UCSB WEB ACCESSIBILITY GUIDELINES

April 17, 2006

> **"**Building an accessible Website is a necessity as the Web becomes an everyday tool for communication, work, and play. Electronic "curb cuts"—accessible Web design elements—need to be addressed in all Website construction. It now appears that our nation has reached a significant crossroad where our policies, technology, and purchasing choices will determine whether or not every person will participate in the digital economy. The impact is systemic and reaches all sectors of our economy. Rather than promoting a digital divide, we must address accessible Web design so that everyone can participate, regardless of age, disability, or the limitations of the available technology."
>
> – Cynthia Waddell

INTRODUCTION:

As the "Information Age" has progressed, the capability of sharing data across vast distances at incredible speeds has become possible. Increasingly, however, the disabled population is being left behind as part of a group which has been termed "The Digital Divide": those who do not have equal access to digital communication either by choice, by financial constraints, or by other constraints such as disability. While a barrier to access such as a building without an elevator, an elevator without a Braille panel, an auditory alarm system without a visual component or stairs without an accompanying ramp may seem like a pretty obvious barrier to access to most of us, poorly designed web pages or computers are less noticeable to those who do not have a disability. It is the goal of these guidelines to outline ways in which the UCSB campus and especially those who create digital content for members of this campus should better facilitate access to electronic data.

REASONING BEHIND ACCESSIBILITY:

Accessibility is a Civil Rights issue and inaccessible websites violate the "effective communications" requirement of the Americans with Disabilities Act (ADA) as well as provisions of Section 504 and 508 of the Rehabilitation Act (you can read more about these pieces of legislation by following the links in the appendix).

The power of technology and the web in particular is to make our lives easier by automating processing, facilitating data retrieval, expediting orders of both merchandise and services and in general, allowing us to more quickly and efficiently take care of everyday tasks. Just as the rights of disabled people are ensured by providing closed captioning for television programs, auditory crosswalk indicators or elevators and ramps in buildings with stairs, so too is it our obligation and responsibility to similarly accommodate the needs of the disabled when it comes to accessing electronic systems and data.

Additionally, many of the guidelines contained herein, which are designed to assist people with various disabilities, will also help people who are not necessarily disabled but who may be accessing electronic information through a slower modem, a text-only browser, web-enabled cell phone or a PDA (Personal Digital Assistant). Ensuring

accessibility for the disabled also helps other groups such as children and those who are not fluent in English. Finally, not only does this enable your web pages to be used in a wider range of environments, but it also provides search engines with a greater ability to index your content.

WHAT DO I NEED TO DO?:

Your web page needs to be accessible to people with disabilities. This means that they must be able to obtain the same information in an adaptable format that is available to persons who do not have a disability and who are not using adaptive technology. Your web page also needs to take reasonable measures to ensure you are not causing undue harm to persons with disabilities. A summary of key accessibility issues with respect to web pages are listed below. If you have any questions regarding your responsibility for designing or maintaining an accessible web page or if you feel that you are unable to access a web page on campus because it lacks the required accessible features, please contact one of the following individuals:

Mark Grosch
Adaptive Technology Specialist and ADA Web Compliance Officer
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Farfalla Borah
Disability Compliance Officer and Whistleblower Coordinator
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Gary White
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GUIDELINES:

Please note that these guidelines are always changing as new technology and markup standards are created. The following guidelines are summarized from the W3C Content Accessibility Guidelines version 2.0 and Section 508 of the Rehabilitation Act. They focus on four premises:

1. Content must be **perceivable**
2. Interface elements in the content must be **operable**
3. Content and controls must be **understandable**
4. Content must be **robust** enough to work with current and future Web technologies

These premises are further elaborated below

A. Content Must be Perceivable

1. Provide text equivalents to all non-text elements

Perhaps one of the most important standards is the concept of a text equivalent for images displayed on every web page. What this means is that when information is communicated graphically, there must be alternative textual information available which communicates the same information as the graphic. This is most commonly accomplished by using an “alt txt” or “longdesc” tab within the web page. Not only does this help individuals using screen reading software to understand the information presented on your page, but it also makes your site more accessible to web crawlers which index content on the web and make it easier to find via search engines. If a graphic does not contain any information, tag it using a null tag (empty quotes) in order to avoid distracting persons using a screen reader. An example of this would be: <IMG SRC="bluebar.gif" ALT="">

Provide Multimedia AlternativesThis standard also applies to any multimedia presentation such as a video of an important speaker, news broadcast or other presentation where the lack of hearing inhibits the understanding of what is being presented. Information on captioning multimedia presentations can be found in Appendix VII.

