Layers of Accessibility in Open Source Software

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Equinox provides innovative open source software for libraries of all types.

Extraordinary service. Exceptional value.

As a 501(c)(3) nonprofit corporation, Equinox supports library automation by investing in open source software and providing technology services for libraries.
Open Source Products

sequoia

Aspen Discovery

vufind®

Koha

Coral ERM

Subjects Plus

Fulfillment

Equinox

Open Library Initiative
Accessibility in open source library software

- Accessibility 101: software considerations for people with disabilities
- Standards and legal requirements
- Challenges for open source
- Work on VuFind
Accessibility is...

- Making web interfaces work with assistive technologies
- Avoiding design patterns that cause distress or confusion
- Ensuring that everyone can accomplish tasks despite physical or mental health challenges
Accessibility is...

<table>
<thead>
<tr>
<th>Permanent</th>
<th>Temporary</th>
<th>Situational</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Touch</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One arm</td>
<td>Arm injury</td>
<td>New parent</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Permanent</th>
<th>Temporary</th>
<th>Situational</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hear</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deaf</td>
<td>Ear infection</td>
<td>Bartender</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Permanent</th>
<th>Temporary</th>
<th>Situational</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>See</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blind</td>
<td>Cataract</td>
<td>Distracted driver</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Permanent</th>
<th>Temporary</th>
<th>Situational</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Speak</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-verbal</td>
<td>Laryngitis</td>
<td>Heavy accent</td>
</tr>
</tbody>
</table>

diagrams from Inclusive 101, by Microsoft
Types of disabilities

- Vision
  - Blindness
  - Low vision
  - Color blindness
- Seizure disorders triggered by flashing lights
- Vestibular disorders triggered by animation
- Mobility
  - Paralysis
  - Tremors
  - Neuropathy

- Hearing
- Cognitive
  - ADHD
  - Autism
  - Dyslexia & dyscalculia
  - Memory & learning issues
  - Sensory processing
Top accessibility issues

- **Form fields**: labels with IDs; error messages linked via ARIA
- **Buttons**: onClick actions on <a>, <div> etc. do not include keyboard support; use <button>
- **Headings and structure**: landmarks allow skimming & skipping; tables have extra keyboard support
- **Tab order**: can you reach everything from the keyboard, in order? Can you see the focus outlines?
- **Unique link names**: “read more” what?
- **Alt text** for images
Cognitive accessibility (WCAG 3)

- **Attention**: your focus is not interrupted unexpectedly
- **Visual noise**: borders and high contrast elements kept to a minimum
- **Color**: emergency alert colors (red, orange, yellow) are not pervasive
- **Mobile support**: screen layout and inputs work with handheld devices
- **Memory**: layouts for similar functions are consistent across the site; forms support autocomplete for personal info
Accessibility Laws
Web Content Accessibility Guidelines (WCAG)

- **Perceivable** - Available through multiple senses
- **Operable** - Used with keyboard, mouse, voice control, or other input devices
- **Understandable** - Easy to comprehend
- **Robust** - Works across browsers, mobile devices, and assistive technologies

WCAG website: [https://www.w3.org/WAI/standards-guidelines/wcag/](https://www.w3.org/WAI/standards-guidelines/wcag/)
WebAIM quick reference: [https://webaim.org/resources/quickref/](https://webaim.org/resources/quickref/)
US accessibility laws

• Federal: several, including...
  • Section 508 (covers all software, not just web)
  • Americans with Disabilities Act

• State: patchwork of laws referencing 508
  • non-discrimination
  • software procurement

• BUT WAIT...

