1   HCI and the Web

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"

– http://www.captchakiller.com/firefox-extension-help-blind-captcha-and-image-translation
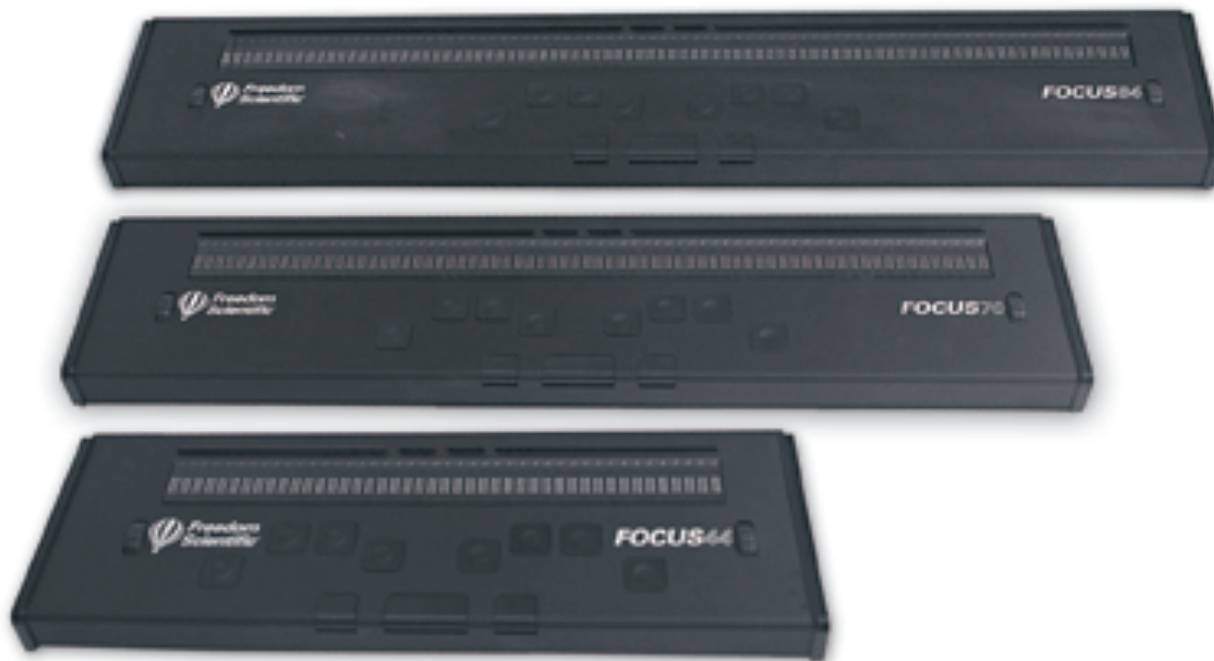
Assistive Technologies
Braille Displays

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.accesstech.ch/

http://www.sightandsound.co.uk/

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://www-01.ibm.com/software/rational/offerings/websecurity/
webcompliance.html

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/

Accessibility Review (Guidelines: WCAG 2.0 (Level AA))

Known Problems(3) **Likely Problems (1)** **Potential Problems (1...**

⊗ *Line 3, Column 1*: Document language not identified.

```
<html>
<head>
  <title>Paul Holleis, Embedded Interaction, Homepage</title>
  <meta http-equiv="cont ...
```

Repair: .

⊗ *Line 3, Column 1*: Document has invalid language code.

```
<html>
<head>
  <title>Paul Holleis, Embedded Interaction, Homepage</title>
  <meta http-equiv="cont ...
```

Repair: Add a valid 2 letter or 3 letter language code as defined in

⊗ *Line 13, Column 3*: frame missing title attribute.