Universal E-Government

“In a fair society, all individuals would have equal opportunity to participate in, or benefit from, the use of computer resources regardless of race, sex, religion, age, disability, national origin, or other such similar factors” (ACM Code of Ethics, Schneiderman, 2000, p. 85).

It is widely accepted that electronic government (e-government) offers an unprecedented opportunity for users to access state and federal services and resources online. E-government proposes to make information accessible via the Web regarding healthcare, taxation, registration, housing, agriculture, education, childcare, social services, and aging, which otherwise may be difficult to obtain. Unfortunately, building an e-government site doesn’t guarantee that individuals who come to use it can access its contents. Though e-government offers the potential to reach many users including those who live in remote areas, are homebound, have low English proficiency, exist on poverty line incomes, suffer from chronic illness, are single parents or older adults, there are impediments to the good use of these sites. Great strides have been made regarding e-government site usability; however, there still are barriers in terms of reading comprehension, language translation, and cultural sensitivity. These barriers render e-government sites virtually inaccessible to users who may need them the most.

Web Usability Initiatives

Many researchers and practitioners alike have studied Web usability in order to develop usable websites that are navigable, consistent, appealing, clear, simple, and forgiving of user mistakes (Murray & Costanza, 1999). Existing user interface design recommendations were extended to include user interfaces for the Web (Lynch & Horton, 1999; Schneiderman, 1998). Those experienced in designing user interfaces provided heuristics and guidelines for designing Web pages often by identifying design layout, navigation, and performance issues associated with particular websites (Flanders & Willis, 1998; Hurst 1999; Spool, Scanlon, Schroeder, Snyder, & DeAngelo, 1999). Jakob Nielsen, a well-known usability expert, has provided much-needed resources on Web usability via featured online articles (www.useit.com/alertbox) and published guidelines (Nielsen, 1999; Nielsen & Tahir, 2002). The National Cancer Institute promoted Web usability via its much acclaimed website that posted usability articles ranging from statistically validated studies to less formal Web experiences (www.usability.gov). More recently, Gant and Gant (2002) and Stowers (2002) have studied the usability of federal and state government websites in order to overcome barriers created by poor navigational schemas, confusing design layouts, and poor or missing help features.

Universal Web Usability Initiatives

Past administrations promoted Internet initiatives with the objective of “bridging the digital divide” in order to improve quality and longevity of life, address social problems, and promote educational advancement in our com-
munities. In pursuit of this objective, Web usability research was expanded in terms of *universal usability* whereby the needs of all users would be taken into account. From a universal usability perspective, significant strides have been made to make websites accessible to those with visual and physical disabilities particularly in the e-government sector. Section 508 of the Rehabilitation Act requires that individuals with disabilities, who are members of the public seeking information or services from a federal agency, have access to information comparable to that provided to the public who are not individuals with disabilities (http://www.Section508.gov). As a result of Section 508, the websites of government agencies have addressed the barriers that were impeding website use by those with disabilities.

Recently, the National Institute on Aging (NIA) has developed Web accessibility guidelines in order to improve the usability of a Web page for an older adult (sixty years of age or older). These guidelines provide information on the effective use of font sizes, types, colors, and styles, background images and colors, vertical scrolling, and text formats (www.nia.nih.gov). This research is extremely important given that the aging baby boomers comprise 12.7% of the U.S. population and will constitute 20% by 2030 (Administration on Aging, 1999). In response to the exploding older adult population in the U.S., some government agencies have made their websites more accessible for older adults. Medicare (www.medicare.gov), for example, enforces many NIA guidelines to improve the legibility of its website.

**Literacy, Language, and Culture Barriers**

The Web accessibility strides that have been made as a result of Section 508 and NIA research show that the digital divide can be bridged for targeted users. However, more needs to be done to address Web accessibility for all e-government users. A website may be usable from the perspective of an effective design layout, intuitive navigation, useful help features, and it may also be accessible according to the Section 508 standards. But, from a literacy perspective, it may be virtually inaccessible to Latino, Native American, Asian-Pacific, and other user groups for whom English is a second language. It may also be inaccessible to any user for whom English proficiency is low.

Tuominen (1998) stated that in terms of universal usability, the design and content of a website must be adaptable to accommodate the needs of a diverse audience. This perspective requires that Web pages be fully translated into a native language when the site provides non-English versions. It also requires that Web pages are culturally sensitive regarding the good use of icons, symbols, and graphics; and that they contain no cryptic clichés, jargon, or acronyms that would only be understood by a localized group of users (Becker & Mottay, 2001). English content should be written at a reading grade level that is appropriate for all targeted users.

Though there is a critical need for addressing these literacy and cultural issues, there has been little done in this area of Web usability. Health literacy guidelines recommend writing content ranging from fifth to eighth grade reading grade levels in order to accommodate most adults. Yet, many e-government sites require a significantly higher reading grade level in order for the reader to comprehend information content.

To illustrate the barriers that still exist on e-government sites, an automated tool called ReadMe was used to produce readability metrics for selected Web pages. (This tool has been developed as part of a National Science Foundation grant to address Web accessibility for ethnic, older adults. ²) The tool was applied to 12 randomly selected e-government websites as an initial assessment of reading complexity. The results showed that the average reading grade level associated with these websites was beyond the twelfth grade. These initial results show that literacy needs to be addressed as a barrier to accessing government websites.

There are insurmountable literacy barriers for persons with no English proficiency when translated versions of an e-government site contain English text. An initial assessment of several government websites found that the Spanish version of the site contained English text on navigation bars, links, error messages, and help pages (Becker & Crespo, 2001). Though many e-government sites have been improved, Figure 1 illustrates the existing translation problem. In
this example, the links on a Spanish version of an e-government Web page are presented in English text.

Given the cultural and religious diversity of U.S. citizens, it is important to be sensitive to Web design issues that may be misinterpreted, or are incomprehensible or offensive to the targeted user. Cultural sensitivity includes appropriate use of images and graphics in terms of religious connotation, for example, as they may be deemed sacrilegious in some cultures (Becker, 2002). Icons, buttons, and graphics should not be localized, and terminology should not contain acronyms, clichés, or cultural jargon.

Still Building a Bridge

The digital divide, though bridged in many communities, still exists in others primarily in rural and low-income communities in the U.S. It also exists for many older adults for whom vision, cognition, and physical disabilities prevent them from effectively using the Internet. The Web Accessibility Lab at Northern Arizona University continues researching Web accessibility barriers and solutions for removing them. This research is especially pertinent for remote areas of the U.S. where Internet access can bring much needed government resources that otherwise would not be available to users. Our Web accessibility tools currently under development, including the ReadMe tool, may be accessed at: http://www.cba.nau.edu/facstaff/becker-a/Accessibility/main.html.

Endnotes


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References


