HCI and Design

Today

Web Accessibility

No class next week…. Spring Break

Who is affected?

People with disabilities

- Visual, hearing, motor, cognitive, reading
- About 1 in 5 adults (webaim.org/intro)

Older adults

- up to 50% of computer users may benefit from accessibility features (http://www.microsoft.com/enable/research/)

“Situational impairments”

- mobile device users, temporarily injured people

Sometimes it’s just convenient

- reading transcripts vs. watching a video

Why make things accessible?

Good for business

- Reach a large audience

Support social inclusion

- Participation from a diverse group is good

Follow the law

- Access to information is a basic human right

Legal support for accessibility

1990: Americans with Disabilities Act (ADA)

1998: Rehabilitation Act (section 508)

2006: Individuals with Disabilities Education Act (IDEA)

http://webaim.org/articles/laws/usa/

Legal Cases

1996 ADA complaint vs. City of San Jose, CA

- Use of PDF inaccessible to city commissioner
- Web sites are a “service” and thus subject to the ADA
- Led to *S. J. Web Page Disability Access Standard*

1999 National Federation of the Blind vs. AOL

- Based on the interpretation of the Web as a place of public accommodation (ADA)
- Settled out of court
- 2000: AOL agreed to make its browser accessible

2006 National Federation of the Blind vs. Target

- ADA as applied to Target’s web site
- Settled for US $6 million

Assistive tech improves quality of life

Enables a person to function at his or her own pace.

Fosters independent living.

Maintains or improves daily function

Reduces stress-related injuries

Eases integration into society (levels the “playing field”)

Modifies the environment instead of the person

Assistive Tech can be simple

A magnifying glass

A straw

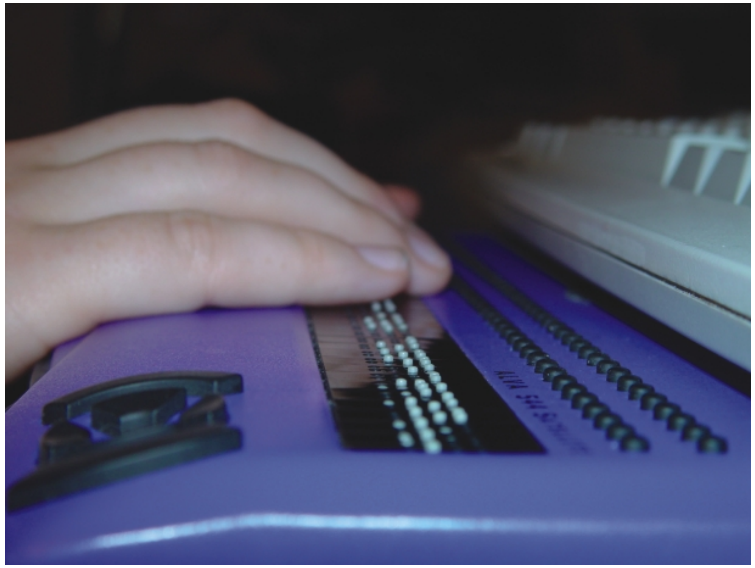
Anti-glare screen for the monitor

Door handles instead of door knobs

Calculators/clocks with extra large digits

Assistive Tech can be complex

- Alternative keyboards or switches
- Braille and refreshable braille
- Scanning software
- Screen magnifiers
- Screen readers
- Speech recognition
- Speech synthesis
- Tabbing through structural elements
- Text browsers
- Visual notification
- Voice browsers



Screen Reader for Blind Users

Allows non-visual access to screens

Speech

Refreshable Braille Display

Screen Reader Timeline

1973 – Section 508 of Rehabilitation Act set bar for accessible technology

1980 – First screen readers for computers.

1986 – IBM Screen Reader, first screen reader for Windows

1990 - World Wide Web Consortium (W3C) released Web Content Accessibility Guidelines (WCAG).

1995 – JAWS (Job Access With Speech), first successful wide-spread commercial screen reader

