

# 3

### Accessibility

#### **Web sites should be designed to ensure that**

everyone, including users who have difficulty seeing, hearing, and making precise movements, can use them. Generally, this means ensuring that Web sites facilitate the use of common assistive technologies. All United States Federal Government Web sites must comply with the Section 508 Federal Accessibility Standards.

With the exception of Guideline 2:7 and Guideline 9:6, all accessibility-related guidelines are found in this chapter. The sample of users who organized these guidelines assigned these two guidelines to other chapters. (See page xxv, Step 7 for more on how the guidelines were organized.)

Some of the major accessibility issues to be dealt with include:

- Provide text equivalents for non-text elements;
- Ensure that scripts allow accessibility;
- Provide frame titles;
- Enable users to skip repetitive navigation links;
- Ensure that plug-ins and applets meet the requirements for accessibility; and
- Synchronize all multimedia elements.

Where it is not possible to ensure that all pages of a site are accessible, designers should provide equivalent information to ensure that all users have equal access to all information.

For more information on Section 508 and accessibility, see [www.section508.gov](http://www.section508.gov)

## 3:1 Comply with Section 508

**Guideline:** If a Web site is being designed for the United States government, ensure that it meets the requirements of Section 508 of the Rehabilitation Act. Ideally, all Web sites should strive to be accessible and compliant with Section 508.

Relative Importance: \*

1 2 3 4 5

Strength of Evidence:

1 2 3 4 5

**Comments:** Section 508 requires Federal agencies to ensure that their procurement of information technology takes into account the needs of all users—including people with disabilities. About eight percent of the user population has a disability that may make the traditional use of a Web site very difficult or impossible. About four percent have vision-related disabilities, two percent have movement-related issues, one percent have hearing-related disabilities, and less than one percent have learning-related disabilities.

Compliance with Section 508 enables Federal employees with disabilities to have access to and use of information and data that is comparable to that provided to others. This also enhances the ability of members of the public with disabilities to access information or services from a Federal agency.

For additional information on Section 508 and accessibility:

- <http://www.section508.gov>
- <http://www.w3.org/WAI/>

**Sources:** GVU, Georgia Institute of Technology, 1998; United States Government, 1998.

## 3:2 Design Forms for Users Using Assistive Technologies

**Guideline:** Ensure that users using assistive technology can complete and submit online forms.

Relative Importance: \*

1 2 3 4 5

Strength of Evidence:

1 2 3 4 5

**Comments:** Much of the information collected through the Internet is collected using online forms. All users should be able to access forms and interact with field elements such as radio buttons and text boxes.

**Sources:** Covi and Ackerman, 1995; Morrell, et al., 2002; United States Government, 1998.

\* Regardless of the 'Relative Importance' rating assigned by the reviewers, U.S. Federal Web sites must adhere to all Section 508 guidelines (see Guideline 3:1).

## 3:3 Do Not Use Color Alone to Convey Information

**Guideline:** Ensure that all information conveyed with color is also available without color.

**Relative Importance:** \*

1 2 3 4 5

**Strength of Evidence:**

1 2 3 4 0

**Comments:** Never use color as the only indicator for critical activities. About eight percent of males and about one-half of one percent of females

have difficulty discriminating colors. Most users with color deficiencies have difficulty seeing colors in the green portion of the spectrum.

To accommodate color-deficient users, designers should:

- Select color combinations that can be discriminated by users with color deficiencies;
- Use tools to see what Web pages will look like when seen by color deficient users;
- Ensure that the lightness contrast between foreground and background colors is high;
- Increase the lightness contrast between colors on either end of the spectrum (e.g., blues and reds); and
- Avoid combining light colors from either end of the spectrum with dark colors from the middle of the spectrum.

**Sources:** Bailey, 1996; Chisholm, Vanderheiden and Jacobs, 1999c; Evans, 1998; Hess, 2000; Levine, 1996; Murch, 1985; Rigden, 1999; Smith and Mosier, 1986; Sullivan and Matson, 2000; Thorell and Smith, 1990; Tullis, 2001; United States Government, 1998; Vischeck, 2003; Wolfmaier, 1999.

