Background: study on web accessibility

• Post-graduate studies on Human-Computer Interaction and Usability, University of Nottingham

  Development of Web Accessibility Recommendations for CERN
  Catharine Noble, 2021
  https://doi.org/10.5281/zenodo.5744899

• Research questions
  • What evidence is there of web accessibility considerations at CERN?
  • What might be driving the situation?
  • What recommendations for Web Accessibility might be relevant?
Overview of today’s talk

• Based on my study 😊
• Background: web accessibility, assistive technologies, impact
• Legal frameworks
• Web accessibility considerations at CERN
  • Formal structures or support
  • Summary of questionnaire/discussion to understand mindset
  • Summary of website evaluations
• Discussion of data – Literature review
• Recommendations
• The conclusion
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”

• Making same content accessible and useable with alternative methods
  • Content, structural, and design choices
  • Compatibility with assistive technologies
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**
Lack of Web Accessibility: user impact

• Websites are not always designed to allow for different interaction methods.

• Top causes of frustration for (eg) screen-reader users
  • Poor page layout = screen-reader confusion,
  • Unlabelled forms - unclear what to fill in where,
  • No descriptive or html alternative (“alt”) text for images.

• Uncertainty, reduced mobility, confusion and cognitive overload

• Impaired users waste on average 37% to 50% of their time.[i]

Legal Frameworks (and acronyms)

- The **Web Content Accessibility Guidelines** *(WCAG)*
- From the **W3C Web Accessibility Initiative** *(WAI)*
- Bedrock of all national and international law

  - Explain **user-centric issues** around text, sound and image,
  - **Technical aspects of mark-up** to provide the necessary support for assistive technologies.
  - Set **compliance objectives** with 3 levels, from A (bare minimum) to AAA (top-level), along with validation tools to provide automatic evaluation.

  - **European Union law**.
  - National law in all EU member states since **2018**.
Web accessibility considerations at CERN

(based on 2021 research study)
- Formal structures/policy
- Discussion/interview summaries
- Website evaluation
Formal structures/policies at CERN

- **CERN Diversity Policy**

  • High level general verbal commitment on diversity in general
    • Highly valued
  
  • No mention of digital accessibility considerations
    • Mentions disability in the form of ensuring diversity principles are applied
    • Includes “meeting the special needs of disabled individuals”.
    • States that it benchmarks best practices with comparable organisations within CERN’s Member States.
  
  • No follow-up information or references seem to be (publicly) available.
Formal structures/policies at CERN
- **CERN Recruitment Policy**

*“Inclusion / Accessibility*

The recruitment process should be fully accessible and support candidates who require reasonable adjustments. Adhering to **W3C standards** for the web interface will ensure **colour-blind** or people with **reading difficulties** may still apply. Alternative methods of application should be provided for candidates who require reasonable adjustments who are **unable to apply via the online application** form. Every effort should be made throughout the application, selection through to hiring process to accommodate these requirements.”

• Accessibility statement exists – encouraging sign! But....
  • No reference to which **“W3C standards”** Maybe meant WCAG? WAI? WAD?
  • No reference any **compliance level** implemented or aimed for
  • **Other impairments exist** affecting web interaction/accessibility beyond visual, not mentioned
  • No reference to **CERN standard or policy**
• Compare with WAI’s **“Developing an Accessibility Statement”** and **HSBC’s web accessibility policy**
• Expectations of understanding of requirements, standards, implementation etc. at CERN
Formal structures/policies at CERN
- Informal support

• Within technical/dev communities at CERN
  • Build documentation on Web Services Portal, drupal-docs etc
  • Minimal reference of web accessibility; some bits, nothing connected

• Update since 2021 study: two efforts in 2023
  • “Guidelines for CERN websites”, CERN Design Guidelines (branding) (IR-ECO)
    • External website checklist linked in a footer
  • Diversity & Inclusion website
    • Learning section includes Web Accessibility notes (since May 2023)

• Ad-hoc unconnected efforts, do not offer centralised policy or official recommendations.
Formal structures/policies at CERN - Training

• CERN Learning Hub
  • “accessibility”, “disability”, “inclusive”, “design”
  • = 4 records on gender issues and leadership.

