RECOMMENDATION ON ACCESSIBILITY STANDARDS FOR CALIFORNIA STATE WEB PAGES

INFORMATION ORGANIZATION, USABILITY, CURRENCY, AND ACCESSIBILITY WORKING GROUP

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Executive Summary

According to the 2000 Census, nearly 6.2 million Californians have an identified disability. By the year 2010, this number is expected to increase to 11 million, nearly 30% of the state's population.[1] State government is responsible for providing service to all citizens, including those with disabilities. Technology provides government the ability to reach its citizens electronically. It is imperative that the state's web presence be designed in a manner that is accessible to all citizens, and compatible with commonly used assistive technologies. When properly designed, the websites can provide an effective means for people with disabilities to interact with government.

In 2003, California amended Government Code 11135 – adopting, in its entirety, Section 508 of the amended U.S. Rehabilitation Act of 1973. Subpart B paragraphs 1194.22 (a)-(p) of Section 508 provide the Standards for accessibility of government websites. At the time the legislation was enacted state departments and agencies were not provided with explanations or interpretations of the law indicating how it should be implemented. Web accessibility training and defined resources for implementation are still desperately needed. Additionally, the law has not been systematically enforced at the state level.

Inaccessible web pages and services place the state at risk of lawsuits and loss of federal funds. Pursuing legal action is one method that citizens and businesses can enforce the rights defined in Government Code 11135. Departments receiving federal funding are subject to audit at any time; this includes their web pages and services associated with the program receiving the funds. Loss of citizen support for government is also a risk associated with insufficient access to government information and services. California is responsible for ensuring all constituents have equal access to state government.

This recommendation provides the business case for implementing and enforcing web accessibility standards for state websites. Standards and guidelines to support website accessibility are defined along with tips for how to implement them. A high level approach to implementation is provided. The recommendation addresses tools for implementation and references for additional information. Web accessibility training for webmasters and web developers will be provided by the Department of Rehabilitation in August and September 2006 to support the recommended standards. Information about the scheduled trainings and additional training needs are included in this document.

[1] 2000 Census and California Department of Finance Demographic Research Unit.

Section I – Business Case

California is a diverse state. As of the 2000 Census, there were an estimated 54 million Americans with disabilities, including nearly 6.2 million Californians with identified disabilities. By 2010, it is anticipated that there will be 11 million Californians with disabilities – that accounts for nearly 30% of the state population. It is important to understand that these statistics use only a narrow definition of disability. A study by Microsoft indicates that an approximate 57% of adult computer users could benefit from some sort of assistive technology.[2] As our population ages and technology becomes more ubiquitous, we will see an increase in the use of assistive technology including alternative pointing devices (trackballs instead of a mouse), screen magnifiers to compensate for vision loss, and many new and exciting technologies not yet even invented. As a technological leader, California should be in the forefront of ensuring that all of our citizens can fully participate in the electronic offerings of their government.

Beyond social justice and demographics, ensuring that all Californians have access to state information and online services is the law. California accepts billions of dollars from the Federal Government, and in accepting those funds we are required to adhere to the Federal Section 508 standard. Inaccessible websites put the state at risk for lawsuits and penalties from federal audits. Even when state monies are involved, California state law requires that websites be accessible.

All citizens and employees, including those who have disabilities, have a right to access California information resources and online services important for their personal well-being, commerce, recreation, and independence. It is imperative, on a humanitarian, technological, and financial basis that California state government incorporates accessibility as essential in its web development and presence as soon as possible. For every day of delay, hundreds of new state documents are introduced to the Web. If these documents are not accessible, California will have dissatisfied citizens and be at risk for employment-related and civil rights discrimination complaints, lawsuits, and the loss of federal funds.

History and Legislation

California state government is committed to ensuring this goal through the development and use of accessible electronic and information technology.

The California legislature followed the lead of the U.S. Congress that enacted Section 508 in the amended U.S. Rehabilitation Act of 1973 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 state legislature expressed this commitment in California Government Code 11135 that adopted, in its entirety, Section 508 of the amended U.S. Rehabilitation Act of 1973.

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[2] Microsoft Corporation Press Release. February 2, 2004. “New Research Study Shows 57 Percent of Adult Computer Users Can Benefit From Accessible Technology.” http://www.microsoft.com/presspass/features/2004/feb04/02-02aging.asp

With California's adoption of Section 508, state agencies and departments must provide both employees and members of the public with disabilities access to information that is comparable to the level of access available to those without disabilities.

To support the enacted legislation, Section 508 Subpart B, paragraphs 1194.22 (a)-(p) of the Technical Standards, were drafted to insure the accessibility of government web sites. These standards address web site development strategies needed to create a baseline level for accessibility. They provide accessibility standards for content provided on web sites, such as Portable Document Format (PDF), image files, audio and video, as well as data and information tables that pose a challenge to even the most skilled webmaster. These standards are available to state web developers through the federal government's Section 508 website (www.section508.gov).

The State of California, however, has not provided interpretations, training, or implementation tools to assist its web developers in implementing the standards. This has left many state agencies vulnerable to potential costly litigation. Over three years have passed since Section 508 was incorporated into state law. In that time, as previously mentioned, the amount of web content has grown exponentially. It is imperative, not only as a cost-effective measure, but also as a responsibility to our customers and employees with disabilities that these standards be enforced and that appropriate training and resources be made available immediately.

Recommended Approach

In addition to the Section 508 standards, the Internet's international standards body, the World Wide Web Consortium (W3C), has also proposed similar standards known as the Web Content Accessibility Guidelines (WCAG). The WCAG Version 1.0 Priority 1 and Priority 2 Checkpoints already incorporate the fourteen Section 508 Technical Standards mentioned above. The IOUCA believes that the inclusion of the additional W3C guidelines not addressed in the Section 508 Standards are important in supporting a state web presence that provides a greater level of independence and usability among California's citizens and employees with disabilities.

Benefits of an Accessible State Web Presence

There are great rewards for compliance with accessibility Standards and Guidelines. Compliance with Section 508 and WCAG 1.0 will benefit California's citizens with disabilities. Compliance will provide an additional benefit to those users who require keyboard-only access or use text-based browsers, low-end processors, slow modem connections, and/or no multi-media capabilities on their computer. Compliance also enhances access to California web sites by developing technologies such as Personal Digital Assistants (PDAs), Web TV, Internet phones, and other devices with Internet connectivity. In general, enhancements to comply with accessibility standards usually improve the general ease of use of a web site thus benefiting all users.

Scope of Implementation

The recommended standards for accessibility apply to all State of California public Internet web sites for state organizations that report to the Governor and the State Chief

Information Officer (CIO). It is hoped that the other constitutional offices will find these standards helpful as they work to make their public web sites accessible.

Section 508 of the amended Rehabilitation Act of 1973 and web accessibility is not limited, however, to public web sites. State agencies and departments should ensure that their Extranet (business to business, not intended for public viewing) and Intranet (available only to staff within the organization) sites are accessible and comply with Section 508.

Implementation timeframes should be assessed and established based initially on urgency, ease of implementation, and the volume of traffic or visibility. A self-evaluation by each agency with a hierarchical implementation plan should be conducted immediately and on an ongoing basis.

Web Applications

The IOUCA recognizes that accessibility for web applications is an important, related issue. The California Enterprise Architecture Program will develop accessibility standards for web applications at a later time with input from the IOUCA. Although this document does not explicitly address web applications, it does address some components of online applications such as HTML forms. As with any online content, web application developers should be familiar with and meet the performance criteria outlined in this document.

Contractors and Outsourcing

Some organizations hire contractors to develop web sites and applications. These standards apply to all of a state agency or department's web pages, regardless of whether the pages were developed in-house or by a contractor, and regardless of the domain name used in the web page's address.

Training and Resources

These standards are intended for all web masters, developers, and content contributors who create or maintain web pages for their organization. In many organizations, staff will have to learn new processes, procedures, and systems in order to create accessible web pages. In some cases, this will require extensive implementation planning and staff training. These efforts will only succeed with a commitment from the executive and management levels in the organization to provide sufficient personnel, funding, and technical resources.