## 3:4 Enable Users to Skip Repetitive Navigation Links

**Guideline:** To aid those using assistive technologies, provide a means for users to skip repetitive navigation links.

**Relative Importance:** \*

1 2 3 4 0

**Strength of Evidence:**

1 2 0 0 0

**Comments:** Developers frequently place a series of routine navigational links at a standard location—

usually across the top, bottom, or side of a page. For people using assistive devices, it can be a tedious and time-consuming task to wait for all of the repeated links to be read. Users should be able to avoid these links when they desire to do so.

**Sources:** United States Government, 1998.

## 3:5 Provide Text Equivalents for Non-Text Elements

**Guideline:** Provide a text equivalent for every non-text element that conveys information.

**Relative Importance:** \*

1 2 3 4 0

**Strength of Evidence:**

1 2 0 0 0

**Comments:** Text equivalents should be used for all non-text elements, including images, graphical representations of text (including symbols), image map regions, animations (e.g., animated GIFs), applets and programmatic objects, ASCII art, frames, scripts, images used as list bullets, spacers, graphical buttons, sounds, stand-alone audio files, audio tracks of video, and video.

**Sources:** Chisholm, Vanderheiden and Jacobs, 1999a; Nielsen, 2000; United States Government, 1998.

**Example:** Alt text allows the with visual impairments user to understand the meaning of the picture.

**President Discusses Immigration Reform with Members of the Senate**



President George W. Bush places his hands on the arm of U.S. Senate Majority leader Senator Bill Frist, R-Tenn., and U.S. Senate Democratic leader Senator Harry Reid, D-Nev., right, at the conclusion of a meeting with legislators Tuesday, April 25, 2006 at the White House to discuss immigration reform. President Bush thanked both Republican and Democratic members of the Senate for their hard work to get a comprehensive immigration bill out of the U.S. Senate and hopefully to his desk before the end of the year.

White House photo by Eric Draper [full story](#)

\* Regardless of the 'Relative Importance' rating assigned by the reviewers, U.S. Federal Web sites must adhere to all Section 508 guidelines (see Guideline 3:1).

## 3:6 Test Plug-Ins and Applets for Accessibility

**Guideline:** To ensure accessibility, test any applets, plug-ins or other applications required to interpret page content to ensure that they can be used by assistive technologies.

**Relative Importance:** \*

1 2 3 4 0

**Strength of Evidence:**

1 2 0 0 0

**Comments:** Applets, plug-ins and other software can create problems for people using assistive technologies, and should be thoroughly tested for accessibility.

**Sources:** United States Government, 1998.

## 3:7 Ensure that Scripts Allow Accessibility

**Guideline:** When designing for accessibility, ensure that the information provided on pages that utilize scripting languages to display content or to create interface elements can be read by assistive technology.

**Relative Importance:** \*

1 2 3 0 0

**Strength of Evidence:**

1 2 0 0 0

**Comments:** Whenever a script changes the content of a page, the change must be indicated in a way that can be detected and read by a screen reader. Also, if 'mouseover' are used, ensure that they can be activated using a keyboard.

**Sources:** United States Government, 1998.

## 3:8 Provide Equivalent Pages

**Guideline:** Provide text-only pages with equivalent information and functionality if compliance with accessibility provisions cannot be accomplished in any other way.

**Relative Importance:** \*

1 2 3 0 0

**Strength of Evidence:**

1 2 0 0 0

**Comments:** When no other solution is available, one option is to design, develop, and maintain a parallel Web site that does not contain any graphics. The pages, in such a Web site should be readily accessible, and facilitate the use of screen readers and other assistive devices.

As a rule, ensure that text-only pages are updated as frequently and contain all of the same information as their non-text counterparts. Also inform users that text-only pages are exactly equivalent and as current as non-text counterparts.

