Accessibility

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Web Architecture, 290-03
October 11, 2007

School of Information UC Berkeley
Outline

Introduction what is accessibility
Guidelines and techniques
Evaluation is this accessible?
Assistive Technologies and resources
Definition: Accessibility

Web accessibility means that people with disabilities can use the Web. More specifically, Web accessibility means that people with disabilities can perceive, understand, navigate, and interact with the Web, and that they can contribute to the Web. Web accessibility also benefits others, including older people with changing abilities due to aging.

— W3C

References:
Microcentre. University of Dundee: http://alpha.mic.dundee.ac.uk/ac~d/research/
TRACE Centre. University of Wisconsin: - W--n: / .Ltrace. wisc. edu
CALL Centre, University of Edinburgh: http://callcentre.
cogsci.ed.ac.uk/Ca11Home
IRV. Netherlands: http://www.tno.nl/expert/inst/irv.html
ASEL. University of Delaware: h t t p : / / w w w . a s e l . u d e l . e d u /
Disabilities to address

Physical

Visual

Auditory

Cognitive

Speech

Neurological
### Example: Alt Text

```html
<img src="thunder.gif" alt="" />
```

<table>
<thead>
<tr>
<th>Day</th>
<th>Mon</th>
<th>Tues</th>
<th>Wed</th>
<th>Thur</th>
<th>Fri</th>
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</thead>
<tbody>
<tr>
<td><strong>Outlook</strong></td>
<td>☀️</td>
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<td><strong>High (°C)</strong></td>
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<td>0°</td>
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<th>Fri</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Outlook</strong></td>
<td>sunny</td>
<td>partly cloudy</td>
<td><strong>IMAGE</strong></td>
<td>rain</td>
<td>snow</td>
</tr>
<tr>
<td><strong>High (°C)</strong></td>
<td>25°</td>
<td>20°</td>
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<td>-5°</td>
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</table>

[http://uiaccess.com](http://uiaccess.com)
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<td>5°</td>
<td>0°</td>
<td>-5°</td>
</tr>
</tbody>
</table>

**Outlook**
- [sunny]
- [partly cloudy]
- [rain]
- [snow]

**High (°C)**
“The designers of human machine interfaces have to be far more inventive and original when they are trying to cope in an effective and efficient manner with the problems presented by the interfaces for people with disabilities. Indeed this has led to the phenomenon of a number of very successful designs, initially targeted at people with disabilities, providing major advances for everyone.”

Human Computer Interaction for People with Disabilities
Newell and Gregor.
Handbook of Human-Computer Interaction.
“The cassette tape recorder was originally designed because blind people could not cope with the reel-to-reel tape recorders on which they had to play their talking books.”

Newell and Gregor
Components

1. Content
The information in a Web page or Web application: natural information such as text, images, and sounds code or markup that defines structure, presentation, etc.

2. Web browsers, media players, and other “user agents”

3. Assistive technology, in some cases - screen readers, alternative keyboards, switches, scanning software, etc.

4. Users’ knowledge, experiences, and in some cases, adaptive strategies using the Web

http://www.w3.org/WAI/intro/components
Components

5. Developers
Designers, coders, authors, etc., including developers with disabilities and users who contribute content

6. Authoring tools
Software that creates Web sites

7. Evaluation tools
Web accessibility evaluation tools, HTML validators, CSS validators, etc.

http://www.w3.org/WAI/intro/components
WAI Guidelines and Techniques

WAI guidelines define how to implement alternative text for accessibility in the different components.

Authoring Tool Accessibility Guidelines (ATAG) addresses authoring tools.

Web Content Accessibility Guidelines (WCAG) addresses Web content, and is used by developers, authoring tools, and accessibility evaluation tools.

