

The background of the slide is a spiral-bound notebook with a light brown, textured cover and a dark brown border. The spiral binding is visible on the left side.

How to Make Your Web Site Section 508 Compliant

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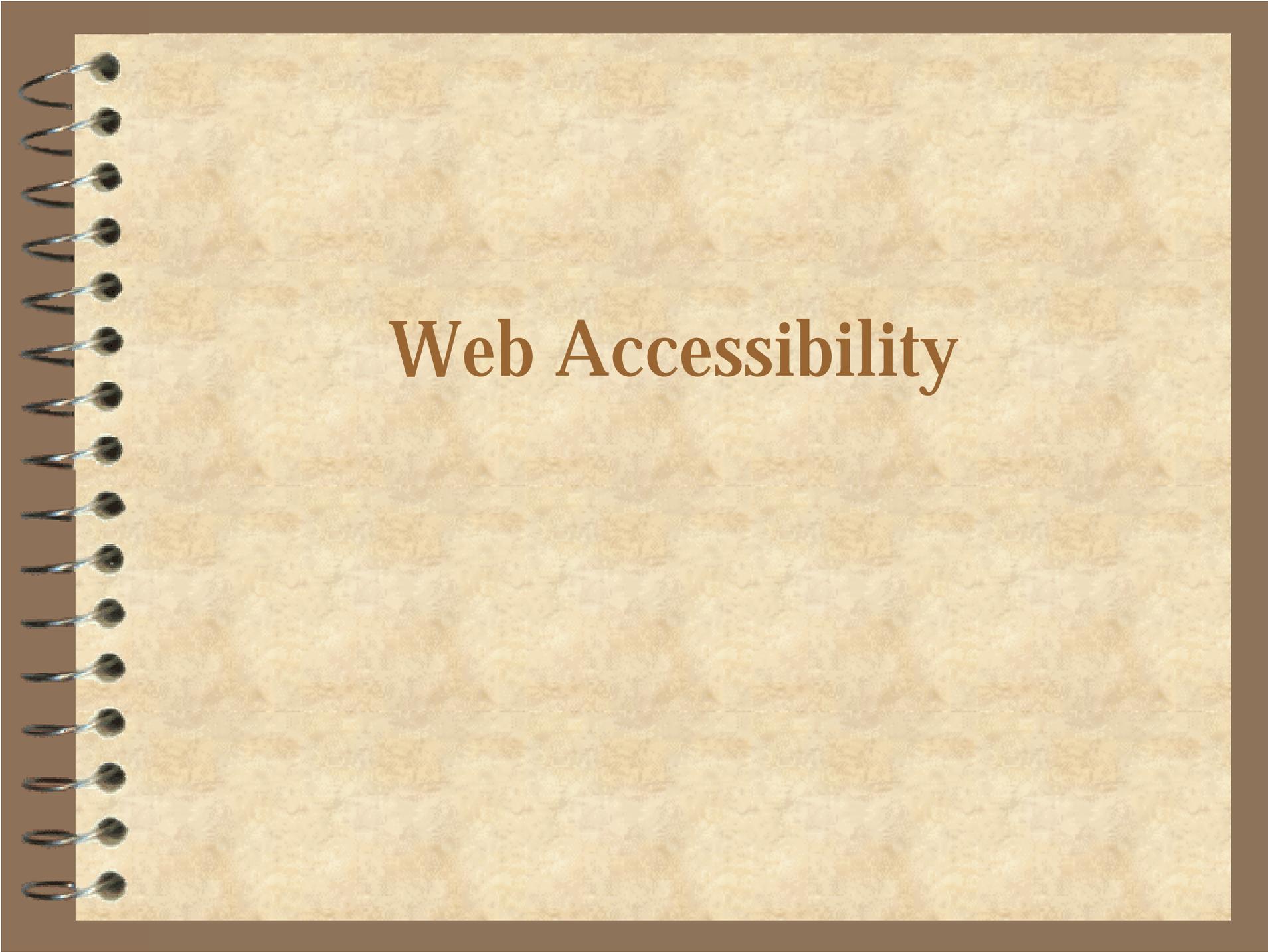
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Webmasters All-Hands