WAI US law reference: https://www.w3.org/WAI/policies/united-states/
US: ADA Title II

- August 2023: Proposed DOJ rule clarifying ADA & web accessibility
  - Timeline depends on institution/constituency size:
    - More than 50,000 people: 2 years
    - Fewer than 50,000 people: 3 years
  - Excludes course content, archived pages
- Criticisms: all-or-nothing approach, underestimates effort
- Still open for comments!
Canada accessibility laws

- **Canada**
  - Provinces have specific laws referencing WCAG
    - Accessibility for Ontarians with Disabilities Act (AODA)
    - Accessibility for Manitobans Act (AMA)
    - Nova Scotia Accessibility Act
    - Québec’s Act to Secure Handicapped Persons... (WCAG translation)
    - Accessible British Columbia Act (Bill 6)
- **New(ish):** [Accessible Canada Act](https://www.accessiblecanada.gc.ca)
Accessibility laws worldwide

- EU: European Accessibility Act
- Web accessibility laws & policies around the world
- Don’t stress: they’re all WCAG
Accessibility in Open Source
Open source stacks

The software you use

Front end framework

Language framework

Programming language

The part we make

Accessibility problems come in here
VuFind stack

Accessibility problems come in here

The part we make

Theme

Parent theme

Bootstrap

Laminas

PHP
Accessibility challenges in open source software

- Awareness
- Education
- Motivation
- Consequences
Accessiblity is a niche specialty in most degree programs
Bad advice is everywhere
Training materials omit accessibility considerations
  “It’s too complicated and we don’t have time to cover that.”
  “It doesn’t affect that many people, does it?”
Designer and developer motivation

- Open source volunteers aren’t employees
- How to mandate training?
- Who sets the standards for the project?
- “If someone has a problem, they can file a bug.”
  - Do they know where in the stack to file it?
  - Is the bug system accessible?
- Are accessibility bugs prioritized by leadership?
  - “Treat accessibility issues as bugs, not feature requests.”
Lack of consequences for open source frameworks

- Accessibility laws don’t apply to the projects, only the organizations using them
- Interface bugs are filed on the end products, not the underlying frameworks
- Who holds the framework developers accountable?
Accessibility in Bootstrap
Bootstrap issues

- Color contrast
- Mouse-only interactive toggles
- Form examples without labels
- Incorrect ARIA roles

“Home pages in the sample that utilize the popular Bootstrap framework had 9.6 more accessibility errors on average...”
– WebAIM Million 2023 report
## Bootstrap text colors

<table>
<thead>
<tr>
<th>Color</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gray</td>
<td>4.3</td>
</tr>
<tr>
<td>Blue</td>
<td>4.1</td>
</tr>
<tr>
<td>Cyan</td>
<td>3.2</td>
</tr>
<tr>
<td>Green</td>
<td>2.7</td>
</tr>
<tr>
<td>Yellow</td>
<td>2.3</td>
</tr>
<tr>
<td>Orange</td>
<td>2.9</td>
</tr>
<tr>
<td>Red</td>
<td>3.6</td>
</tr>
<tr>
<td>Purple</td>
<td>3.6</td>
</tr>
<tr>
<td>Violet</td>
<td>3.9</td>
</tr>
</tbody>
</table>

**Icons**
- Gray: 3.0+  (66%)
- Blue: 4.5
- Cyan: 4.5
- Green: 4.6
- Yellow: 4.6
- Orange: 4.6
- Red: 4.5
- Purple: 4.6
- Violet: 4.5

**Text**
- Gray: 4.5+  (100%)
- Blue: 4.5
- Cyan: 4.5
- Green: 4.6
- Yellow: 4.6
- Orange: 4.6
- Red: 4.5
- Purple: 4.6
- Violet: 4.5

*From Stripe.com*
Bootstrap upgrade guide

Bootstrap 3-4-5 Class Migration Reference
Accessibility in VuFind Theme
Topic: Concertos (Piano)
Topic: Concertos (Piano) ...
VuFind theme work

- Headings
- Landmarks
- Form labels
- Lists
- Table structure
- Redundant adjacent links
- Ambiguous links
- Badge counts in links
Showing 1 - 1 results of 1 for search 'The winter of our discontent', query time: 0.05s

The winter of our discontent / by Steinbeck, John, 1902-1968
Published 1961
Book
Accessibility at Equinox
Open Library Initiative
Community awareness & developer training

- Developer’s guide to accessibility
- ALA poster presentation, June 2023
- Upcoming training workshops
- Evergreen ILS accessibility bugfixes, January-June 2023
- VuFind: bug fixes contributed to default theme; ongoing work
- Frameworks and code libraries: bug reports and pull requests
- … and lots more education and training to come!
Questions?

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