

Accessible Computing Seminar

Lecture #8 – Accessibility and the World Wide Web

What is Web Accessibility

- Web accessibility refers to the inclusive practice of removing barriers that prevent interaction with, or access to, websites by people with disabilities.



We need to make every single thing accessible to every single person with a disability.

- Stevie Wonder

Information wants to be free.
Information NEEDS to be accessible.

Why make Web Site Accessible?

- Data shows 1 in 5 people have a disability.
- You could be excluding 20% of your potential users, customers, students, and more.

Legal Requirements

- If you're federally funded:
 - Section 508 (with new rules enforced Jan 2018)
- If you're a business:
 - There have been successful lawsuits against web sites deemed inaccessible

Section 504

- Section 504 of the Rehabilitation Act is a civil rights law.
- It was the first civil rights legislation in the United States designed to protect individuals with disabilities from discrimination based on their disability status.
- The nondiscrimination requirements of the law apply to employers and organizations that receive federal financial assistance.

Section 504

- Programs receiving federal funds may not discriminate against those with disabilities based on their disability status.
- All government agencies, federally-funded projects, K-12 schools, postsecondary entities (state colleges, universities, and vocational training schools) fall into this category.

Section 508

- The Reauthorized Rehabilitation Act of 1998 included amendments to Section 508 of the Act.
 - This section bars the Federal government from procuring electronic and information technology (E&IT) goods and services that are not fully accessible to those with disabilities.
 - This would include the services of web design since the Internet was specifically mentioned.

Section 508

- Section 508 directed the Access Board (The Architectural, and Transportation Barriers Compliance Board) to create binding, enforceable standards that clearly outline and identify specifically what the federal government means by "accessible" electronic and information technology products.

Influence of Section 508

- Section 508 provided the first-ever US federal accessibility standard for the Internet.
 - The WCAG existed prior to this. Unlike WCAG 508's were compulsory for federal contracts and other funding.
- **This section provides compliance language that could be monitored at a distance.**
 - Unlike, WCAG, Section 508 outlines binding, enforceable standards that must be adhered to.

Influence of Section 508

- State governments may be held accountable for complying with Section 508.
 - All states receive funding under the Assistive Technology Act of 1998.
 - To gain access to this funding, each state must assure the federal government they will implement all conditions of Section 508 within their state entities (including higher education).
 - Many states have codified Section 508 to be state law (e.g., Arizona, Nebraska, and Wisconsin), requiring state institutions to comply with these requirements.

Influence of Section 508

- Businesses must comply with Section 508 when supplying Electronic and Information Technology goods and services to the federal government.
 - The influence of web accessibility on business and industry is more significant when the demands of a client, or potential client, like the US federal government, must be met.

Web Accessibility Standards

- WCAG 2.0 (Web Content Accessibility Guidelines version 2)
 - WCAG are part of a series of guidelines published by the Web Accessibility Initiative (WAI) of the World Wide Web Consortium (W3C), the main international standards organization for the Internet.
 - **Current version was published in 2018.**
- Section 508
 - Section 508 Standards apply to electronic and information technology developed, procured, maintained, or used by federal agencies, including computer hardware and software, websites, phone systems, and copiers.
 - **Current standards were issued in 2017.**

WCAG

- **Guideline 1.1**
Text Alternatives: Provide text alternatives for any non-text content
- **Guideline 1.2**
Time-based Media: Provide alternatives for time-based media
- **Guideline 1.3**
Adaptable: Create content that can be presented in different ways (for example simpler layout) without losing information or structure
- **Guideline 1.4**
Distinguishable: Make it easier for users to see and hear content including separating foreground from background

WCAG

- **Guideline 2.1**
Keyboard Accessible: Make all functionality available from a keyboard
- **Guideline 2.2**
Enough Time: Provide users enough time to read and use content
- **Guideline 2.3**
Seizures and Physical Reactions: Do not design content in a way that is known to cause seizures or physical reactions.
- **Guideline 2.4**
Navigable: Provide ways to help users navigate, find content, and determine where they are.
- **Guideline 2.5**
Input Modalities: Make it easier for users to operate functionality through various inputs beyond keyboard.

