Concepts & Resources

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Digital Accessibility Workshop
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Digital accessibility – broad brushstrokes

• What is:
  • Impairment | Accessibility | Assistive technology

• Experience impairment:
  • Visual
  • Motor
  • Cognitive

• Constructing a “POUR” website

• (Starter guide to...) Design tips, tools, evaluation
What is Impairment?

• Impairment can manifest in many different ways.
  • Visual | Auditory | Motor | Cognitive
  • Permanent | Temporary | Situational
  • Wide range of severities – mild to extreme
• ~ 1.3 billion people have a disability or impairment worldwide.
  • 16% of world’s population, 1 in 6.
• Impairments happen to EVERYONE

What is Digital Accessibility

• Web Accessibility Initiative (WAI) definition underpinning the Web Content Accessibility Guidelines (WCAG)

  “Web accessibility means that websites, tools, and technologies are designed and developed so that people with disabilities can use them. More specifically, people can; perceive, understand, navigate, [...] interact with the Web, [and] contribute to the Web”

• Lower the digital barriers that hinder access to your content.
What is assistive technology?

• **Alternative methods to interact with websites**
  • Helps impaired users depending on what is needed.
    • Screen-readers
    • Keyboard navigation
    • Input devices - Mouth-wands, eye-tracking software, voice recognition
    • Functions - Slow/sticky keys (eg. difficulties maintaining pressure on keyboard)
    • Live captioning and transcripts

• Look at your Accessibility settings on your device!

• **Only helpful if website has been designed and developed to take these technologies into account**
Showcasing: The screen-reader

• Software which allows people who are blind or visually impaired to use their computer.
  • Convert **digital text** into **synthesized speech**.
  • User can **hear content** and **navigate with the keyboard**.
  • Skim/scan text, keyboard tabs from link-to-link.
  • Describes images if “alternative” text has been included

• Requires:
  • Page structured logically, uses titles and headers (**<h1>**, **<h2>**) to navigate
  • Images described with “alt” text
  • All page functionality to be accessible via keyboard
Experience impairment
Experience: Visual

Please change text marked in red, OK text in green.

At CERN, we probe the fundamental structure of particles that make up everything around us. We do so using the world's largest and most complex scientific instruments.

Actual text: can be resized without losing clarity

Red/green colourblind simulation

Please change text marked in red, OK text in green.

At CERN, we probe the fundamental structure of particles that make up everything around us. We do so using the world's largest and most complex scientific instruments.

Text embedded in image: distorts and pixelates when resized

Images of text

Helen Keller

Lose context on magnification
Experience: motor control

• Experience it yourself
  • Try 5 minutes using your non-dominant hand for everything: cleaning your teeth | computer mouse in non-dominant hand | NO mouse at all, use keyboard only...

• Itsy bitsy teeny weeny icons
  • Target area and spacing
  • Easy to click the wrong one
  • Icon placement – error risk

• User cannot use a mouse or pad: on keyboard navigation only
  • Inaccessible widgets (mouse-only target!)
  • Tab control: Lengthy navigation... or not be able to navigate at all
Physicists and engineers at CERN use the world's largest and most complex scientific instruments to study the basic constituents of matter – fundamental particles. Subatomic particles are made to collide together at close to the speed of light. The process gives us clues about how the particles interact, and provides insights into the fundamental laws of nature. We want to advance the boundaries of human knowledge by delving into the smallest building blocks of our universe.
Constructing a "POUR" website
Constructing a POUR interface

• Understand the rationale (the ‘why’) then you can be more effective in applying the ‘what’ and the ‘how’

• The principles: https://webaim.org/articles/pour/

P  Perceivable
O  Operable
U  Understandable
R  Robust
P is for …. Perceivable

• **If you can’t perceive it, it’s inaccessible.**

• **Visual**
  - Readable text, view images
  - Meaning not conveyed by colour alone
  - Colour contrast and background images not interfering with message

• **Audio**
  - Screen-reader friendly – navigable, scannable...
  - Captions on audio-heavy content
  - Audio not obscured by background sounds
O is for... Operable

- Input methods
  - Keyboard-accessible, voice responsive etc

- Interaction methods
  - Find/skip content, navigate menus, sidebar content

- User Control Over Timing
  - Timeouts (eg. banking), multi-media controls

- Error Recovery
  - Can back out of hitting (eg) wrong link
U is for… Understandable

