

Designing Accessible Websites

A Checklist of Web Accessibility Guidelines

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Designing Accessible Web Sites

There are many different ways to make a website accessible to people with disabilities, who may use special software or equipment to operate their computers and access the Internet. A problem with some of the currently available guidelines on website accessibility is that they rely on additions and extensions to HTML that have not yet been implemented, or might only apply to people with a particular disability, such as a visual impairment or motor control difficulties, and thus bring up access issues for people with other disabilities.

This document attempts to combine the currently available guidelines for web accessibility into a single set of guidelines that works for all types of disabilities, and which can be implemented with a minimal amount of modification to HTML and viewed with the most widely used browsers, such as Netscape Navigator 3.0, Internet Explorer 3.0, or Lynx, a text-based browser. These guidelines are best used after other design issues such as organization and appearance have been dealt with. The ideal accessible web site is one which any user can visit, whether or not he or she has a disability. Thus, when one designs a website for accessibility, one must still consider other basic design principles such as organization, balance, and readability.

For reference to other popularly-used documents on web accessibility, please see the bibliography at the end of this document.

Note: All references to HTML refer to HTML 3.2, the latest version supported by Netscape 3.0 and Internet Explorer 3.0. Some tags that are very useful for accessibility are only implemented in HTML 4.0, which is not supported by these earlier browsers. As browsers are updated and the newer versions become more common, people may move to using HTML 4.0, which is described at <http://www.w3c.org>.

Text

- **All text is in a single column.** Multiple-column text is confusing to screen readers, which read each line of text across the screen as it appears in the browser. Moreover, text that is formatted into columns through the use of tables may not flow properly when viewed in a text-only browser.
- **Use logical formatting tags rather than physical formatting tags.** Logical formatting tags not only define the appearance of the text, but also its place in the structure and organization of the whole document. Some browsers have different ways of displaying bold or italic text, so

it's best to use the appropriate logical tag to convey the structure of the document, especially to text-only browsers. Some examples are as follows:

- *Logical tags:* <H1> and other heading tags, , , <CITE>, <BLOCKQUOTE>
- *Physical tags:* , <I>, <U>, ,

Some screen readers use the logical formatting tags in HTML to interpret how they read the text on-screen (i.e. headings are emphasized in a particular order, list items are read differently than paragraph text, etc.). Also, users with special browsers or that use style sheets may have certain elements displayed in a particular way that helps them cognitively and visually organize the information. Physical tags are not as flexible as logical tags, and will not be interpreted by these access methods. It's best to let the user determine how they will view the webpage.

- **Headings and list elements are nested properly.** The levels of headings should be used to convey the organization of the document, and shouldn't be used simply because they display text bigger. To nest properly, make sure that higher levels (i.e. <H1>) are used before lower levels (i.e. <H4>). This also applies to nesting ordered and unordered lists.
- **Avoid using <BLINK> and <MARQUEE>.** Flashing and moving text can be a problem for some users with a disability. High flashing rates can trigger seizures, and moving text presents reading or tracking difficulty for users with poor vision.
- **Do not use text symbols as graphics (i.e. ASCII art, smileys, etc.).** Text used as a graphic is read improperly by a screen reader. A line of asterisks intended as a horizontal rule will be read by a screen reader as "asterisk asterisk asterisk ..." Replace the text graphic with an actual image, making sure that you use an ALT tag to describe that graphic to visually disabled users.

Images and Image Maps

- **All images have ALT tags.** Make sure that the ALT tags are descriptive enough to provide an adequate description for a screen-reader. However, don't use excessively long ALT tags; anything more than 5-7 words may not be read correctly by a screen reader because of formatting.

- **Graphics that present important information (especially charts, tables and diagrams) have a longer description.** If the image is important enough in content to merit a long description, consider adding a link next to the image that goes to a description, or creating a text-only version of the website.
- **Try not to use image maps.** Most image maps can be replaced by a group of discrete images adjacent to each other on screen, giving the illusion of being one whole graphic. However, if you must use an image map, be sure that the links on the image map are repeated elsewhere on the same page as text links, or that a text-only version of the site is available.
- **Images that serve as links or buttons are at least 1" x 0.5".** Some users with motor control problems use an alternate type of pointing device with their computers. Therefore, using buttons of at least this minimum size makes it easy to click on links.
- **Avoid using images made up of bitmapped text.** Screen readers cannot read the text contained in images. Therefore, if an image uses text that cannot be contained in an ALT tag of reasonable length (see above), consider placing the text in the main body of the document in HTML, so that visually disabled users or users with text-only browsers can access your content still.

Color and Backgrounds

- **Use adequate contrast between text and background colors.** Dark text against a light background provides the most contrast for people with low vision. Avoid using similar hues together (i.e., don't place blue-green text on a blue background). This applies for text and background colors set in the HTML, as well as colors used in graphics.
- **Avoid using busy patterns as background images.** HTML allows you to tile an image as a background for your web page. Do not use an image that will distract from the text or make it difficult to distinguish between the background and foreground elements. This not only includes brightly colored backgrounds without adequate contrast with the text, but also "busy" patterns that cause cognitive or visual difficulties.
- **Make sure your webpage can be viewed on a monochrome or grayscale monitor.** Some color combinations that seem to have adequate contrast between them become confused when viewed on a grayscale or monochrome monitor. Also, some colors cannot be distinguished by a person with color-blindness. In any case, a website that can be

viewed in grayscale or monochrome can also be printed out without loss of information. Thus, the site remains accessible even when it's been printed out.