File Types

All of the State's web pages would be affected by these standards, regardless of the type of web page. In addition to web pages with .htm or .html file extensions, these standards apply to web pages with other file extensions such as .asp and .php.

The use of other technologies (e.g., Java, Flash, AJAX) and other document formats (e.g., Adobe Acrobat PDF, Microsoft Word, WordPerfect) is permissible if used in accordance with the standards outlined in this document. See the sections on Applets

and Plug-ins and Downloadable Documents for more information. In the absence of any specific guidelines, document authors and webmasters should always consider the accessibility performance criteria included later in this document.

Barriers to Implementation

Lack of Familiarity with Accessibility

Lack of knowledge and understanding of how to successfully integrate accessibility into state web design and content are the major barriers to making this recommendation into reality. The state must ensure that good communication and training are in place to support our own staff as they are asked to follow this recommendation. The IOUCA is working closely with the Department of Rehabilitation to support their commitment to the delivery of training, and the provision of reliable tools and accurate information for state webmasters and content developers to utilize.

PDF Documents

Portable Document Format (PDF) is a popular format for making documents available over the Internet. Improperly prepared PDF documents, particularly those originating from scanned images, are not accessible to many people with complete or low vision loss. PDF documents which originate as images, without Optical Character Recognition (OCR) cannot be converted to speech output that is readable by assistive technologies. (Please refer to the Special Note on PDFs later in this document.) California, like many governments, has used the format widely for creating documents to be placed on state web sites.

Creation PDFs that are accessible places the burden on the authors to create properly constructed documents. The widespread need to properly educate and train all state government staff who create a document that may later be converted to PDF is critical and currently poses a great challenge. Ensuring that PDFs are accessible will present a significant challenge, whether dealing with new documents or converting selected older ones. The IOUCA and the California Enterprise Architecture Program are meeting with Adobe to explore how best this issue can be addressed.

Advanced technologies

Web developers are constantly “pushing the envelope” and exploring new, flashy, and exciting methods of displaying information online. Some of these technologies are things like Adobe Flash, AJAX, or Java. Often these techniques are adopted by web developers without careful consideration and understanding of the accessibility challenges inherent in new technology. Unfortunately the pace of development in assistive technology for users with disabilities lags behind that of the Internet.

Implementation, Monitoring, and Accountability

Developing well thoughtful implementation plans with appropriate and reasonable timeframes is paramount. Site redesigns, new content management systems, and the

planned training and technical resources will reduce these barriers and move the state forward in meeting its commitment to accessibility. Although there are free tools to evaluate the accessibility of a single web page, these methods rely on each individual webmaster and content creator to validate each individual page. Without an enterprise approach to evaluating, monitoring, and repairing web accessibility, compliance will continue to be inconsistent and extremely challenging for individual webmasters.

Section II – Recommended Standards and Guidelines

Standards

State agencies subject to this policy will take reasonable steps to design and develop web sites that are accessible to people with disabilities as well as those without disabilities.

Web page developers, designers, programmers, and content providers should become familiar with the standards and guidelines for achieving universal Web accessibility and should apply these principles in designing and creating any official state web sites.

State Web sites should meet both the Web accessibility standards in California Government Code 11135, which adopted the Section 508 standards issued by the United States Access Board[3], and the Priority 1 and 2 level checkpoints of the Web Content Accessibility Guidelines 1.0 (WCAG 1.0 "AA" Conformance Level) developed by the World Wide Web Consortium (W3C).

In addition, the Department of Rehabilitation has drafted five recommendations based upon its work with 508, WCAG and the communities serving persons with disabilities.

Avoid using small images or text as links. [Ref: CA DOR #1]

Avoid using frames. [Ref: CA DOR #2 Based on WCAG 10]

If a downloadable document cannot be provided in an accessible electronic format, provide information on how to request an alternate format. [Ref: CA DOR #3]

Provide contact information. [Ref: CA DOR #4]

Test for accessibility. [Ref: CA DOR #5]

These additions increase the level of accessibility and empowerment to a website visitor or employee with a disability without difficulty or major expense. They are easily achieved best practices and techniques.

[3] Part 1194 to Chapter XI of Title 36 of the Code of Federal Regulations, Subpart B Section 22, under Section 508 of the Rehabilitation Act.

Accessibility Performance Criteria[4]

The goal of these standards is to insure that all information and functionality presented in a web site or web-based application is available in a manner that is:

- Compliant with browser and system font size and color settings
- Completely operable using the keyboard only
- Completely operable using leading screen magnification software
- Completely operable using leading screen reading software
- Completely operable using leading speech recognition software
- Completely understandable without sound
- Completely understandable without color
- Clear and consistent
- Unlikely to trigger photosensitive seizures

[4] These Performance Criteria and Guidelines are based on the work of the State of Maine's Policy and Guidelines (Revised and Adopted by the Information Services Policy Board 9/18/03). Maine's policy and related information is available online at http://www.maine.gov/oit/accessibility/index.htm. Modifications were made to clarify text and incorporate W3C Priority 2 items that were not included in Maine's policy.

Guidelines[4]

1. Coding

a. Use valid, standard web programming code. [Ref: WCAG 3.2, 11.1]

What: The World Wide Web Consortium (W3C) sets and publishes standards for most web programming languages, including HTML 4.01, XHTML 1.0, CSS Level 1 & 2, DOM, and SMIL. Programming code is considered "valid" when it follows all the rules and conventions specified in the published standards.

Why: Screen readers and other assistive technologies can more accurately interpret and interact with web pages that are built using valid, standard code. W3C languages are designed with accessibility in mind. This will also make your site compatible with a wider range of web browsers and devices used by the general public.

How: Indicate the programming language you are using by starting your code with a document type declaration such as: <!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN">. Use the W3C HTML Validation Service and W3C CSS Validation Service to check your code. Refer to the World Wide Web Consortium site for full specifications and documentation.

b. Use appropriate markup to convey document structure. [Ref: WCAG 3.5, 3.6, 3.7, 5.4]

What: HTML includes markup (programming code) to identify the structural elements of a document. For example, the <p> element identifies a paragraph and <h1> identifies a first-level heading.

Why: Screen readers use structural elements to help make reading more efficient. For example, some screen readers can skip from heading to heading to allow the user to "skim" the document.

How: Identify section heading, paragraphs, lists, quotes, etc using the appropriate tags instead of relying on formatting commands to distinguish these elements. For example, use <h1> tags to identify top-level headings rather than simply applying font-size or bold formatting commands. Do not misuse structural elements for formatting effects, such as using <h1> to make text bold or <blockquote> to indent a paragraph that is not actually a quotation.

c. Use style sheets for formatting whenever possible. [Ref: WCAG 3.3]

What: Cascading Style Sheets (CSS) is a formatting language designed to compliment HTML. While HTML is designed to identify a document's structure, CSS defines formatting and presentation. Most current browsers offer some level of support for CSS; however, older browser versions may not. Pages must be usable and function properly when CSS is not supported.

Why: In general, users can most easily override formatting settings made using CSS. The use of CSS for formatting also tends to facilitate the proper use of HTML to identify document structure.

How: See the W3C's Cascading Style Sheets site for specifications, tutorials, and resources.

Note: Some older web browsers, notably Internet Explorer 3 and Netscape 4, have problematic support for CSS. Be sure to test pages using CSS in multiple browsers.

d. Avoid deprecated W3C markup and technologies [Ref: WCAG 11.2]

What: A deprecated element or attribute is one that has been outdated by newer constructs. Deprecated elements may become obsolete in future versions of the standards. Using deprecated elements instead of newer elements will make your site incompatible with the latest version of HTML and may, despite your best intentions, decrease its accessibility.

Why: It is important to avoid deprecated elements so that your Web page is compliant with current browser technology. The presentational elements (like FONT) and color attributes have been deprecated in order to encourage authors to use style sheets, thus separating page style from page content.

For example, the new OBJECT element is far more versatile at handling content from different sources than the deprecated APPLET, and it is designed to degrade more gracefully if coded properly.

How: Use CSS for formatting when possible. Be familiar with the W3C's deprecated elements for the various standards the W3C develops (HTML, XML, CSS, etc)

e. Use metadata to add semantic information to pages and sites. [Ref WCAG 13.2]

What: Some of the code behind web pages provides information about the document itself. This is called "metadata" about the document - metadata is information about data. Well-crafted metadata can provide important orientation information to users. HTML elements that provide useful information about a document include <title>, <doctype>, <link>, and <meta> tags.