User Agent Accessibility Guidelines (UAAG) addresses Web browsers and media players, including some aspects of assistive technologies.

http://www.w3.org/WAI/intro/atag.php
Best Practices

Authoring Tool Accessibility Guidelines (ATAG)

http://www.w3.org/WAI/intro/atag.php
Web Content Accessibility Guidelines (WCAG)

W3C Recommendation 5-May-1999

This version:
http://www.w3.org/TR/1999/WAI-WEBCONTENT-19990505
(plain text, PostScript, PDF, gzip tar file of HTML, zip archive of HTML)

Latest version:
http://www.w3.org/TR/WAI-WEBCONTENT

Previous version:
http://www.w3.org/TR/1999/WAI-WEBCONTENT-19990324

Editors:
http://www.w3.org/TR/WAI-WEBCONTENT/
Best Practices

User Agent Accessibility Guidelines (UAAG)

User Agent Accessibility Guidelines 1.0

W3C Recommendation 17 December 2002

This version:
http://www.w3.org/TR/2002/REC-UAAG10-20021217/

Latest version:
http://www.w3.org/TR/UAAG10/

Previous version:
http://www.w3.org/TR/2002/PR-UAAG10-20021016/

Editors:
Heather Weir, W3C

http://www.w3.org/TR/WAI-WEBCONTENT/
Standards

(X)HTML Validation from the W3C for the pages content
CSS Validation from the W3C for the pages layout
At least WAI-AA (preferably AAA) compliance with the WAI’s WCAG
Compliance with all guidelines from Section 508 of the US Rehabilitation Act
Access keys built into the HTML
Semantic Web Markup
A high contrast version of the site for individuals with low vision
Alternative media for any multimedia used on the site (video, flash, audio, etc)
WTAG 2.0 Guidelines

Perceivable

- Provide text alternatives for any non-text content so that it can be changed into other forms people need such as large print, braille, speech, symbols or simpler language
- Provide synchronized alternatives for multimedia
- Create content that can be presented in different ways (for example spoken aloud, simpler layout, etc.) without losing information or structure
- Make it easier for people with disabilities to see and hear content including separating foreground from background

Operable

- Make all functionality available from a keyboard
- Provide users with disabilities enough time to read and use content
- Do not create content that is known to cause seizures
- Provide ways to help users with disabilities navigate, find content and determine where they are

Understandable

- Make text content readable and understandable
- Make Web pages appear and operate in predictable ways
- Help users avoid and correct mistakes that do occur

Robust

- Maximize compatibility with current and future user agents, including assistive technologies
## Helpful Tips

<table>
<thead>
<tr>
<th>Components Affected by Principle</th>
<th>Principle Example</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Perceivable</strong></td>
<td>Color used to convey meaning</td>
</tr>
<tr>
<td>Visual, Hearing, Touch,</td>
<td></td>
</tr>
<tr>
<td>Transformability, Content</td>
<td></td>
</tr>
<tr>
<td>vs. Style and Presentation</td>
<td></td>
</tr>
<tr>
<td><strong>Operable</strong></td>
<td>Rollovers versus keyboard tabbing</td>
</tr>
<tr>
<td>Input Methods, Interaction</td>
<td></td>
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<tr>
<td>Methods, User Control over</td>
<td></td>
</tr>
<tr>
<td>Timing and Time Limits, Error</td>
<td></td>
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<tr>
<td>Recovery</td>
<td></td>
</tr>
<tr>
<td><strong>Understandable</strong></td>
<td>Graphics and / or animations to convey meaning</td>
</tr>
<tr>
<td>Meaning—Language, Alternative or</td>
<td></td>
</tr>
<tr>
<td>Supplemental Representations</td>
<td></td>
</tr>
<tr>
<td><strong>Robust</strong></td>
<td>Requiring a certain browser</td>
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<tr>
<td>Functionality across Current and</td>
<td></td>
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<tr>
<td>Future Technologies, Using</td>
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<tr>
<td>Technologies According to</td>
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<tr>
<td>Specification</td>
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</table>
Evaluation

1. Select a representative page sample
2. Examine pages using graphical browsers
3. Examine pages using specialized browsers
4. Use automated Web accessibility evaluation tools
5. Summarize obtained results

Related site: http://www.w3.org/WAI/eval/Overview
Tips for Content

Page organization
Use headings, lists, and consistent structure. Use CSS for layout and style where possible.

