1 HCI and the Web

1.1 HCI – A Quick Reminder
1.2 Web Technology – A Brief Overview
1.3 Web Usability
1.4 Designing Web Sites for Usability
1.5 Web Accessibility

Literature:
• Jakob Nielsen: Designing Web Usability, New Riders 2000
• Steve Krug: Don’t Make Me Think, New Riders 2006 (2nd ed.)
• Shneiderman, Plaisant: Designing the User Interface: Strategies for Effective Human-Computer Interaction (5th Edition)
Hearing impairment

User cannot hear audio content

This one is easy to test for
  – Turn off your speakers!

Solution
  – Provide captioning for all audio content
Impaired motor skills

Difficulty using mouse and keyboard
  – Inaccuracy while clicking
  – Slow input
  – May use specialized input device

Solutions
  – Do not require precise clicking
  – Allow alternate input methods
    • Keyboard
    • Mouse
    • Voice
Cognitive disabilities

Many types

– Learning disabilities
– Attention deficit disorder
– Memory impairments
– Impairments of intelligence

May have difficulty focusing on or processing information

Solutions

– Clear, simple design
– Simple navigation
– Avoid distracting elements (video, navigation)
Universal design principles

Equitable Use
– The design is useful and marketable to people with diverse abilities

Flexibility in Use
– The design accommodates a wide range of individual preferences and abilities

Simple and Intuitive Use
– Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.

Perceptible Information
– The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.
Universal design principles

Tolerance for Error
- The design minimizes hazards and the adverse consequences of accidental or unintended actions

Low Physical Effort
- The design can be used efficiently and comfortably and with a minimum of fatigue

Size and Space for Approach and Use
- Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility
Assistive Technologies - Screenreader

Software that reads what is on the screen
Provides navigation
Integrates with application software

Example: JAWS
- Includes a software speech synthesizer
- Can output to Braille display
- Demo: http://www.freedomscientific.com/fs_downloads/jaws.asp

Firefox Plugin
- "We created a Firefox extension to help blind people with CAPTCHAs and image translation! It adds a contextual menu item, so just right click on any image and "Send to CAPTCHA Killer". A new window will popup and display the result. This is very beta - but maybe it will help some of you out there"
Assistive Technologies
Braille Displays

Used with a JAWS screen reader
Refreshable Braille cells act as a tactile monitor (e.g. 44-, 70- and 84-cells)
Navigation controls are on the display
Quite expensive (> 5000 €)

http://www.sightandsound.co.uk/
http://www.accesstech.ch/
Assistive Technologies
Braille Printer
E.g. Basic-S Printer
Speed
  – 150 PPH (pages per hour) or 39 CPS (characters per second).
Technology
  – 6 High quality hardened hammers forming against hardened steel anvils

http://www.sightandsound.co.uk/  http://www.brailler.com/juli2.htm
Web Accessibility Evaluation

Guidelines available from W3C
http://www.w3.org/TR/2004/WD-WCAG20-20040311/

Guidelines are divided into three categories of success criteria:

– Level 1 success criteria:
  • do not specify how information is presented
  • are reasonably applicable to all Web sites
  • some are machine-testable. Others require human judgment. Success criteria that require human testing yield consistent results among multiple testers.

– Level 2 success criteria:
  • may require an author to present content in particular ways
  • are reasonably applicable to all Web sites
  • some are machine-testable. Others require human judgment. Success criteria that require human testing yield consistent results among multiple testers.

– Level 3 success criteria:
  • are additional criteria that go beyond Level 1 and 2 that may be applied to make sites accessible to more people with all or particular types of disability

– Conformance
  • WCAG 2.0 A, WCAG 2.0 A+, WCAG 2.0 AA, WCAG 2.0 AAA
Quick Tips to make Accessible Web Sites

• Images & animations: Use the alt attribute to describe the function of each visual.
• Image maps. Use the client-side map and text for hotspots.
• Multimedia. Provide captioning and transcripts of audio, and descriptions of video.
• Hypertext links. Use text that makes sense when read out of context. For example, avoid "click here."
• Page organization. Use headings, lists, and consistent structure. Use CSS for layout and style where possible.
• Graphs & charts. Summarize or use the longdesc attribute.
• Scripts, applets, & plug-ins. Provide alternative content in case active features are inaccessible or unsupported.
• Frames. Use the noframes element and meaningful titles.
• Tables. Make line-by-line reading sensible. Summarize.
• Check your work. Validate. Use tools, checklist, and guidelines at http://www.w3.org/TR/WCAG

http://www.w3.org/WAI/References/QuickTips/
Software to Check Guidelines - Examples

IBM Rational Policy Tester for privacy, quality, and accessibility

http://achecker.ca/checker/index.php
(Formerly A-promt: http://aprompt.snow.utoronto.ca/)

http://www.anybrowser.com/
http://www.barrierekompass.de/
http://validator.w3.org/