Why: Information about your content (metadata) allows information about the document to be understood and best used by technology devices including not only assistive technologies, but also technologies like PDAs, printers, etc. Proper use of metadata also supports the separation of content and presentation as recommended by the IOUCA.

How: See recommendations incorporated in the IOUCA Recommendations for the Separation of Presentation and Content.

2. Text

a. Avoid using images to display text. [Ref: WCAG 3.1]

What: Web developers often use images of text to achieve a specific style, size, or special effect.

Why: Users with limited vision rely on the ability to enlarge text or choose enhanced color combinations. However, most web browsers cannot change the size and color of images.

How: Whenever possible, use actual text instead of images of text. Style sheets can be used to achieve specific sizes, colors, or effects. Text that requires exact formatting, such as logos, are appropriate exceptions.

b. Avoid using absolute sizes for fonts. [Ref: WCAG 3.4]

What: Font sizes can be set using "absolute" or "relative" units of measurement. Absolute units, notably pixels, points, and inches,

are based on fixed physical measurements; Relative units, such as percentages, “em” units, or "small," "medium," or "large," are based on the user's default font size. Web developers can also choose not to define font sizes.

Why: Users with limited vision often rely on the ability to enlarge text. Most web browsers allow users to easily change the size of text that has been set with relative units (or not set at all). Using absolute font sizes generally makes it much more difficult for users to change text size to meet their needs.

How: Set font sizes using relative measurements or avoid setting font sizes altogether.

c. Specify the language of text. [Ref: WCAG 4.1, 4.3]

What: HTML uses the language attribute (“lang”) to specify language in a web page. It can be set for any HTML element.

Why: Words written in foreign languages can be unintelligible when spoken by a screen reader. Some screen readers are able to pronounce words in their appropriate language if it is specified.

How: Use the language attribute on the <html> element to identify the primary language of each document, for example, <html lang="en">, for English. Use the language attribute on or other elements to identify words or phrases in other languages. For example, a Spanish phrase within an English document could be coded as se habla español.

Note: Not all screen readers support automatic language changes, but setting the lang attribute will not negatively affect those that do not.

d. Avoid using "ASCII art.” [Ref: WCAG7.3]

What: "ASCII art" (and "emoticons") are images created using special arrangements of text characters and symbols. For example, ":-)" is often used to create a smiley face, and "-->" could be used as an arrow.

Why: Screen readers read most ASCII art literally, which can be extremely confusing. For example, ":-)" reads as "colon dash right parenthesis," and "-->" as "dash dash greater than."

How: Use images with appropriate alternate text instead of ASCII art.

3. Colors

a. Do not convey information with color alone. [Ref: WCAG 2.1; 508 (c)]

What: Color is often used to indicate special functions or status. For example, required form fields are frequently indicated with red labels.

Why: Users with blindness, limited vision, or color-blindness may miss information presented with color.

How: Whenever color is used as an indicator, use a non-color-based indicator as well. For example, required form fields could be identified with asterisks as well as color.

b. Use contrasting foreground and background colors. [Ref: WCAG 2.2]

What: Web authors can set specific colors to be used for foregrounds (text) and backgrounds. Sometimes images are used as backgrounds.

Why: Users with limited vision or color-blindness may have difficulty reading text that is similar in color to its background.

How: For text, use dark colors on light backgrounds, or vice versa. Avoid combinations of red and green as well as busy background images.

4. Images

a. Provide "alternate text" for all images. [Ref: WCAG 1.1; 508 (a)]

What: The HTML image element (<img>) includes an "alternate text" attribute (alt) that is used to provide text that can be substituted when the image itself cannot be displayed. Alternate text is meant to be a concise replacement for an image and should serve the same purpose and convey the same meaning.

Why: Individuals who are blind cannot perceive information presented in images; screen-reading software reads alternate text instead.

How: ALL images must have appropriate alternate text. As a rule of thumb, consider what you might say if you were reading the web page to someone over the telephone. Alternate text should be brief, no more than a few words (150 characters).

For images that contain words or letters - use alternate text that includes the same words or letters. For images links - use alternate text that identifies the link's destination or function. You do not need to include the words "link to.” For images that are invisible, purely

decorative, or otherwise do not convey meaning - use alt="" (null) to indicate that the image can be safely ignored by a screen reader.

Certain types of information, such as GIS and geographically coded data, currently may not be available in a displayable text format. At this time it is acceptable to use these formats without a text equivalent. However, these formats should be used with caution and only when necessary. If a more accessible format to present the same information is available, or becomes available, it should be used instead or provided as an alternative.

b. Provide full descriptions for graphs, diagrams, and other meaningful images. [Ref: WCAG 1.1; 508 (a)]

What: "Meaningful" images are images that convey more information than can appropriately be expressed as alternate text.

Why: A full description allows a user who cannot see or understand a meaningful image to receive the same information as a sighted individual.

How: Present a full description of a meaningful image either on the page on which the image appears or through a link immediately preceding or following the image. Use alternate text to provide a concise name for the image. For example, the alternate text of a graph should state its title and the long description should summarize its trends and/or present a table of its data.

Note: The long description attribute (“longdesc”) of the <img> element can also be used to provide a link to a full description. Because most web browsers do not yet support long description, it should not be used as the only method of providing a full description.

Note: Certain types of information, such as GIS or geographically coded data may not be currently available in a displayable text format.

5. Image Maps

a. Provide alternate text for each area in client-side image maps. [Ref: WCAG 1.1; 508 (a)]

What: Image maps are images divided into multiple "areas," with each area having its own hypertext link.

Why: Just as images must have alternate text, each area of an image map must also have appropriate alternate text for use when the image is not displayed.

How: Use alternate text that indicates the function or destination of the link for each area of a client-side image map. The image itself should have alternate text that indicates the overall function of the image map.

b. Avoid using server-side image maps. [Ref: WCAG 1.2, 9.1; 508 (e), (f)]

What: While client-side image maps and server-side image maps look and operate similarly, they are technically very different. Because of the way server-side image maps work, all information about the image and links is stored at the web server and is not available to the user's web browser or assistive technology.

Why: Screen readers cannot identify or read the separate areas or links within server-side image maps.

How: Whenever possible, use client-side image maps instead of server-side image maps. If server-side image maps must be used, provide a set of text links that duplicate all the functions/destinations included in the image map.

6. Audio

a. Do not convey information with sound alone. [Ref: WCAG 1.1; 508 (a)]

What: It is possible to use sound for a variety of purposes, including presenting warning signals, cues, or verbal instructions.

Why: Users who are deaf or hard of hearing may miss information provided only through sound.

How: Whenever significant information is provided by sound, include a visual indicator that provides the same information as well.

b. Provide text transcripts for audio containing speech. [Ref: WCAG 1.1; 508 (a)]

What: "Audio containing speech" includes audio recordings or live broadcasts of speeches, seminars, conferences, etc. A text transcript is a word-for-word written record of the spoken content of such an event.

Why: Individuals who are deaf or hard of hearing may require text transcripts to access audio information.

How: Provide a link to a text (or HTML) transcript of any audio presented on a web site. Transcripts should be posted within 48 hours of a request for the data.

7. Multimedia

a. Provide synchronized captions for multimedia containing speech. [Ref: WCAG 1.4, 508 (b)]

What: Multimedia generally refers to recorded or live media containing both video and audio tracks. Captioning (as in "closed captioned") is essentially a text transcript of the audio synchronized with the audio/video tracks of the presentation.

Why: Individuals who are deaf or hard of hearing may require captions to access the audio information in multimedia.

How: Whenever possible, captions should be implemented using Synchronized Multimedia Integration Language (SMIL) to synchronize the display of text from a transcript with the video. As a less desirable alternative, captions can be added to a standard video recording and then converted to a web format.

b. Provide audio descriptions for multimedia with significant video. [Ref: WCAG 1.3]

What: Audio descriptions are verbal descriptions of the actions and images displayed in a video that are inserted during pauses in the regular dialog or audio track. Audio descriptions are only necessary if significant information is presented visually but not discernable from the dialog or audio track.