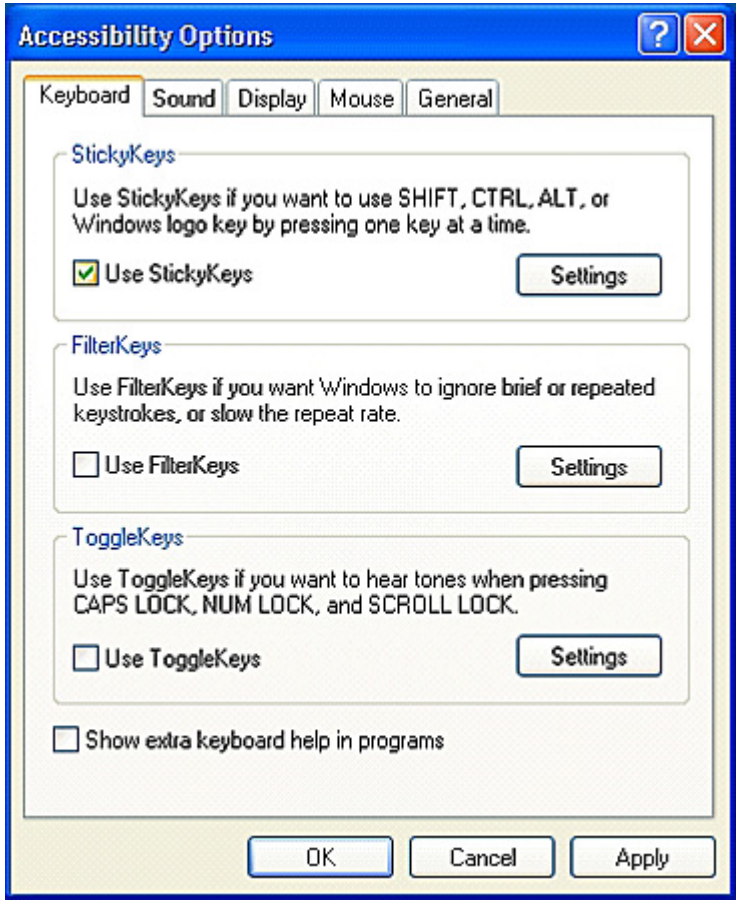
2006 – NVDA (NonVisual Desktop Access), first successful open source screen reader

2008 – VoiceOver, first built-in screen reader for iOS devices.

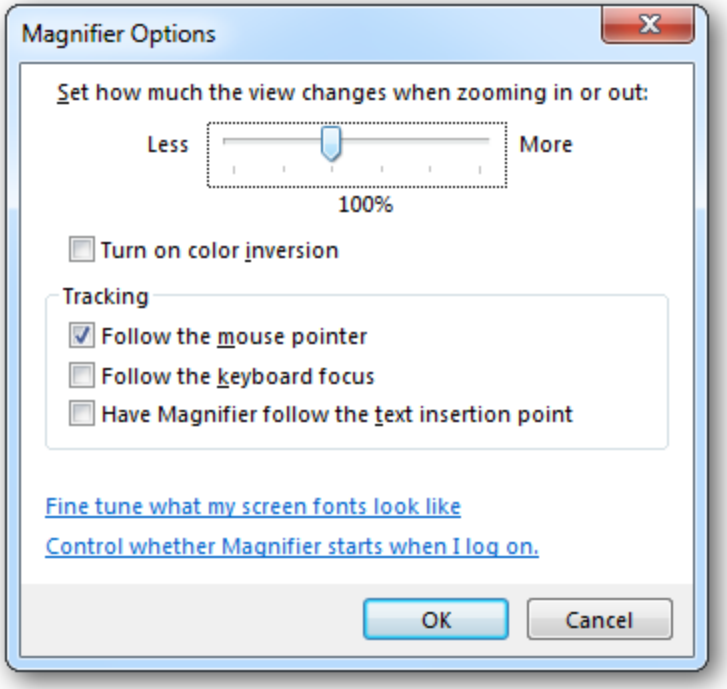
iOS Text-to Speech

Accessibility features in OS

- Sticky keys / filter keys
- Screen magnifiers
- Mouse & cursor control
- Keyboard navigation
- Visual alert
- On-screen keyboard
- Speech recognition for specific commands



