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Accessibility and IEEE

Everyone who uses the Internet is positively impacted by accessible design.

Whether you are doing behind-the-scenes development for an IEEE website or influencing front-end interfaces and content, web accessibility is critical to your work. This tip sheet will get you started down the path of optimizing your site for all possible audiences.

What is accessibility?

The term "accessibility" refers to the degree to which a tool or object is usable by the broadest possible range of users, including those with physical, cognitive, or technological disabilities. Who benefits from accessible design?

- People with disabilities
- Mobile device users
- People with a primary language different from the site
- Colorblind individuals
- Users with slow Internet connections
- People with temporary disabilities (such as a broken arm)

The bottom line? Everyone who uses the Internet is positively impacted by accessible design.

Individuals with accessibility needs are assisted by a wide range of assistive technologies, such as:

- Screen readers
- Voice recognition software
- Screen magnifiers
- Selection switches

Why does accessibility matter?

It is the right thing to do: Provides equal access and equal opportunity to people with disabilities.

It makes business sense: Websites get higher usage and achieve KPIs from increased accessibility.

Legal considerations: IEEE is legally bound to comply; future legislation may expand requirements.

It's relevant for IEEE users: More than 45% of members use some type of assistive device (2016 IEEE Use of Internet Survey).

Virtual User Experience Lab

The IEEE Virtual User Experience (UX) Lab offers IEEE website managers and IEEE.org contributors the tools to test their digital content virtually, at no cost, and to collaborate with the Digital & Creative Innovations team on website maintenance efforts.

Contact Digital & Creative Innovations (dci-team@ieee.org) if you need assistance with the tools listed here.

www.ieee.org/uxlab

Accessibility policy and guidelines

All IEEE sites should strive to comply with Section 508 (29 U.S.C. ' 794d) and Web Content Accessibility Guidelines (WCAG) 2.1, Level A. These two guidelines outline the industry-accepted, user-tested best practices within the field of accessibility.

Section 508

In 1998, Congress amended the Rehabilitation Act of 1973 to require Federal agencies to make their electronic and information technology (EIT) accessible to people with disabilities. The law (29 U.S.C § 794 (d)) applies to all federal agencies when they develop, procure, maintain, or use electronic and information technology. Under Section 508, agencies must give disabled employees and members of the public access to information comparable to the access available to others.

View full guideline at: http://www.section508.gov/

Web Content Accessibility Guidelines (WCAG) 2.1

Published by the World Wide Web Consortium (W3C) in 2008 as a reference guide for accessibility principles and design ideas.

View full guideline at: https://www.w3.org/TR/WCAG21/

Questions: accessibility@ieee.org

Accessibility Best Practices and Exercises

The list below is not comprehensive, nor should it be considered definitive, as best practices are always evolving. It is simply intended to provide a sense of the kinds of issues that should be carefully considered when developing a site.

- **Keyboard accessibility –** Ensure that all content can be accessed with the keyboard alone.

- **Consistency –** Preserving consistency in layout, color, and terminology reduces the cognitive load placed on users.

- **Color –** Test designs with colorblind simulators and contrast viewers. Never use color alone to convey information.

- **Tables –** Tables should generally be used for data presentation, not for layout, and should be properly tagged.

- **Links –** Provide an option to "skip" navigation (often a hidden link) and use meaningful link text (not "click here").

- **Text resizing –** Do not "hard-code" text size as this defeats the user's ability to use standard browser controls.

- **Audio –** Anything available in audio/visual format should also be available as a text transcript for hearing-impaired users.

- **Images –** All images should have descriptive embedded text ("alt text") that conveys the purpose of the image.

- **Header tags –** Proper header tags (h1, h2, h3, etc.) make site navigation easier for users of assistive technologies.

- **Element ordering –** Ensure that content will be read by screen readers in a logical order ("div" tags help with this).

Other accessibility resources

Introduction to "How people with disabilities use the web" illustrates how assistive technologies are used. https://www.w3.org/WAI/people-use-web/

WAI-ARIA (the Accessible Rich Internet Applications Suite) Overview / Making rich websites accessible https://www.w3.org/WAI/standards-guidelines/aria/

JAWS screen reader www.freedomscientific.com

WCAG 2.1 at a Glance – Principles behind WCAG 2.1 https://www.w3.org/WAI/standards-guidelines/wcag/glance/

WebAIM's WCAG 2.1 Checklist (PDF, 233 KB) https://webaim.org/standards/wcag/WCAG2Checklist.pdf

Guide for developing useful and usable websites www.usability.gov

Accessibility exercises and tools

- **Motor impairment simulation:** Type with one hand while holding a ball or type with a bag over your hand.

- **Low-vision simulation:** Put Vaseline on your glasses.

- **NVDA:** Free screen reader tool by NV Access: https//www.nvaccess.org/

- **WAVE Toolbar:** Web Accessibility Evaluation Tool: https://wave.webaim.org/

- **Siteimprove:** Chrome browser extension: Perform single-page accessibility checks: https://siteimprove.com/en-us/core-platform/integrations/browser-extensions/

- **Contrast checkers:**
    - **WebAIM:** http://webaim.org/resources/contrastchecker/
    - **Tanaguru:** Tool that suggests compliant-color combinations: http://contrast-finder.tanaguru.com/

Questions:
accessibility@ieee.org

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