Why: Individuals who are blind or low-vision may require audio descriptions to access the visual information in multimedia.

How: Carefully consider whether audio descriptions are necessary to present the significant information of a multimedia recording. Many speech-intensive events, such as speeches, lectures, or conferences, may not need audio description.

8. Animation

a. Avoid flickering, blinking, and unnecessary animation. [Ref: WCAG 7.1, 7.2, 7.3; 508 (j)]

What: Animated graphics, Flash, Java, <blink> tags, <marquee> tags, and other techniques are often used to create a variety of animated effects.

Why: Flickering or blinking between 2 and 55 Hz (flashes per second) can trigger epileptic seizures. Animation can be distracting to users with certain visual or cognitive disabilities.

How: Do not cause elements to blink regularly between 2 and 55 Hz. Avoid animation and movement unless it provides significant additional information.

9. Links

a. Make sure that links are understandable out of context.) [Ref: WCAG 13.1]

What: A link is understandable out of context when it clearly indicates its destination or function without requiring additional information.

Why: Screen reader users often tab through links (skip from link to link by pressing the Tab key) in order to "scan" a page. Most screen readers also offer a "links list" feature to help speed the process of navigating to specific links. Links that are not understandable out of context, such as "click here" or "more," make these techniques much less efficient.

How: Use link text that is clear and unambiguous. Avoid using "click here."

b. Provide a means of skipping past repetitive navigation links. [Ref: 508 (o)]

What: Navigation links are the lists or "menus" of links to all the sections of a site that are often repeated on every page.

Why: Because navigation links are typically placed at the beginning (top left) of pages, screen reader users must read through all the navigation links before reaching the main area of the page. Individuals who use a keyboard instead of a mouse similarly must tab through all the navigation links before reaching the main area of the page. Providing a means of skipping these links can significantly improve efficiency and usability for screen reader and keyboard users.

How: Provide a link at the beginning of navigation lists which points to a target at the beginning of the main content area of the page. This link must be visible to screen reader and keyboard-only users, but can be hidden from other users. The link can be text or a small image with ALT-text such as “skip navigation”. The link is typically named “skip navigation” or “skip to content”. It is also acceptable to

design a page so that navigation links come at the end of the document.

Note: This is required only if your site contains a set of navigation links at or near the top of the page that repeats on multiple pages of the site.

c. Avoid using small images or text as links. [Ref: CA DOR #1]

What: The size of the "clickable" area of a link is limited to the size of the image or text that makes up the link.

Why: Mouse-users with limited fine motor control may have difficulty pointing to and clicking on links that are small, especially if the links are close together.

How: Make sure that images used for links are reasonably large (preferably 32 pixels by 16 pixels or larger). Use standard or enlarged font sizes for text links, and avoid using text links that are shorter than four characters in length. Additionally, avoid placing small links close together.

10. Forms

a. Associate labels with all form fields. [Ref: WCAG 12.4; 508 n]

What: HTML forms include "fields" such as buttons (<input type="button">), text boxes (<input type="text">), list boxes (<select>), and more. A text label typically identifies each field.

Why: Screen readers cannot always determine which label belongs to which field based on positioning alone. The <label> element makes this association clear.

How: Use the <label for="…"> tag to label every form field.

Note: The value of a label's "for" attribute is the corresponding field's id, not its name.

b. Position labels as close as possible to form fields. [Ref: WCAG 10.2; 508 (n)]

What: Using certain layout techniques, form labels are not always positioned immediately next to their fields.

Why: When screen magnification software enlarges a web page it also reduces the field of view. If form field label is positioned far away from its field, it may be impossible for a screen magnifier-user to view both the field and the label at the same time.

How: Position labels immediately adjacent to fields, preferably in standard locations, such as on the left or above text boxes and list boxes and on the right of checkboxes and radio buttons.

c. Include any special instructions within field labels. [Ref: 508 (n)]

What: Frequently, special instructions are listed after the field to which they apply. In some cases, instructions are even presented in "pop up" text or in the browser's status bar.

Why: When filling out a form, screen readers typically read only the field's label. Screen magnifiers will focus on the field and its label, and instructions may be out of the field of view.

How: Special instructions should be given before the form field and within the field label if possible. If instructions are too long to appropriately fit within the label, they should be given in an instructions section in advance of the form.

d. Make sure that form fields are in a logical tab order. [Ref: WCAG 9.4; 508 (n)]

What: Screen reader and keyboard users move between form fields (and links) using the Tab key. The order in which form fields receive focus is called the tab order. By default, the tab order follows the order in which elements appear in a page's HTML code.

Why: Depending on the design and layout of a page, the tab order may not match the visual (or logical) order of fields on a form. Reading fields out of their intended order can be disorienting for a screen reader or keyboard-only user.

How: Make sure that fields appear in the HTML code in the logical order and/or use tabindex to set the appropriate order.

Note: Tabindex only is supported by Internet Explorer 4 and up.

11. Data Tables

a. For simple data tables, explicitly identify headings for all columns and rows. [Ref: WCAG 5.1; 508 (g)]

What: "Data tables" are simply HTML tables used to display data. "Layout tables" are used to position columns and sections on a web page. Both data and layout tables use the <table> element, but their functions, and accessibility issues, are very different.) "Headers" identify the content of each row and/or column.

Why: A screen reader can use table headers to provide row and column information while a user explores the data cells within a table.

How: Use <th> (table header) or <td> (table data) elements with scope="col" (for column headers) or scope="row" (for row headers) to identify cells that contain row and/or column headings.

b. Avoid using complex data tables. [Ref: WCAG 5.2; 508 (h)]

What: Tables with multiple layers of headers and "spanned" columns or rows can be very complex and are difficult for assistive technologies to handle.

Why: Complex data tables can be difficult to navigate and understand using a screen reader. Only the most advanced screen readers can use advanced table markup to provide orientation information.

How: Whenever possible, simplify complex tables by re-arranging or dividing them into separate tables. When a complex table cannot be simplified, use advanced table markup, such as headers, axis, scope, column (<col>), and column group (<colgroup>), to fully indicate the relationships between data cells and headers.

Note: See W3C's "Tables in HTML Documents" for complete details on how to markup complex tables.

12. Frames

a. Avoid using frames. [Ref: CA DOR #2 based upon WCAG 10]

What: Frames are sometimes used inappropriately for formatting and layout. For example, empty frames can be used to create margins around or within a page.

Why: Screen readers cannot judge whether the content of a frame is significant and must identify every frame for the user. Having to read this extraneous information for non-essential frames can be time consuming and confusing.

How: Use frames sparingly. If a frame is not necessary for page content, eliminate it.

b. Provide meaningful names and page titles for all frames. If the names are not sufficient, then describe the relationship between frames. [Ref: WCAG 12.1, 12.2; 508 (i)]

What: HTML frames are used to divide web pages into separate areas, each displaying a separate web page. Each frame is identified by a

name attribute and each page contained within a frame is identified by its title element.

Why: To navigate pages with frames, users who are blind must be able to identify the different frames and understand the purpose of each frame. Most screen readers identify frames by speaking the name and/or page title of each frame.

How: Give each frame an understandable name that indicates the frame's function. For example, use name="Navigation" and name="Content" rather than name="nav" and name="right". Set the title element of each page contained within a frame to match the name attributes or to identify the current content of that frame.

Note: Traditionally, the "name" attribute is used for programming and should not contain spaces; the title attribute, which can contain spaces, can also be used to set a more descriptive name for each frame; however, this technique is not yet supported by all screen readers.

13. Scripts

a. Make sure that significant interactions can be performed with both keyboard and mouse. [Ref: WCAG 6.4, 9.2, 9.3]

What: Scripting languages, such as JavaScript, are simple programming languages that can be used within a web browser to automate certain tasks and enable pages to change and respond to user input. Scripts can trigger changes when the user performs specific actions ("events"). Some events are triggered by either mouse or keyboard actions. For example, an image can change color when the mouse pointer hovers over it (the “onmouseover” event).

Why: Users with physical impairments may be able to use the keyboard but not the mouse. Individuals who cannot see the mouse pointer on the screen also use the keyboard for all interactions. Scripts that can only be triggered by the mouse are not usable by these individuals.

