

# **Access for All: Improving Web Accessibility for People with Disabilities**

Khalilah Gambrell, MA, MLS

Product Manager

EBSCO Publishing

Ipswich, MA

Member, SLA

## **ABSTRACT**

Imagine being denied access to knowledge. Having it empowers us and our customers to improve their lives as well as their communities. Today the web is the central nervous system for obtaining information related to our health, employment, education, and other interests. Yet many websites are inaccessible to the 54 million Americans who are disabled.<sup>i</sup>

At the end of this paper, information professionals will understand the importance of web accessibility, learn quick fixes for making a site accessible, and receive tips on how to set standards for improving web experience for all users.

## **Importance of Web Accessibility**

Currently there are 54 million people in the United States who have a disability. With the Baby Boomer generation also growing older, the need to have sites that accommodate persons with visual and physical impairments in particular is paramount.<sup>ii</sup>

Recent court rulings have also placed a brighter spotlight on the need for sites to be accessible. In February 2006, the [National Federation of the Blind](#) (NFB) filed a lawsuit on the behalf of a California member against the Target Corporation because its website was not accessible and the group believed it violated the Americans with Disabilities Act (ADA). Although Target has made considerable strides to make its website accessible, in October 2007, a Federal District judge ruled that the lawsuit may continue as a class action suit and that California law states that Target's website must be accessible.<sup>iii</sup>

The ruling was based on the fact that the judge saw Target.com on the same level as a public accommodation thus violating [Title III of ADA](#) which states:

“No individual shall be discriminated against on the basis of disability in the full and equal enjoyment of the goods, services, facilities, privileges, advantages, or accommodations of any place of public accommodation by any person who owns, leases (or leases to), or operates a place of public accommodation.”<sup>iv</sup>

This ruling solidifies how important the web is and that it is truly the central nervous system to many of the actions we take today. We are shopping online, accessing books and newspapers, and taking courses online. In addition many jobs require candidates to use the web. Inaccessible websites place limits on what knowledge users can acquire and their independence.

## **Complying with Standards to Overcome Barriers – Section 508**

[Section 508 of the Rehabilitation Act](#) applies standards to government agencies in relation to the use of the following technologies.

“software applications and operating systems  
web-based information or applications  
telecommunication products  
video and multimedia products  
self contained, closed products (e.g., information kiosks, calculators, and fax machines)  
desktop and portable computers”<sup>v</sup>

Vendors that supply these technologies must comply with Section 508. Along with this federal statute, several [states](#)<sup>vi</sup> have laws and standards with respect to web accessibility.

Complying with Section 508 provides users with a pleasurable user experience but does not address completely the usability of a site for a person with disabilities especially when confronted with new web technologies, browser updates, and assistive technology enhancements. It only lays the foundation for creating an accessible and user friendly website.

## **Complying with Standards to Overcome Barriers – Web Accessibility 508<sup>vii</sup>**

[Web Accessibility Initiative](#) (WAI) is a part of the World Wide Web Consortium (W3C) that puts forth best web practices for:

- Developing accessible mobile web interfaces
- Implementing accessible Web 2.0 technologies (e.g. AJAX)
- Designing accessible web sites

Web Content Accessibility Guidelines 1.0 (WCAG 1.0) offer best practices for web developers to design accessible websites. These guidelines have checkpoints which are assigned to a priority. There are three priorities.

- Priority 1 – “A Web content developer **must** satisfy this checkpoint.”
- Priority 2 – “A Web content developer **should** satisfy this checkpoint.”
- Priority 3 – “A Web content developer **may** address this checkpoint.”

Section 508 was based on much of WCAG’s Priority 1 so most sites that comply with Section 508 meet Priority 1 guidelines as well and vice versa.

As of April 30 2008, WAI has introduced WCAG 2.0 for approval and has advised web developers to follow WCAG 2.0 immediately. For websites that comply with WCAG 1.0 there should be minimal change. The major difference is structure of the guidelines, as it is based on four design principles and each principle has guideline(s) which are then assigned a success criterion of (A, AA, or AAA). The principles are:

- “Principle 1: Perceivable - Information and user interface components must be presentable to users in ways they can perceive
- Principle 2: Operable - User interface components and navigation must be operable
- Principle 3: Understandable - Information and the operation of user interface must be understandable
- Principle 4: Robust - Content must be robust enough that it can be interpreted reliably by a wide variety of user agents, including assistive technologies”

**Website Recommendation:** WAI offers a comparison table of WCAG 1.0 and WCAG 2.0  
<http://www.w3.org/WAI/WCAG20/from10/comparison/>

## Web Accessibility Myths

**Myth 1:** “Complying with Section 508 is costly because I have to redesign my website.”

Following Section 508 standards can be accomplished with little impact to the look and feel of your website. In the past, to comply with Section 508, companies created Text Only versions of websites but with advances in web development tools, this is no longer necessary. Many sites can be built using CSS thus offering greater flexibility for interface design and limiting the amount of HTML code used to build a page. With less HTML code on a web page it is easier for a user who navigates a site with a screen reader and/or keyboard.

