Accessibility Testing

1. The context of accessibility
2. Accessibility personas
3. Accessible design
4. Web-content accessibility guidelines
5. Assistive technologies and tools

NTB / Aftenposten
17th of August 2018:

SAS Norway will receive daily fines of NOK 150,000 if they do not improve the availability of their own websites within 10 days.

Fredag 17. august 2018 Aftenposten

INNENRIKS

Kan få tvangsmulkt for dårlig nettside

SAS Norge vil få dagbøter på 150.000 kroner dersom de ikke forbedrer tilgjengeligheten på egne nettsider innen ti dager.

Direktoratet for forvaltning og IKT (Difi) varsler tvangsmulkten fordi flyselskapet ikke har utbedret nettsiden etter en kontroll i fjor høst.

I en pressemelding skriver direktoratet at SAS bryter likestillings- og diskrimineringsloven og ikke sikrer at nettsiden for billettbestilling er tilgjengelig for alle. I juni var en tredjedel av feilene ikke rettet, og nesten 20 prosent var fortsatt ikke rettet for en uke siden. (NTB)

The context of accessibility

✓ *LO: Define the notion of accessibility*

✓*LO: Explain what are the barriers in using software that the accessible design tries to solve*

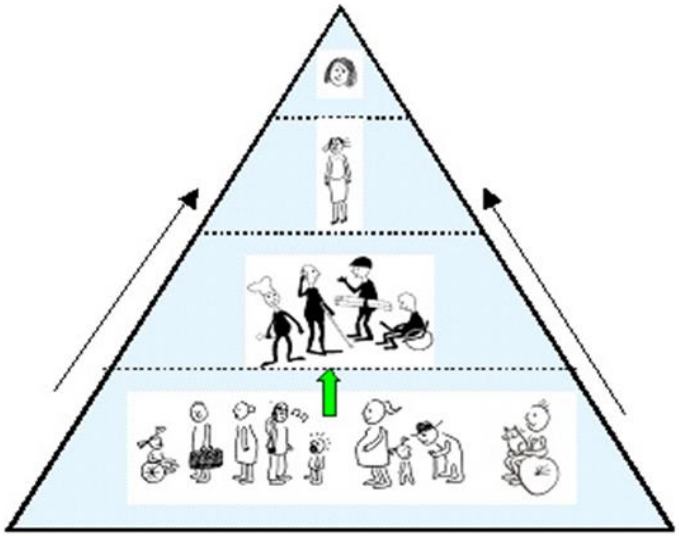
✓*LO: Contrast between HCI and Accessibility*

✓*LO: .List the reasons why Accessibility isn't more included in the HCI guidelines*

The Accessibility Pyramid

Application domain:
Health
Education
Transportation
Emergency management

User:
Disabled
Older
All



Level 4: Personal assistance

Level 3: Customise for individuals

Level 2: Customise for special groups

Level 1: Universal design

Methodology:
Human-centred
Co-design

Law, regulation, guideline, standard:
CRPD
EU directives
National

Definition of accessibility

Disability:

The outcome of the interaction between a person and the environmental and attitudinal barriers they may face.

(World Health Organization, International Classification of Functioning (ICF))

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Accessibility:

The usability of a product, service environment or facility by the people with the widest range of capabilities.

(ISO 9241-20)

(Accessibility is the degree to which a product, device, service, or environment is available to as many people as possible.)

Barriers

What problems will stop someone from being able to use a software product?

Barrier priority	What it covers
Critical	Barriers that stop someone from using a software product or some of its features successfully
Serious	Problems that cause frustration, slow someone down or require work-arounds
Annoying (moderate)	Things that are frustrating, but won't stop someone from using the site
Noisy (minor)	Minor issues that might cause someone a problem, but which mainly damage credibility

Accessibility in the UX work

Why is accessibility not considered more in the HCI work?

Invisible

Hidden

Misunderstood

International accessibility legislation

The purpose is to offer equal access to social, political, and economic life which includes not only physical access but access to the same tools, services, organizations and facilities for which everyone pays (e.g., museums).

UN: Article 9 of the United Nations Convention on the Rights of Persons with Disabilities commits signatories to provide for full accessibility in their countries

http://www.un.org/disabilities/convention/conventionfull.shtml

(all 192 member-countries).

