom.best.vwh.net/usability/]
- Usability.gov [www.usability.gov]
- Usabilityfirst.com [www.usabilityfirst.com/index.html]
- Useit.com [www.useit.com]

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