

# General Web Accessibility Guidelines

## 1. Introduction

For those unfamiliar with accessibility issues pertaining to Web page design, consider that many users may be operating in contexts very different from your own:

- They may not be able to see, hear, move, or may not be able to process some types of information easily or at all.
- They may have difficulty reading or comprehending text.
- They may not have or be able to use a keyboard or mouse.
- They may have a text-only screen, a small screen, or a slow Internet connection.
- They may not speak or understand fluently the language in which the document is written.
- They may be in a situation where their eyes, ears, or hands are busy or interfered with (e.g., driving to work, working in a loud environment, etc.).
- They may have an early version of a browser, a different browser entirely, a voice browser, or a different operating system.

Content developers must consider these different situations during page design. While there are several situations to consider, each accessible design choice generally benefits several disability groups at once and the Web community as a whole. For example, by using *style sheets* to control font styles and eliminating the FONT element, HTML authors will have more control over their pages, make those pages more accessible to people with low vision, and by sharing the style sheets, will often shorten page download times for all users.

The guidelines discuss accessibility issues and provide accessible design solutions. They address typical scenarios (similar to the font style example) that may pose problems for users with certain disabilities. For example, the [first guideline](#) explains how content developers can make images accessible. Some users may not be able to see images, others may use text-based browsers that do not support images, while others may have turned off support for images (e.g., due to a slow Internet connection). The guidelines do not suggest avoiding images as a way to improve accessibility. Instead, they explain that providing a *text equivalent* of the image will make it accessible.

How does a text equivalent make the image accessible? Both words in "text equivalent" are important:

- Text content can be presented to the user as synthesized speech, braille, and visually-displayed text. Each of these three mechanisms uses a different sense -- ears for synthesized speech, tactile for braille, and eyes for visually-displayed text -- making the information accessible to groups representing a variety of sensory and other disabilities.
- In order to be useful, the text must convey the same function or purpose as the image. For example, consider a text equivalent for a photographic image of the Earth as seen from outer space. If the purpose of the image is mostly that of decoration, then the text "Photograph of the Earth as seen from outer space" might fulfill the necessary function. If the purpose of the photograph is to illustrate specific information about

world geography, then the text equivalent should convey that information. If the photograph has been designed to tell the user to select the image (e.g., by clicking on it) for information about the earth, equivalent text would be "Information about the Earth". Thus, if the text conveys the same function or purpose for the user with a disability as the image does for other users, then it can be considered a text equivalent.

Note that, in addition to benefiting users with disabilities, text equivalents can help all users find pages more quickly, since search robots can use the text when indexing the pages.

While Web content developers must provide text equivalents for images and other multimedia content, it is the responsibility of *user agents* (e.g., browsers and assistive technologies such as *screen readers*, *braille displays*, etc.) to present the information to the user.

*Non-text equivalents* of text (e.g., icons, pre-recorded speech, or a video of a person translating the text into sign language) can make documents accessible to people who may have difficulty accessing written text, including many individuals with cognitive disabilities, learning disabilities, and deafness. Non-text equivalents of text can also be helpful to non-readers. An *auditory description* is an example of a non-text equivalent of visual information. An auditory description of a multimedia presentation's visual track benefits people who cannot see the visual information.

**2. Themes of Accessible Design.** The guidelines address two general themes: ensuring graceful transformation, and making content understandable and navigable.

**2.1 Ensuring Graceful Transformation.** By following these guidelines, content developers can create pages that transform gracefully. Pages that transform gracefully remain accessible despite any of the constraints described in the [introduction](#), including physical, sensory, and cognitive disabilities, work constraints, and technological barriers. Here are some keys to designing pages that transform gracefully:

- Separate structure from presentation (refer to the difference between *content*, *structure*, and *presentation*).
- Provide text (including *text equivalents*). Text can be rendered in ways that are available to almost all browsing devices and accessible to almost all users.
- Create documents that work even if the user cannot see and/or hear. Provide information that serves the same purpose or function as audio or video in ways suited to alternate sensory channels as well. This does not mean creating a prerecorded audio version of an entire site to make it accessible to users who are blind. Users who are blind can use *screen reader* technology to render all text information in a page.
- Create documents that do not rely on one type of hardware. Pages should be usable by people without mice, with small screens, low resolution screens, black and white screens, no screens, with only voice or text output, etc.