International accessibility legislation

EU:

The European Union which has signed the United Nations' Convention on the Rights of Persons with Disabilities, also has adopted a European Disability Strategy for 2010-20. The Strategy includes the following goals, among others:

- ensuring the European Platform Against Poverty includes a special focus on people with disabilities
- working towards the recognition of disability cards throughout the EU to ensure equal treatment when working, living or travelling in the bloc
- developing accessibility standards for voting premises and campaign material
- taking the rights of people with disabilities into account in external development programs and for EU candidate countries

http://ec.europa.eu/justice/discrimination/disabilities/disability-strategy/index_en.htm

Accessibility personas

✓ *LO: Explain the role of the personas in the study of accessibility*

✓*LO: List the main types of personas used in the accessibility studies*

The role of personas in the accessibility

The personas can help address big challenges in approaching the usability issues:

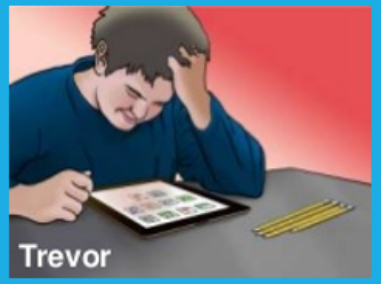
- give a realistic view of the people we design for
- help taking different users into account (will tell a story we can relate to)
- help organizing increasing amounts of data; will document our assumptions
- build consensus around a clear, consistent view on accessibility needs to be solved

Source:

https://rosenfeldmedia.com/books/a-web-for-everyone

A Web for Everyone: Designing Accessible User Experiences
Book by Sarah Horton and Whitney Quesenbery

(1) Autism spectrum disorder



Trevor, 18
"I like consistent, familiar places on the web"

- **Lives with family**
- **Goes to secondary school**
- **Computers at school; laptop at home, basic mobile phone with SMS**

Characteristic	Uses larger test and a program who hides everything but the text, so he doesn't get distracted
Aptitude	Uses the computer well for games, but doesn't learn new sites easily
Attitude	Prefers familiar sites in an established routine
Assistive technology	Text preference settings, power keyboard user

(2) Cerebral palsy

Emily, 24
"I want to do everything for myself"

- **High school graduate, working on a college degree**
- **Lives independently in a small apartment**
- **Works part-time at a local community center**

Characteristic	Difficult to use hands and has some difficulty speaking clearly; uses a motorized wheel chair
Aptitude	Uses the computer well, with the right input device, good at finding efficient search terms
Attitude	Wants to do everything for herself; can be impatient
Assistive technology	Communicator with speech generator, iPad, power wheelchair

(3) Blindness with some light perception

Jacob, 32
"The right technology lets me do anything"

- **College graduate, legal training courses**
- **Paralegal, reviews and writes cases**
- **Shares apartment with a friend**
- **Laptop, braille display, smartphone**

Characteristic	Blind since birth with some light perception
Aptitude	Skilled technology user
Attitude	Digital native, early adopter, persists until he gets it
Assistive technology	Screen reader, audio note-taker, Braille display

(4) Fibromyalgia (fatigue)

Lea, 35
"No one gets that this really is a disability"

- **Masters degree**
- **Writes for a trade publication**
- **Works from home**
- **Computer, tablet**

Characteristic	Fatigue, more pronounced when using trackballs and keyboards
Aptitude	Average user
Attitude	Wishes people would understand how hard it can be for her to make it through the day
Assistive technology	Split keyboard, speech recognition software

(5) Deaf-mute

Steven, 38
"My only disability is that not everyone can sign"

- **Art school**
- **Graphic designer in a small ad agency**
- **Computers, laptops, tablets, smartphones**

Characteristic	Native in ASL (American sign language)
Aptitude	Good with graphic tools
Attitude	Can be annoyed about accessibility, like lack of captions
Assistive technology	Sign language, CART (communication access real-time translation), captions, video-chat

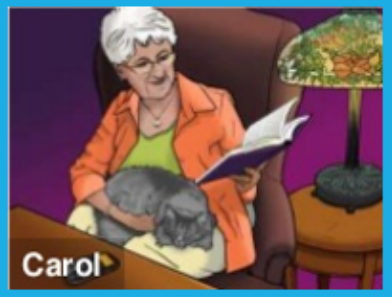
(6) Visual impairment

Vishnu, 48
"I want to be on the same level as everyone else"

