# VIGNETTE

**Vignette Professional Services**

**Designing Web Sites for Accessibility**

**Personalization V-Paper**

Version 1.0

July 21, 2000

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Printed on 07/21/00 2:07 PM
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# <u>Introduction</u>

What is web site accessibility?  It includes accommodating users with disabilities, but it also includes more types of users.  An accessible web site supports users who:

- Rely on such output devices such as screen enlargers, screen readers, and voice synthesizers because they do not hear, see, or move well enough to process some types of information.

- Have difficulty reading or comprehending text because of such situations as education, age, and medical condition.

- Use an input device other than a standard keyboard or mouse, such as pen-based devices, touch screens, voice input devices, smaller or larger keyboards, eye-gaze pointing devices, or sip-and-puff systems controlled by breathing.

- Use a text-only screen, a television screen, a tiny screen on a wireless device, or a slow Internet connection (which currently includes most people outside North America and Western Europe).

- Do not fluently speak or understand the language used on the web site.

- Operate in a situation (such as driving a car, working in low light, or working in a very loud environment) in which they are unable to use their hands, eyes, or ears.

- Rely on an early version of a browser, a voice (telephone-based) browser, a text-only browser like Lynx and SIS, or a low-end browser that doesn't understand constructs such as tables and frames.

- Run a different operating system than the web site uses.

The need for an accessible web site can apply, either temporarily or permanently, to each and every person who wants to use the Internet.

## Reasons to Design for Accessibility

Why should you make your web site accessible?  There are only two reasons, but they're good ones:

- It's intelligent to provide access to so many people (well over half of the global population at any given time), especially for e-commerce sites.  People who access the web may have money to spend for products and services.

- In the United States, it's the law under the Americans with Disabilities Act.

### Accessibility Makes Good Business Sense

Designing web pages for accessibility makes good business sense, even from the view of accessibility to people with disabilities.  According to government figures, about 54 million people or one person in five has some functional limitation.  About eight percent of all users currently on the web have disabilities.  In the U.S. alone there are

more than 30 million people with disabilities.  Worldwide, as many as 500 million people have disabilities.

If we live long enough, most of us will experience some level of disability as a result of injury, illness, or aging.  People with disabilities are in all types of trades and professions, and each year increasing numbers of people worldwide use computers in their daily lives as well as in their work.[1]

The American Council of the Blind estimates that currently only ten to twenty percent of web sites are accessible to the roughly 2.5 million blind people in the U.S.

Disability portal services such as iCan, We Media, Can Do, and HalfThePlanet.com are already directing people with disabilities (and their dollars) to accessible web sites.  A spokesman at newly-launched disability portal iCan, described the current situation this way:

> "As we look for other sites to link to and for places for people to shop, people here in the company find them and send me e-mail and say, 'Mike, will you check to see if this site is accessible?' If I have time, I test it. If I don't, I just say, 'No,' and I'm usually right."[2]

From the broader perspective of accessibility—accessibility by a wide variety of users who may be operating from many different contexts—designing web pages for accessibility is simply smart web design.  Every day more people around the world are gaining some type of access to the Internet.  Many will use different hardware, different operating systems, and different browsers.  Many will have very slow access to the Internet.  More and more people are accessing the Internet using handheld devices with very small screens and input devices other than standard keyboards or pointing devices.

If hundreds of millions of potential customers in the global e-commerce market need accessible web design, and most web sites are not yet using accessible design, there is a huge, largely undiscovered market waiting to be tapped.

## Accessibility Is Required by the Law

The Americans with Disabilities Act [3], enacted by the U.S. Congress on July 26, 1990, is federal civil rights legislation that protects people with disabilities from discrimination and ensures equal access to employment, privately owned businesses serving the public (public accommodations), programs controlled by state and local governments, and telecommunication systems.

