Creating Accessible Websites

A Guide for UA Websites

By
The Faculty Resource Center
The University of Alabama

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Falling Short of the Web's Potential

Despite the Web's great potential for providing easily accessible information for people with disabilities, this potential is still largely unrealized. For example, some sites can only be navigated using a mouse, and only a very small percentage of video or multimedia content has been captioned for the deaf. What if the Internet content is only accessible by using a mouse? What do people do if they can't use a mouse? And what if Web developers use graphics instead of text? If screen readers can only read text, how would they read the graphics to people who are blind?

As soon as you start asking these types of questions, you begin to see that there are a few potential glitches in the accessibility of the Internet to people with disabilities. The Internet has the potential to revolutionize access to information for those with disabilities, but if we're not careful, we can place obstacles along the way that destroy that potential and which leave people with disabilities just as discouraged and dependent upon others as before.

Most Web developers are not opposed to the concept of making the Internet accessible to people with disabilities. Most accessibility errors on websites are the result of lack of awareness, rather than malice or apathy.

People with Disabilities on the Web

Though estimates vary, most studies find that about one fifth (20%) of the population has some kind of disability. Not all of these people have disabilities that make it difficult for them to access the internet, but it is still a significant portion of the population. Businesses would be unwise to purposely exclude 20, 10, or even 5 percent of their potential customers from their web sites. For schools, universities, and government entities it would not only be unwise, but in many cases, it would also break the law.

Here are the major categories of disability types:
- **Visual** - Blindness, low vision, color-blindness
- **Hearing** - Deafness
- **Motor** - Inability to use a mouse, slow response time, limited fine motor control
- **Cognitive** - Learning disabilities, distractibility, inability to remember or focus on large amounts of information.

Each of the major categories of disabilities requires certain types of adaptations in the design of the Web content. Most of the time, these adaptations benefit nearly everyone, not just people with disabilities. Almost everyone benefits from helpful illustrations, properly-organized content, and clear navigation. Similarly, while captions are a necessity for deaf users, they can be helpful to others, including anyone who views a video without audio.

Principles of Accessible Design

Below you will find a list of some key principles of accessible design. Most accessibility principles can be implemented very easily and will not impact the overall "look and feel" of your Web site.

Provide Appropriate Alternative Text.

Alternative text provides a textual alternative to non-text content in Web pages. It is especially helpful for people who are blind and rely on a screen reader to have the content of the Website read to them.

Every image must have an alt attribute. While it only takes a few minutes (sometimes only a few seconds) to add Alt text, it is a very important topic with no straightforward rules. Please visit the link below to see examples and learn more about how to use Alt text so it is beneficial; not annoying!
http://Webaim.org/techniques/alttext/

Decorative images do not present important content, are used for layout or non-informative purposes, and do not appear within a link. In almost all cases, spacer and decorative images should have null alt text (alt="").

Ensure Links Make Sense Out of Context.

Every link should make sense if the link text is read by itself. Screen reader users may choose to read only the links on a Web page. Certain phrases like "click here" and "more" must be avoided.

Caption and/or Provide Transcripts for Media.

Videos and live audio must have captions and a transcript. With archived audio, a transcription may be sufficient. Learn more about captions and transcripts at the Web Captioning Overview (http://Webaim.org/techniques/captions/) page. YouTube has a captioning tool and TechSmith's Camtasia offers captioning tools, as well.

Ensure Accessibility of Non-HTML Content.

This includes PDF documents, Microsoft Word documents, PowerPoint presentations, and Adobe Flash content. In addition to all of the other principles listed here, PDF documents and other non-HTML content must be as accessible as possible. If you cannot make it accessible, consider using HTML instead or, at the very least, provide an accessible alternative. PDF documents should also include a series of tags to make them more accessible. A tagged PDF file looks the same, but it is almost always more accessible to a person using a screen reader.

Unless you are skilled in working with Flash movies, it is highly recommended that Flash elements be avoided within UA Websites.

Do Not Rely on Color Alone to Convey Meaning.

The use of color can enhance comprehension, but do not use color alone to convey information. That information may not be available to a person who is colorblind and will be unavailable to screen reader users.

Make Sure Content is Clearly Written and Easy to Read.

There are many ways to make your content easier to understand. Write clearly; use clear fonts, and use headings and lists appropriately.

Use Headings Correctly.

Do not use text formatting, such as font size or bolding of text to give the visual appearance of headings - use actual headings for all content headings. Assistive technologies and other browsers rely upon the literal markup of the page to determine structure. Items that are bolded or display in a bigger font are not interpreted to be structural elements.

Likewise, do not use headers to achieve visual results only. For instance, if you want to highlight or emphasize an element within your content that is not a heading, do not use heading tags to achieve the visual appearance you want. Instead, make it bold or italicize it.