- **Born in India, finished school in Malaysia, lives in Singapore**
- **Engineering degree, speaks 3 languages**
- **Works for a medical software company on international projects**
- **High-tech dedicated devices at work, two mobile phones and a laptop**

Characteristic	Uses contrast adjustment to see the screen clearly
Aptitude	Expert user of technical tools
Attitude	Sees himself as a world citizen and wants to be able to use any site
Assistive technology	Contrast adjustment, screen magnification, personalized style sheets

(7) ARMD (age-related macular degeneration



Carol, 74
"My grandkids are dragging me in the world of technology"

- **Retired, worked as a bookkeeper**
- **Lives alone in an apartment**
- **Older computer at home, basic mobile phone**

Characteristic	Cannot see so well Hearing aid Doesn't have any special AT on the computer
Aptitude	Used computers when she worked ad a bookkeeper, but now her grandkids keep her old home-computer updated
Attitude	Willing to learn
Assistive technology	Enlarges text

(8) Non-English speaker

Maria, 49
"I love the internet. It's all here… when I can find it"

- **High-school graduate**
- **Married, grown children**
- **Community health worker**
- **Smartphone from her work, home computer – mainly used for her husband's work**

Characteristic	Needs to use sites in Spanish (when she can find them) Needs computer instructions written clearly
Aptitude	Curious but not very proficient Husband and daughter set-up bookmarks for her.
Attitude	Thinks it's nice to be able to have her favorite websites with her at all times
Assistive technology	Skype, online translation sites

Accessible design

✓ *LO: List and describe the characteristics of accessible design of software*

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6. **Plain language**: easy to understand
7. **Accessible media**: supports all senses

Web-content accessibility guidelines

✓ *LO: List and explain the four principles in the web accessibility guidelines*

✓*LO: Enumerate and explain the characteristics that make web-content perceivable*

✓*LO: Enumerate and explain the characteristics that make web-content operable*

✓*LO: Enumerate and explain the characteristics that make web-content understandable*

✓*LO: Enumerate and explain the characteristics that make web-content robust*

Introduction

Web Content Accessibility Guidelines (WCAG) 2.0 covers a wide range of recommendations for making Web content more accessible.

http://www.w3.org/TR/WCAG20/

- **Principles** - At the top are four principles that provide the foundation for web accessibility: *perceivable, operable, understandable, and robust*.

- **Guidelines** - Under the principles are guidelines. The 12 guidelines provide the basic goals to make content more accessible to users with different disabilities.

- **Success Criteria** - For each guideline, testable success criteria are provided to allow WCAG 2.0 to be used.

- **Sufficient and Advisory Techniques** - For each of the guidelines and success criteria there is a list of test techniques. The techniques are informative and fall into two categories:
  - those that are sufficient for meeting the success criteria
  - and those that are advisory

Principle 1 - Perceivable

Perceivable - Information and user interface components must be presentable to users in ways they can perceive it.

Guidelines:

- Text Alternatives

Provide text alternatives for any non-text content so that it can be changed into other forms people need, such as large print, braille, speech, symbols or simpler language.

- Time-based Media

Provide alternatives for time-based media.

- Adaptable

Create content that can be presented in different ways (for example simpler layout) without losing information or structure.

- Distinguishable

Make it easier for users to see and hear content including separating foreground from background.

Principle 1 - Perceivable

Advisory techniques for development and testing:

- Identify informative non-text content
- Describe images that include text
- Link to textual information that provides comparable information (e.g., for a traffic webcam, a municipality could provide a link to the text traffic report)
- Provide more than two modalities of CAPTCHAs
- Provide a transcript of a live audio-only presentation
- Provide a note saying "No sound is used in this clip" for video-only clips
- Use readable fonts
- Make sure any text in images of text is at least 14 points and has good contrast
- Provide a highly visible highlighting mechanism for links or controls when they receive keyboard focus
- Convey information redundantly using color
- The visual presentation of text and images of text has to have a contrast ratio of at least 4,5:1 (21:1 for black: white)

Principle 2 - Operable

Operable - User interface components and navigation must be operable.

Guidelines:

- Keyboard Accessible

Make all functionality available from a keyboard.

- Enough Time

Provide users enough time to read and use content.

- Seizures

Do not design content in a way that is known to cause seizures.