The theme of graceful transformation is addressed primarily by guidelines 1 to 11.

**2.2 Making Content Understandable and Navigable.** Content developers should make content understandable and navigable. This includes not only making the language clear and simple, but also providing understandable mechanisms for navigating within and between pages. Providing navigation tools and orientation information in pages will maximize accessibility and usability. Not all users can make use of visual clues such as image maps, proportional scroll bars, side-by-side frames, or graphics that guide sighted users of graphical desktop browsers. Users also lose contextual information when they can only view a portion of a page, either because they are accessing the page one word at a time (speech synthesis or *braille display*), or one section at a time (small display, or a magnified display). Without orientation information, users may not be able to understand very large tables, lists, menus, etc. The theme of making content understandable and navigable is addressed primarily in guidelines 12 to 14.

**3. How the Guidelines are Organized.** This document includes fourteen guidelines, or general principles of accessible design. Each guideline includes:

- The guideline number.
- The statement of the guideline.
- Guideline navigation links. Three links allow navigation to the next guideline (right arrow icon), the previous guideline (left arrow icon), or the current guideline's position in the table of contents (up arrow icon).
- The rationale behind the guideline and some groups of users who benefit from it.

**3.1 Document conventions.** The following editorial conventions are used throughout this document:

- Element names are in uppercase letters.
- Attribute names are quoted in lowercase letters.
- Links to definitions are highlighted through the use of style sheets.

**4. Priorities.** Each checkpoint has a priority level assigned by the Working Group based on the checkpoint's impact on accessibility.

**[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** 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.

Some checkpoints specify a priority level that may change under certain (indicated) conditions.

**5. Conformance.** This section defines three levels of conformance to this document:

- **Conformance Level "A":** all Priority 1 checkpoints are satisfied;
- **Conformance Level "Double-A":** all Priority 1 and 2 checkpoints are satisfied;
- **Conformance Level "Triple-A":** all Priority 1, 2, and 3 checkpoints are satisfied;

**Note.** Conformance levels are spelled out in text so they may be understood when rendered to speech.

Claims of conformance to this document must use one of the following two forms.

Form 1: Specify:

- The guidelines title: "Web Content Accessibility Guidelines 1.0"
- The guidelines URI: <http://www.w3.org/TR/1999/WAI-WEBCONTENT-19990505>
- The conformance level satisfied: "A", "Double-A", or "Triple-A".
- The scope covered by the claim (e.g., page, site, or defined portion of a site.).

## 6. Web Content Accessibility Guidelines

**Guideline 1. Provide equivalent alternatives to auditory and visual content. Provide content that, when presented to the user, conveys essentially the same function or purpose as auditory or visual content.**

Although some people cannot use images, movies, sounds, applets, etc. directly, they may still use pages that include *equivalent* information to the visual or auditory content. The equivalent information must serve the same purpose as the visual or auditory content. Thus, a text equivalent for an image of an upward arrow that links to a table of contents could be "Go to table of contents". In some cases, an equivalent should also describe the appearance of visual content (e.g., for complex charts, billboards, or diagrams) or the sound of auditory content (e.g., for audio samples used in education).

This guideline emphasizes the importance of providing *text equivalents* of non-text content (images, pre-recorded audio, video). The power of text equivalents lies in their capacity to be rendered in ways that are accessible to people from various disability groups using a variety of technologies. Text can be readily output to speech synthesizers and *braille displays*, and can be presented visually (in a variety of sizes) on computer displays and paper. Synthesized speech is critical for individuals who are blind and for many people with the reading difficulties that often accompany cognitive disabilities, learning disabilities, and deafness. Braille is essential for individuals who are both deaf and blind, as well as many individuals whose only sensory disability is blindness. Text displayed visually benefits users who are deaf as well as the majority of Web users.

