



Web Accessibility

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“The power of the Web is in its universality. Access by everyone regardless of disability is an essential aspect.”

— *Tim Berners-Lee, W3C Director and inventor of the World Wide Web*

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Objectives

- Accessibility on the Web: What is it and why is it important?
- Web Accessibility themes
- Guidelines and methods for improving accessibility
- Testing and validation

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Accessibility—what is it?

- From Section 508 of the U.S. Rehabilitation Act:
“...an information technology system is accessible ... if it can be used in a variety of ways that do not depend on a single sense or ability.”
- From the September 1994 National Information Infrastructure white paper by Susan Brummel, USGSA CITA, entitled “People with Disabilities and the NII: Breaking Down Barriers, Building Choice”:
“... information systems flexible enough to accommodate the needs of the broadest range of users of computers and telecommunications equipment, regardless of age or disability”

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Accessibility—what is it?

- From Chuck Latourneau, co-author of the Web Accessibility Initiative Page Author Guidelines Curriculum:

“To me, it means that anyone using any kind of Web browsing technology must be able to visit any site and get a full and complete understanding of the information as well as have the full and complete ability to interact with the site—if that is necessary.”

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Why is accessibility important?

- Obviously, to accommodate users with disabilities
- In addition, it is fundamental to the future of the Web.
- Newer ways to access the Internet benefit greatly from universal design.
 - Set-top receivers, video game consoles, handhelds, mobile phones, etc.



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Universal Design

- Web designers can be less and less certain that a site visitor is using the latest version of Firefox or Internet Explorer.
- We must instead design for device independence.
- Sites that are accessible to people with disabilities are highly usable and accessible to everyone else as well.

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Persons attempting to access the Web may

- not be able to see, hear, move, or may not be able to process some types of information.
- not have, or be able to use, a mouse or even a keyboard.
- have a text-only screen, a small screen, or a slow Internet connection.
- not speak or understand fluently the language in which the document is written.
- be in a situation where their eyes, ears, or hands are busy or interfered with.
- have an early version of a browser, a voice browser, or an operating system other than Mac OS or Windows.

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Consider this...

Access to the Web is sometimes even more critical for people with disabilities than for the general population, which may have an easier time accessing traditional sources of information such as print media or libraries.

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Major Web Accessibility Themes

- Information medium
- Graceful transformation
- Separate content (& structure) from presentation
- Make content understandable & navigable

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Information medium

- The Web is an **information medium**, not a **visual medium**.
 - Embracing this fact is an important change of mindset for many Web authors.
 - There is nothing wrong with having a great visual representation of the information encoded by your HTML, but you must be careful not to confuse that *display* of the page with the actual page itself.
- Bartlett, Kynn. "Web Accessibility and Users with Disabilities." 12 Apr. 1999. http://aware.hwg.org/why/essay_kb_01.html (5 Jun. 2001).

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Graceful transformation

- Alternative terms
 - Degradation
 - Backwards compatibility
 - Transition to other media
 - Trans-usability
- Pages remain accessible despite constraints:
 - Physical, sensory, and cognitive disabilities
 - Environmental constraints (low light, no hands free)
 - Technological barriers (slow modem, small monitor, older or "alternative" browser)
- Note that this eliminates the need to create alternative pages (or at least makes it a last resort)

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Separate content, structure, and presentation

- Content
 - What the document says to the user through natural language, images, sounds, movies, animations, etc.
 - Determined by Web author
- Structure
 - How the document is organized logically (e.g., chapters, sections, headings, etc.)
 - **Uses appropriate HTML**
- Presentation
 - How the document is rendered (e.g., graphical browser, print, text-only browser, speech browser)
 - **Uses Cascading Style Sheets**

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Examples of structural elements

- Block-level structures:
 - Chapter
 - Section
 - Paragraph
 - Lists
 - Block quotes
- Text-level structures:
 - Abbreviations and acronyms
 - Words or phrases in a language other than the dominant language of the page

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Making content understandable and navigable

- Design consistency
- Navigation consistency
- Appropriate/accessible color use
- Font choices
- Wording/vocabulary

- More on this to come...