November 27, 2001

Agenda

- 4 **Web Accessibility**
- 4 **Section 508 Overview**
- 4 **Web-based Technical Standards**
- 4 **Site Evaluation**
- 4 **Current Status**

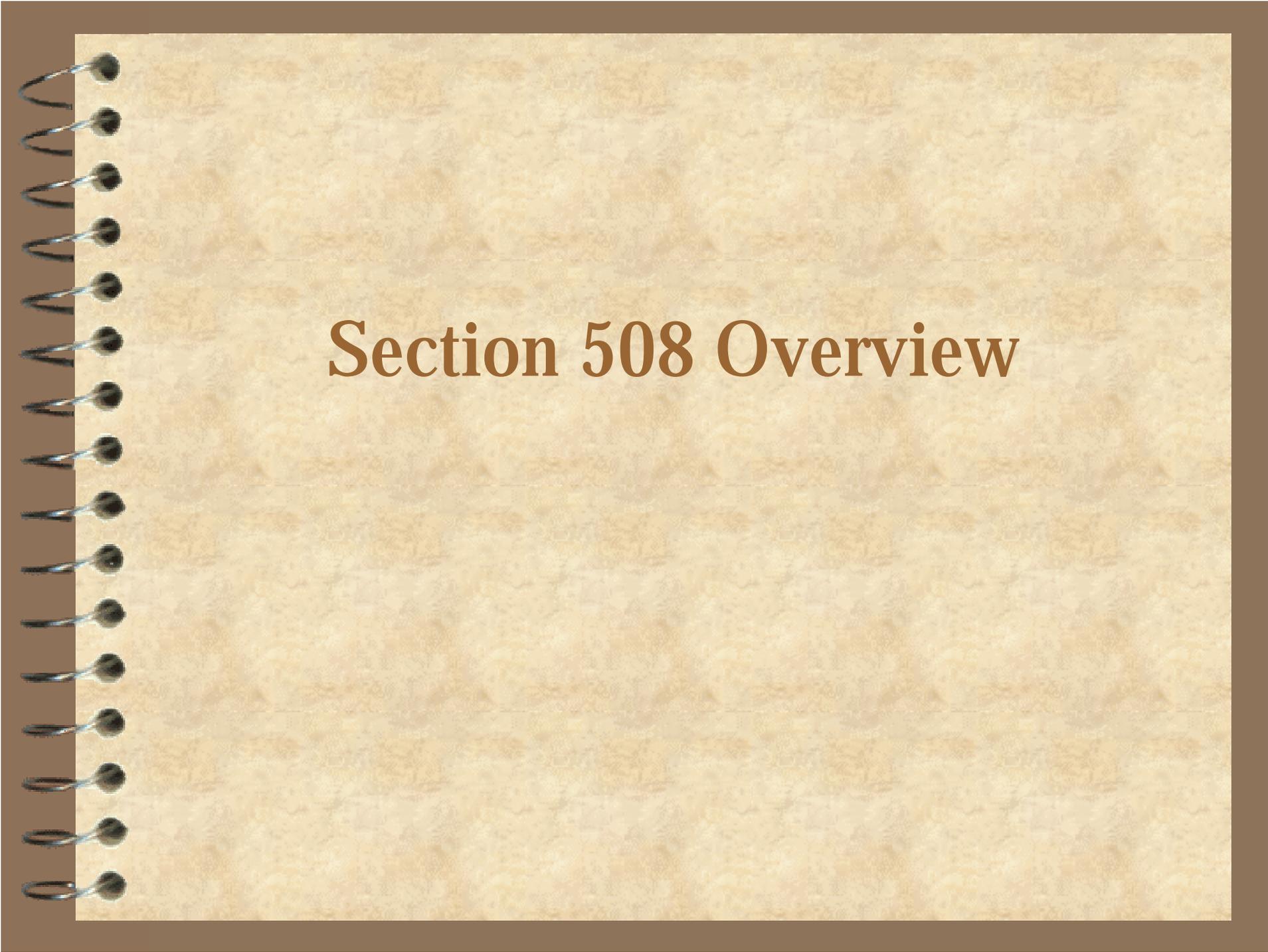
The image shows a spiral-bound notebook with a textured, light brown cover. The notebook is oriented vertically, with the spiral binding on the left side. The cover has a dark brown border. The text "Web Accessibility" is printed in a dark brown, serif font in the center of the cover.