Magnification



CRTL+ or Command+ on browsers

Spread gesture on touchscreens

Color blindness

Affects 10% of males

Multiple variations

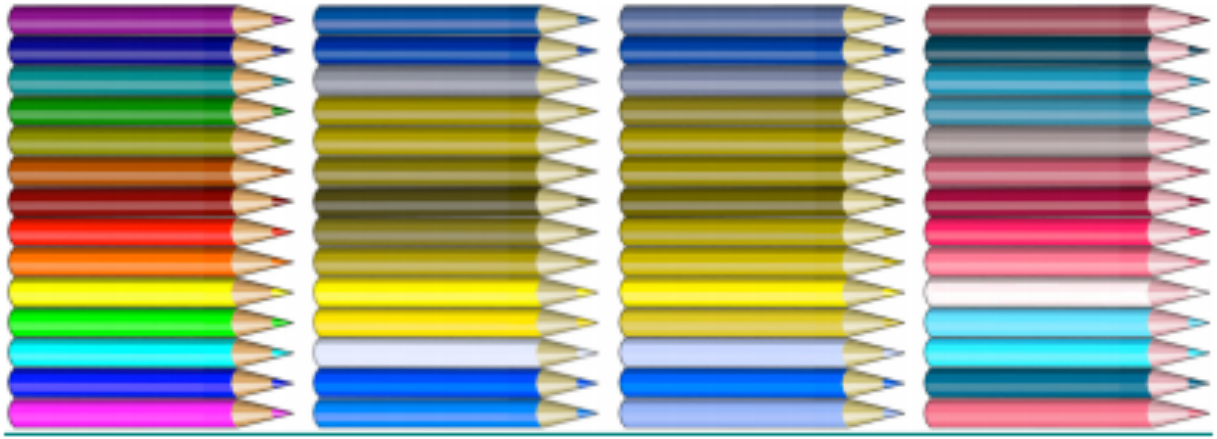


Fig. 2. Simulations of dichromatic color vision. From left to right: original image, simulation of protanopia, simulation of deuteranopia, and simulation of tritanopia. Simulations generated at www.vischeck.org.

http://vischeck.com

Web Accessibility

- **Web accessibility** refers to the practice of removing barriers that prevent interaction with, or access to, websites by people with disabilities so that all users have equal access to information and functionality.

- Web content is extremely visual, so people with vision impairments are particularly affected
- Web developers need to accommodate needs of visually impaired more than for any other group e.g., blind, low-vision, color blind, etc.

Web Content Accessibility Guidelines

Perceivable

Operable

Understandable

Robust

Web Content Accessibility Guidelines

Perceivable

- Provide text alternatives for non-text content and provide captions and alternatives for audio and video content.
- Make content adaptable; and make it available to assistive technologies.
- Use sufficient contrast to make things easy to see and hear.

Web Content Accessibility Guidelines

Operable

- Help users find content and make everything keyboard accessible.
- Give users enough time to read and use content.
- Do not use content that causes seizures.

Web Content Accessibility Guidelines

Understandable

- Make text and content understandable, and readable
- Make content operate in predictable ways and help users avoid and correct mistakes.

Robust

- Maximize compatibility with current and future technologies.
- Doesn’t break every time there is an OS update
- Works across a variety of services and platforms

10 Quick Tips

1. Images & animations: Use the alt attribute to describe the function of each visual.
2. Image maps. Use the client-side map and text for hotspots.
3. Multimedia. Provide captioning and transcripts of audio, and descriptions of video.

10 Quick Tips (cont)

4. Hypertext links. Use text that makes sense when read out of context. For example, avoid "click here."
5. Page organization. Use headings, lists, and consistent structure. Use CSS for layout and style where possible.
6. Graphs & charts. Summarize or use the longdesc attribute.

10 Quick Tips (cont)

7. Scripts, applets, & plug-ins. Provide alternative content in case active features are inaccessible or unsupported.

8. Frames. Use the noframes element and meaningful titles.

9. Tables. Make line-by-line reading sensible. Summarize.

10. Check your work. Validate. Use tools, checklist, and guidelines at http://www.w3.org/TR/WCAG

Verifying accessibility

Testing with real users is the best way

Online materials can help

- http://webaim.org/intro/#principles
- http://webaim.org/standards/wcag/checklist

Simulating disability

- http://vischeck.com/
- http://firevox.clcworld.net/
- http://www.chromevox.com/

Summary

Web accessibility refers to the practice of removing barriers that prevent interaction with, or access to, websites by people with disabilities so that all users have equal access to information and functionality.

There are established guidelines and checklists for how to make your designs and systems accessible.

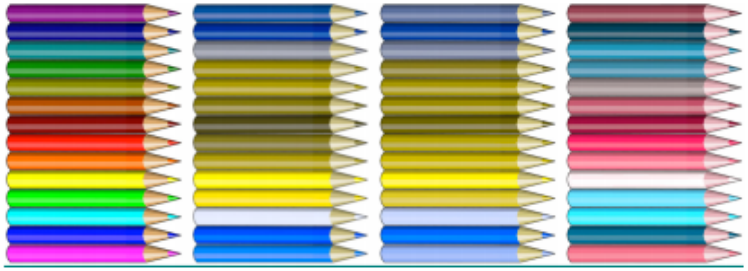
Please use them!

Activity 1: Color blindness

Go to: http://vischeck.com

Play around with uploading different images/screenshots to see how they would look to color blind people.

Take a screenshot of an image you tested.



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Activity 2: OS Accessibility

Explore your phone or laptop accessibility features by trying them out.

Write down 3 things you learned by trying out the different features.

e.g., What is available? Does it seem easy to use? Are there challenges?

Activity 3: Web Accessibility

Pick a website. Your choice…. Make it interesting!

Evaluate: How accessible is your chosen website?

HINT: Use the 10 tips to evaluate the accessibility. You can use "View Source" on the page to examine the HTML and see how well it implements accessibility features.

Make a list of things the website does well/badly.

Create a pdf file with your Activity 1 (screenshot), Activity 2 (three things you learned), and Activity 3 (list). Save the file as NetID.pdf and email to hci_c75d@sendtodropbox.com.