WCAG

- Guideline 3.1
Readable: Make text content readable and understandable
- Guideline 3.2
Predictable: Make Web pages appear and operate in predictable ways
- Guideline 3.3
Input Assistance: Help users avoid and correct mistakes

WCAG

- Guideline 4.1
Compatible: Maximize compatibility with current and future user agents, including assistive technologies



- All non-text content needs *a text equivalent* to help convey information to those with sensory disabilities

Text and non-Text Equivalents

- Examples of non-text content
 - Images / Word Art
 - Charts / Graphs / Infographics
 - Decorative images, such as backgrounds
- Accessible text equivalents:
 - Image captions or `alt` attributes
 - Captioned video Audio transcripts

Without alternative text, life-saving information in this graphic is not available to visually impaired users.

SEVERE WEATHER AWARENESS WEEK
TORNADO SAFETY

In Homes or Small Business:

- If in a home or small business, go to the basement or small interior room. Cover your head and stay away from windows.

In Mobile Homes

- If in a mobile home, get out and take shelter in a sturdy building or storm shelter. If there is not one nearby, take shelter in the most interior room that has no windows.

In a Vehicle

- If caught in your vehicle, get out and into a sturdy shelter. If one is not available nearby, get to a low spot and cover your head from flying debris.

#ReadyAL NWSBirmingham

How To Hide Content Visually:

```
.screen-reader-text {
    clip: rect(1px, 1px, 1px, 1px);
    clip-path: polygon(0 0, 0 0, 0 0, 0 0);
    position: absolute !important;
    white-space: nowrap; height: 1px;
    width: 1px; overflow: hidden;
}
```



- Color usage should have sufficient contrast and should not be used as the sole method for conveying information or direction.
- ***Minimum: 4.5:1***

If color is the only method for conveying a link...

- Web accessibility means that **people with disabilities** can perceive, understand, navigate, interact with, and contribute to the Web.

The link is invisible to those who can't see blue

- Web accessibility means that people with disabilities can perceive, understand, navigate, interact with, and contribute to the Web.

If a different color AND an underline is used:

- Web accessibility means that people with disabilities can perceive, understand, navigate, interact with, and contribute to the Web.

How to provide “Skip to Content”:

```
<a id="skip" href="#content">Skip to Main Content</a>
```

```
#skip {  
  position: absolute;  
  left: -10000px;  
  top: auto;  
  width: 1px;  
  height: 1px;  
  overflow: hidden;  
}  
  
#skip:focus {  
  position:  
  static;  
  width: auto;  
  height: auto;  
}
```

- While not an official standard, **responsive web design** is important to ensure your site can be viewed on assistive devices of various sizes.

- Another important consideration is **download speeds/order** to ensure those who don't have access to high speed Internet can consume your information.

ARIA

- **ARIA (Assistive Rich Internet Applications)** Was created to improve accessibility of applications by providing extra information to screen readers via HTML attributes.

ARIA Example

```
<nav role="navigation">
  <ul>
    <li>
      <a href="/">Home</a>
    </li>
    <li>
      <a href="/contact">Contact Us</a>
    </li>
  </ul>
</nav>
```

The foundation for good accessibility is

GOOD MARKUP

Which improves your SEO!!





Web page address...



an accessibility evaluation tool from WebAIM

<http://wave.webaim.org>

TESTS FOR: Section 508 and WCAG 2.0/AA

- Free in-browser testing
- Free Chrome extension
- Premium API



tota11y

an accessibility visualization toolkit

<http://khan.github.io/tota11y>

TESTS FOR:

- Alt text and confusing link text
- Color contrast
- Heading structure
- Form labels
- ARIA landmarks
- Javascript file that places button on site
- Free Chrome extension

✓ HTML_CodeSniffer

client-side script that checks HTML source code
and detects violations of a defined coding standard

http://squizlabs.github.io/HTML_CodeSniffer

TESTSFOR: Section 508 and WCAG 2.0 A/AA/AAA

- Copy/paste code for quick testing
- Free bookmarklet for in-browser testing



pa11y

your automated accessibility testing pal

an automated accessibility testing library

<http://pa11y.org>

TESTS FOR:

- Section508
- WCAG 2.0 A/AA/AAA

PROVIDES:

- Web dashboard
- JSON web service
- Command line



Javascript library that executes automated accessibility testing inside your testing framework or browser of choice

<http://www.deque.com/products/axe>

- Free Javascript library
- Free Chrome extension

COLOR TOOL

USER INTERFACES ACCESSIBILITY

Primary #1159bd

White Text	min 54% opacity	Aa Large Text	Aa Normal Text	min 77% opacity
Black Text	min 88% opacity	NOT LEGIBLE ⚠		