In providing goods and services, a public accommodation cannot use eligibility requirements that exclude or segregate individuals with disabilities, unless the requirements are necessary for the operation of the public accommodation. The

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[1] *Need for Accessible Design*, Greg Lowney, Director of Accessibility, Microsoft Corporation
http://www.microsoft.com/enable/dev/reasons.htm
[2] *Net To Get More Accessible To Disabled*, Doug Brown, June 5, 2000, Inter@ctive Week
http://www.wgbh.org/wgbh/pages/ncam/bp/news/Webnews13.html
[3] *Overview of the Americans with Disabilities Act*
http://www.ada-infonet.org/Documents/General%20Documents/ada_overview.htm

Americans with Disabilities Act also requires that public accommodations provide auxiliary aids necessary to enable persons who have visual, hearing, or sensory impairments to participate in the program, if their provision will not result in an undue burden on the business.

A public accommodation can choose among various alternatives as long as the result is effective communication.  Since designing web sites for accessibility is relatively simple and straightforward, it would be difficult to argue that doing so would result in an undue burden on the business.

In March 2000 the U.S. federal government published standards designed to ensure that information technology (IT), including web sites, used by the federal government will provide accessibility to people with disabilities. The guidelines will not become law until late 2000 or early 2001, but managers are already concerned about the lawsuits that could ensue if their sites are not readily accessible to people with disabilities.[4]

## Help for Building Accessible Sites

How do you make a web site accessible?  Many organizations have developed and published guidelines for designing accessible web sites. Among these are:

- World Wide Web Consortium (W3C)
- IBM
- Microsoft
- The HTML Writers Guild
- Alliance for Technology Access

# Guidelines for Designing Accessible Web Sites

Following is a composite of the guidelines previously listed.  Appendix B on page 9 provides pointers to these guidelines, so you can review each in more detail if necessary.

## Make Text Clear and Easy to Read

- Use the simplest text possible to accomplish your purpose.
- Use the largest font size that is reasonable in each case.
- Keep the screen uncluttered.
- Leave a considerable amount of blank space around each item on the screen.

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[4] *Net To Get More Accessible To Disabled*, Doug Brown, June 5, 2000, Inter@ctive Week
http://www.wgbh.org/wgbh/pages/ncam/bp/news/Webnews13.html

- Avoid using tiled and textured backgrounds because they can obscure some of the text.

- Avoid dark or brightly-colored backgrounds. Dark lettering on a light background (high contrast) is easiest to read.

# Provide Clear, Device-independent Navigation Mechanisms

- Make sure the site can be navigated using a keyboard, voice commands, and sip-and-puff devices.

- Use descriptive link text (not just "Click here") that makes sense when read out of context.

- Put no more than a single link per line.

# Provide Alternative Ways to Access Non-textual Content

Non-textual content includes images, scripts, multi-media clips, streaming video, animation, tables, forms, and frames. For browsers that don't display these types of content, use the ALT tag to provide accurate, descriptive text for all non-textual content that conveys meaning.

## Titles

Provide titles for objects. Use the TITLE attribute to provide user-friendly names for the following objects: A, APPLET, AREA, BGSOUND, BUTTON, CODE, COL, COLGROUP, DIV, EMBED, FORM, FRAME, H1-H6, IFRAME, IMG, INPUT, LABEL, MARQUEE, OBJECT, OPTION, SELECT, TABLE, TD (if appropriate), TEXTAREA, and TR.

## Scripts, Controls, Applets

Provide an alternate page that uses static text and graphics for displaying information. For example:

- For a search field, provide a tree of indexed links.

- For information displayed by an ActiveX control or Java applet, provide a page displaying the same information as HTML text.

## Tables

- Use the TITLE attribute to provide labels for columns, rows, and even particular cells, if appropriate.

- Make sure the table is understandable when it is read left-to-right, top-to-bottom, or one line at a time.

- Provide alternate pages that don't use tables, if the table cannot pass the previous test.