Providing non-text equivalents (e.g., pictures, videos, and pre-recorded audio) of text is also beneficial to some users, especially nonreaders or people who have difficulty reading. In movies or visual presentations, visual action such as body language or other visual cues may not be accompanied by enough audio information to convey the same information. Unless verbal descriptions of this visual information are provided, people

who cannot see (or look at) the visual content will not be able to perceive it.

**Guideline 2. Don't rely on color alone.**

**Ensure that text and graphics are understandable when viewed without color.**

If color alone is used to convey information, people who cannot differentiate between certain colors and users with devices that have non-color or non-visual displays will not receive the information. When foreground and background colors are too close to the same hue, they may not provide sufficient contrast when viewed using monochrome displays or by people with different types of color deficits.

**Guideline 3. Use markup and style sheets and do so properly. Mark up documents with the proper structural elements. Control presentation with style sheets rather than with presentation elements and attributes.**

Using markup improperly -- not according to specification -- hinders accessibility. Misusing markup for a presentation effect (e.g., using a table for layout or a header to change the font size) makes it difficult for users with specialized software to understand the organization of the page or to navigate through it. Furthermore, using presentation markup rather than structural markup to convey structure (e.g., constructing what looks like a table of data with an HTML PRE element) makes it difficult to render a page intelligibly to other devices (refer to the description of *difference between content, structure, and presentation*).

Content developers may be tempted to use (or misuse) constructs that achieve a desired formatting effect on older browsers. They must be aware that these practices cause accessibility problems and must consider whether the formatting effect is so critical as to warrant making the document inaccessible to some users.

At the other extreme, content developers must not sacrifice appropriate markup because a certain browser or assistive technology does not process it correctly. For example, it is appropriate to use the TABLE element in HTML to mark up *tabular information* even though some older screen readers may not handle side-by-side text correctly (refer to [checkpoint 10.3](#)). Using TABLE correctly and creating tables that transform gracefully (refer to [guideline 5](#)) makes it possible for software to render tables other than as two-dimensional grids.

**Guideline 4. Clarify natural language usage**

**Use markup that facilitates pronunciation or interpretation of abbreviated or foreign text.**

When content developers mark up natural language changes in a document, speech synthesizers and braille devices can automatically switch to the new language, making the document more accessible to multilingual users. Content developers should identify the predominant *natural language* of a document's content (through markup or HTTP headers). Content developers should also provide expansions of abbreviations and

acronyms. In addition to helping assistive technologies, natural language markup allows search engines to find key words and identify documents in a desired language. Natural language markup also improves readability of the Web for all people, including those with learning disabilities, cognitive disabilities, or people who are deaf. When abbreviations and natural language changes are not identified, they may be indecipherable when machine-spoken or brailled.

**Guideline 5. Create tables that transform gracefully.**

**Ensure that tables have necessary markup to be transformed by accessible browsers and other user agents.**

Tables should be used to mark up truly *tabular information* ("data tables"). Content developers should avoid using them to lay out pages ("layout tables"). Tables for any use also present special problems to users of *screen readers* (refer to [checkpoint 10.3](#)).

Some *user agents* allow users to navigate among table cells and access header and other table cell information. Unless marked-up properly, these tables will not provide user agents with the appropriate information. ([Refer also to guideline 3.](#))

The following checkpoints will directly benefit people who access a table through auditory means (e.g., a screen reader or an automobile-based personal computer) or who view only a portion of the page at a time (e.g., users with blindness or low vision using speech output or a *braille display*, or other users of devices with small displays, etc.).

**Guideline 6. Ensure that pages featuring new technologies transform gracefully.**

**Ensure that pages are accessible even when newer technologies are not supported or are turned off.**

Although content developers are encouraged to use new technologies that solve problems raised by existing technologies, they should know how to make their pages still work with older browsers and people who choose to turn off features.

**Guideline 7. Ensure user control of time-sensitive content changes.**

**Ensure that moving, blinking, scrolling, or auto-updating objects or pages may be paused or stopped.**

Some people with cognitive or visual disabilities are unable to read moving text quickly enough or at all. Movement can also cause such a distraction that the rest of the page becomes unreadable for people with cognitive disabilities. *Screen readers* are unable to read moving text. People with physical disabilities might not be able to move quickly or accurately enough to interact with moving objects.