Web Accessibility

Web Accessibility

Anyone using any kind of Web browsing technology must be able to visit any site and get a full and complete understanding of the information as well as have the full and complete ability to interact with the site - if that is necessary.

Chuck Letourneau, Starling Access Services © 1998



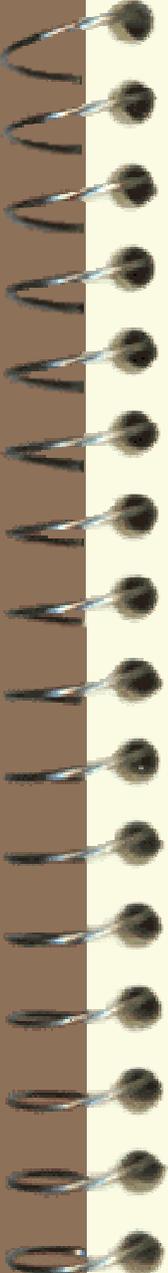
Section 508 Overview

Workforce Investment Act of 1998 - Section 508

- 4 Federal agencies' electronic and information technology is to be accessible to people with disabilities
 - Employees
 - Members of the public
- 4 Revision has "teeth", i.e., provides for enforcement

Enforcement

- 4 Individuals with disabilities can file a complaint concerning the inaccessibility of an agency's electronic or information technology
- 4 Alternatively, individuals may file a civil action against an agency
- 4 Remedy is agency compliance, i.e., not a monetary penalty or reward



Architectural and Transportation Barriers Compliance Board

4 Independent Federal Agency

- Created in 1973
- Primary mission is accessibility for people with disabilities

4 Directed to publish Federal E & IT technical standards

Implementation

- 4 **Effective June 2001**
- 4 **Exempts only national security systems**
- 4 **Phases in hardware, software, and services via procurement**

Six Subsections

- 4 Software applications and Operating Systems
- 4 **Web-based intranet and internet information and applications**
- 4 Telecommunications products
- 4 Video and multimedia products
- 4 Self contained, closed products
- 4 Desktop and portable computers

Contractor Obligations

- 4 Contractors are not required to procure accessible hardware and software to carry out government related activities, unless contract calls for delivery
- 4 Similarly, if a firm is contracted to develop a web site for a Federal agency, the web site created must be fully compliant, but the firm's own web site need not be compliant

Agency Obligations

- 4 Federal agency must comply with the standards when it develops, procures, maintains or uses electronic and information technology, including all web-based information and applications**
- 4 Federal agency must comply with these standards unless to do so would be an undue burden and burden must be documented**

Undue Burden

- 4 The term "undue burden," is based on case law interpreting Section 504 (*Southeastern Community College v. Davis*, 442 U.S. 397 (1979))
- 4 The term "undue burden" is also used in Title III of the Americans with Disabilities Act. (ADA), and is analogous to the term "undue hardship" in Title I of the ADA

Undue Hardship

- 4 Congress defined the term as “an action requiring significant difficulty or expense”
- 4 Agency resources available to a program or component are considered in determining whether an action is an undue burden
 - Case-by-case basis
- 4 Other (unspecified) factors may be considered, e.g., an accessible product does not (yet) exist

Undue Hardship (continued)

- 4 Section 508 requires agencies to procure accessible electronic and information technology regardless of whether they have employees with disabilities
 - Eliminates any need for later retrofitting
 - Retrofitting is changing /adding requirements and may be a significant difficulty or expense
- 4 Agencies prohibited from procuring inaccessible E&IT then claiming hardship

