

MEMORANDUM

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FROM: Paula Some

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SUBJECT: Web Site Accessibility Challenges for Technical Communicators

Introduction

The purpose of this report is to explain why web site accessibility has become a significant issue for technical communicators. Accessibility means that a web site is designed to accommodate the widest range of users. People with physical and mental disabilities, and others such as the elderly, need to view and interact efficiently with the Web. Leading industry groups and the Federal Government have established guidelines that are necessitating the transition to access-centered design for web site development and modification.

This report provides an introduction to disabilities and common web site barriers, legal and industry guidelines, evaluation techniques, and suggested resources for further information.

Summary of Investigation

Accessibility brings social, technical, financial, ethical, and legal benefits to both users and developers. Web site content accessibility helps non-disabled users as well. This means that all text, images, forms, sounds, etc. on a web page or application can be used by most people.

The Web is becoming the primary information vehicle for work, e-commerce, educational programs, community activities, research, and more. The U.S. Census Bureau states there are 54 million people with disabilities living in the U.S., and that 25 million have difficulty accessing the internet (AccessAbility, 2001-2006). Furthermore, the U.S. Census Bureau also estimates that by age 75, 70% of Americans will endure some form of disability. (McConnell, 2006)

For consideration in web site design and usage, most disabilities fall within six categories: cognitive and neurological; hearing; motor; speech; visual; and combination. Different disabilities within these categories create different barriers to accessing information. In addition, people with these disabilities use the web in many different ways, often with the use of assistive technology like screen-readers, special keyboards, voice input devices, or eye-tracking software. Web sites must be accessible for assistive technology to be effective. Table 1, shown on page 2, lists examples of disabilities, common barriers, and sample accessibility modifications.

Table 1: Disability Types and Website Design Considerations

| | Examples | Common Barriers | Sample Accessibility Modifications |
|--------------------------|--|---|--|
| Cognitive & Neurological | Reading Disorders Learning Disabilities Memory Problems ADHD Sequencing Problems | Distracting video or audio that can't be turned off Lack of website organization Lack of graphics Unnecessarily complex language Video/audio frequencies that can trigger seizures | Enhanced illustrations and good graphics Organized content with headings Visual clues for navigation Minimize need to remember material navigating screens |
| Hearing | Deafness Hard of Hearing | Lack of captions or transcripts Lack of content related images Lack of simple language | Provide audio and text transcripts for video Use closed captions |
| Motor | Physical disabilities Short Stature Lack of digit or hand Epilepsy Limited reach or strength | Time-limited response options No support for keyboard alternatives to mouse commands Forms that can't be tabbed In logical order | Avoid unnecessary typing Create forms that allow access with assistive technology Provide links to alternate forms such as TTY, voice Plan for platform differences (desktop, wireless, etc) Provide mechanism for allowing users to indicate they need more time to make response |
| Speech | Inability to speak Strong foreign accent Stutter Speech impediment | Websites that require voice base interaction but no alternate input mode | State language names in native tongue Allow users to enter, not say, foreign words, technical terms Provide links to alternate forms such as email |
| Visual | Blindness Low-vision Color-blindness | Images without alternate text Non-standard document formats Video not described in text or Audio Browser & authoring tools lacking keyboard support for all commands Web pages hard to navigate when enlarged Web pages with poor contrast | Adapt website for use with alternate browsers such as text-to-speech Apply color so that web pages can be understood is colors can't be differentiated by user Maximize contrast between foreground and background Maintain flexibility to change fonts via browser |
| Combination | Deaf blindness | See speech and hearing | See speech and hearing |

Sources: Compiled from Bine & Reese (2003); Brewer (2005);

Results of Investigation

The accessibility trend in the United States can be pinpointed to policy developed by the Federal Government and the W3C World Wide Web Consortium.