Also if you do not develop an accessible site, there is a much larger cost. Financially, you may lose patrons, customers, or business partners. Publicly it may reflect negatively for your organization.

**Myth 2:** “Accessible websites are not user friendly; they are not functional or beautiful”

By using best web practices and leveraging developer tools, web designers can create accessible and user friendly websites.

**Website Recommendation:** BBC (<http://www.bbc.co.uk/?ok>) has been recognized as leader in providing an accessible and user friendly website.

## Developing an accessible website

Again, most websites can be made accessible with little cost and no dramatic change to its look. The following are practical web design tips to accomplish the goals of an accessible website.

- **Access keys:** Offering Access keys aids users in navigating to important areas or features on the page. Typical access keys permit users to return to the Search box area, access Help, or go to the Home page, etc. There are no standardized access key guidelines to reference but it is recommended to not use letters as it may interfere with browser or screen reader shortcuts.
- **Detailed Page Title:** It is critical to have informative HTML title tags to set the expectations of what is on the page. Without good descriptions, visually impaired users accessing information with the help of a screen reader may take longer to determine the main theme of the information on the page.
- **Heading levels:** Heading levels are important because it allows users to navigate to important areas on the webpage. It is critical to define how and at what point to assign heading levels. Heading level one tag should always be assigned to a description of the purpose of the page and there should only be one. Heading level two tag is assigned to area (s) of lesser importance than heading level one and additional heading level assignments are placed with content of lesser degree(s) of importance.
- **Skip Navigation:** Offering users the ability to Skip Navigation is another way to give them the ability to get right to the most important area of the page – the main content.
- **Eliminate tables:** Advances with CSS have allowed for many sites to be built without the use of tables. Tables can be a barrier for users who utilize screen readers to navigate especially if nested tables are involved. If you must maintain tables, remember to provide a description for that table and the content available inside it.
- **Descriptions of images:** Using CSS to manage the color and look of the website decreases the need for images especially for designing toolbars or navigation areas. If you need to include images on a website, it is important to provide alternative text or what is known as an alt tag with the image to inform the user utilizing the screen reader of the purpose of this image.

- **Linear:** For persons who can only navigate websites by using a keyboard, the content should be organized in a linear fashion to allow users to easily navigate using the tab key and for easy reading for screen readers.
- **Color:** The use of color should never be the only indicator of the importance of content or a feature on a website. Screen reader cannot interpret what the color represents for a visually impaired user.
- **Scripting language:** There are several tools to assist with implementing accessible features that use scripting language. Utilizing these tools is especially important for sites with Web 2.0 features.
- **Forms:** It is important to make forms accessible by providing descriptive text for each option on the form. If not it is difficult for the user to navigate and complete the form.
- **Validate your work:** It is important to use tools that test for accessibility with an emphasis on meeting Section 508 rules and WCAG guidelines. In addition as a developer builds a site it is important to test with screen readers (when possible) to verify if the website functions properly for users of this technology.<sup>viii</sup><sup>x</sup>

### Recommended Sites for Developer Resources and Tools

Resources	Link	Summary
Web Accessibility Toolbar (WAT) for I.E.	<a href="http://www.paciellogroup.com/resources/wat-ie-about.html">http://www.paciellogroup.com/resources/wat-ie-about.html</a>	This free tool is provided by Web Accessibility Tools Consortium. It allows developers to validate sites for accessibility and for users to control elements on the page to help navigate easily when using Internet Explorer.
Firefox Accessibility Extension	<a href="http://firefox.cita.uiuc.edu/">http://firefox.cita.uiuc.edu/</a>	A Firefox extension that allows developers to validate sites for accessibility and for users to control elements on the page to help navigate easily.
Dojo Toolkit	<a href="http://dojotoolkit.org/">http://dojotoolkit.org/</a>	Dojo is an open source JavaScript toolkit that allows for the implementation of many Web 2.0 features in an accessible manner.