Equivalent Facilitation

- 4 Allows designs or technologies that result in substantially equivalent or greater access to and use of a product for people with disabilities
- 4 Is neither a waiver nor a variance
- 4 Recognizes future technologies or existing technologies used in new ways may provide the same functional outcome -- e.g., voice recognition/activation replaces a keyboard

GSFC Web Priorities

- (1) The 20 most popular Web pages at GSFC
- (2) Web pages that NASA employees, contractors, or the public use to request services (e.g., subscribe to a Center electronic newsletter) or to report on a situation (e.g., answer a help desk user satisfaction survey)
- (3) All other Web pages

Possible Compliance Problems

- 4 Technical difficulty or difficulties
- 4 Expense required to bring the site into compliance, relative to the resources available to the program or organization
- 4 Functional nature of the site
 - Site can not be made compliant without altering its functional nature
 - Example: visualization techniques are used for data analysis (not just to represent information)

Non-Compliant Sites

- 4** Regardless of the justification for a non-compliant site,
- Individuals with disabilities shall be provided with the information and data
 - An alternative means of access shall allow individuals with disabilities to use the information and data

Key Accessibility Resources

4 NASA Webmasters

<http://www.hq.nasa.gov/webaccess/>

4 Online Web training

<http://www.section508.gov/Training.htm>

=> [508 Universe](#), GSA's section 508 training

<http://todl.anteon.com/508/>



ite:

BC

Web Accessibility Made Easy

Government Website Accessibility Guidelines



Introduction

This document was assembled by and with the help of NASA webmasters to assist NASA and other Federal webmasters in the goal of making all Government websites accessible to persons with disabilities. The information below represents source material and the actual guidelines with descriptions of intent and suggested methods of compliance. In addition to the guidelines, information on current web technology developments and how they are used is found here on the [Assistive Technology page](#).

For Webmasters are sharing their learned experience in making the multiple NASA web pages accessible. To see these best practices, including a fairly straightforward and easy to follow [step-by-step](#) to website accessibility assessment and cleanup, go to the [NASA Webmasters Web Accessibility Best Practices](#) page.

For information on the renovation of NASA Headquarters web pages, check the [schedule](#).

Note: All links spawn new browser windows.

Architectural Compliance Board, Department of Justice, General Services Administration, and World Wide Web Consortia Base Documents and Reference Materials

- [Final Published Section 508 Rules \(U.S. Architectural and Transportation Barriers Compliance Board\)](#)
- [WORKFORCE INVESTMENT ACT OF 1998 SEC. 508. ELECTRONIC AND INFORMATION TECHNOLOGY](#)
- [Department of Justice listing of instructions and documents about Section 508](#)
- [World Wide Web Consortia Web Accessibility Guidelines](#)
- [Web Accessibility Guidelines Checklist](#)
- [World Wide Web Consortia HTML 4.01 Specification Contents & Index Section](#)
- [World Wide Web Consortia HTML 4.01 Tag Attribute Index](#)

NASA Accessibility Guideline Checklist and Explanations

Web Practice	Accessibility Standard Links go to tag reference at W3C .	Explanation Links go to more information and examples at CAST or W3C .
Text equivalent	A text equivalent for every non-text element shall be provided (e.g., via alt , longdesc , or in element content).	The alt text tag provides a title or descriptive phrase about the image it accompanies. This is essential for users of reader software who are vision impaired and it is valuable for users of graphical browsers who have "load images" turned off. It is also useful for...