Section 508 (of the 1998 Amendments to the Federal Rehabilitation Act) is the main U.S. law concerning accessibility. Section 508 is a set of requirements that are applicable to all electronic and information technology products developed for or purchased by the Federal Government. This includes software, web sites, multimedia, documentation, and computers. Software must be compatible with assistive technology or completely accessible without the need of other assistive technology. There can be no interference with adaptive equipment. Criteria in Section 508 are based on the Web Accessibility Initiative (WAI) of the W3C guidelines. It's important to note that there is a difference between conforming to 508 standards and being completely accessible. Conformation can be established by satisfying minimum requirements.

W3C is an international vendor-neutral group of 300 member organizations dedicated to web development. The W3C Web Access Initiative (WAI) compiled Web Content Accessibility Guidelines. There are 14 guidelines that are general principles. Each guideline has between one and ten checkpoints that explain how the rule applies in specific areas. Checkpoints are each assigned a priority level dependent on whether it must be used, should be used, or may be used to satisfy accessibility requirements Table 2 lists each guideline.

Table 2: W3C Web Content Accessibility Guidelines

| No. | Statement of Guideline |
|-----|---|
| 1 | Provide equivalent alternatives to auditory and visual content |
| 2 | Do not rely on color alone |
| 3 | Use mark up and style sheets and do so properly |
| 4 | Clarify natural language usage |
| 5 | Create tables that transform gracefully |
| 6 | Ensure that pages featuring new technologies transform gracefully |
| 7 | Ensure user control of time-sensitive content changes |
| 8 | Ensure direct accessibility of embedded user interfaces |
| 9 | Design for device interdependence |
| 10 | Use interim solutions |
| 11 | Use W3C technologies and guidelines |
| 12 | Provide context and orientation information |
| 13 | Provide clear navigation mechanisms |
| 14 | Ensure that documents are clear and simple |

Source: W3C (1994-2006)

Evaluation is an important step for achieving web site accessibility. A variety of software and online service tools are available for use in all stages of product development to evaluate, repair, or transform web sites. Although these programs are very useful, a lot of testing must be done manually. Testing with a combination of users (including disabled) and WCAG checklists will ensure that all disabilities and situations

are covered. In addition, it is useful to use multiple methods. Testing should include voice browsers, text browsers, graphics browsers, and screen readers.

Organizations advocating rights for the disabled are also leaders in the accessibility movement. In Britain, the Royal National Institute for the Blind has teamed with Harry Potter author J.K. Rowling to produce a model web site, <http://www.jkrowling.com>, designed with Flash. Here is proof that quality and visual interest are not sacrificed with accessibility. Web site users are welcomed with the following important elements:

- Accessibility menu
- Site help
- Adjustable text size
- Labels
- Audio handling
- Keyboard navigation
- Screen reader accommodation

For an excellent analysis of the website, visit the Royal National Institute of the Blind Web Access Centre at http://www.rnib.org.uk/xpedia/groups/public/document/publicwebsite/public_jkrowling.hcsp.

Future Investigation

The trend to design accessible web content is likely here to stay. W3C guidelines have flexibility and are designed to evolve along with software, browsers, and web sites. In addition to the guidelines created by Section 508 and the W3C, many private companies have established accessibility programs. These include Adobe, Macromedia, Microsoft, IBM, and Hewlett Packard. Although Section 508 still only applies to the Federal government, laws may eventually impact the private sector. It is more efficient for designers to gradually update content rather than risk making last minute updates due to policy changes.

For further information on accessibility, I suggest starting with the following resources:

- W3C Web Accessibility Initiative (WAI)
<http://www.w3.org/WAI/>
- Society for Technical Communicators (STC) AccessAbility special interest group
<http://www.stc.org/sn/>
- Web Standards Project Accessibility Task Force
<http://www.webstandards.org/action/atf/>

Conclusion

Technical communicators have a responsibility to ensure that web content is usable by the widest possible audience. This involves knowledge of accessibility law and guidelines to ensure that disabled users, the elderly, and all other population groups can actively participate in the internet community. Conforming to accessibility is likely to strengthen the collaborative relationship between web designers, software developers, and usability specialists.

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