How: Whenever using a mouse-only event (e.g., “onmouseover”, “onmouseout”) to trigger a significant script action, also use the corresponding keyboard event (e.g., “onfocus”, “onblur”). Also make sure that keyboard events do not unintentionally trigger script actions. For example, keyboard users should be able to arrow through the choices in a <select> list without triggering each choice (e.g., “onchange”).

b. Make sure that essential content and functionality are available when client-side scripts are not fully supported. [Ref: WCAG 6.3; 508 (l)]

What: Scripts are often used to dynamically show or hide the content that appears on a web page or to perform important functions, such as checking that entries in form fields are appropriate. "Client-side" scripts, such as JavaScript, are scripts that are run by the user's web browser. Client-side scripts must be supported by and compatible with the user's browser in order to work. ("Server-side" scripts, such as CGI, ASP, JSP, or PHP, run on the web server before the web page ever reaches the user's browser. Server-side scripts do not generally pose additional accessibility problems.)

Why: Older assistive technologies and web browsers may not support client-side scripting. Even current assistive technologies may interact in unexpected ways with content that is displayed using scripts, such as by skipping text that is dynamically displayed or reading text that is dynamically hidden. Users need to be able to access the same essential content and functionality whether scripts are fully, partially, or not supported. It is not safe to assume that users with disabilities will have scripting support turned off.

How: Whenever scripts are used, it is the responsibility of the page developer to thoroughly test the page using assistive technologies to ensure that all information and functionality is accessible. If there is any doubt, err on the safe side by ensuring that the essential elements of the page do not rely on scripts.

Note: One approach to ensuring accessibility with scripts is to include a back-up method of providing the same information and functionality that does not require scripts. For example, if a client-side script is used to check an entry in a form field, a server-side script could make the same check. Similarly, if scripts are used for "drop-down" menus, the same menu choices could be provided in an appropriate location elsewhere on the current or subsequent page. Additionally, scripting features that are purely decorative and do not present any significant information or functionality do not need to be made accessible. (Please remember Guideline 8 about animation)

14. Applets and Plug-Ins

a. Avoid plug-ins if possible, but when necessary use accessible applets or plug-ins. [Ref: WCAG 8.1; 508 (m)]

What: "Applets" and "plug-ins" refer to a variety of newer web technologies, such as Java and Flash, which can be used to create advanced, interactive content on web pages. Both require additional software to be downloaded, installed, and run before the content can be viewed or used. Applets and plug-ins also operate with their own user interfaces, which are separate and different from that of standard web pages.

Why: Because applets and plug-ins have their own interfaces, they must be accessible in and of themselves. If essential content or functionality is presented using an applet or plug-in that is not accessible, it will not be usable by individuals with disabilities.

How: Check with the manufacturer or developer of an applet or plug-in to find out if, and how, the technology is accessible. Whenever a link is provided to content that requires an applet or plug-in, the text should indicate that an applet or plug-in is required and provide a link to an accessible download site for the plug-in (e.g., “Flash Player 6 is required to view this presentation.”). If an accessible applet or plug-in is available, provide users with a link to any special instructions or software that is necessary.

b. If an inaccessible applet or plug-in must be used, provide an accessible alternative that includes the same content and functionality. [Ref: WCAG 6.2, 11.4; 508 (k)]

What: If an applet or plug-in is inaccessible, it may be possible to provide both the original applet or object and an equivalent accessible alternative.

Why: The same features that make an applet or plug-in inaccessible to some users may actually improve accessibility or usability for users without, or with different, disabilities. By providing both the original and accessible versions, the same content and functionality can be available to all users.

How: Wherever a link is provided to an inaccessible applet or object, also provide a link to an equivalent accessible version. Make sure that the information and functionality is completely equivalent and up-to-date. Be sure to consider whether the inaccessible version is actually necessary.

Note: Exceptions may be necessary in cases where it is impossible to create an equivalent accessible version, such as with some geographical imaging and mapping systems.

15. Window Control

a. Avoid automatically opening new windows. If you open a new window, notify the user. [Ref: WCAG 10.1]

What: It is possible to cause hypertext links to open pages in a new browser window, or to automatically open additional windows when a page loads or unloads.

Why: It may not always be obvious to users, especially those with limited vision, blindness, or cognitive disabilities, when a new window has opened. It can be confusing when features such as the browser's "back" button no longer work as expected.

How: Clearly identify any links that will open new windows by providing an indication in the link text or title attributes. In more complex web sites or applications, you may want to consider allowing users to select their preference for whether links are opened in new windows or not.

b. Do not automatically refresh the current page. [Ref: WCAG 7.4]

What: It is possible to cause web pages to automatically re-load their content on a certain interval. For example, a page containing news headlines might refresh every few minutes to present the most current items.

Why: When a page automatically refreshes, it can cause a screen reader to re-start reading from the beginning of the page.

How: Do not use <HTTP-EQUIV="refresh">. If necessary, provide a link or control to allow the user to refresh a page at his or her discretion.

c. Notify users of time limits and provide a means to extend time if needed. [Ref: WCAG 7.5; 508 (p)]

What: Some web pages, frequently those that require a user to log in with an ID and password, "reset" themselves after a certain period of inactivity. Typically, any form entries that have been partially completed are erased and the user must start over.

Why: Users with visual, physical, or cognitive disabilities may require additional time to read and interact with a web page.

How: Provide a clear explanation of any time limits and offer the user a way to extend or remove the limits if necessary. Avoid using time limits unnecessarily.

16. Page Layout

a. Avoid using tables for layout. When it is necessary to use tables for layout, make sure that reading order is logical. [Ref: WCAG 5.3]

What: Layout tables are HTML tables used to lay out a web page in multiple columns and sections (as opposed to tables that actually present data.) "Reading order" refers to the order in which a screen reader would read through the table. For example, the reading

order for a simple table might be (1) row 1, cell 1, (2) row 1, cell 2, (3) row 2, cell 1, and (4) row 2, cell 2.

Why: Screen readers read through tables in the order in which cells are defined in the table code, which can be very different from the order that someone reading visually would follow. It is essential that the reading order match the logical flow of the document so that a screen reader user would hear the document in the same order that a visual reader would read it.

How: Check the reading order by following the order in which the table cells appear in the code. It may be possible to combine cells and/or nest tables to achieve an appropriate reading order. You may wish to use one of the available tools to view a linearized version of your page described in the Resources.

b. When using style sheets for layout, make sure that reading order is logical when style sheets are not supported. [Ref: WCAG 6.1; 508 (d)]

What: The positioning features of Cascading Style Sheets can be used to position elements visually almost anywhere on a web page.

Why: As with layout tables, screen readers read through the elements on a web page in the order in which they appear in the page code, regardless of how they are positioned using style sheets. It is essential that the reading order match the logical flow of the document so that a screen reader user would hear the document in the same order that a visual reader would read it.

How: Check the reading order by following the order in which elements appear in the page code. Reading order can usually be adjusted by rearranging the order in which elements are defined in the code.

c. Minimize the need for horizontal scrolling. [Ref: WCAG 3.4]

What: If a web page is wider than the window or screen in which it is viewed, most browsers will display a horizontal scroll bar and require the user to manually scroll to see the entire page.

Why: When a screen magnifier enlarges a web page, it also reduces the field of view so that the user must pan (scroll) to see the entire page. When the web page being viewed also requires horizontal scrolling, the combination can be awkward or unusable. Keyboard users may also find repetitive scrolling fatiguing and inefficient.

How: Design pages so that they can resize to fit the width of the user's browser. Use relative widths on tables and frames used for layout and make sure that horizontally adjacent images are less than a

total of 600 pixels wide. If scrolling cannot be avoided, place the least important content on the right side of the page.

17. Page Content

a. Use the clearest, simplest, and most concise language appropriate for a page's subject matter. [Ref: WCAG 14.1]

What: "Clearest, simplest, and most concise language", or plain language, refers to the words and grammar used in the content of a web page. It is a subjective goal that depends on the subject matter and intended audience of each web page.

Why: Clear and simple language is easier for all readers, and especially those with cognitive or learning disabilities. Plain language also helps individuals whose primary language is American Sign Language, which differs significantly from written English.