Yahoo! User Interface Library (YUI)	<a href="http://developer.yahoo.com/yui/">http://developer.yahoo.com/yui/</a>	Yahoo! provides sample code, documentation and tutorials on how to implement Web 2.0 features that are accessible.
Adobe	<a href="http://www.adobe.com/accessibility/">http://www.adobe.com/accessibility/</a>	Adobe has a resource center that provides tips for developing accessible PDF and Flash materials.
Mozilla Development Center: Accessibility	<a href="http://developer.mozilla.org/en/docs/Accessibility">http://developer.mozilla.org/en/docs/Accessibility</a>	Mozilla is the company behind the Firefox web browser. The company provides updates regarding accessibility efforts. It also includes links for developers to conduct accessibility testing and to simulate a screen reader at no cost.
Functional Accessibility Evaluator (FAE)	<a href="http://fae.cita.uiuc.edu/">http://fae.cita.uiuc.edu/</a>	University of Illinois at Urbana –Champaign’s Illinois Center for Information Technology Accessibility provides a free tool to test your site for accessibility.
WAVE	<a href="http://www.wave.webaim.org/wave/indexjsp">http://www.wave.webaim.org/wave/indexjsp</a>	Another great and free tool to use for testing accessibility provided by WebAim.
Cynthia Says	<a href="http://www.cynthiasays.com/">http://www.cynthiasays.com/</a>	A free accessibility testing tool provided by HiSoftware, a company that provides comprehensive accessibility testing tools.
FireVox	<a href="http://www.firevox.clcworld.net/">http://www.firevox.clcworld.net/</a>	A Firefox extension that functions as a screen reader for Firefox users for free.

## Tips for Information Managers for making your information accessible

- **Make it known how important accessibility is to your organization when working with vendors or internal groups.** For vendors, verify if they have an accessibility statement and request a completed [Voluntary Product Accessibility Template](#) (VPAT). Created by Information Technology Industry Council (ITI), the VPAT allows vendors to inform customers how their software or programs meet Section 508 standards.
- **Conduct usability tests with persons with disabilities:** Ask users questions as to their experiences with your website and software. Document what they like or do not like. Request permission from users to watch them use your resources and document any obstacles in completing their work.
- **Awareness of assistive technologies devices:** Information professionals should learn about devices and software geared to help users with disabilities. Becoming familiar with assistive technologies will aid you when thinking about the best approach for users to access information.
- **Stay current:** Very important for information professionals to be current on pending changes to Section 508 and WCAG, updates to assistive technologies, and enhancements to internet browsers and its impact on accessibility. <sup>x</sup>
- **Develop an accessibility statement:** Defining the organization’s accessibility standards is important as it reflects how the organization values accessibility. It sets the tone for how your web development staff approaches enhancements or new websites.

### Recommended Sites for Current Awareness

Name	Link	Description
WebAIM	<a href="http://www.webaim.org">http://www.webaim.org</a>	WebAim is affiliated with Utah State University and Center for Persons with Accessibilities. The organization provides a wonderful online resource for users who want to develop accessible websites and stay aware of current issues in the field. The site also supports a listserv and provides workshops on accessibility.
Illinois Center for Information Technology Accessibility	<a href="http://www.cita.uiuc.edu/">http://www.cita.uiuc.edu/</a>	The center is a part of University of Illinois and offers best web practices, tutorials, and workshops related to web accessibility.

Freedom Scientific – JAWS	<a href="http://www.freedomscientific.com/">http://www.freedomscientific.com/</a>	One of the most popular screen reading software used today. Cost vary and trial downloads are available.
Equal Access to Software and Information (EASI)	<a href="http://easi.cc/">http://easi.cc/</a>	The organization offers online training, webinars and podcasts to assist with improving accessibility to online information.
IBM Human Ability and Accessibility Center	<a href="http://www-03.ibm.com/able/index.html">http://www-03.ibm.com/able/index.html</a>	IBM offers an informative website regarding the development of accessible websites.
BBC: My Web My Way	<a href="http://www.bbc.co.uk/accessibility">http://www.bbc.co.uk/accessibility</a>	BBC dedicated page on its efforts to be web accessible.
Adaptive Technology Resource Centre	<a href="http://atrc.utoronto.ca/index.php?option=com_content&amp;task=blogsection&amp;id=4&amp;Itemid=9">http://atrc.utoronto.ca/index.php?option=com_content&amp;task=blogsection&amp;id=4&amp;Itemid=9</a>	A great resource for learning about devices and software that help persons with disabilities.
Special Education Technology – British Columbia (SETBC)	<a href="http://www.setbc.org/lcindexer/default.aspx">http://www.setbc.org/lcindexer/default.aspx</a>	Wonderful reference with tutorials and demonstrations on assistive technology tools and software.
Assistive Technology for Mac OS X users (ATMac)	<a href="http://atmac.org/">http://atmac.org/</a>	A blog dedicated to accessible resources for Mac users.
Jim Thatcher	<a href="http://www.jimthatcher.com/">http://www.jimthatcher.com/</a>	Jim Thatcher is an accessibility expert who provides tutorials on the topic of web accessibility.
Computers Access: In Our Own Words	<a href="http://www.washington.edu/doi/Video/comp_acc.html">http://www.washington.edu/doi/Video/comp_acc.html</a>	A video file that shows disabled persons using computer and assistive technologies.
AccessIT	<a href="http://www.washington.edu/accessit/index.html">http://www.washington.edu/accessit/index.html</a>	The University of Washington's Center for Technology and Disability Studies (UWDCTDS) and Disabilities, Opportunities, Internetworking and Technology (DO-IT) collaborate on resources and publications in the field of web accessibility.
WebInSight	<a href="http://webinsight.cs.washington.edu/">http://webinsight.cs.washington.edu/</a>	A group affiliated with the