NASA Accessibility Guideline Checklist and Explanations

No.	Web Practice	Accessibility Standard Links go to tag reference at W3C .	Explanation Links go to more information and examples at CAST
(a)	Text equivalent	A text equivalent for every non-text element shall be provided (e.g., via alt , longdesc or in element content).	The alt text tag provides a title or descriptive phrase about the image. This is essential for users of reader software who are vision impaired, users of graphical browsers who have "load images" turned off. It is of text-only WWW tools like Lynx. The longdesc tag can be essential to convey important information such as <i>what about the image represents image is a science result image</i> .
(b)	Equivalent alternatives	Equivalent alternatives for any multimedia presentation shall be synchronized with the presentation.	This states that any dynamic changes which occur based on multimedia (<code><frame></code> , <code></code> , <code><object></code> , or <code><script></code>) must also update the "alt" element.
(c)	Web page design	Web pages shall be designed so that all information conveyed with color is also available without color, for example from context or markup. Good primer on Color Blindness <i>Link used with author's permission.</i>	Thirty percent of all males suffer from some form of color deficiency: red-green, blue-yellow, or spreading one color across several others. Choose text and colors that provide maximum contrast. Contrast is also very important for individuals with reduced vision. Good design also refers to the ability of readers to properly parse a page correctly left to right and up to down.
(d)	Organization	Documents shall be organized so they are readable without requiring an associated style sheet .	Style sheets present a double-edged sword: Only the latest browsers support them and when using them the text still needs to be able to be read by reader software .
(e)	Server-side image maps	Redundant text links shall be provided for each active region .	Most sites have moved away from server-side image maps. The exceptions are things as geographical information system clickable maps.
(f)	Client-side image maps	Client-side image maps shall be provided instead of server-side image maps except where the regions cannot be defined with an available geometric shape.	Modern browsers support client-side image maps, with the addition of the image hot spots , assistive technology readers can provide additional information. If the user has "load images" turned off, the only approach is to provide alternative text elsewhere on the same page .
(g)	Data tables	Row and column headers shall be identified for data tables.	Using row and column headers becomes crucial when a table is large. Without the headers, assistive technology such as reader software will not be able to recite the table contents with no reference to what that column or row is.
(h)	Multi-logic row or column headers	Markup shall be used to associate data cells and header cells for data tables that have two or more logical levels of row or column headers.	Additional information such as summary and scope can be applied to data tables to render their contents and intent meaningful to users of assistive technology. Particular, can be very useful for column headers . See above.
(i)	Frames	Frames shall be titled with text that facilitates frame identification and navigation.	Frames present unique obstacles to users of reader software. A frame always includes an alternative layout (text only) inside a <code><noframe></code> element. Using title, name and longdesc tags , frames can be made more navigable for reader software.
(j)	Web page design	Pages shall be designed to avoid causing the screen to flicker with a frequency greater than 2 Hz and lower than 55 Hz.	Flicker and continuous motion (as from applets or javascripts or from images) can be a problem for individuals with seizures in individuals with photosensitive epilepsy . Content developers should avoid an overuse of time-sequenced elements. If used, the timing should



Web-based Technical Standards

Web_based Technology and Information Criteria

- 4 Based on priority level one guidelines developed by the World Wide Web Consortium (W3C) Web Accessibility Initiative (WAI)
- 4 Ensures access for people with disabilities who rely on assistive products
 - Access not necessarily (full) accessibility

Non-text Elements (a)

- 4 A text equivalent for every non-text element shall be provided (e.g., via "alt", "longdesc", or in element content)
 - Non-text elements requiring identification
 - Images that provide information (content)
 - Images used for navigation
 - Not all images need a description, e.g., image slices and transparent graphics used for spacing
 - Use alt= " " so people listening to the page are not subjected to unnecessary speech

Multimedia (b)

4 Equivalent alternatives for any multimedia presentation shall be synchronized with the presentation

- Provide text transcriptions of all video clips
- Include captions or text tracks with a description of the sounds
- Multimedia isn't inexpensive or easy

Color (c)

- 4 Web pages shall be designed so that all information conveyed with color is also available without color, for example from context or markup (text labels)

Example: green start button

- a statement should read "press the green button labeled start to begin"
- the word "start" should be associated with the green button on the page

Style Sheets (d)

- 4 Documents shall be organized so they are readable without requiring an associated style sheet
- Style sheets are a relatively new technology however their use is not forbidden
 - Users with disabilities may not have computer software that can properly render style sheets

Style Example

- 4 Indicating crucial or unique information using styles, such as "The statements in *italics* are...." will not be understood if style sheets are not available in the users software
- 4 Braille terminal does not provide styles (italic, bold, underline) or sizing (capitalization, subscript, superscript)

Server-side Image Map (e)