How: Be concise and avoid jargon. Have someone else proofread your text. You should perform user testing with people from your intended audience if possible.

b. Divide large blocks of content into manageable groups where natural and appropriate. [Ref: WCAG 12.3]

What: Documents often contain long unbroken text narratives that can be difficult to read on a screen and provide little to help assistive technology users navigate the web page. Also, large blocks of narrative text or long unbroken lists of items can be challenging to understand and hinder accessibility for users with cognitive impairments.

Why: Organized and grouped content is easier for all users to comprehend. Using proper code to group items also enables assistive technologies to more easily navigate web pages.

How: Long narratives of text can be broken into paragraphs and headers can be used to organize narratives. (See Guideline 1.2) In HTML forms, use field set (<fieldset>) and option group tags (<optgroup>) to group related elements. These groupings can then be styled using CSS to provide visual cues to groupings and improve the ability for assistive technologies to navigate large amounts of text.

18. Downloadable Documents and Alternate Accessible Versions

a. Use separate accessible versions only as a last resort. [Ref: WCAG 11.4; 508 (k)]

What: Separate accessible or "text-only" versions are often offered instead of providing a single accessible site.

Why: Manually developing and maintaining a separate "text-only" version of an entire site is tremendously demanding of time and resources. In practice, "text-only" versions are rarely kept complete or up-to-date. Given advances in accessibility techniques and assistive technologies, "text-only" sites are simply not necessary in most cases.

How: Follow the web accessibility standards to develop a single site that is universally accessible.

Wherever a link is provided to a document that is not written in HTML or an accessible text format, such as Rich Text Format, also provide a link to an accessible HTML or text version of the same document. HTML versions should follow these guidelines; text versions may require reformatting to ensure proper reading order. Additional text descriptions may need to be added for charts, graphs, or other non-text content.

b. Provide accessible HTML or text versions instead of downloadable documents whenever possible. [Ref: WCAG 11.4; 508 (k)]

What: Downloadable documents are often provided in formats such as Adobe PDF, Microsoft Word, or WordPerfect. Such documents must be viewed in their own applications or using a web browser plug-in. Non-HTML documents can often pose an additional accessibility challenge.

Why: For documents in PDF, Word, Power Point, etc to be accessible they must be created in a carefully structured method. Also, the applications required to open downloadable documents may not be available or accessible to users with disabilities or to users who do not have the application or plug-in installed on their computer.

How: When creating content for the web, consider what format is the best. Often documents that are posted as downloads, could as easily be converted to HTML content and made available through printing by the use of CSS.

Note: See also the Special Note on PDFs later in this document.

c. If a downloadable document cannot be provided in an accessible electronic format, provide information on how to request an alternate format. [Ref: CA DOR #3]

What: In some cases, documents cannot be provided in an accessible electronic format.

Why: Users with disabilities must still have equivalent access to public documents.

How: Provide information regarding whom to contact to obtain the document in alternate formats (e.g., Braille, large-print, or audio-cassette). Alternate formats must be available in a timely manner.

d. Make sure that dynamic content is accessible. If dynamic content cannot be made accessible, then provide an alternate presentation of the content. [Ref: WCAG 6.5]

What: Older browsers may not support Dynamic HTML (DHTML) or techniques such as JavaScript or technologies like Flash; they might require special plug-ins or be turned off for a number of reasons, from load-time to security.

Why: If a user's browser does not handle scripts, no content will be generated or displayed.

How: Avoid creating content on the fly on the client. Server-side dynamic content is likely more accessible than client-side. Make sure that all pages display correctly when dynamic technologies (scripts like javascript) are turned off. Avoid using javascript links (e.g. <a href=”javascript…>).

19. Contact Information

a. Provide contact information. Ref: CA DOR #5]

What: Contact information should be identified. Contact information should include email, telephone, text telephone (TTY), and mailing address.

Why: Individuals with disabilities may need to report accessibility problems or request information in an alternate accessible format.

How: List accessibility contact information on the home page or contact page. Inquiries about accessibility, especially requests for materials in alternate format, need to be handled in a timely manner.

20. Testing

a. Test for accessibility. [Ref: CA DOR #5]

What: Testing includes functional tests with assistive technology, browser and operating system functionality as well as automated testing software.

Why: Testing will determine whether accessibility has actually been accomplished.

How: Use browser and operating system accessibility features and leading assistive technology software such as screen readers and magnifiers to test for functional accessibility. Use an automated testing tool to identify common accessibility problems. If possible, do user testing with people with disabilities.

21. Navigation

a. Use navigation mechanisms in a consistent manner throughout a site (Ref: WCAG 13.4]

What: Inconsistent navigation makes using a web site confusing to those using assistive technology and those with cognitive impairments. If a web site used buttons, images, icons, text links, and image maps for navigation, on different pages, there would be five different ways to move around and the user must learn a new method on each page.

Why: A consistent style of presentation on each page allows users to locate navigation mechanisms more easily but also to skip navigation mechanisms more easily to find important content. This helps people with learning and reading disabilities but also makes navigation easier for all users. Predictability will increase the likelihood that people will find information at your site, or avoid it when they so desire.

How: Use similar structure across pages so that key areas (navigation, content, etc.) appear in similar, recognizable places throughout your site.

b. Provide information about the general layout of a site (e.g., a site map or table of contents) [Ref: WCAG 13.3]

What: When a user visits a web site, they need to understand the structure of a site in order to navigate it. From any single page they likely need to understand the relationship of that page to the rest of the site.

Why: It is crucial that the descriptions and site guides be accessible since people who are lost at your site will rely heavily on them.

How: Describe navigation mechanisms. This can be done by providing links at the start of a document to descriptions of navigation and accessibility features on the site. Text-based site maps and tables of content also help users understand and navigate a site's structure.

Special Note about Portable Document Format (PDF) on the Internet

This section of the standards refers specifically to document image files that are created using the Portable Document Format. PDF is specified here because of its widespread use and the unique accessibility challenges it poses. However, this standard is intended to apply to any document image file regardless of its format.

PDF DOCUMENTS

PDF is a commonly used format for making documents available over the Internet. Some PDF documents cannot be converted to speech output that is readable by assistive technologies. Other PDF documents cannot be converted to speech output accurately. In order to make information posted on State web sites usable by assistive technologies, the following requirements apply to the use of PDF documents:

Each inaccessible PDF document posted on a State web site requires either:

1. An equivalent version of the document also be posted in ASCII, HTML, or other text format with a link to the alternate version of the document be prominently displayed next to the link leading to the PDF document file; or,

2. A text explanation of how to obtain an accessible version of the document is prominently displayed next to the link leading to the PDF version. At a minimum, the explanation should identify a telephone number or an email address which can be contacted to request an accessible version of the document; the format(s) in which the accessible version of that document may be obtained (e.g., ASCII text file, HTML text file); and the maximum number of business days before the accessible version of the document will be sent to the requesting individual.

PDF documents that depict information that, by its very nature is graphical, such as maps, building plan drawings, and pictorial diagrams, are exempt from the requirement to post an accessible version. Also in some situations, there may be legal reasons to preserve a document’s original formatting. However if an alternate format cannot be provided, a brief text description of the general nature of the information contained in the PDF document should be prominently displayed next to the link leading to the PDF document.

PDF FORMS

PDF forms often cannot be accurately converted to speech output by assistive technologies. PDF forms that are inaccessible to assistive technologies require that the creator put considerable effort into repairing the PDF version or convert the form and it's functionalities, or convert it to a different format. In order to make forms posted on State web sites accessible by assistive technologies, the following requirements apply to the use of PDF forms:

Each inaccessible PDF form posted on a State web site requires an equivalent version of the form also be posted in a format that

allows a person using speech output to access the form's field elements, information, and functionality required for completion and submission of the form, including all directions and cues. The form should also be able to be accessed and navigated using a keyboard without a pointing device. A link to the alternate form should be prominently displayed next to the link leading to the PDF form.

Exception: An exception to the requirements is allowed if a PDF form is made available only to provide a means to distribute it electronically so that users can print it and fill it out by hand. In this situation, an accessible alternative is not required.