2. Do not rely on color alone to convey information.

Information conveyed by color alone is inaccessible to individuals who are color blind as well as people who are using a screen reader to convey web information. For instance, instructions such as “click on the green button to continue” should not be used unless the green button is identified in a format accessible to persons with colorblindness or other disabilities which do not allow them to distinguish colors. A better method would be to use an emphasized elment or strong element or mark the item with an * as well as a color.

3. Use markup and style sheets and do so properly. Pages must transform gracefully

Markup sheets should be used according to W3C standards and not simply for presentation effect (i.e. to achieve a specific font or text size). Pages should still be able to be read without the associated style sheet – i.e. the content should be arranged in a logical order.

A page should either be useable without scripts, applets and other programming objects or an identical alternate page should be readily available which doesn't require such objects.

4. Create tables that transform gracefully.
Data tables should have table headers and use attributes such as scope or id and headers to associate table data with the right headers.

Data tables should feature three items:

- A caption (use the <caption> tag) acting as a title for the table
- A summary attribute (contained within the opening <table> tag
- Table headers

Tables should be used for data and not to lay out pages unless the page will still make sense when linearized.

5. Ensure that your web page can be viewed by people with color blindness.
For more information on testing your page for "color accessibility: go to http://colorfilter.wickline.org/ or http://www.vischeck.com (both pages have a filter though which you can run your web page to test for color discernability). Some other simple techniques for testing color combinations are to print your web page on a black and white printer and see if any information is difficult or impossible to discern. Alternatively, turn the colors all the way down on your monitor and make the same observation.

6. Repeat image map links as text somewhere else on the page.
Not every web browser can properly interpret image links and in the case of very small image links, they can be difficult to click on by someone with limited dexterity. Listing the alternate text links at the bottom of the page is acceptable but closer to the image in question is preferable.

B. Interface Elements Must be Operable

7. Design for device-independence.
Your page should be navigable via either a mouse, keyboard, by voice or by a head wand. Items which only appear during a mouse-over are generally inaccessible to people using screen readers. Generally speaking, any page which can be navigated via the keyboard only can also be navigated by voice and by anyone using a screen reader.

8. Ensure user control of time-sensitive content changes.

Do not use automatic client-side redirection or refreshing. If you must use automatic refreshing, provide ample time between refreshes (a general guideline is 20 seconds for every line of text. Even better would be to include a button that allows one to disable or turn off automatic refreshing and redirection. Screen readers are unable to read moving text.

Try to avoid using the <blink> or <marquee> tags at all costs, but especially between 2 and 55 times per second as this can induce seizures in users with epilepsy or other seizure disorders. If motion is crucial to your page, you need to allow a user to easily stop the motion or skip it altogether.

9. Provide mechanisms to help users find content, orient themselves within it, and navigate through it.
Such mechanisms may include site specific search engines, site outlines, tree diagrams, and the use of proper HTML techniques such as tagging elements as tables, headers, lists and forms.

When using tables, title each frame to facilitate navigation and describe the frame and their relationship to the other frames in the table if it is not readily apparent.

Avoid ambiguous navigation tags such as: “Click here”, “More info”, or “Skip intro”. Wherever possible, use a “title” attribute to further clarify the destination of a link.

It is also helpful to allow users to skip redundant navigation links (i.e. identical links that appear at the top of every subpage). While a visual user can simply skip over these links, a person using a screen reader must tab through each link before they can access content.

One technique is to make an anchor at the start of your content:

Then make the first link on the page a link to this anchor. This page can be white on white if needed to preserve graphical design issues:
Skip to Page Content

Any links which use the same text should go to the same page (i.e. “Link to Our Home Page” or “Link to Email Us”).

Provide a means to skip over ASCII art and calendars.

10. Use interim solutions.
The following guidelines will change as adaptive technology enables the user to override certain web page features which adaptive technology users might find problematic:

Do not use pop-up windows. They inhibit the ability of screen readers to read the desired active screen.

Use a non-link item between links when listing links in a row:
Weather | People | Find | Job Opportunities

11. Use W3C technologies and guidelines.
Use accessible technology specified by W3C such as HTML and CSS while avoiding PDF and Shockwave which is not as readily accessible. When utilizing PDF documents provide an alternative HTML page wherever possible. Alternatively, PDF documents may be used PROVIDED they meet the accessible PDF guidelines listed below.

Text only web pages should be used ONLY as a last resort, as they are invariably not updated with the same frequency and regularity as the main graphical page.