### Multi-media

Although non-text (pictures, videos, pre-recorded audio) material is beneficial to many users, provide alternative textual explanations of any non-textual presentations.

### Forms

- Associate labels with form elements.

- Provide an e-mail link, fax number, or phone number for people who are unable to use a web response form.

### Frames

- Use the NOFRAMES tag to show a link to an alternate page without frames.

- Provide a meaningful name attribute and TITLE attribute for each FRAME element.

### Images

- Avoid blinking or scrolling marquees.

- Use simple text to replace simple images:

  - Use an asterisk (*) for a bullet.
  - Use a number for the image of a number.
  - Use a single space character or an empty string for invisible images that are typically used for spacing.

- Provide a link to a separate page with a detailed description for more complex images.

**Note:** All images that mean something must have descriptive text on the ALT tag. However, if you need use a few spacer.gif or bluebullet.gif images, then don't annoy the user by providing ALT text for spaces, bullets, or purely decorative items.

## Use Cascading Style Sheets (CSS) or Structural Markup

- If possible, use cascading style sheets (CSS) rather than structural markup elements or presentation elements to control presentation and style.

- If you are not using CSS, use structural markup elements instead of presentation elements wherever possible.  Make sure you know the difference between structural and presentation elements (see Appendix A. Glossary on page 8).

- Avoid highlighting with B, I, and other tags that control the appearance of the text.  If possible, use STRONG and EM instead.

## Use Image Maps Properly

- Use client-side not server-side image maps.

- Provide text links (either in-line or at the bottom of the page) in addition to an image map.

- Never use a marquee as a link.

## Verify Accessibility

The following organizations provide useful guidelines and checklists for testing the accessibility of your web site (see Appendix B. References on page 9):

- IBM

- Microsoft

- W3C

- Alliance for Technology Access

Automated tools are also available that check the accessibility of your web site:

- Bobby is a tool for analyzing web pages for accessibility and conformity to HTML specifications that was developed by the Center for Applied Special Technology (CAST).  Bobby is available in a web version or in a downloadable version.[5]

- IBM Home Page Reader (HPR) is designed for people who are blind or have severely low vision.[6]  IBM suggests that you use it to see whether all the information available visually in Netscape or Internet Explorer is also available in text in HPR.

# Personalization for Accessibility

Vignette solutions allow you to design sites that provide content in alternate ways for different audiences.  Some of the following techniques may be useful.

## Using the Visitor Registry for Alternative Layout

You can set a flag for accessibility in the Visitor Registry table and access it in personalization commands.  For example, suppose a component is used to retrieve and lay out an article and the layout itself is set up in libraries.  Suppose the default article has a complex layout structure.  To provide an alternate layout for accessibility, simply select an alternate library.  In fact, many sites that provide for "printable" page options probably already have the functionality in place.

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[5] Bobby, Center for Applied Special Technology (CAST).
http://www.cast.org/bobby/
[6] IBM Home Page Reader, IBM Special Needs Systems,
http://www.ibm.com/able

To use the `COMPONENT PZN` command for an alternate layout (with an accessibility flag held in the "access" trait), use the following:

```
[COMPONENT /path "$ID_{visitorinfo:access} PZN]
```

In the component itself, simply check the flag when getting libraries to perform the work.

## Using the PERSONALIZE Command

The `PERSONALIZE` command can be used in client-side scripts to seed a JavaScript variable.  The client-side script can then perform different functions for different users in a fully cached page.  For example, a user needing a text-only page will get a page without graphics.  For more information, see the Personalization V-Paper, *Personalization Functions and Client-Side Scripting*.

## Using Cookies

Cookies can include information on custom page settings.  When a returning visitor requests the page view again, the web server checks for the presence of a cookie in order to deliver what the visitor wants.  For more information, see the Personalization V-Paper, *StoryServer and Cookie-Based Personalization*.