		University of Washington and is working on several projects to improve web accessibility.
University of Minnesota at Duluth	<a href="http://www.d.umn.edu/itss/support/Training/Online/webdesign/accessibility.html">http://www.d.umn.edu/itss/support/Training/Online/webdesign/accessibility.html</a>	A website that lists resources related to web accessibility.
Blind Access Journal	<a href="http://blog.blindaccessjournal.com/">http://blog.blindaccessjournal.com/</a>	A blog written by Darrell Shandrow, a blind information technology professional covering current events with web accessibility.
ACB Radio	<a href="http://www.acbradio.org/pweb/">http://www.acbradio.org/pweb/</a>	A website that produces podcasts regarding web accessibility issues.
Visually Impaired and Blind User Group	<a href="http://www.vibug.org/audio.html">http://www.vibug.org/audio.html</a>	User group located in Massachusetts that offers mp3s regarding new gadgets that are useful to persons with visual impairments.
National Center for Accessible Media	<a href="http://ncam.wgbh.org/">http://ncam.wgbh.org/</a>	A PBS station, WGBH, has developed several tools to help with accessing multimedia online for users with disabilities.
Trace Research and Development Center	<a href="http://trace.wisc.edu/">http://trace.wisc.edu/</a>	Affiliated with the University of Wisconsin, the center develops tools and resources to improve web accessibility.
Accessites.org	<a href="http://accessites.org/site/">http://accessites.org/site/</a>	A blog that provides web accessibility design tips.
WebAxe	<a href="http://webaxe.blogspot.com/">http://webaxe.blogspot.com/</a>	A podcast hosted by Dennis Lembree, a web developer and Ross Johnson, a web designer that cover web accessibility issues.
Are we all Web 2.0	<a href="http://areweallweb2crazy.blogspot.com/">http://areweallweb2crazy.blogspot.com/</a>	A librarian at Oxford that discusses web accessibility and assistive technologies.

## Conclusion

Web Accessibility is a critical issue for information professionals. We must understand all barriers that users encounter when seeking knowledge. We must be aware of emerging technologies that impact persons with disabilities. As we become more of a paperless world in which most transactions are conducted electronically, we have to ask ourselves and vendors- “how do we ensure a positive experience for all users?” By taking these actions we continue to prove our value to our customers as managers of information.

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<sup>i</sup> Health and Human Services. “Office of Disability.” <http://www.hhs.gov/od/> (accessed December 15, 2007).

<sup>ii</sup> Hunt, Robyn. “An Accessible Work-Wide Web.” *Human Resources Magazine*, p.14-15 (April 2006).

<sup>iii</sup> Klein, Karen E. “Is Your Web Site Handicap-Accessible?,” *Business Week Online*, p 16 (December 18, 2007), <http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=27977597&site=ehost-live> .

<sup>iv</sup> American with Disabilities Act of 1998, Public Law 101-336, “American with Disabilities Act.” <http://www.ada.gov/pubs/ada.htm#Anchor-Sec-34807> (accessed April 25, 2008).

<sup>v</sup> Section 508 of the Rehabilitation Act. “Summary of Section 508 Standards.” 2006. <http://www.section508.gov/index.cfm?FuseAction=Content&ID=11> (accessed April 24, 2008).

<sup>vi</sup> Georgia Tech Research Institute. “Overview of State Accessibility Laws, Policies, Standards and Other Resources Available On-line.” 2006. <http://accessibility.gtri.gatech.edu/sitid/stateLawAtGlance.php> (accessed April 24, 2008)

<sup>vii</sup> Web Accessibility Initiative. “Web Content Accessibility Guidelines (WCAG).” 2008. <http://www.w3.org/WAI/intro/wcag.php> (accessed April 30, 2008).

<sup>viii</sup> WebAim: Web Accessibility in Mind. 2008. <http://www.webaim.org/> (accessed April 30, 2008).

<sup>ix</sup> Illinois Center for Information Technology Accessibility. “HTML Best Practices.” 2008. <http://html.cita.uiuc.edu/> (accessed April 24, 2008).

<sup>x</sup> Brophy, Peter and Jennifer Craven. “Web Accessibility,” *Library Trends*. Vol. 55:4 (Spring 2007): 950-72.