Links

- **Use text for links that make sense when read out of context, but is not too verbose.** Some text-only browsers can jump from link to link, reading only the text that is part of the link. A link that says “click here” has no meaning out of context, while a link that says “addresses of ATA centers” is much more descriptive. Link text should not be too long, for it causes difficulty for screen-enlarging software.
- **Links that are adjacent have non-link, printable characters (surrounded by spaces) between them.** Try to stick an extra character like an asterisk (*) or a vertical line (|) between links that are right next to each other. Visually impaired users and screen readers have difficulty distinguishing between links that are separated only by a space.

Tables

- **If tables are used for formatting and placement, test them in a text-only browser (such as Lynx).** Text-only browsers have different ways of interpreting tables. The only way to make sure text-only browsers will display your content properly is to view your website in one and find out.
- **Tables that convey statistical data or other organized information are available in a linear fashion.** For instance, the following table contains statistical data:

	Washington	Oregon	California
Apples	30	10	40
Oranges	20	25	60

To convey this information without using columns and rows, you might create the following text:

Washington had 30 apples and 20 oranges.
 Oregon had 10 apples and 25 oranges.
 California had 40 apples and 60 oranges.

Although this is tedious, if the content of the table is truly integral to

the content of your site, you must provide access to your tables as well as your other text and graphics.

- **If tables are used to position graphics, make sure the ALT text doesn't wrap.** This causes multiple columns of text, which confuses screen-readers. (See Text section.)

Frames

- **Don't use frames.** Frames cause difficulty in printing, viewing, and navigation — for all users, not just those with physical disabilities.

Audio, Video and Multimedia

- **All audio and video information, if important, have an associated transcript.** If audio or video information contains verbal content, provide a link to a transcript of that content. If the audio or video information is just for decoration, then a transcript is not necessary. (Consider the possibility that the audio/video clip itself is also not necessary.)
- **Use HTML instead of content that requires plug-ins whenever possible.** Plug-ins, which add functionality to browsers such as Netscape and Internet Explorer, must often be downloaded and installed before a user can view your content. Thus, minimize the use of plug-in content such as Shockwave, Adobe PDF, QuickTime, and RealAudio, particularly when the content can be presented in regular HTML.
- **Shockwave movies or Java applets that cannot be duplicated in an alternative fashion must be directly accessible.** Some content which is interactive cannot be duplicated in HTML and must be presented in Shockwave or Java. Therefore, provide a way to operate the Shockwave or Java applet via the keyboard and well as the mouse, and provide instructions on how to use the keyboard equivalents.
- **User-interaction should not be time-sensitive.** Any interactive content that requires the user to press a key should not be time-limited. Animations that use text should show the text long enough for a slow reader to read it.

User-Input Forms

- **Text input boxes are the most accessible type of input.** Of the various types of input that can be used in a form, text boxes are the easiest to use for accessibility because (1) they can be tabbed through using just the keyboard, and (2) they do not require mouse movements to enter information. Checkboxes, radio boxes, and pop-up menus, on the other hand, require a mouse to use, and “textarea” boxes (which allow multiple lines of text input) are inaccessible by keyboard in Netscape because they cannot be tabbed out of.
Note: Checkboxes and radio boxes may be more convenient than text input boxes if your main audience is people with visual or cognitive disabilities. They are also familiar to people who have used computers before. Use your judgment and consider your audience when choosing whether to use checkboxes or text input boxes.
- **Each entry box is clearly associated with its label or description.** If you use a table or some other type of formatting to arrange entry boxes and labels, make sure that it is clear which label refers to which entry box. View the form using different window sizes and on Lynx to see if the labels and entry boxes are clearly associated.
- **Provide an alternative phone number, fax number, e-mail address or postal mail address to submit information.** This allows a user who prefers an alternate form of communication the opportunity to participating in giving feedback or submitting information. Even though the form may be accessible, there may be other ways of filling it out without using the web that are more convenient and less time-consuming.

Bibliography

“Accessible Information on the World Wide Web.” *The Research Exchange*, Volume 2, Number 1, 1997. This entire issue is devoted to uses of the Web by NIDDR grantees and contains some guidelines and information on designing for physically disabled Internet users.

Alliance for Technology Access (ATA). <http://www.ataccess.org>. The ATA maintains both a page on designing web sites for access and on improving access to the Internet if you have a disabled.

Bobby, an on-line HTML validation service provided by the Center for Applied Special Technology. <http://www.cast.org/bobby>.

“Design of Accessible Web Pages.” Available on InfoUse’s *Access to Disability Data* web site,
<http://www.infouse.com/disabilitydata/guidelines96.html>.

Web Accessibility Initiative (WAI) of the W3C. <http://www.w3.org/WAI/>.
Contains recommendations for accessible webpage design that may be implemented in future versions of HTML. Not all recommendations are backwards compatible.