Images & animations
Use the alt attribute to describe the function of each visual. Image maps. Use the client-side map and text for hotspots.

Multimedia
Provide captioning and transcripts of audio, descriptions of video.

Hypertext links
Use text that makes sense when read out of context. For example, avoid “click here.”

http://www.w3.org/WAI/quicktips/
Tips for Content

**Graphs & charts**
Summarize or use the longdesc attribute.

**Scripts, applets, & plug-ins**
Provide alternative content in case active features are inaccessible or unsupported.

**Frames**
Use the noframes element and meaningful titles.

**Tables**
Make line-by-line reading sensible.
Accessibility Principles

1. Hearing
2. Mobility/Motor
3. Cognitive
4. Seizure
5. Vision
1. Hearing Disabilities

Include any information conveyed by sound in text format as well.
2. Mobility Disabilities

Some people do not use a keyboard and/or mouse. Make sure your Web document is navigable by both keyboard and keyboard equivalent.

Position hyperlinks so that it is easy to get to the most important ones. Put the most important first.
3. Cognitive Disabilities

Avoid dense paragraphs of text. Use lots of white space.

Use bulleted lists to simplify paragraphs.

Use short and simple sentences.

Avoid ‘busy’ screens. Space information out, so that there isn’t too much in a small area.
4. Seizure Disabilities

Avoid flashing or blinking elements in your documents. Avoid animated text that can make the words harder to read.
5. Vision Disabilities

- Use alternative text on all graphics.
- Use a reasonable font size. Minimum of 10 point.
- Separate columns with a wide blank space.
- Design tables so that they read sensibly line by line. Use a high contrast color scheme.
- Black text on white is ideal.
- Never put two colors of similar contrast next to each other.
- Name hyperlinks sensibly. For example, do not use “to see more information check out this Link” or “Click here.”
On-line Credit Reports, Credit Monitoring, Business Services - TransUnion

Preventing fraud. Creating options. Managing risk. Identifying customers. Discover all the benefits TransUnion brings to your bottom line.

Whether you’re a corporate customer or an individual consumer, TransUnion offers products and services, as well as facilitating options and opportunities, which promote greater financial health.

To learn more about the industries we serve and the way in which we are uniquely positioned to serve them, see Capabilities & Markets.

Understanding the crucial role the credit reporting industry plays in economic development in Industry Overview.

More information on how credit-based products and services impact access to consumer information. Credit reporting is a necessity in our global economy. However, accuracy and security are crucial. Learn more in TransUnion’s Public Policies.
Color

**HUE** varies around the solid

**LIGHTNESS** varies from top to bottom

**SATURATION** is the distance from the center.
**Hue**

**HUE** is ‘pure’ color without the addition of white or black.
Lightness

**LIGHTNESS** reflects the perception of a color's brightness (also known as value)
Saturation

SATURATION the colorfullness or intensity of a color
Color attributes?
Color attributes

Effective

Not as effective
Color attributes

Effective

Not as effective
Color attributes

Effective

Not as effective
“You can learn it through exploration” Mac VoiceOver is built into the operating system and works standard key commands and shortcuts like Command-S for Save and Command-C for copy.”

Let’s hear it in action!

Apple Inc.
What Are Remaining Challenges?

http://ncdae.org/tools/factsheets/pdf.cfm
Remaining Challenges

**Challenge for Blind**
Only true headings (<h1>) and lists <li> will convey semantic meaning to a screen reader user.

**Solution**
Tag all headings so they are true headings. Tag all lists as ordered or unordered lists.

**Challenge for Blind**
Images must include an alternative description (alt text) to be meaningful to a screen reader user.

**Solution**
Right-click on the selected image and select Properties from the menu. Click on the Tag tab and type the appropriate alt text in the field labeled Alternate Text. While in TouchUp Reading Order, Right-click on the image and choose Edit Alternate Text.