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Accessibility in Digital Communication Higher Education Curricula

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Module A, content:

1. What is accessibility
2. User needs – this document
3. Policy and legislation
4. Accessibility standards
5. Web accessibility basics

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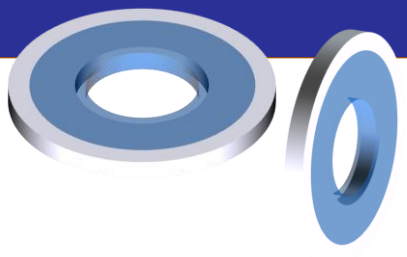
2 User needs



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Notes

There are many ways of grouping user needs when it comes to accessibility. In this training, we are using the so called functional performance statements of the European standard that contain the minimum requirements of the Web Accessibility Directive (the standard is called EN301549). We will present each user group separately.

Usage without vision

Users access written information (documents, websites, books) through assistive technology that transform written information to audio or braille

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Notes

Blind users rely on assistive technology to access written information in various formats. Two common forms of assistive technology used for this purpose are screen readers and braille displays.

Screen Readers: Screen readers are software applications that convert on-screen text into synthesized speech or braille output. They can read aloud the content of documents, websites, and other digital materials, enabling users with visual impairments to access information independently. Screen readers interpret the content based on the underlying structure and markup of the document, such as HTML tags on websites or proper heading structures in documents.

Braille Displays are hardware peripherals that allow users to read digital text in braille. These devices have a series of small pins that dynamically raise and lower to form braille characters based on the digital content being displayed. Users can read the braille output using their fingertips, providing a tactile representation of the written information.

An alternative to the braille display is audio.

For blind users, these assistive technologies play a critical role in making written information accessible. By transforming text into audio or braille, blind users can access a wide range of materials, including documents, websites, books, educational resources, and more independently. This ensures equal participation in education, work, and various aspects of daily life, promoting inclusivity and independence.

Accessibility – without vision

- Structuring text properly, using headings, preambles, sections etc correctly, so the assistive technology can interpret the information and provide it to the user in an organised way
- Providing text alternatives for non-text information (such as images)

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Notes

https://www.w3.org/WAI/WCAG21/Understanding/info-and-relationships

https://www.w3.org/WAI/WCAG21/Understanding/non-text-content

Usage with limited vision

- Users with limited vision benefit from magnification
- Users with limited vision benefit from good contrast between text and background

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Notes

Users with limited vision can benefit from various accessibility features that enhance readability and visual clarity. Two essential aspects that significantly improve their experience are magnification and good contrast between text and background:

Magnification: Many individuals with limited vision use screen magnification tools or built-in accessibility features on devices to enlarge text and graphical elements. By allowing users to increase the size of the content, they can read text more comfortably and discern graphical details with greater ease. Providing content that remains legible and usable at higher magnification levels ensures a positive user experience for people with limited vision.

Contrast: Good contrast between text and background is critical for users with limited vision, as it enhances the visibility of the content. A high contrast ratio makes text stand out from the background, making it easier to read. Consider using dark text on a light background or vice versa to ensure maximum contrast. Avoid low contrast combinations that may strain the eyes or make it difficult for users with limited vision to distinguish the text.

Implementing these features not only benefits users with limited vision but also improves the overall accessibility of your content for a broader audience. Ensuring that

your website, documents, and digital materials offer options for increased magnification and have excellent contrast makes the information more accessible and usable to people with varying visual abilities. This commitment to accessibility aligns with the principles of inclusive design, creating a more inclusive and welcoming experience for all users.

Accessibility – limited vision

- Making sure that the graphical design allows for magnification
- Make sure to provide enough contrast between text and background

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Notes

https://www.w3.org/WAI/WCAG21/Understanding/resize-text

https://www.w3.org/WAI/WCAG21/Understanding/contrast-minimum

Usage without perception of colour

- Users who are colour-blind cannot distinguish between different colours.
- This may also affect the way information is perceived on a screen.

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Notes

Colour blindness is a common visual impairment that affects how individuals perceive and distinguish colours. People with colour vision deficiencies may have difficulty differentiating certain colours or may not perceive colours at all. This condition can impact the way information is conveyed and understood, especially in digital environments where colour is often used for various purposes, such as conveying meaning, highlighting elements, or organizing content.

Accessibility
– no perception of colour

- Do not rely on colour alone to convey meaning in communication. For example:
  - Make sure links are visually marked with colour plus something more, like underline, bold or an icon.
  - In diagrams or pie charts, combine colour with patterns.

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Notes

Use Colour with Caution: Avoid using colour alone to convey important information. For example, do not use colour as the only means to differentiate between different options or indicate errors. Instead, use colour in combination with other visual cues, such as text labels, icons, or patterns.

Usage without hearing

Users who are born deaf have sign language as their first language.
Although most understand written language, it can be likened to a foreign language.