**Guideline 8. Ensure direct accessibility of embedded user interfaces.**

**Ensure that the user interface follows principles of accessible design: device-independent access to functionality, keyboard operability, self-voicing, etc.**

When an embedded object has its "own interface", the interface -- like the interface to the browser itself -- must be accessible. If the interface of the embedded object cannot be made accessible, an alternative accessible solution must be provided.

**Guideline 9. Design for device-independence.**

**Use features that enable activation of page elements via a variety of input devices.**

**Device-independent** access means that the user may interact with the user agent or document with a preferred input (or output) device -- mouse, keyboard, voice, head wand, or other. If, for example, a form control can only be activated with a mouse or other pointing device, someone who is using the page without sight, with voice input, or with a keyboard or who is using some other non-pointing input device will not be able to use the form. Generally, pages that allow keyboard interaction are also accessible through speech input or a command line interface.

**Guideline 10. Use interim solutions.**

**Use interim accessibility solutions so that assistive technologies and older browsers will operate correctly.**

For example, older browsers do not allow users to navigate to empty edit boxes. Older screen readers read lists of consecutive links as one link. These active elements are therefore difficult or impossible to access. Also, changing the current window or popping up new windows can be very disorienting to users who cannot see that this has happened.

**Guideline 11. Use W3C technologies and guidelines.**

**Use W3C technologies (according to specification) and follow accessibility guidelines. Where it is not possible to use a W3C technology, or doing so results in material that does not transform gracefully, provide an alternative version of the content that is accessible.**

The current guidelines recommend W3C technologies (e.g., HTML, CSS, etc.) for several reasons:

- W3C technologies include "built-in" accessibility features.
- W3C specifications undergo early review to ensure that accessibility issues are considered during the design phase.
- W3C specifications are developed in an open, industry consensus process.

Many non-W3C formats (e.g., PDF, Shockwave, etc.) require viewing with either plug-ins or stand-alone applications. Often, these formats cannot be viewed or navigated with standard *user agents* (including *assistive technologies*). Avoiding non-W3C and non-standard features (proprietary elements, attributes, properties, and extensions) will tend to make pages more accessible to more people using a wider variety of hardware and software. When inaccessible technologies (proprietary or not) must be used, equivalent accessible pages must be provided.

Even when W3C technologies are used, they must be used in accordance with

accessibility guidelines. When using new technologies, ensure that they transform gracefully ([Refer also to guideline 6.](#)).

**Note.** Converting documents (from PDF, PostScript, RTF, etc.) to W3C markup languages (HTML, XML) does not always create an accessible document. Therefore, validate each page for accessibility and usability after the conversion process (refer to the [section on validation](#)). If a page does not readily convert, either revise the page until its original representation converts appropriately or provide an HTML or plain text version.

### **Guideline 12. Provide context and orientation information.**

**Provide context and orientation information to help users understand complex pages or elements.**

Grouping elements and providing contextual information about the relationships between elements can be useful for all users. Complex relationships between parts of a page may be difficult for people with cognitive disabilities and people with visual disabilities to interpret.

### **Guideline 13. Provide clear navigation mechanisms.**

**Provide clear and consistent navigation mechanisms -- orientation information, navigation bars, a site map, etc. -- to increase the likelihood that a person will find what they are looking for at a site.**

Clear and consistent *navigation mechanisms* are important to people with cognitive disabilities or blindness, and benefit all users.

### **Guideline 14. Ensure that documents are clear and simple.**

**Ensure that documents are clear and simple so they may be more easily understood.**

Consistent page layout, recognizable graphics, and easy to understand language benefit all users. In particular, they help people with cognitive disabilities or who have difficulty reading. (However, ensure that images have text equivalents for people who are blind, have low vision, or for any user who cannot or has chosen not to view graphics. [Refer also to guideline 1.](#))

Using clear and simple language promotes effective communication. Access to written information can be difficult for people who have cognitive or learning disabilities. Using clear and simple language also benefits people whose first language differs from your own, including those people who communicate primarily in sign language.