C. Content and Controls Must be Understandable

12. Ensure that documents are clear and simple.
Use consistent page layout and clear, simple language.

13. Clarify natural language usage
Identify the natural language of content using the “lang” attribute in HTML or the "xml:lang" tag in XML in order to facilitate correct pronunciation by screen readers. This includes specifications for language which are read

14. Provide links to plug-ins and applets
If a page requires the use of a plug-in or applet, there must be a link to the plug-in or applet from the page requiring it.

15. Use accessible Flash files:
See Appendix V for information on creating accessible Flash files.

16. Use accessible PDF files:
See Appendix VI for information on creating accessible PDF files.

17. Use accessible multimedia files:
See Appendix VII for information on captioning multimedia files.

GUIDELINES SPECIFIC TO THE USE OF CSS:

Guideline: Decrease maintenance and increase consistency

- Use a minimal number of style sheets for your site
- Use linked style sheets rather than embedded styles, and avoid inline style sheets.
- If you have more than one, use the same "class" name for the same concept in all of the style sheets.

Guideline: User override of styles
Allow user specified guidelines (i.e. “important!” style) to override any author-generated style sheets. This is important for overriding small font sizes as well as undesired color combinations.

Guideline: Units of measure
Use relative rather than absolute units of measurement (em or %).

Guideline: Generated content
Ensure that important content appears in the document object. Text generated by style sheets is not part of the document source and will not be available to assistive technologies that access content through the Document Object Model Level 1 ([[DOM1]).

Guideline: Fonts
Instead of using deprecated presentation elements and attributes, use the many CSS properties to control font characteristics: 'font-family', 'font-size', 'font-size-adjust', 'font-stretch', 'font-style', 'font-variant', and 'font-weight'. If you must use HTML elements to control font information, use BIG and SMALL, which are not deprecated.

Guideline: Text style effects
Avoid causing text to blink until such time that this can be overridden by the user.

Guideline: Text instead of images
Use text instead of images containing text wherever possible. If it is necessary to render text via an image, an alternate text tag must be provided.

Guideline: Text formatting and position
Use style sheets to control layout and presentation

Guideline: Colors
Ensure background and foreground colors provide appropriate contrast. Ensure information is not in color alone.

Guideline: Providing contextual clues in HTML lists

Markup lists and list items appropriately.

Guideline: Layout, positioning, layering, and alignment
Use style sheets to control layout and presentation. Do not use tables for layout unless table data makes sense when linearized.

Guideline: Rules and borders
Organize documents so they may be read without style sheets.

Guideline: Using style sheet positioning and markup to transform gracefully
Removal of associated style sheets should still allow tabular data to be read in a way which makes logical sense.

Guideline: Creating movement with style sheets and scripts
Until it is possible for users to freeze moving content, avoid using movement in pages.

Guideline: Aural Cascading Style Sheets
The following properties are part of CSS2's aural cascading style sheets.

- 'volume' controls the volume of spoken text.
- 'speak' controls whether content will be spoken and, if so, whether it will be spelled or spoken as words.
- 'pause', 'pause-before', and 'pause-after' control pauses before and after content is spoken. This allows users to separate content for better comprehension.
- 'cue', 'cue-before', and 'cue-after' specify a sound to be played before and after content, which can be valuable for orientation (much like a visual icon).
- 'play-during' controls background sounds while an element is rendered (much like a background image).
- 'azimuth' and 'elevation' provide dimension to sound, which allows users to distinguish voices, for example.
- 'speech-rate', 'voice-family', 'pitch', 'pitch-range', 'stress', and 'richness' control the quality of spoken content. By varying these properties for different elements, users can fine-tune how content is presented aurally.
- 'speak-punctuation' and 'speak-numeral' control how numbers and punctuation are spoken, which has an effect on the quality of the experience of aural browsing.

RESOURCES:

The World Wide Web Consortium

The worldwide web consortium is an excellent resource for both accessibility guidelines and web standards in general. Their website is: http://www.w3.org/WAI/ . They have many resources for specific questions related to accessible web design, and they should be referenced in order to more fully familiarize yourself with web accessibility. For now, we will touch on several important W3C Guidelines that you should know about when designing and maintaining a website:

WebAIM (Web Accessibility In Mind)

WebAIM is a non-profit organization at Utah State University organized within their Center for Persons with Disabilities. Their goal is to "…expand the potential of the Web for people with disabilities by providing the **knowledge**, **technical skills**, **tools**, **organizational leadership strategies**, and **vision** that empower organizations to make their own content accessible to people with disabilities." Their website is http://webaim.org/

APPENDIX I: LINKS TO RELEVANT CASE LAW

The rights of disabled individuals in the United States are covered under several laws. These laws are in turn enforced by several agencies:

Section 504 of the Rehabilitation Act of 1973
(Text: http://www.nationalrehab.org/website/history/act.html)

"Section 504 states that "no qualified individual with a disability in the United States shall be excluded from, denied the benefits of, or be subjected to discrimination under" any program or activity that either receives Federal financial assistance or is conducted by any Executive agency or the United States Postal Service.