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Notes

Deaf individuals who are born deaf or acquire deafness early in life often have sign language as their first language. Sign language is a visual-gestural language with its own grammar, syntax, and cultural nuances, distinct from spoken languages. For these individuals, sign language is the primary means of communication, and it is how they naturally interact and express themselves.

Written language, on the other hand, can be considered a second language for many deaf individuals. While some deaf individuals may understand written language well, others may find it challenging, similar to learning a foreign language. This is because sign language and written language have different linguistic structures and modalities.

Accessibility – no hearing

- The key to ensure accessibility for this user group is to provide information in the local sign language.
- Captions can also be useful for this user group, but not all deaf users read well.

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Notes

Sign languages are not modelled on spoken languages. They are languages in their own right, with equally complex rules, grammatical structures and vocabulary that evolve and vary by region, social and age groups; convey meanings and emotions; create social and family bonds; and meet artistic and identity needs. The EU has a large variety of sign languages, including a French sign language in France, (a different) French and Flemish sign languages in Belgium, as well as, for example, Catalan and Galician sign languages as well as the Spanish sign language in Spain.

There is not (yet) any automatic sign language services, so sign language has to be provided by live interpreters.

For some deaf users, captions can be of help too.

Usage with limited hearing

Users who are hard of hearing can have difficulties perceiving video or audio on the web.

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Notes

People who experience limiting hearing abilities range from mild or moderate hearing loss in one or both ears (“hard of hearing”).

Some people with auditory disabilities can hear sounds but often not sufficiently to understand all speech, especially when there is background noise. This can include people using hearing aids, but estimations show that only around half of the users (in developed countries) who would benefit from hearing aids actually have – or use - them.

To be hard of hearing often means challenges in the social life.

Accessibility – limited hearing

- Provide captions for videos
- Provide text alternatives (such as transcripts) for audio

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Notes

https://www.w3.org/WAI/WCAG21/Understanding/captions-prerecorded

Usage without manipulation or strength

Users with motor impairments may use different assistive technology devices for input; voice control, sip-and-puff mouse, eye tracking or special keyboard and/or mouse.

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Notes

Motor impairments include weakness and limitations of muscular control (like involuntary movements including tremors, lack of coordination, or paralysis), limitations of sensation, joint disorders (such as arthritis), pain that impedes movement, and missing limbs.

This user group rely on keyboard support to activate functionality provided on web pages, while using different kind of input devices. They may need more time to type, click, or carry out other interaction, and even type one character at a time.

Accessibility – motor impairment

- Ensure clickable areas are big enough to hit
- Do not place objects too close to each other

Notes

People motor impairments may have trouble clicking small areas and are more likely to make mistakes in typing and clicking. Providing large clickable areas, enough time to complete tasks, and error correction options for forms are important design aspects. Other important design aspects include providing visible indicators of the current focus, and mechanisms to skip over blocks, such as over page headers or navigation bars.

https://www.w3.org/WAI/WCAG21/Understanding/keyboard

https://www.w3.org/WAI/WCAG21/Understanding/focus-visible

https://www.w3.org/WAI/WCAG21/Understanding/target-size

Usage with limited cognition

Difficulties with understanding content, keeping attention and focus or completing tasks that are complex or involve using their memory.

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Notes

Cognitive impairment is when a person has trouble remembering, learning new things, concentrating, or making decisions that affect their everyday life. Cognitive impairment ranges from mild to severe. With mild impairment, people may begin

to notice changes in cognitive functions, but still be able to do their everyday activities. Severe levels of impairment can lead to losing the ability to understand the meaning or importance of something and the ability to talk or write, resulting in the inability to live independently.

Accessibility - cognition

- Writing in plain language or easy-to-read
- Complementing text with illustrations to enhance understanding
- Using bullet points or other visual elements to break up texts and guide the reader
- Provide explanations for difficult words and concepts

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Notes

https://www.w3.org/WAI/WCAG21/Understanding/reading-level

https://www.w3.org/WAI/WCAG21/Understanding/consistent-navigation

Exercise / activity

The best activity to understand user needs is to meet people with disabilities. Invite some into the classroom and discuss!

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Look at videos with end users

Look at videos with people with disabilities using assistive technology, for example:

- Dyslexia
- Motor impairments
- Visual impairments
- Blind

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Notes

If meeting end users is not an option, watching a video where end users use assistive technology can be a way to understand the topic.

Simulations

Try some of the simulation features you can find online, for example:

- Colour blindness simulator
- Disability simulator

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Notes

NB using simulation features can of course never replace working close to real users. But if you use it as a "teaser" or a way to get some very basic insights or thought around what accessibility is about, it can be a good first step – allowing you to be more curious.

Resources

- International Association of Accessibility Professionals: CPACC Body of Knowledge
- ITU: Self Paced Online Training on ICT Accessibility
- UK GOV: Resources on accessibility

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