P - Light #5c85f0

White Text	min 87% opacity	Aa Large Text	Aa Normal Text	min 74% opacity
Black Text	min 54% opacity	NOT LEGIBLE ⚠		

MATERIAL PALETTE: Deep Purple, Indigo, Blue, Light Blue, Cyan

CURRENT SCHEME

Primary #1159bd P	Secondary S	Text on P #ffffff T
-------------------------	----------------	---------------------------

Text on S

Material Design: Color Tool

<https://material.io/color/>

Allows you to measure the accessibility level of any color combination.

wA11y – The Web Accessibility Toolbox


<https://wordpress.org/plugins/wa11y/>

wA11y - The Web Accessibility Toolbox

Screen Options ▾

tota11y

Enable tota11y [v0.1.3]

 tota11y is an accessibility visualization toolkit provided by your friends at [Khan Academy](#). It is a single JavaScript file that inserts a small button in the bottom corner of your document and helps visualize how your site performs with assistive technologies.

Why tota11y is Awesome

tota11y consists of several plugins, each with their own functionality, that works to help you visualize accessibility violations (and successes) while also educating you on best practices. Beyond simply pointing out errors, many tota11y plugins also suggest ways to fix these violations - specifically tailored to your document.

Best Uses For tota11y

tota11y is built to scan, and provide feedback on, an entire document so this tool is best used to evaluate pages on the front-end of your site. tota11y can scan any page that you can load so the page does not have to be published.

Other Resources

There are several [Chrome extensions](#) available.

If no user roles are selected or user capability is provided, tota11y will load for all logged-in users.

Only load tota11y for specific user roles:

Editor
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About wA11y

wA11y is a toolbox of resources to help you improve the accessibility of your WordPress website.

Version: 1.0.0
Author: [Rachel Carden](#)

About wA11y.org

[wA11y.org](#) is a new community initiative to contribute to web accessibility by providing information, education, resources, and tools.

If you're interested in joining the wA11y.org community, and would like to contribute to its growth, please subscribe at <https://wa11y.org>.


Spread the Love

★ [Give the plugin a good rating](#)

🐦 [Follow me on Twitter](#)

☕ [Donate](#) and buy me a coffee


WORDPRESS PLUGINS



WP Accessibility

WP Accessibility fixes common accessibility issues in your WordPress site.

[Download Version 1.5.1](#)




Access Monitor

TENON

Test your WordPress site for accessibility compliance. Run on-demand tests or schedule a weekly accessibility check.

[Download Version 1.1.3](#)

WORDPRESS PLUGINS

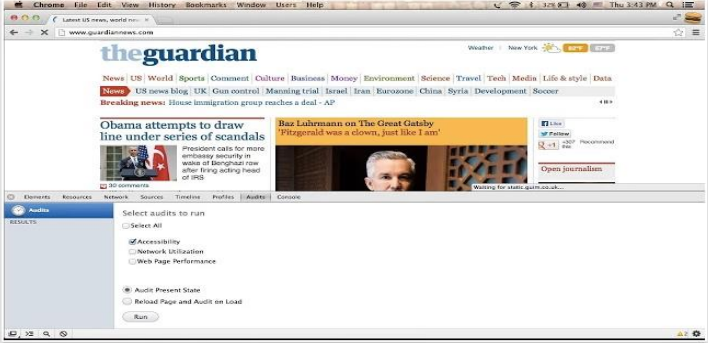


Accessibility Developer Tools
offered by Google Accessibility

★★★★★ (74) | [Developer Tools](#) | 68,976 users

ADDED TO CHROME

OVERVIEW
REVIEWS
RELATED
G+1 284



properties.

This extension will add an Accessibility audit, and an Accessibility sidebar pane in the Elements tab, to your Chrome Developer Tools.


To use the audit: go to the Audits tab, select the Accessibility audit, and click Run. The audit results will appear as a list of rules which are violated by the page (if any), with one or more elements on the page shown as a result for each rule.