- Navigable

Provide ways to help users navigate, find content, and determine where they are.

Principle 2 - Operable

Advisory techniques for development and testing:

- Provide keyboard shortcuts to important links and form controls
- Use unique letter combinations to begin each item of a list
- Avoid use of common user-agent keyboard commands for other purposes
- Provide a mechanism to stop all content that blinks within a web page
- Provide the user with a means to stop moving content even if it stops automatically within 5 seconds
- Limit the number of links per page
- Provide mechanisms to navigate to different sections of the content of a Web page
- Make links visually distinct
- Highlight search terms
- Provide keyboard access to important links and form controls
- Provide skip links to enhance page navigation
- Provide access keys
- Using the 'live' property to mark live regions

Principle 3 - Understandable

Understandable - Information and the operation of user interface must be understandable.

Guidelines:

- Readable

Make text content readable and understandable.

- Predictable

Make Web pages appear and operate in predictable ways.

- Input Assistance

Help users avoid and correct mistakes.

Principle 3 - Understandable

Advisory techniques for development and testing:

- Make text that is not in the default human language of the web page visually distinct, giving the names of any languages used in foreign passages or phrases
- Provide language markup on proper names to facilitate correct pronunciation by screen readers
- Provide a mechanism for finding definitions for all words in text content
- Provide a mechanism to determine the meaning of each word or phrase in text content. Avoiding unusual foreign words
- Use unique abbreviations in a web page
- Including content summaries in metadata
- Using the clearest and simplest language appropriate for the content
- Using sentences that contain no redundant words, that is, words that do not change the meaning of the sentence
- Using sentences that contain no more than two conjunctions

Principle 4 - Robust

Robust - Content must be robust enough that it can be interpreted reliably by a wide variety of user agents, including assistive technologies.

Guidelines:

- Compatible

Maximize compatibility with current and future user agents, including assistive technologies.

Principle 4 - Robust

Advisory techniques for development and testing:

- Provide labels for all form controls that do not have implicit labels
- Avoid deprecated features of W3C technologies
- Do not display content that relies on technologies that are not accessibility-supported when the technology is turned off or not supported.

Assistive technologies and tools

✓ *LO: Explain how the assistive technologies can help the people using them*

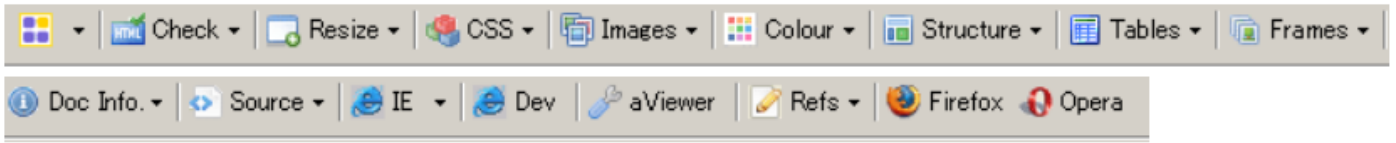
Assistive technologies

Impairment	Assistive technology
Communication impairment	• Electronic speech synthesizer
Hearing impairment	• Earphones, headphones, headsets; • Real-time closed captioning; • Teletypewriter
Mobility impairment	• Page-turning device; • Adaptive keyboards and computer mice (pointing devices such as trackballs, vertical mouse, foot mouse, or programmable pedal)
Physical or mental impairment, learning disability	• Voice recognition software • Talking textbooks
Visual impairment, learning disability	• Modified monitor interface, magnification devices; • Reading service, E-text • Braille note-taker; • Braille printer; • Screen magnifiers; • Optical scanner

Example of testing tools for accessibility

- http://wave.webaim.org/
- http://validator.w3.org/
- http://www.paciellogroup.com/resources/wat

About the Web Accessibility Toolbar (WAT) for IE



The Web Accessibility Toolbar has been developed to aid manual examination of web pages for a variety of aspects of accessibility. It consists of a range of functions that:

- identify components of a web page
- provide access to alternate views of page content
- facilitate the use of 3rd party online applications

In addition, the Colour Contrast Analyser provides functionality to simulate certain visual conditions such as dichromatic color blindness (protanopia, deuteranopia, tritanopia) and cataracts. **Note:** the image simulation features are currently not available in the Mac version.