- 4 Redundant text links shall be provided for each active region of a server-side image map
- 4 Provide access to the page for anyone
 - not able to see the map
 - not able to accurately click on the map
 - who has images turned off (slow connection)

Client-side Image Maps (f)

4 Client-side image maps shall be provided instead of server-side image maps

- Except where the regions cannot be defined with available geometric shapes
- Example

```
<map name="top-nav">
```

```
<area shape="rect" coords="0,19,139,38" href="guestbook.html" alt="Feedback">
```

```
<area shape="rect" coords="0,0,139,18" href="sponsors.html" alt="Sponsors">
```

```
</map>
```

Data Tables (g)

- 4 Row and column headers shall be identified for data tables
 - Does not prohibit the use of table codes to format non-tabular text
- 4 Associate each data cell (created with TD) with its headers via "headers" attribute
 - Specifies row and column labels for data cell
 - Requires header cells to have an "id" attribute

Example of Markup

<http://www.w3.org/TR/WCAG10-HTML-TECHS/#identifying-table-rows-columns>

```
<TABLE border="1"
  summary="This table charts the number of
           cups of coffee consumed by each senator,
           the type of coffee (decaf or regular),
           and whether taken with sugar.">
  <CAPTION>Cups of coffee consumed by each senator</CAPTION>
  <TR>
    <TH id="header1">Name</TH>
    <TH id="header2">Cups</TH>
    <TH id="header3" abbr="Type">Type of Coffee</TH>
    <TH id="header4">Sugar?</TH>
  <TR>
    <TD headers="header1">T. Sexton</TD>
    <TD headers="header2">10</TD>
    <TD headers="header3">Espresso</TD>
    <TD headers="header4">No</TD>
  <TR>
    <TD headers="header1">J. Dinnen</TD>
    <TD headers="header2">5</TD>
    <TD headers="header3">Decaf</TD>
    <TD headers="header4">Yes</TD>
</TABLE>
```

Result of Markup

A speech synthesizer might render this markup example as follows:

Caption: Cups of coffee consumed by each senator

Summary: This table charts the number of cups of coffee consumed by each senator, the type of coffee (decaf or regular), and whether taken with sugar.

Name: T. Sexton, **Cups:** 10, **Type:** Espresso, **Sugar:** No

Name: J. Dinnen, **Cups:** 5, **Type:** Decaf, **Sugar:** Yes

Multi-level Data Tables (h)

- 4 Markup shall be used to associate data cells and header cells for data tables that have two or more logical levels of row or column headers

Travel Expense Report

	Meals	Hotels	Transport	subtotals
San Jose				
25-Aug-97	37.74	112.00	45.00	
26-Aug-97	27.28	112.00	45.00	
subtotals	65.02	224.00	90.00	379.02
Seattle				
27-Aug-97	96.25	109.00	36.00	
28-Aug-97	35.00	109.00	36.00	
subtotals	131.25	218.00	72.00	421.25
Totals	196.27	442.00	162.00	800.27

Frames (i)

4 Frames shall be titled with text that facilitates frame identification and navigation

- Such labels as top, bottom, or left, provide few clues as to what is contained in the frame
- Labels such as "navigation bar" or "main content" are more meaningful and facilitate frame identification and navigation

Screen Flicker (j)

- 4 Pages shall be designed to avoid causing the screen to flicker with a frequency greater than 2 Hz and lower than 55 Hz
- Consistent with proposed revisions to the ADA Accessibility Guidelines
 - Photosensitive epilepsy seizure can be triggered in this range

Text-only Page (k)

- 4 A text-only page, with equivalent information or functionality, shall be provided to make a web site comply with the provisions of this part, **when compliance cannot be accomplished in any other way**
- 4 The content of the text-only page shall be updated whenever the primary page changes

Scripts (I)

- 4 When pages utilize scripting languages to display content, or to create interface elements, the information provided by the script shall be identified with functional text that can be read by assistive technology
 - Does not forbid use of scripts but prohibits reliance on a script to make the page usable

