

# Web Site Usability

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## EVOLUTION

Strictly speaking, the term usability has evolved from one of use to also include design and presentation aspects. A large amount of research has been conducted using this wider definition. These studies include everything from model development (Cunliffe, 2000) to personal self image on Web sites (Dominick, 1999) to the purpose of a Web site (Falk, 2000), and to Web site effectiveness (Briggs & Hollis, 1997). Ultimately, these topics are related to usability and the success a Web site enjoys. The construct of usability covers a range of topics. This paper specifically addresses Web usability from the perspective of how easy a system is to learn, remember and use (Rosen, Purinton & Lloyd, 2004). The system features should emphasize subjective satisfaction, low error rate and high task performance (Calongne, 2001). In this regard, usability is a combination of the underlying (hypermedia) system engine and the contents and structure of the document, and how these two elements fit together (Lu & Yeung, 1998).

## USABILITY GOALS

At one time, usability was an afterthought in the computer industry; developers were rewarded for the features of an application, not its usability. Usability was a suppressed and barely tolerated oddity (Nielsen, 2000). Typically, Web usability is interpreted to mean how effective the Web site is at permitting access to its information. Site design should take into account the users' characteristics, experience and context (Badre, 2002; Rau, Liang & Max, 2003; Chen & Sockel, 2001). People rely on their experiences and use semantic models in an attempt to make sense out of the environment. What might seem an easy application for a design team can be awkward and

difficult to the end user (Marinilli, 2002). Therefore, it warrants setting usability goals and measuring them before a site goes into production. If a goal is high task performance, a sensible measure might refer to the speed in which the Web pages load, given a particular hardware and software combination (Calongne, 2001). However, if low error rate is the point of interest, click stream data and server logs might be analyzed to isolate the error patterns.

## USABILITY ISSUES

Every Web page has an address on the Internet. The more recognizable the address, the easier it is for the user to become brand aware and the more often they might return to the site. The address of the main Web page is typically called the domain name, and appears on the URL address line of the browser. Typically, the Web is used as a marketing tool that allows millions of potential customers to visit a site each day (Hart, Doherty & Ellis-Chadwick, 2000). However, before that can happen, a person needs to find the appropriate Web page. In that regard, many individuals use and depend upon search engines to locate sites of interests. A serious problem is that a Web site's reference may be buried so deep in a search result that it likely will go unnoticed, and hence not be visited. The consequence is not only a usability issue, it also is a visibility/profitability problem. To circumvent this issue, an organization should consider using meaningful Web addresses (URL), descriptive meta tags in the (X)HTML code, key words in titles and paragraphs, and backward links (link referrals) to help enhance placement of a Web site in search results.

While search engines use Web-bots to find the pages on their own, it makes sense to register the site with the search engines so that search criteria can be tailored to the Web site. The Web site's domain name

becomes more meaningful to the user if it contains cognitive cues. Studies show that the majority of a Web site's traffic is generated through search engines and directories.

### Design Issues

A goal of a Web page should be to quickly deliver quality content in a fashion that does not cause the person to become hopelessly frustrated. In this regard, "*Time* is a very big factor." A general rule of thumb is that a Web page should load in less than 8 seconds; if it takes longer, users typically abort the request and go onto the next page of interest. Based on an average basic bandwidth of the Internet providers, the 8-second rule translates to Web pages that are less than 50,000 bytes. The 50,000 bytes is the total size of the page, including icons, images, links, sound and verbiage. Some users include too many images, which can cause three problems: cognitive disorientation, slow downloads and excessive bandwidth use. Graphics should be used sparingly – only when they add and have a point (Nygaard, 2003).

The primary element in making a Web site usable is its design. Unfortunately, many people are anxious to skip steps and just go for a "product" without considering the "basics." As in the engineering field, the design has to be "defined" up front, along with the goals and objectives of the site. One cannot test quality into a product; quality has to be designed into it. However, designing interfaces is a complex problem, quite different from typical engineering challenges, because it deals with users' behavioral aspects. Inadequate forethought, tight schedules, misconceptions, inappropriate attitudes and priorities – such as "usability is a plus that we cannot afford now" – and lack of professionalism are responsible for many poor sites (Marinilli, 2002).

Like in any other medium, the design should be aesthetically pleasing and balanced. To avoid optical confusion, the background needs to be just that, background. The site should use ample white space so the site does not appear cluttered. A problem that developers face is that they do not know what size monitor the user has, screen size the user is using or the actual display size of the browser. The usability issue includes the fact that each version of each browser type may interpret Web pages slightly differ-

ently, with some browser releases not supporting many of the features. This is further complicated because there is a large mix of disparate technologies: different browsers, different versions of software, different machine-based applications. Further, there are a variety of Web-enabled devices besides the standard desktop PC: TVs, cellular phones, watches and PDAs. Each technology is associated with a different set of characteristics that limit its ability to be usable. Most previous systems were developed for viewing on regular-sized monitors. A great deal of developmental effort is needed before the Web sites that were built for traditional monitors can be adapted for successful viewing on portable devices (Huang, 2003).

### Hardware and Software Issues

A Web page should be designed so that it can be viewed in the three major resolution (screen) sizes. The original standard resolution displayed 640 rows of 800 pixels each (640 x 800). A popular resolution size is 800 x 600 mode, with 1024 x 768 rapidly gaining popularity and 1600 x 1200 on the horizon. The screen modes present information differently. The smaller the mode, the larger items appear, leaving less room (real estate) for information to be displayed on the screen. Many developers make the mistake of not checking the Web pages in other resolution modes. The mode size has astonishing effects on Web pages. It can cause line shifts, sentences to be broken midline, moved links, and many other irritating manifestations.

Another dilemma that can have an effect on the design is the browser. A browser is an application that retrieves, interprets and displays an online or offline document in its final Web page format. The most popular browsers are Internet Explorer, Netscape/Mozilla/Firefox and Opera. Different browsers and versions (even within the same vendor) may display items on a Web site differently. In some cases, certain elements and features, such as marquees and blinking, can be viewed with some browsers and not on others. Some sites are designed to use a specific browser, but even these may not work using a previous version of the same browser. To ensure that a site works correctly, the Web site should be checked against the major browsers.

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