Each Federal agency has its own set of section 504 regulations that apply to its own programs. Agencies that provide Federal financial assistance also have section 504 regulations covering entities that receive Federal aid. Requirements common to these regulations include reasonable accommodation for employees with disabilities; program accessibility; effective communication with people who have hearing or vision disabilities; and accessible new construction and alterations. Each agency is responsible for enforcing its own regulations. Section 504 may also be enforced through private lawsuits. It is not necessary to file a complaint with a Federal agency or to receive a "right-to-sue" letter before going to court." (Source: http://www.usdoj.gov/crt/ada/cguide.htm#anchor65610)

Section 508 of The Rehabilitation Act of 1973:
(Text: http://www.section508.gov/index.cfm?FuseAction=Content&ID=14)

"In 1998, Congress amended the Rehabilitation Act to require Federal agencies to make their electronic and information technology accessible to people with disabilities. Inaccessible technology interferes with an individual's ability to obtain and use information quickly and easily. Section 508 was enacted to eliminate barriers in information technology, to make available new opportunities for people with disabilities, and to encourage development of technologies that will help achieve these goals. The law applies to all Federal agencies when they develop, procure, maintain, or use electronic and information technology. Under Section 508 (29 U.S.C. ' 794d), agencies must give disabled employees and members of the public access to information that is comparable to the access available to others. It is recommended that you review the laws and regulations listed below to further your understanding about Section 508 and how you can support implementation." For more information, see http://www.section508.gov

Section 255 of The Telecommunications Act of 1996:
(Text: http://www.fcc.gov/cgb/dro/telecom_language.html)

"The Federal Communications Commission (FCC) has rules requiring telecommunications manufacturers and service providers to make their products and services accessible to people with disabilities, if readily achievable. These rules implement Section 255 of the Communications Act. Where it is not readily achievable to provide access, Section 255 requires manufacturers and providers to make their devices and services compatible with peripheral devices and specialized customer premises equipment that are commonly used by people with disabilities, if such compatibility is readily achievable." For more information, see http://www.fcc.gov/cgb/dro/section255.html

The Americans with Disabilities Act of 1990:
(Text: http://www.usdoj.gov/crt/ada/pubs/ada.txt)

"The ADA prohibits discrimination on the basis of disability in employment, State and local government, public accommodations, commercial facilities, transportation, and telecommunications. It also applies to the United States Congress.

To be protected by the ADA, one must have a disability or have a relationship or association with an individual with a disability. An individual with a disability is defined by the ADA as a person who has a physical or mental impairment that substantially limits one or more major life activities, a person who has a history or record of such an impairment, or a person who is perceived by others as having such an impairment. The ADA does not specifically name all of the impairments that are covered." (Source: http://www.usdoj.gov/crt/ada/cguide.htm#anchor62335).

APPENDIX II: THE AGENCIES WHO ENFORCE ACCESS

The United States Access Board:
The United States Access Board covers Accessible Design and sets standards for architecture and design. They set rules and standards for such things as size, distribution and arrangement of disabled parking spaces, wheelchair access for theatres, design guidelines for talking or chirping crosswalk indicators, etc.
http://www.access-board.gov/

U.S. Department of Education:
Section 504 is enforced by the U.S. Department of Education, Office for Civil Rights enforces Section 504 as it applies recipients of Federal Funding for education.
http://www.ed.gov/about/offices/list/ocr/index.html

The Department of Justice:
Section 508 requires all federal government bodies and their contractors to make Information Technology accessible for the disabled.
http://www.usdoj.gov/crt/508/508home.html

The Federal Communications Commission (FCC):
Section 255 of The Telecommunications Act is coordinated by the FCC. They require the telecommunications industry to make equipment readily accessible or, alternatively make equipment compatible with assistive technology devices.
http://www.fcc.gov/cgb/dro/section255.html

APPENDIX III: SOFTWARE

Some examples of adaptive software are listed below:

JAWS Family
(http://www.freedomscientific.com/index.html):

- ***Connect Outloud***
  Internet access through speech or Braille output; designed for the beginning blind or low-vision user

- ***MAGic***

Screen magnification software

- ***Open Book***
  OCR and text-to-speech software

- ***JAWS for Windows:***

Screen reading software for use with Windows

ZoomText/AI Squared Family
(http://www.aisquared.com):

- ***ZoomText Magnifier***

Screen magnification software

- ***ZoomText Reader***

Screen magnification and screen reading software

Dragon Systems Family
(http://www.scansoft.com):

- ***Dragon NaturallySpeaking***

Voice recognition software for dictating documents and controlling computer applications via voice.