Script Functional Text Example

```
<SCRIPT type="Javascript">
```

```
/* ...some Javascript to show a billboard of sports scores... */
```

```
</SCRIPT>
```

```
<NOSCRIPT>
```

```
  <p>To access today's scores, <A href="scores.html">  
    visit our text-only version </A>
```

```
  </p>
```

```
</NOSCRIPT>
```

Applets and Plug-ins (m)

- 4 When a web page requires that an applet, plug-in or other application be present on the client system to interpret page content, the page must provide a link to a plug-in or applet that complies with paragraphs (a) through (l)
 - Responsibility on the Web page author to know that a compliant application exists

Electronic Forms (n)

- 4 When electronic forms are designed to be completed on-line, the form shall allow people using assistive technology to access the information, field elements, and functionality required for completion and submission of the form, including all directions and cues
- 1998 Government Paperwork Elimination Act requires that Federal agencies make electronic versions of their forms available online and allows individuals and businesses to use electronic signatures to file these forms electronically
 - Does not prohibit use of compliant scripts and plug-ins

Repetitive Navigation Links (o)

- 4 A method shall be provided that permits users to skip repetitive navigation links
 - Web authors place navigation links at the top, bottom, or side of every new page
 - Repetitive navigation links forces persons with visual impairments to re-read these links when moving to every new page
 - Provide users with the option to skip repetitive navigation links

Skip Repetitive Navigation Links

4 “Hidden” skip over the navigation links often found at the top and left of a page to the main content

```
<a href="#navskip"></a>
```

```
<a name="navskip"><h1> The main content...</h1></a>
```

4 Display a "skip navigation" link at the top of the page

Response Time (p)

- 4 When a timed response is required, the user shall be alerted and given sufficient time to indicate more time is required
- Disability can have a direct impact on a user's speed
 - There is no way for a user to turn timed messages or pages off
 - Very frustrating when text just disappears

Web Documents

4 Provide equivalent HTML or ASCII formats for all documents in PDF, PS, WORD or other formats that may not be accessible

- Images, e.g., scanned document pages
- Format codes, e.g., excessive "noise"

4 Adobe PDF information and resources

<http://access.adobe.com/information.html>

A spiral-bound notebook with a light brown, textured cover. The notebook is oriented vertically, with the spiral binding on the left side. The cover has a dark brown border. The text "Site Evaluation" is printed in a dark brown, serif font in the center of the cover.

Site Evaluation

Accessibility Testing

- 4 Assistive technology products
- 4 Accessibility test tools
 - Free
 - Commercial
- 4 Code verification (reading) & validation
- 4 Disabled your browser
 - Turn off image loading, scripts, Java, style sheets, etc.

Free Test Tools

- 4 Lynx - text browsers for several platforms
- 4 ANYBrowser - online text viewer
- 4 Bobby - online and download versions
 - download to test internal pages
- 4 WAVE - online prototype evaluation tool