This list does not present all accessibility issues, but by addressing these basic principles, you will ensure greater accessibility of your web content to everyone.

Guidelines for Using Links

Keyboard Accessibility of Links

Users must be able to navigate to and select each link using the keyboard alone. In most browsers, the Tab key allows users to jump from link to link, and the Enter key allows users to select a link. If the only way to access a link is with a mouse, the link is unusable by people who cannot use a mouse. How is it even possible to create a link that is inaccessible by keyboard? By using drop-down menus!

Drop-down Menus

Mouse users will at least be able to click on the links in the drop-down menu, but keyboard users cannot access the drop-down menu, so the link is completely useless and all of the link destinations in the drop-down menu are completely inaccessible to them. One solution is to abandon the drop-down menu and instead use standard hypertext links.

Screen Readers and Links

People who use screen readers to access the Web most often use their keyboard rather than their mouse, so keyboard accessibility is an important first step in making hypertext links accessible to screen reader users. Beyond basic keyboard accessibility, it helps to know how screen reader users access links. Screen readers inform users that a piece of text (or a graphic) is a link.

JAWS, a type of screen reader, says "link" before each link. For example, a link that says "products" would be read as "link products" by JAWS. IBM Home Page Reader, another brand of screen reader, switches voices. A male-sounding voice reads regular text and a female-sounding voice reads link text.

Implication: Links do not need to say "link" in the link text, because all users already know that the link is a link. This is more of an issue with graphics used as links. The alt text for a graphic does not need to say "link" or "link to." Otherwise, JAWS users will hear "link graphic link to products," which is redundant.

Screen reader users often navigate from link to link, skipping the text in between. Tabbing from link to link is a way of skimming Web content, especially if users are trying to find a particular section of a website.

Implication 1: Links should make sense out of context. Phrases such as "click here," "more," "click for details," and so on are almost completely meaningless when read out of context. At the same time, it would be overkill to ensure that every detail about a link destination is discernable by listening to the link context. Users wouldn't want to hear "Products page on which a list of all of our products are presented, including software products and training products, with a list of prices and availability by region (this page uses the same navigation template as the page you are now on)." Perhaps a better alternative would be a link that simply says "Products."

Implication 2: Place the distinguishing information of links at the beginning of a link.
Don't put extra information first, For example, don't say "Link opens in a new window: Products." Instead, say "Products (opens in a new window)" (or something along those lines). This is especially important in this example if several links open in a new window. With the explanatory information first instead of the main information, screen reader users would have to listen to the phrase "link opens in a new window" repeatedly. They will have a harder time distinguishing between different links, or at least it will take them longer.

Screen reader users sometimes obtain an alphabetically-organized list of links.

Screen readers allow users to extract the links into an alphabetically-organized list, using a keyboard shortcut within their screen reader software for that purpose. This is especially useful if they have an idea of what letter the link they are looking for starts with.

Implication: Use link words and phrases that can be intuitively organized in alphabetical order. For example, the phrase "contact us" is a common one that users may want to access. If the link says "you can contact us," or "how to contact us," or some other phrase that is less intuitive, users may have a more difficult time finding the link.

Link Text
As mentioned previously, links are more useful when they make sense out of context. Authors should avoid non-informative link phrases such as:
- click here
- here
- more
- read more
- link to [some link destination]
- info.

In fact, the phrase "click here" is unnecessary, even if it precedes a more meaningful phrase. For example, a link that says "click here to access today's weather" can be shortened to "today's weather." In some cases it may make sense to precede a link phrase with "more" or "read more about," (e.g. "more about global warming"), but if these extra words can be avoided, it is probably best to avoid them (e.g. "global warming" may convey the same meaning as "more about global warming," depending on the context).

Link Length

Long Links

What is the maximum allowable length of link text? This is a reasonable question to ask. There is no set answer though. The most accurate answer is that the link needs to be long enough to convey the purpose of the link and no longer. Such a vague answer is open to wildly different interpretations, but perhaps this is not such a bad thing. Content authors need to have the freedom to give meaning to their content in the ways that make sense to them. Still, as a general rule, links should be as concise as possible without sacrificing meaningfulness.

Some authors have made links out of entire sentences, entire paragraphs, or even multiple paragraphs. These long links are almost certainly unnecessary and are not user-friendly for screen reader users. Remember that screen reader users cannot visually skim through lengthy links. They must listen to the entire text. Some screen reader users get frustrated with long link text and impatiently move on to the next link if they cannot understand the purpose of the link after the first few words. Authors have no control over user behavior such as this, but they do have control over some of the reasons that can lead users to get frustrated. Short, concise links are less likely to frustrate screen reader users than long, imprecise links.

