Web Accessibility, Mobility, and Findability

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Abstract

This tutorial addresses the issues of accessibility, mobility and findability as appropriate to a discussion of Web site or Web page interface usability. The goal of this tutorial is to emphasize the importance of these factors while providing attendees with sufficient vocabulary and conceptual knowledge to make appropriate design decisions.

1. Introduction

A recent search of Amazon.com for books on “Web Usability” yielded 28 titles with names ranging from “Web Usability for Dummies” to “The Usability Business: Making the Web Work.” There are likely many more titles and thousands of articles and Web pages devoted to the subject. Few topics in Web technology are capable of generating such discussion and passion. Designing a Web page or Web site for usability has provided fertile ground for numerous “usability gurus” who are always ready to give a “thumbs up or thumbs down” on a particular design or on current design practices or technologies. The books, articles, and mailing lists of these gurus are often in disagreement with one another and remain so due to any lack of standardization in what “Web Usability” really means.

Much of the background in Web usability stems from basic research in human-computer interaction and interfaces that pre-dates Web technology. In fact, one of the most popular Web usability pundits defines the topic as “a quality attribute that assesses how easy user interfaces are to use and to methods for improving ease-of-use during the design process.” (Jakob Neilsen, http://www.useit.com/alertbox/20030825.html) This definition mentions none of the specific and unique usability issues that arise in Web-based interfaces.

The three “ilities” discussed in this tutorial – accessibility, mobility, and findability – are critical elements of overall Web usability that are too often overlooked, minimized, or even ignored. As the Web becomes a more pervasive tool in our lives, these factors may, in the end, become more important than the simple “ease-of-use” issues that are more commonly associated with usability. The fact that the Web is no longer limited to desktop platforms suggests that a designing an interface for specific platforms or browsers has become “short-sighted.” Work on the Semantic Web promises a world of agents that will be capable of collecting information from Web sources without conventional interfaces and allowing users access to more of the information they need in a logical and efficient manner. These agents will be capable of discovery, interpretation, and reuse.

2. Accessibility

The topic of “Web Accessibility” is, most generally, associated with those Web design practices that specifically address the interface issues encountered by physically-challenged users. This is, indeed, a very important research area and significant contributions have been made such as the guidelines created by the Web Accessibility Initiative (WAI) of the World Wide Web Consortium (W3C) (http://www.w3.org/WAI/).

The WAI Guidelines address accessibility in four specific areas:

- Web Content Accessibility Guidelines – discussion of how to make a Web site accessible for users with a variety of physical challenges;
- Authoring Tool Accessibility Guidelines – aimed at software developers, these guidelines explain how to make a variety of authoring tools support the production of accessible Web content and also how to make the software itself accessible;
- User Agent Accessibility Guidelines – for software developers, these guidelines explain how to make accessible browsers, multimedia players, and assistive technologies that interface with them;
- XML Accessibility Guidelines – for developers of XML-based applications, these guidelines explain how to ensure that XML-based applications support accessibility.

Work such as that of the WAI suggests that the concept of accessibility needs to be expanded to include what has
been described as "universal accessibility." Therefore, designing a Web resource for "universal accessibility" would have as a goal that "anyone or anything using any kind of Web client technology on any Web-enabled platform should be able to visit that resource and get a full and complete understanding of the information contained therein as well as have the full and complete ability to interact with that resource as necessary." "Universal accessibility" generalizes the issues by suggesting that a restrictive Web environment encountered by a physically-challenged person may have a similar effect on an indexing robot or a Semantic Web agent. Likewise, the same technology which provides Web access to a deaf user might be re-purposed for use in Web-enabled automobiles.

3. Mobility

"Universal accessibility" suggests mobility. Web-enabled platforms are no longer limited to desktop or laptop computer systems running typical GUI operating systems. As more and more users are increasingly accessing the Web from many classes of devices with different form factors, the same content needs to be rendered differently, taking into account limitations with respect to display (screen) size and capabilities, processing power (thin client), bandwidth connectivity, and types of applications. All of these devices present their own unique usability issues. Web interfaces on these devices cannot simply be "screen scrapings" or "dumbed-down" versions of CRT displays. User interfaces and interaction capability on mobile devices cannot be a significant hindrance to their functionality. The goal of Web content "mobility" has been likened to that of television. That is, content is delivered universally regardless of whether it is displayed on a wall-sized plasma display or a 5-inch black and white portable. The utility of many existing and future Web applications depends upon their "mobility." For example, navigational services for providing travel directions are far more effective if they can be used for hand-held devices rather than on desktop browsers.

Mobility and the "miniaturization" of the computing platform bring about new Web design considerations, but at the same time open up opportunities for new user experiences and interface design. The Web and the Extensible Markup Language (XML) will become the backdrop for this "shrinking" interface. Emerging technologies such as the Wireless Application Protocol (WAP) have established an architecture for accessing the Web while mobile.

4. Findability

If "ease of use" is a primary goal of Web usability, then "findability" may be one of the most critical concepts. Unlike the other two "ilities," "findability" is not an obvious element of the Web user interface and plays a more subtle (typically in the background) role in Web usability. Its importance, however, is not to be neglected in that never before in history have individuals had access to so much information and so many services at their fingertips (or rather via their Web interface). "Accessibility" and "mobility" depend upon "findability."

"Findability" is not only a description of how easily a Web page or resource might be found by a user or an automated agent, but also its relationship to other pages or resources. One of the key concepts in the description of "findability" is that a possible element of a Web page’s interface (thereby part of the description of its usability) is a description of its content. On the simplest scale, elements in the <HEAD> container of an HTML page (e.g., <TITLE>, <META>, etc.) do just that. Data appearing in these containers affect the interface (e.g., the contents of the <TITLE> container appears in the browser title bar), rather than being a part of the page’s principal content.

The Resource Description Framework (RDF) is one example of a technology that can be used to describe a Web page’s "findability." RDF is a W3C recommendation (http://www.w3.org/RDF/) and a key component in the description of the Semantic Web.

The RDF format, if widely used, will help to make Web pages more "findable" and interoperable since,

- Tools (browsers, agents, etc.,) can instantly characterize the structure and draw conclusions about properties;
- RDF promotes the use of standardized vocabularies, standardized types, and standardized properties.

5. Conclusion

Any complete description of the usability of a Web page or Web site cannot be limited to an evaluation of its physical and logical user interface as per typical human-computer interaction (HCI) standards. The expanding use of the Web for diverse applications requires that new usability factors such as accessibility, mobility, and findability be considered.