Commercial Test Tools

4 SSB Technologies

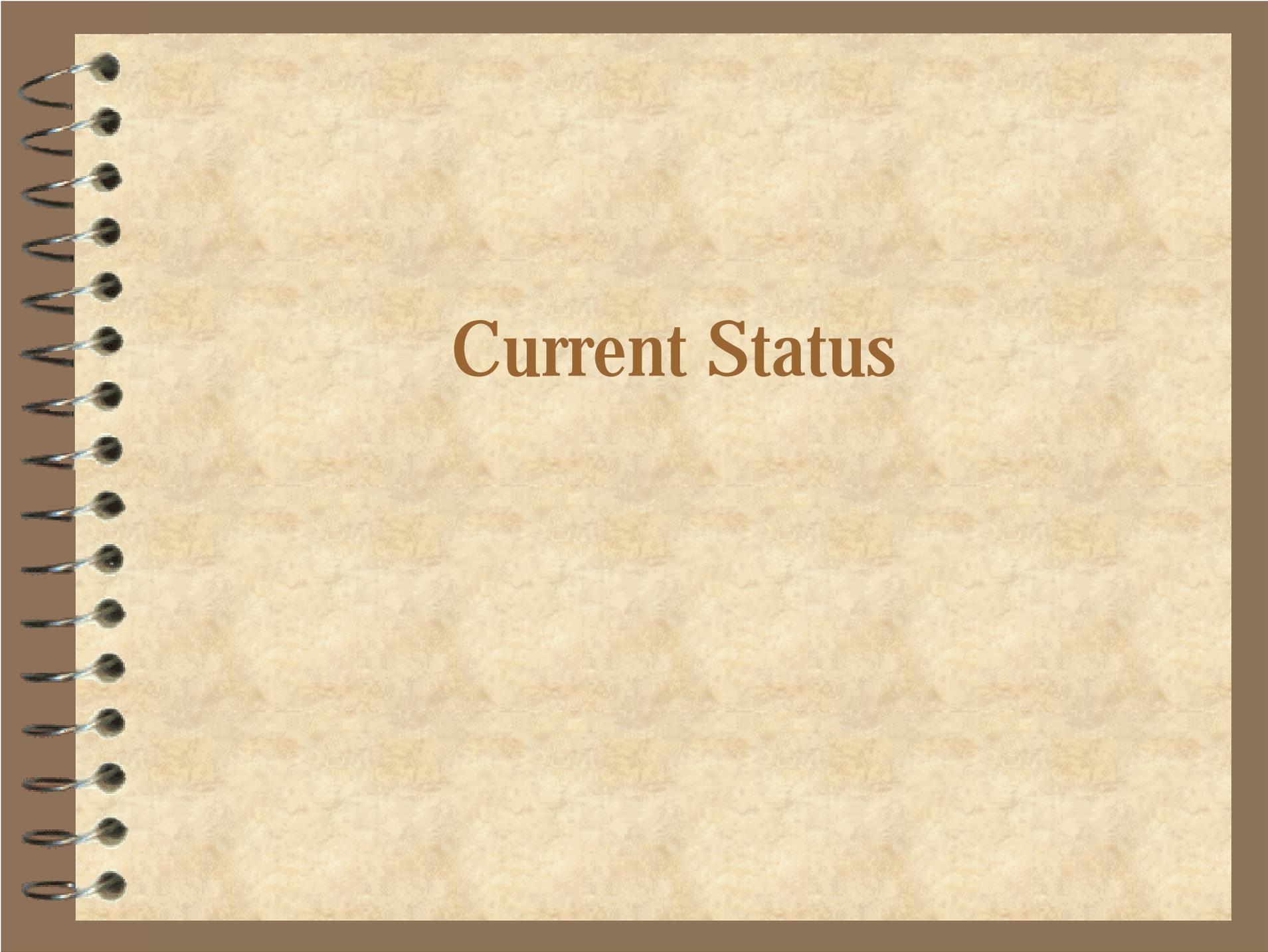
- InSight and InFocus

4 Crunchy Technologies

- PageScreamer

4 HiSoftware

- AccVerify and AccRepair
- Free plugin for Microsoft FrontPage

A spiral-bound notebook with a light brown, textured cover and a dark brown border. The notebook is open to a page with horizontal lines. The text "Current Status" is written in a dark brown, serif font in the center of the page. The spiral binding is visible on the left side.

Current Status

Recent Findings

4 ALT text

- Missing - screen reader says "image"
- Incorrect - image changed and text not updated
- Generic - ALT="graphic"

4 Inconsistent links

- Image and ALT text do not match URL

4 Incomplete table markup

JavaScript Problem

- 4 Text, function, and invocations of uses of JavaScript need to be accessible with assistive technology, namely screen readers and talking browsers
- 4 NOT sufficient that NOSCRIPT element describes the purpose of a script
 - Script accomplishes a login
 - NOSCRIPT says "This is the login page."

A spiral-bound notebook with a brown cover and a light brown, textured paper page. The page is ruled with horizontal lines. The word "Conclusion" is written in a dark brown, serif font in the center of the page. The spiral binding is visible on the left side.

Conclusion

Summary

4 Accessibility is a "Good Thing"

- Often improves site usability
- Need not be expensive, but there are exceptions

4 Accessibility is the "Right Thing"

4 Compliance with Section 508

- Is not "accessibility", but improves site access