Short Links

What is the minimum allowable length of link text? This is another reasonable question, also with no set answer. In most cases, links should be words or phrases. In some instances, though, it may make sense to link a single character, letter of the alphabet, or numeral. For example, an alphabetical index may use each individual letter of the alphabet as a link.

The danger in using single characters as links—or in using any sort of small link (such as a 10 pixel by 10 pixel graphic)—is that some users will have difficulty clicking on such a small area. Someone with cerebral palsy, for example, may be able to use the hands to manipulate a mouse, but may have difficulty with the precise movements and muscle control necessary to click on a small link. This person may have to click two or three times to hit the target and may end up clicking on the wrong link in the process, which would require the user to hit the Back button in the browser and try again.

URLs as Links

Web addresses, or URLs, present two types of challenges:
1. Readability
2. Length

URL Readability

The first challenge is that URLs are not always human-readable or screen-reader friendly. Many URLs contain combinations of numbers, letters, ampersands, dashes, underscores, and other characters that make sense to scripts and databases but which make little or no sense to the average person. In many cases, it makes sense to use human-readable text instead of the URL. The human readable link Constructing Accessible Websites external link is more user-friendly than the link to purchase the book by the same title on Amazon.com, which consists of a 108-character link full of numbers, slashes, and text that is not very human-readable:
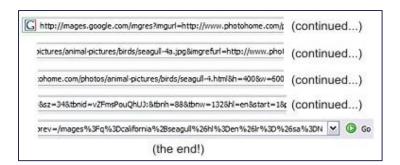(http://www.amazon.com/exec/obidos/ASIN/ 1590591488/qid=1116957951/sr=2- 1/ref=pd_bbs_b_2_1/103-5755258-8204633 - external link).

Does this mean that URLs should never be used as links? No. If the URL is relatively short, there is probably no problem with using the URL as the link text. The key is to be considerate of screen reader users who must listen to the longer, less intelligible URLs.

URL Length

The second problem is that some URLs are quite long, and some browsers refuse to let long URLs wrap to the next line, so the links extend off to the right beyond the visible area of the browser. These long URLs are generally generated by database-based websites or Web applications that transfer a number of variables through the Web address itself. The above link to the book on Amazon.com is a perfect example. In fact, the long link text was modified by adding two spaces in the middle of the URL, to allow it to wrap to the next line. Mozilla-based browsers such as Firefox and Netscape do not allow long URLs to wrap unless the author introduces a space somewhere.

The original width of the following screen shot was over 2000 pixels, stretching across two monitors. Imagine placing a long link such as this in a Web page. Users would have to scroll a long distance horizontally in order to read the entire thing.

Even worse, imagine listening to the link with a screen reader! Hardly anyone would ever have the patience to listen to all of that indecipherable mess. The link above could be shortened to "California seagull stock photos," since the link goes to a page with stock photography of California seagulls.

Alternative Text for Images Used as Links

When images are used as links, the alt text performs the function of link text. As with linked text, the alt text of linked images does not need to inform users that the link is a link, since they already know. One interesting dilemma though is to decide how important it is to describe the visual characteristics of the image in the alt text, since the purpose of alt text is to substitute for the image in cases where users cannot see it. In most cases, the visual characteristics of the image are less important than the link destination.

Example
The graphic in this example could be described as "a horizontally-aligned, pill-shaped, somewhat three-dimensional-looking object, with royal blue on top fading to red on the bottom, with the colors slightly darker on the left side and slightly more washed out on the right side, with the word 'Products' written in white bold Arial text on top of the pill-shaped object, suggesting that the object is a link to a list or explanation of products."

The description would be entirely accurate, but quite unnecessary. The purpose of the graphic in this instance is to link to the products section of a website. The alt text should reflect the purpose of the graphic more than its visual appearance. Most screen reader users will not care what the button looks like, especially if the description is long. An alt text of "Products" will do nicely.

PDF Documents
Sometimes PDFs are nothing more than images that appear to the sighted user as text. Adobe Acrobat Pro provides an easy way for scanning such documents and converting them to text, thus making them accessible.

In Adobe Acrobat Pro 9, open the document to be converted. From the top menu, select "Document," then "OCR Text Recognition," then "Recognize Text Using OCR." Allow the program to scan all pages. Once completed, the document can be saved and, for the most part, will be accessible. To learn about tags and reading order to further enhance accessibility, visit the PDF Accessibility (http://Webaim.org/techniques/acrobat/) portion of WebAim.org.

Conclusion
For people with disabilities, the Web offers so many opportunities that are unavailable through any other medium. It offers independence and freedom. However, if a website is not created with Web accessibility in mind, it may exclude a segment of the population that stands to gain the most from the Internet. Most people do not intend to exclude people with disabilities. As organizations and designers become aware of and implement accessibility, they will ensure that their content can be accessed by a broader population.