## Using XML

How can you design a web site that meets the varied needs of all users in all of their special contexts?  According to Jakob Nielsen, a noted expert on web usability, the solution probably lies in template-driven, database-backed publishing with more intelligently-marked-up XML content that is transformed into appropriate hypertext units for each class of users and devices. [7]

Consider using XHTML rather than HTML for markup; XHTML allows for extensions describing audio and other alternate display methods and is completely compatible with current browsers.

Both StoryServer and the V/5 platform provide a rich set of tools to support XML documents.  For more information, see the StoryServer 5.0 *Template Cookbook*.

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[7] *Disabled Accessibility: The Pragmatic Approach*, Jakob Nielsen, Alertbox, June 13, 1999, http://www.useit.com/alertbox/990613.html

# Appendix A. Glossary

| | |
|---|---|
| ASCII art | Refers to text characters and symbols that are combined to create an image. For example ":-)" is the smiley emoticon. |
| assistive technology | Software or hardware that has been specifically designed to assist people with disabilities in carrying out daily activities. In the area of web accessibility, common 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). Hardware assistive technologies include alternative keyboards and pointing devices. |
| content | Refers to what it says to the user through natural language, images, sounds, movies, or animations. |
| presentation | How the document is rendered (such as in print, as a two-dimensional graphical presentation, as an text-only presentation, as synthesized speech, or as Braille). |
| presentation element | An element that specifies document presentation (such as B, FONT, or CENTER in HTML) is called a presentation element. HTML 4 discourages the use of presentation elements.[8] |
| structure | How a document is organized logically (such as by chapter, with an introduction and table of contents). |
| structural element | An element (such as P, STRONG, EM, ADDRESS, LI, or BLOCKQUOTE in HTML) that specifies document structure is called a structural element. The use of structural elements is preferable (for accessible web site design) to the use of presentation elements. |

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[8] *HTML 4.01 Specification: W3C Recommendation*, December 24, 1999
http://www.w3.org/TR/REC-html40/

# Appendix B. References

*Overview of the Americans with Disabilities Act*
http://www.ada-infonet.org/Documents/General%20Documents/ada_overview.htm

*Web Content Accessibility Guidelines 1.0*: *W3C Recommendation*, May 5, 1999,
http://www.w3.org/TR/1999/WAI-WEBCONTENT-19990505/

*Designing Access to WWW Pages*, Alliance for Technology Access,
http://www.ataccess.org/ATResourceLibrary/WWW%20Access/default.html

*Six Principles of Accessible Web Design: An Introduction to the WAI Page Author
Guidelines*, Kynn Bartlett, July 12, 1998 The HTML Writers Guild
http://www.hwg.org/resources/accessibility/sixprinciples.html

*National Center for Accessible Media: Web Access Project*
http://www.wgbh.org/wgbh/pages/ncam/Webaccess/index.html

*IBM Special Needs Systems: Web Accessibility*
http://www-3.ibm.com/able/accessWeb.html

*Microsoft Accessibility: Web Guidelines*
http://www.microsoft.com/enable/dev/Web/default.htm

*CAST Bobby* (a web-based tool that analyzes web pages for their accessibility to
people with disabilities),
http://www.cast.org/bobby/

*HTML 4.01 Specification: W3C Recommendation*, December 24, 1999
http://www.w3.org/TR/REC-html40/

# Appendix C. Document Control

## Document Revision History

| Version | Release Date | Revised By | Revision Description |
|---------|-------------|------------|---------------------|
| 0.1 | 06/14/2000 | Priya Ditraglia | Initial creation and distribution. |
| 0.2 | 07/17/2000 | Jody Kelly | Edit and rewrite changes. |
| 0.3 | 07/21/2000 | Phil Barnhart | Reviewed and added a section. |
| 1.0 | 07/21/2000 | Jody Kelly | Readied for posting to KC. |

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## Document Owner

Jody Kelly is responsible for maintaining this document.