• Language should be clear and as simple as possible
  • Audience
  • Non-native speakers

• Document/website language MUST be identified!
  • Screen-readers pronounce text according to <lang> language attribute
  • If text written in (eg) English is read with the pronunciation rules of another (eg. language attribute set to <html lang="fr">), results are incomprehensible.
  • EN/CZ audio example at https://webaim.org/techniques/language/
R is for... Robust

• Don’t make up your own standards, internationally-agreed ones already exist...
  • [https://www.w3.org/WAI/standards-guidelines/](https://www.w3.org/WAI/standards-guidelines/)
  • [https://webaim.org/articles/](https://webaim.org/articles/) (for explanations)

• Functionality : Current and Future Technologies
  • Is your website/interface compatible with assistive technologies?
  • Developers: robust clean code, future-proof where possible ;-)

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(Starter guide to...) Design tips, tools, evaluation
Example solutions: auditory

• Create high-quality audio wherever humanly possible.

• Include (live) captions and transcripts
  • Not perfect but already very helpful
  • Live captions grant time and clues to figure out what’s being said.
  • (automated) Transcripts = access all content after event

• Easy to switch on and costs you nothing; radical improvement for those that need it
  • Eg. Turn on live captioning in Zoom as a default!!!
Example solutions: visual

• Colour perception
  • Use accessible colour palettes, including for data visualisation
  • Use texture/shape as well as colour to convey meaning
    • not changes marked in red alone
    • but changes marked in red and underlined

• Feed the screen-reader
  • Include “ALT” text (a descriptive snippet) for screen-reader to describe pictures
  • No more “Click here”/”Read more” labels - use labels that make sense, based on destination rather than action (see Webaim for link text advice)
Example solutions: motor control

• Mouse/tap methods
• Icons: bigger **target areas**
  • Min 44px x 44px

I accept the terms & conditions

• Icon placement
  • Consider error-forcing placements.
  • Space them well if you do....

1 WCAG recommendation at [https://www.w3.org/TR/WCAG21/#target-size](https://www.w3.org/TR/WCAG21/#target-size)
WAVE – automatic accessibility evaluation

- [https://wave.webaim.org/](https://wave.webaim.org/)
- Web interface version
- Browser extensions
  - Firefox, Edge, Chrome
  - Works behind SSO
Web Disability Simulator

- Web Disability Simulator: Chrome browser extension
- Simulates how people with disabilities see the web.
- Pointers to promote your understanding + techniques for text/design choices
Accessibility Mindset - conclusion

• Invisible to you does not mean invisible to others.

• Educate yourself to understand the impact of your design choices.

• Do what you can. A little tweak can go a long way for those that need it.

• Start now!
Annex 1: Articles and tips

• **WebAim**: articles, resources, tools...
  •  https://webaim.org/
  •  https://webaim.org/articles/userperspective/

• **WAI**:
  •  https://www.w3.org/WAI/tutorials/

• **Specifics**
  •  Avoid using ‘Click Here” – appropriate labelling for links (focus on destination, not on the action)
    •  https://www.lamar.edu/web-communication/resources/avoid-using-click-here.html
  •  Designing for red/green colourblindness
    •  https://visualisingdata.com/2019/08/five-ways-to-design-for-red-green-colour-blindness/

• **WebAIM Million**: 2023 report on the accessibility of the top 1,000,000 home pages
  •  https://webaim.org/projects/million/

• Including an **Accessibility Statement**
  •  WAI’s “Developing an Accessibility Statement”
  •  https://www.w3.org/WAI/planning/statements/
Annex 2: Tools (for starters)

- **WAVE**: Automated evaluation to highlight and resolve issues
  - [https://wave.webaim.org/](https://wave.webaim.org/)
- **Firefox**: (right click/Inspect Accessibility… or via menu/More Tools…)
- **WebAIM resources**: Checklists, tools
  - [https://webaim.org/resources/](https://webaim.org/resources/)
- **Web Disability Simulator** (Chrome browser extension)
  - [https://chrome.google.com/webstore/detail/web-disability-simulator/olioanlbgbpmdlgjnnampnnlohigkja](https://chrome.google.com/webstore/detail/web-disability-simulator/olioanlbgbpmdlgjnnampnnlohigkja)
- **Accessible Colour** palette generator