Window-Eyes Family
(http://www.gwmicro.com):

- ***Window-Eyes***

Screen reading software for use with Windows

APPENDIX IV: DESIGNING ACCESSIBLE FLASH PAGES:

Macromedia has an excellent guide for creating accessible Flash pages. It can be found here: http://www.macromedia.com/resources/accessibility/ .

General standards, many of which are equally as applicable to standard HTML applications, are as follows:

Hearing disabilities
- Provide synchronized captions for any audio that conveys content

Photo epilepsy
- Remove strobing content that flashes between 2 and 55 times per second

Motor disabilities
- Ensure the Flash content is keyboard accessible
- Do not require fine motor skills

Cognitive disabilities
- Give users control over time sensitive content
- Provide easy to use controls and navigation schemes
- Be consistent
- Use the clearest, simplest language appropriate to the content

Low vision
- Provide plenty of contrast
- Allow the Flash content to scale to a larger size

Blindness
- Ensure screen reader accessibility or provide an accessible alternative
- Ensure keyboard accessibility
- Do not interfere with screen reader audio or keyboard commands
- Provide textual equivalents for all non-text elements that convey content or provide a function.

Please note: In order to be fully accessible to screen readers, the content must have been developed for accessibility using Flash MX or newer.

Source: http://www.webaim.org/techniques/flash/

APPENDIX V: DESIGNING ACCESSIBLE PDF DOCUMENTS:

Adobe has some very good information on designing accessible PDF Documents. This information can be found online at:
http://www.adobe.com/enterprise/accessibility/main.html

The full set of guidelines for designing accessible PDF Documents can be found here:
http://www.adobe.com/enterprise/accessibility/pdfs/acro7_pg_ue.pdf

These guidelines are very useful to anyone who is familiar with creating PDF Documents in Adobe Acrobat. They include information for adding Alt-tags to images inside a PDF, suggestions for which fonts to use, as well as…

To summarize the most important parts of the document:

- When creating a PDF, make sure you are making a searchable text file and not just a scan of the document.
- Provide alt-tags for images that convey the same information conveyed by the image itself.
- Use proper tags to denote headers, figures, text, tables, etc. Although this is usually easier to do from the original source document than it is from within Adobe Acrobat, it can be done (see Section 9 of the previously mentioned guide).
- If document is a form, use accessible, fillable form fields, and include descriptions of the form fields.
- Make sure your document has a logical reading structure.
- Configure your security settings so that they do not interfere with screen readers (i.e. make sure you've enabled the option: "Enable Text Access for Screen Reader Devices For the Visually Impaired").

Conclusion:

Adobe has gone to a lot of effort to provide a guide on creating accessible PDFs. It is updated on a regular basis as newer versions of Adobe Acrobat are released and should be considered one of the definitive resources for this process.

APPENDIX VI: DESIGNING ACCESSIBLE MULTIMEDIA FILES:

There are a variety of recommended methods for making multimedia files and web pages accessible. One of these is the W3C group's Synchronized Multimedia Integration Language. These lengthy guidelines can be found here:
http://www.w3.org/TR/2005/REC-SMIL2-20051213/

WebAim also has many resources for learning skills such as captioning multimedia presentations to make them accessible to Deaf and hard of hearing populations:
http://www.webaim.org/techniques/

APPENDIX VII: TOOLS FOR VALIDATING ACCESSIBILITY OF WEB PAGES

W3C List of Accessibility Tools:
http://www.w3.org/WAI/ER/existingtools.html

W3C Validator Tool:
http://validator.w3.org/

University of Minnesota List of Accessibility Tools:
http://www.d.umn.edu/goto/tools#accesstools

Web Developer plugin for Firefox Browsers:
https://addons.mozilla.org/extensions/moreinfo.php?id=60

WebXACT Validator:
http://webxact.watchfire.com

Cynthia Says Validator:
http://www.contentquality.com/