Section III – Recommended Approaches to Implementation

IOUCA recommends that these proposed accessibility standards be implemented on a pilot basis through August 2006. During this time, they will be open to public comment for modification and improvement. Also during this time, the Department of Rehabilitation will conduct a “training for trainers” session, which will provide a further opportunity to fine tune the standards.

Existing Pages

Once the standards have been adopted, IOUCA recommends that agencies and departments develop a plan to insure that their existing web pages and online documents are made accessible. Although a specific timeframe to accomplish this is not being proposed, CIOs and management should keep in mind that they are already required by law to comply with Section 508 and that delays in compliance with that statute could potentially result in negative action being taken against their agency or department.

Future Pages

IOUCA recommends that all state web redesign projects be required to include specific language that mandates compliance with these proposed accessibility standards, regardless of whether the project will be done in-house or by a contractor. IOUCA also recommends that the agency’s or department’s plan to make existing web pages accessible, as stated above, also include the steps to be taken to insure that all future new web pages are accessible.

PDF Documents

There will need to be a consistent strategic decision about the use of PDF on state sites. Decisions need to be made about updating or removing existing inaccessible PDFs as well as the use of PDF documents in the future. This decision should be made collaboratively by webmasters, citizens, and executives. This is an issue the Access Review Board proposed below should be involved in.

Because the creation of accessible PDF documents relies heavily upon the use of careful formatting of source documents, widespread training will be required. Both document authors, including program and clerical staff, and webmasters will need to be carefully trained to understand the importance of careful preparation of documents as well as how to check the accessibility of PDF documents. Because of the complex nature of forms, additional training will be needed on this topic.

Accessibility Policy Statement

The IOUCA recommends that as this policy is implemented state web sites should provide a link to a concise statement of California’s commitment to accessibility. Such a statement is common on many web sites and would be in line with the existing practice

of providing online privacy and terms of use statements. This statement would demonstrate to the public and our employees the state's commitment to accessibility.

See Appendix A for a sample statement borrowed from the United States Health and Human Services Agency.

Accessibility Review Board

In today's rapidly changing technology environment, IOUCA anticipates that changes to Section 508, the WCAG 1.0, and the technology used to make our web sites accessible will occur on an ongoing basis. In order to insure that the State's web pages continue to be accessible in this changing environment, IOUCA recommends that a team be chartered with the purpose of evaluating, updating, and revising these standards and guidelines as needed in the future.

The team should be composed of at least twelve state accessibility experts including persons with disabilities. The team would be responsible for remaining informed about the latest and most effective strategies used to create accessible web sites. Once changes to the standards or guidelines have been adopted by the State Portal Review Board and State Portal Steering Committee, this accessibility team would be responsible for ensuring the provision of any needed training for trainers, dissemination and posting of information, and provision of technical assistance for web masters, developers, content contributors, CIOs, and policy makers.

Enterprise Monitoring and Reporting

It would be unreasonable and ineffective to expect each and every state webmaster to be able to manually review every bit of coding on each and every web page for accessibility. There are many automated tools available that can review a web page or site and create a report describing how well it meets accessibility standards. While no tool can completely automate creating accessible content or accessibility checking, it is expected that the use of an accessibility checker would improve compliance with the standards and accountability. Some accessibility tools can even be integrated into content management systems and other web development software, an automated checker can also make it easier for webmasters to create accessible content in the first place. IOUCA recommends that the CIO, or other centralized body explore the use of a single tool across the entire enterprise. Providing a tool to departments would likely boost compliance as well as provide a centralized method of reviewing accessibility and holding departments accountable.

Section IV – Tools for Implementation

Code repository

A code repository focused on accessibility could contain sample pieces of code that demonstrate specific techniques that may be challenging or new to many webmasters. This resource should be available online and be updated as technology, techniques, and standards change over time.

See the Code Repository in Appendix B

Training

The Department of Rehabilitation has accepted the challenge to provide technical training to approximately 200 Webmasters within the State of California. Training will consist of two one-day introductory-level classes for those less familiar with the current federal and state web accessibility standards and international recommended guidelines. For advanced participants, six in-depth two-day trainings will be provided.

Trainings such as these initial ones provided by DOR will be an ongoing need for state webmasters. In addition, there needs to be continuing education of content creators in programs as well as among executives and management about the importance and value of accessibility. This includes both basic awareness training as well as more in-depth training on techniques for creating accessible documents.

General resources

Resources and technical information will be made available to those impacted by these recommendations and posted on a secure and accessible location within the State Chief Information Officer's Website.

Resources referred to in this document are for informational purposes and no specific endorsement should be inferred. Interpreting and implementing standards can be challenging and requires time and effort to ensure that the spirit of the accessibility standards is met.

See the Resources in Appendix C

Section V – Vetting Process

The IOUCA encourages departmental reviews by state webmasters and web developers for applicability in a real-world environment. Comments and suggestions from these reviews provide valuable input for incorporation into the recommended standards where applicable. This recommendation for accessibility has been reviewed by:

- Department of Motor Vehicles
- Department of Health Services
- Department of Boating and Waterways
- Employment Development Department
- State Portal Review Board
- State Portal Steering Commitee

It is being reviewed by:

- State Disabilities Advisory Committee

On adoption by the State Portal Steering Committee, the recommended standards and guidelines contained within become policy for all California departments and agencies reporting to the Governor and the State Chief Information Officer.

The standards and guidelines are intended to be living documents. An open review period will follow adoption, soliciting feedback from all state departments and agencies that choose to review the draft.

Section VI – Glossary and References

Glossary

Accessibility – The ability to fully acquire, use, and manipulate web-based content and/or services by all individuals regardless of individual age, disability, dependence on assistive technology to process information, or primary language.[5]

Alternative Text ("Alt text" or "Alt tag") - Refers to "alternative text" that is placed in the code for an image in an HTML page (in an ALT tag). If the image is not displayed, the ALT text can be presented instead. ALT text is especially useful to users of screen readers. The text should be a brief representation of the purpose of the image, not a description of the image. ALT text is frequently seen on pop-up tool tips when users move the mouse over images.

Americans with Disabilities Act (ADA) - A 1990 federal law that forbids discrimination against persons who are disabled. It gives civil rights protection to individuals with disabilities similar to those provided to individuals on the basis of race, color, sex, national origin, age, and religion. It guarantees equal opportunity for individuals with disabilities in public accommodations, employment, transportation, State and local government services, and telecommunications.

Assistive Technology - Software or hardware that has been specifically designed to assist people with disabilities in carrying out daily activities. Assistive technology includes wheelchairs, reading machines, devices for grasping, etc. In the area of web accessibility, assistive technologies can be either hardware or software.

> **Hardware-based assistive technologies** include alternative keyboards and pointing devices.
>
> **Software-based assistive technologies** include screen readers, screen magnifiers, speech synthesizers, and voice input software that operate in conjunction with graphical desktop browsers (among other user agents).

Braille Display - These displays create a tactile translation of information on a computer screen. Some Braille displays have a reusable, refreshable surface, composed of rounded pins that rearrange to translate information as it is selected on screen.

Disability - A condition that curtails to some degree a person's ability to carry on his normal pursuits. A disability may be partial or total, and temporary or permanent.

> **Cognitive** - People with cognitive disabilities may have trouble reading, for example Auditory Processing Deficits and Attention Deficit Disorders.

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[5] IOUCA Purpose and Definition (Updated April 3, 2006)

Hearing - People with these impairments may be completely deaf, or may have partial loss of hearing.

Learning - A generic term that refers to a heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning or mathematical abilities. These disorders are intrinsic to the individual and presumed to be due to Central Nervous System Dysfunction. Even though a learning disability may occur along with other conditions (e.g. sensory impairment, mental retardation, social and emotional disturbance) or environmental influences (e.g. cultural differences, insufficient/inappropriate instruction, psychogenic factors) it is not the direct result of those condition or influences.

Mobility -Some people have decreased mobility. This can range from stiffness of fingers due to arthritis to complete paralysis below the neck.

Visual - People with visual impairments range from the totally blind to people who have some difficulty reading small print to people who have difficulty distinguishing colors.