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How?

- Who decides what makes a site accessible?
- How do I know what methods to use to make a site accessible?
- How do I know if the methods I'm using are correct?

Guidelines

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Guidelines

- For the Web at large:
 - Web Content Accessibility Guidelines (WCAG) 1.0
 - Developed by the Web Accessibility Initiative (WAI) (<http://www.w3.org/WAI/>), part of the World Wide Web Consortium (W3C)
 - <http://www.w3.org/TR/WAI-WEBCONTENT/>
- For the State of Kansas:
 - Web Content Accessibility Guidelines for the State of Kansas 3.0
 - Developed by the Web Accessibility Subcommittee (<http://da.state.ks.us/itab/was/>), part of the Information Technology Advisory Board (ITAB).
 - Based on the WAI's WCAG.
 - <http://da.state.ks.us/itec/WASPriorities011303.htm>

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Other Policies

- Information Technology Policy 1210
 - State of Kansas Web Accessibility Requirements
 - www.da.ks.gov/itec/documents/itecpolicy1210.htm
- Americans with Disabilities Act
 - Requires covered entities to furnish appropriate auxiliary aids and services where necessary to ensure effective communication
 - Does apply to Web pages, according to a US DOJ Policy Ruling
 - www.usdoj.gov/crt/foia/tal712.txt
 - Applying the ADA to the Internet
 - www.icdri.org/CynthiaW/applying_the_ada_to_the_internet.htm
- Section 508 of the U.S. Rehabilitation Act §1194.22
 - Federal IT Accessibility Initiative
 - www.section508.gov/index.cfm?FuseAction=Content&ID=12#Web
 - www.access-board.gov/sec508/guide/1194.22.htm

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Core Technologies: HTML & CSS

- The guidelines rely on *HyperText Markup Language (HTML) version 4 or later* and *Cascading Style Sheets (CSS) version 2*.
- HTML is the publishing language of the World Wide Web.
- CSS is a style sheet language that allows authors and users to attach style (e.g., fonts, spacing, and aural cues) to HTML documents.

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Core Technologies: HTML & CSS

- Separate content (HTML) from presentation (CSS)
 - What you say vs. how you say it
- HTML 4 (and its successors) and CSS2 represent a new era in Web authoring.
- Return HTML to its roots as a markup language

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About the Web Content Accessibility Guidelines

- W3C Guidelines
 - 14 guidelines
 - Each guideline consists of multiple checkpoints. (65 checkpoints in all)
 - Each checkpoint has a priority level assigned (1-3).
 - Each checkpoint has techniques and examples for implementation.
- Kansas Guidelines
 - 40 items
 - Three priority levels
- Section 508 Guidelines
 - 16 rules

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Priorities

- **Priority 1:** A Web content developer **must** satisfy this checkpoint.
 - Otherwise, one or more groups will find it impossible to access information in the document. Satisfying this checkpoint is a basic requirement for some groups to be able to use Web documents.
- **Priority 2:** A Web content developer **should/must** satisfy this checkpoint.
 - Otherwise, one or more groups will find it difficult to access information in the document. Satisfying this checkpoint will remove significant barriers to accessing Web documents.
- **Priority 3:** A Web content developer **may** address this checkpoint.
 - Otherwise, one or more groups will find it somewhat difficult to access information in the document. Satisfying this checkpoint will improve access to Web documents.

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Web Content Accessibility Guidelines for the State of Kansas 3.0

Priority I Items

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Provide a text equivalent for every non-text element (e.g., via "alt", "longdesc", or in element content). This includes: images, graphical representations of text (including symbols and logos), image map regions, animations (e.g., animated GIFs), applets and other programmatic objects, graphical buttons, audio, video, etc.

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- Text is considered accessible to almost all users.
 - Can be handled by screen readers, speech browsers, and braille output devices
 - Can be displayed visually, magnified, synchronized with a video, etc.
- Can help all users find pages more easily since search robots can use the text when indexing the page

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What is “text equivalent”?