**Sources:** Chisholm, Vanderheiden and Jacobs, 1999e; United States Government, 1998.

See page xxii  
for detailed descriptions  
of the rating scales

1 2 3 4 0

### 3:9 Provide Client-Side Image Maps

**Guideline:** To improve accessibility, provide client-side image maps instead of server-side image maps.

Relative Importance: \*

12300

Strength of Evidence:

12300

**Comments:** Client-side image maps can be made fully accessible, whereas server-side image maps cannot be made accessible without employing a text alternative for each section of the map. To make client-side image maps accessible, each region within the map should be assigned alt text that can be read by a screen reader or other assistive device. Designers must ensure that redundant text links are provided for each active region of a server-side image map.

**Sources:** United States Government, 1998.

### 3:10 Synchronize Multimedia Elements

**Guideline:** To ensure accessibility, provide equivalent alternatives for multimedia elements that are synchronized.

Relative Importance: \*

12300

Strength of Evidence:

12000

**Comments:** For multimedia presentations (e.g., a movie or animation), synchronize captions or auditory descriptions of the visual track with the presentation.

**Sources:** Ahlstrom and Longo, 2001; Chisholm, Vanderheiden and Jacobs, 1999b; Galitz, 2002; Mayhew, 1992; United States Government, 1998.

### 3:11 Do Not Require Style Sheets

**Guideline:** Organize documents so they are readable without requiring an associated style sheet.

Relative Importance: \*

12300

Strength of Evidence:

10000

**Comments:** Style sheets are commonly used to control Web page layout and appearance. Style sheets should not hamper the ability of assistive devices to read and logically portray information.

**Sources:** United States Government, 1998.

\* Regardless of the 'Relative Importance' rating assigned by the reviewers, U.S. Federal Web sites must adhere to all Section 508 guidelines (see Guideline 3:1).

### 3:12 Provide Frame Titles

Relative Importance: \*

1 2 0 0 0

Strength of Evidence:

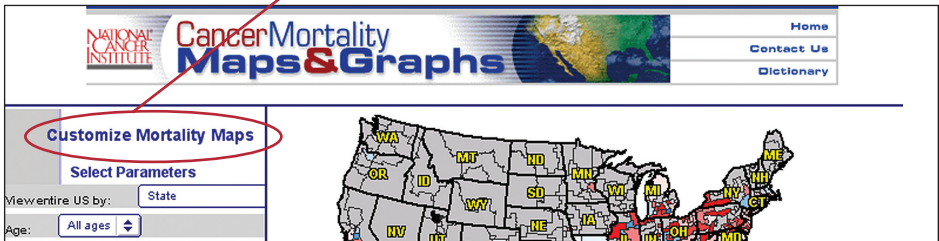
1 2 0 0 0

**Guideline:** To ensure accessibility, provide frame titles that facilitate frame identification and navigation.

**Comments:** Frames are used to divide the browser screen into separate areas, with each area presenting different, but usually related, information. For example, a designer may use a frame to place navigational links in the left page, and put the main information in a larger frame on the right side. This allows users to scroll through the information section without disturbing the navigation section. Clear and concise frame titles enable people with disabilities to properly orient themselves when frames are used.

**Sources:** Chisholm, Vanderheiden and Jacobs, 1999f; United States Government, 1998.

**Example:** Providing frame titles like that circled will allow users with visual impairments to understand the purpose of the frame's content or its function. Note that the right frame does not contain a title, and thus poses accessibility concerns.



### 3:13 Avoid Screen Flicker

Relative Importance: \*

1 2 0 0 0

Strength of Evidence:

1 0 0 0 0

**Guideline:** Design Web pages that do not cause the screen to flicker with a frequency greater than 2 Hz and lower than 55 Hz.

**Comments:** Five percent of people with epilepsy are photosensitive, and may have seizures triggered by certain screen flicker frequencies. Most current monitors are unlikely to provoke seizures.

**Sources:** United States Government, 1998.

\* Regardless of the 'Relative Importance' rating assigned by the reviewers, U.S. Federal Web sites must adhere to all Section 508 guidelines (see Guideline 3:1).