• No CERN training relating to digital accessibility principles.

• Just today’s workshop...
Interview/Questionnaire results

• Questionnaire + open-ended discussion on (eg):
  • *What do you understand or perceive as Web Accessibility*
  • *Do you think CERN as a whole understands web/digital interface accessibility for people with impairments?*
  • *Have you seen any examples you thought were good? Or indeed, any examples / experiences where you thought this might be a problem?*

• Results 1: Perceived issues/mindset around disability
  • Not many users with impairments, disability was invisible unless personally affected, the most impacted people the most invisible
  • Attractive websites were not perceived compatible with accessible websites.

• Results 2: Perception of organizational issues
  • Lack of awareness or commitment at CERN
  • Lack of training, lack of dedicated budget
  • Not a priority, no-one’s responsible
  • CERN silo effect
Sample responses

- “We speak a fair bit about diversity and inclusion, but digital inclusion is never a part of our dialogues [...] CERN - and many more organisations - care a lot about wheelchair access, but don't realise that people with visual impairment have similar challenges with regard to software.”

- “I’ve encountered many occasions where users had difficulties with our systems but already lost hope that we could provide something that would work for them. They take inaccessible systems for granted and consider it part of their CERN life.”

- Use-case: a user was offered a job contract at CERN but they refused because of issues around accessibility.
Automatic website evaluation (2021)

• WAVE (Web Accessibility Evaluation Tool)
  • [https://wave.webaim.org/](https://wave.webaim.org/)
  • Identify WCAG compliance level, highlight issues to be resolved
  • Alerts and Fails (both of concern!)

• Evaluated homepages of 5 CERN websites
  • Most visited (eg. public)
  • Browser-based internal administrative CERN tools
  • Different web technologies (avoid developer bias)
## Automatic evaluation results (2021)

<table>
<thead>
<tr>
<th>Site</th>
<th>Total instances (alerts+fails)</th>
<th>Of which number of WCAG Fails</th>
</tr>
</thead>
<tbody>
<tr>
<td>home.cern</td>
<td>141</td>
<td>86</td>
</tr>
<tr>
<td>Indico</td>
<td>35</td>
<td>31</td>
</tr>
<tr>
<td>CERN Account Management</td>
<td>133</td>
<td>30</td>
</tr>
<tr>
<td>IT Department</td>
<td>23</td>
<td>16</td>
</tr>
<tr>
<td>ServiceNow</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

- Benchmark: “WebAim Million” report 2021: average of **51.4 WCAG Fails** per home page of top million websites worldwide.
Sample types of instances on CERN sites

- **Very low contrast**
  - Sunshine... or impaired sight

- **Layout table**
  - Used to create visual layout eg. person pic + bio

- **Image missing alternative text**
  - “alt” text = descriptive text for audio rendering

- **Device dependent event handler**
  - eg. mouse-only interaction

- **Suspicious link text**
  - “Click here!”, “Read more"

- **Skipped heading level**
  - Navigation issues for screen-readers and keyboard navigation
The conclusion
Web Accessibility at CERN in a nutshell

“It [...] is reasonable to conclude that no policy or support exists at CERN regarding standards, adoption, implementation, evaluation or statement of Web Accessibility.”

(Cath Noble, 2021)
Conclusion after-thought

• Web accessibility at CERN has had minimal consideration.
• Despite legal obligations about web accessibility in EU and globally.
• Several contributing factors
  • Low awareness, understanding or knowledge, management commitment..
• The Future
  • Things will improve (see Joachim Yde’s presentation)
  • But not going to change overnight

• PS. Read Development of Web Accessibility Recommendations for CERN