- Text must convey the same function or purpose as the image.
- If an image is used **only** for layout or decoration, provide an empty alt attribute (e.g., alt="").
- Example:
 - Purpose = illustrative
 - "Photo of Earth from outer space showing North and South America."
 - "Dense vegetation covers much of South America."
 - Purpose = link
 - "Outer space"
 - Purpose = decorative
 - ""
- Articles on this subject:
 - WebAIM (Web Accessibility in Mind). "Appropriate Use of Alternative Text." 24 Aug. 2006. <http://webaim.org/techniques/alttext/> (24 Aug. 2006).
 - Flavell, A.J. "ALT texts in IMG." 14 Aug. 2002. <http://htmlhelp.com/feature/art3.htm> (7 April 2008)

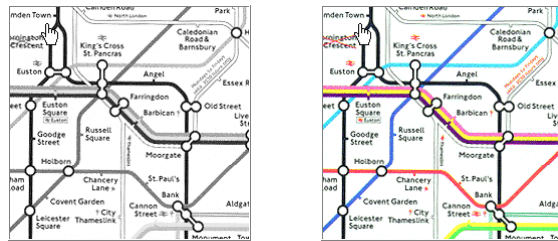


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Ensure that all information conveyed with color is also available without color, for example from context or markup.



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Use style sheets to control presentation while ensuring that all content is accessible in user agents that do not support or do not fully support style sheets.

- <http://www.csszengarden.com/zengarden-sample.html>
- <http://www.csszengarden.com>

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Avoid causing the screen to flicker.

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Client side image maps should be provided instead of server side image maps. If you must use server-side image maps, provide redundant text links for each link on the image map.

An image map is a picture on a Web page that provides different links to other Web pages, depending on where a user clicks on the image.

- www.jkrowling.com
- <http://www.jkrowling.com/textonly/en/>

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Use of frames is discouraged. If you must use frames, title each frame to facilitate frame identification and navigation.

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Ensure that foreground content is easily distinguishable from the background, particularly when viewed by someone with color deficits.

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- For more information about colors and contrasts, refer to: Lighthouse International. "Lighthouse International." 25 Sep. 2002. <http://www.lighthouse.org/> (4 Oct. 2002).
- This tool simulates what your web page might look like to someone who is colorblind: "Colorblind Web Page Filter." <http://colorfilter.wickline.org/> (13 Jul. 2007).
- Contrast Analyzer, WAT-C, (freeware) (7 March 2008)
 - <http://www.paciello.com/resources/contrast-analyser.html> (7 March 2008)

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Clearly identify the target of each link.

For example you do not want to use a .jpg that says "click here" as a link. That will not mean anything to a text browser.

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Use markup according to specification.

For example,

- Use header elements to convey document structure.
- Mark up lists and list items properly.
- Mark up quotations.
- Do not use quotation markup for formatting effects such as indentation.

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Use markup to identify the primary natural language of a document and any changes in its natural language, (including those in text equivalents, captions, etc.)

For example,

- Abbreviations and acronyms
 - Is US pronounced "you ess" or "us"?
 - `US`
- Words or phrases in a language other than the dominant language of the page
 - *Cette phrase est en français.* (French)
 - `<p lang="fr"> Cette phrase est en français </p>` (French)

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Make scripts and applets that allow users to interpret or access page content, or any other element that has its own interface, compatible with assistive technologies, and ensure that event handlers are input device-independent.

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Ensure that all content is accessible when scripts, applets, or other programmatic objects are turned off or not supported. If this is not possible, provide equivalent information on an alternative accessible page.

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For data tables, identify row and column headers. Use markup to associate data cells with header cells for data tables that have two or more logical levels of row or column headers.

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Provide summaries for data tables. If a table is used only for layout, provide an empty summary attribute (e.g., `summary=""`).

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Use markup to associate all form controls with their labels.

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For any time-based multi-media presentation (e.g., movie or animation) synchronize equivalent alternatives (e.g., captions or auditory descriptions of the visual track) with the presentation.

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- For more information about online captioning, refer to: WebAIM. "Captioning Resource List." 7 April 2008. <http://webaim.org/resources/captioning/> (7 April 2008).