Equivalent - Content is "equivalent" to other content when both fulfill essentially the same function or purpose to the user. In the context of this document, the equivalent must fulfill essentially the same function for the person with a disability (at least insofar as is feasible, given the nature of the disability and the state of technology), as the primary content does for the person without any disability. Note that equivalent information focuses on **fulfilling the same function**. If the image is part of a link and understanding the image is crucial to guessing the link target, an equivalent must also give users an idea of the link target.

As part of fulfilling the same function an equivalent may involve a description of that content (i.e., what the content looks like or sounds like). For example, in order for users to understand the information conveyed by a complex chart, authors should describe the visual information in the chart.

Since text content can be presented to the user as synthesized speech, Braille, and visually displayed text, these guidelines require text equivalents for graphic and audio information. **Text equivalents** must be written so that they convey all essential content. **Non-text equivalents** (e.g., an auditory description of a visual presentation, a video of a person telling a story using sign language as an equivalent for a written story, etc.) also improve accessibility for people who cannot access visual information or written text, including many individuals with blindness, cognitive disabilities, learning disabilities, and deafness.

Text transcript - a text equivalent of audio information that includes spoken words and non-spoken sounds such as sound effects.

Caption - a text transcript for the audio track of a video presentation that is synchronized with the video and audio tracks. Captions are generally rendered

visually by being superimposed over the video, which benefits people who are deaf and hard-of-hearing, and anyone who cannot hear the audio (e.g., when in a crowded room).

Collated text transcript - combines (collates) captions with text descriptions of video information (descriptions of the actions, body language, graphics, and scene changes of the video track). These text equivalents make presentations accessible to people who are deaf-blind and to people who cannot play movies, animations, etc. It also makes the information available to search engines.

Auditory description - a non-text equivalent is of the key visual elements of a presentation. The description is either a prerecorded human voice or a synthesized voice (recorded or generated on the fly). The auditory description is synchronized with the audio track of the presentation, usually during natural pauses in the audio track. Auditory descriptions include information about actions, body language, graphics, and scene changes.

Linearized table - A process where the contents of the cells in a table become a series of paragraphs (e.g., down the page) one after another. The paragraphs will occur in the same order as the cells are defined in the document source. Cells should make sense when read in order and should include structural elements (that create paragraphs, headers, lists, etc.) so the page makes sense after linearization.

Screen Magnifier - A software program that magnifies a portion of the screen so that it can be more easily viewed. Individuals with low vision often use screen magnifiers.

Screen Reader - A software program that reads the contents of the screen aloud to a user. People who are blind use screen readers. Screen readers can usually only read text that is printed, not drawn as an image, to the screen.

Web Page - A document that contains text and graphical information that can be accessed through the Internet via a web browser. Usually, web pages are stored as HTML documents on a web server. Alternatively, web pages may be generated dynamically as they are accessed through the use of scripting language, such as Active Server Pages (ASP) or PHP.

Web Application - An application delivered to users from a web server that meets one or more of the following conditions:

- Utilizes a database to store data, the meaning or display of which is not known until run time,
- Is a script process, either compiled or interpreted, that generates HTML output based on input from the database or user,
- Extracts data from multi-record files,
- Requires a constantly running server process (in addition to the web service), or
- Stores input data from data entry screens or web forms on the server.

General Sources used in the Glossary:

- Techniques for Web Content Accessibility Guidelines 1.0 – Glossary. (W3C Note 6 November 2000) http://www.w3.org/TR/WCAG10-TECHS/#glossary

- SAP Design Guild Accessibility Glossary. http://www.sapdesignguild.org/editions/edition9/acc_glossary.asp

Frequently asked questions

Frequently asked questions (FAQ) will be compiled and answered during the vetting and review process. Like the other resources, a dynamic FAQ should be kept online and made available to all webmasters.

Document History

Submitted for focused departmental review in June 2006 to

- Department of Boating and Waterways
- Department of Health Services
- Department of Motor Vehicles
- Employment Development Department

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Appendix A (Sample Accessibility Policy Statement)

United States Health and Human Services Agency Web Accessibility Statement[6]

The U.S. Department of Health and Human Services (HHS) is committed to providing access to our Web pages for individuals with disabilities.

We do this primarily by complying with Section 508 of the Rehabilitation Act requirements. Section 508 requires that individuals with disabilities, including Federal employees, have access to and use of information and data that is comparable to those without disabilities. HHS strives to meet this goal except when comparable access would result in undue burden on the Department. To learn more about the regulations governing the accessibility of Federal electronic information, please read the Synopsis of Section 508 Accessibility Requirements.)

If you use assistive technology (such as a Braille reader, a screen reader, TTY, etc.) and cannot access information due to the format of the material, please try the HHS Information and Hotline Directory which contains a list, by subject, including the Websites, public inquiry and publication phone numbers.

To enable us to respond in a manner most helpful to you, please indicate the nature of your accessibility problem, the preferred format in which to receive the material, the web address of the requested material, and your contact information.

Last Revised: April 25, 2006

[6] http://www.hhs.gov/Accessibility.html

Appendix B (Code Repository)

An Accessibility Code Repository will be compiled by IOUCA with additional contributions from other state webmasters. Some possible examples include:

- How to create a hidden link using CSS to allow screen readers to skip directly to accessibility features of the site, site navigation, or page content
- Creating basic tables using header <th> tags
- Creating complex tables that may have nested (multi-level) row or column headings using row and column ID tags
- How to use “D-Links” to convey the information available in complex images (i.e. charts and graphs)
- Suggested alternative text for common design elements that are used across state web sites (banners, state seal, logos, etc)

Appendix C (Resources)

Free online testing

The following web sites offer free online evaluation of the accessibility of your web pages or, in some cases, an entire site. No automated accessibility tool can completely validate your web page and some manual judgment and review is always necessary.

aDesigner (IBM): www.alphaworks.ibm.com/tech/adesigner

Browser plug-ins (available from WAT-C)

Cynthia Says: www.cynthiasays.com

W3C HTML Validator: validator.w3.org

W3C CSS Validator: jigsaw.w3.org/css-validator

WAVE: www.wave.webaim.org

Web Accessibility Tools Consortium (WAT-C): www.wat-c.org WAT-C provides several tools for evaluating sites using web browsers.

WebXact (formerly "Bobby"): webxact.watchfire.com

Software

All of the major commercial **HTML editors** have accessibility checking and editing features incorporated. However, these are often minimal checks and should not be used as the sole method of testing.

Several **commercial products** exist and they can often be used as stand-alone products or implemented in an enterprise environment. These can either operate independent of your content creation process, or be integrated with HTML editors and Content Management Systems.

Web sites

Standards Bodies

UNITED STATES ACCESS BOARD (SECTION 508)

Homepage: www.section508.gov

Web page standards:
http://www.section508.gov/index.cfm?FuseAction=Content&ID=12

W3C WAI (WCAG 1.0)

WAI homepage: www.w3.org/wai

WCAG 1.0 Guidelines: www.w3.org/tr/wcag10

WCAG Accessibility Checklist: www.w3.org/tr/wcag10/full-checklist.html

Useful Web Accessibility Resources

Information Technology Technical Assistance and Training Center (ITTATC): http://www.ittatc.org (note that as of May 2006, their funding has ended and the information is no longer being updates)

WebAIM (Web Accessibility in Mind): www.webaim.org

Adobe Acrobat Solutions for Accessibility: http://www.adobe.com/products/acrobat/solutionsacc.html

Books

Access by Design: A Guide to Universal Usability for Web Designers. (2005) Horton.

Building Accessible Web Sites. (2002) Clark. Available online: http://joeclark.org/book/sashay/serialization/.

Constructing Accessible Web Sites. (2003) Thatcher et al. Companion web site: www.jimthatcher.com.

Maximum Accessibility: Making Your Web Site More Usable for Everyone. (2002) Slatin and Rush.

Web Accessibility for People with Disabilities. (2000) Michael G. Paciello.

Accessibility for Everybody: Understanding the Section 508 Accessibility Requirements. (2003) Mueller.

NOTE: These books and other resources on accessibility may be requested by state staff through the California State Library by contacting the State Information and Reference Center at (916) 654-0261, Monday through Friday, 9:30 a.m. to 4:00 p.m., or emailing: cslsirc@library.ca.gov.