To use the sidebar pane: inspect an element in the Elements tab, then expand the Accessibility sidebar pane (note that it may be offscreen if the Styles pane is open). If the

[Report Abuse](#)

Additional Information
Version: 2.10.9
Updated: October 12, 2015
Size: 67.25KIB
Language: English

BROWSER TOOLS

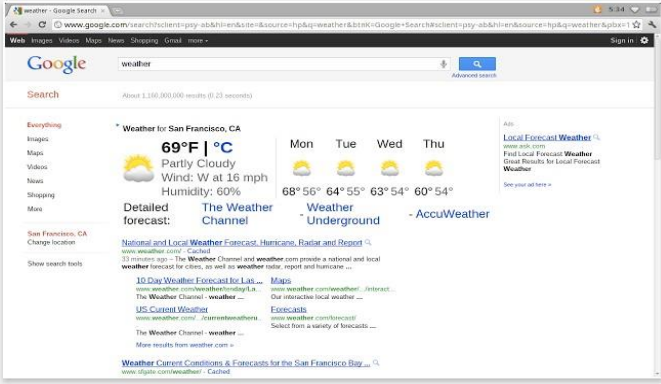


ChromeVox
offered by [chrome.google.com](#)

★★★★★ (545) | [Developer Tools](#) | 98,234 users

+ ADD TO CHROME

OVERVIEW
REVIEWS
RELATED
G+1 873



By Google

Compatible with your device

ChromeVox - Giving Voice to Chrome

The ChromeVox screen reader is an extension to Chrome that brings the speed, versatility, and security of Chrome to visually impaired users.

Unlike most accessibility software, it is built using only web technologies like HTML5, CSS and Javascript. ChromeVox was designed from the start to enable unprecedented access to modern web apps, including those that utilize W3C ARIA (Access to Rich Internet Applications) to provide a rich, desktop-like

[Website](#)

[Report Abuse](#)

Additional Information
Version: 49.0.2588.1
Updated: January 11, 2016
Size: 2.98MB

BROWSER TOOLS

The screenshot shows the Chrome Web Store page for the extension "I want to see like the colour blind" by artbek. The extension has a 5-star rating from 11 reviews and 2,051 users. The main content area displays the Google UK homepage with a context menu open over the search bar, showing color blindness simulation options: normal, protanopia, protanomally, deuteranopia, deuteranomally, tritanopia, tritanomally, achromatopsia, and achromatomally. On the right, there is a "Compatible with your device" badge and a "Experience Colour Blindness" section with instructions to right-click and select the option from the context menu. Below that are links for "Website" and "Report Abuse", and an "Additional Information" section listing version 1.0, update date of April 13, 2014, size of 98.81 KIB, and language of English (UK).

BROWSER TOOLS

ACCESSIBILITY PRO TIP:

Take advantage of in-browser testing tools to evaluate WordPress theme demos and other products before you purchase.

- **Which Tool Is Best?**
 - <http://webaim.org/articles/tools>
- **Web Accessibility Evaluation Tools**
 - <https://www.w3.org/WAI/ER/tools>
- **Color Contrast Checker**
 - <http://webaim.org/resources/contrastchecker>

RESOURCES

- **Getting Started With ARIA**
 - <http://a11yproject.com/posts/getting-started-aria>
- **Practical ARIA Examples**
 - http://heydonworks.com/practical_aria_examples
- **Videos of screen readers using ARIA**
 - <http://zomigi.com/blog/videos-of-screen-readers-using-aria-updated/>

RESOURCES

- **Accessibility - WordPress Theme Handbook**
 - <https://developer.wordpress.org/themes/functionality/accessibility/>
- **The A11Y Project**
 - <http://a11yproject.com/>
- **The API You Probably Didn't Know Existed**
 - Amanda Rush, LoopConf
 - <https://www.youtube.com/watch?v=IYg66C9PQy8>

RESOURCES

The A11Y Project has
an **AMAZING** list of resources:

<http://a11yproject.com/resources.html>

So what are my first
steps to get started supporting
accessibility?

#1:

Learn accessibility deeply

#2:

**Implement testing tools into
your workflow**

#3:

**User testing is the best
testing**

#4:

Tell your friends

#5:

Repeat

WCAG 2.0 Checklist

<http://webaim.org/standards/wcag/checklist>

Section 508 Checklist

<http://webaim.org/standards/508/checklist>

- **Deque**
 - <https://www.deque.com/>
- **Tenon**
 - <http://www.tenon.io>
- **Siteimprove**
 - <https://siteimprove.com>
- **SSB Bart**
 - <http://www.ssbartgroup.com/>

COMMERCIAL SERVICES