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When a timed response is required, the user shall be alerted and given sufficient opportunity to indicate more time is required.

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Provide a method that permits users to skip lists of links repeated on every page in a site, such as navigation links.

For example,

```
<div id="ku_accessibility_skip">  
<a href="#maincontent">  
</a> </div>
```

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If you cannot create an accessible page, provide a link to an alternative page that is accessible, has equivalent information (or functionality), and is updated as often as the inaccessible (original) page.

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Evaluation and Repair Tools

Many tools exist that can automatically do much of the evaluation, repairing, and transformation of Web documents, potentially saving a great deal of time.

The WAI maintains a list of these at <http://www.w3.org/WAI/ER/existingtools.html>.

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Validation and Testing

- Use a combination of automatic tools and human review/testing.
- Begin using validation and testing at the earliest stages of development, when problems are easiest to correct and avoid.
- Use spell and grammar checkers whenever possible.
- Review the document(s) for clarity—ask an outsider to read your texts.

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Validation

- **Cynthia Says**—A validation tool from The International Center for Disability Resources on the Internet, The Internet Society Disability and Special Needs Chapter, and HiSoftware
<http://www.cynthiasays.com/>
- **Dreamweaver**—Dreamweaver has built-in reporting tools for accessibility. (Choose **Site > Reports**, then click **Accessibility**.)
- **LIFT online**—Complete Web accessibility development tool with features for verification, repair, and reporting, available in versions for Dreamweaver and FrontPage, and in an online version. LIFT Online evaluates five pages for free and then offers a fee-based service that provides a more comprehensive evaluation of subsequent pages or the whole site. <http://www.usablenet.com/>



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Validation

- **W3C HTML Validation Service**
<http://validator.w3.org/>
- **W3C CSS Validation Service**
<http://jigsaw.w3.org/css-validator/>
- **HTML Tidy**—A utility for fixing errors in HTML by Dave Raggett of the W3C
<http://tidy.sourceforge.net/>
- **A Prompt Basic - Free Accessibility Checker**
<http://prompt.snow.utoronto.ca/download.html>



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Testing tips

- Use multiple graphical browsers, old and new, PC & Mac, with:
 - sounds and images loaded,
 - images not loaded,
 - sounds not loaded,
 - no mouse,
 - frames, scripts, style sheets, and applets not loaded.
 - keyboard-only navigation
- Alternate display types
 - Magnification software
 - A small monitor
 - Low resolution
- Test your pages with a text-only browser such as Lynx or a Lynx emulator such as Lynx Viewer (<http://www.delorie.com/web/lynxview.html>) or Lynx-me (<http://ugweb.cs.ualberta.ca/~gerald/lynx-me.cgi>).

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Testing tips

- Test with speech browsers
 - pwWebSpeak (<http://www.soundlinks.com/pwgen.htm>)
 - Home Page Reader
 - IBM product
 - No additional hardware necessary
 - Download a 30-day trial version at: <http://www-3.ibm.com/able/>
- Test with a screen reader
 - JAWS demo software works in 40 minute blocks. (http://www.freedomscientific.com/fs_downloads/jaws.asp)
 - Window-eyes demo software works in 30 minute blocks. (<http://www.gwmicro.com/Window-Eyes/Demo/>)
- Testing by persons with disabilities
 - Independence, Inc.: 785/841-0333

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PDF Accessibility

- As with websites, creating accessible electronic documents starts at the design level.
- According to WebAIM, HTML is the preferred web format by the majority of users with disabilities.
- Adobe has published an extensive handout on creating accessible PDF documents using Adobe Acrobat 7.0.
 - http://www.adobe.com/enterprise/accessibility/pdfs/acro7_pg_u_e.pdf (7 April, 2008)
 - Additional information can be found at:
 - <http://www.adobe.com/accessibility/> (7 April, 2008)
 - <http://www.webaim.org/techniques/acrobat/> (7 April, 2008)

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Supporting accessible design means supporting universal design that will make a better Web for all.

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Thank you

Please take a moment before you leave to:

- Evaluate this workshop:

<http://www.lib.ku.edu/instruction/evaluation>