Topics in Usability Testing

Software Usability

- Eventually a person will interact with a software system.
- *Software usability* is how:
  - appropriate
  - functional
  - effective

  that interaction is.
- *Ergonomics* is the science of designing everyday things so that they are easy and functional to use.

Important traits of a good UI

- Follows standards and guidelines
- Intuitive
- Consistent
- Flexible
- Comfortable
- Correct
- Useful

Follows UI standards and guidelines

- Macintosh Human Interface Guidelines
  - http://developer.apple.com/documentation/UserExperience/Conceptual/OSXHIGuidelines/XHIGIntro/chapter_1_section_1.html
- Microsoft Windows User Experience
  - http://msdn2.microsoft.com/en-us/library/aa511258.aspx
- These guides detail how software that runs on each platform should *look and feel* to the user.
  - When should a check box be used instead of a button?
  - When is it proper to use information, warning, or critical messages?

Follows UI standards and guidelines (cont' d)

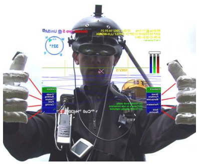
- The standards guidelines for a platform should be treated as an addendum to the product specification.
- Test cases should be created based on the standards guidelines in addition to the test case created from the product' s specification.
- If the development platform does not have a standard, the design team must create usability standards for the software itself.

Intuitive UI

- Is the UI clean, unobtrusive, not busy?
- Are responses obvious and there when you expect them?
- Is the UI organized and laid out well?
- Are the inputs acknowledged?
- Do the menus go too deep?
- Is there excessive functionality?
- Is there information overload?
- Does the help system really help the user?

- Read an interesting article on UI engineering:
  - http://www.uie.com/articles/design_intuitive/

Non-intuitive UIs



Intuitive UIs

Consistent UI

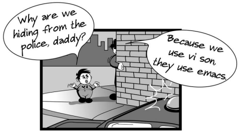
- Shortcut keys and menu selections
  - F1 should always get you Help in MS Windows.
  - Different UI paths should have the same F key to execute a feature.
- Terminology and naming
  - Is Find sometimes called Search?
- Audience
  - Consider the success of the UI of the car and ATM.
- Placement of buttons such as OK and Cancel
  - In Mac OS, the OK button is always on the right.
  - In MS Windows the, the OK button is on the left and Cancel is on the right.

Flexible UI

- Users like choices … but not too many.
  - E.g., MS simple and scientific calculators
- Flexible UIs provide:
  - State jumping
    - Many alternative ways to achieve the same goal.
  - State termination and skipping
    - "If you know your party's extension enter it at any time".
  - Multiple ways to perform I/O
    - Excel allows many input formats (from keyboard or files) and many output formats (table, graphs, charts).

Comfortable UI

- Sounds like a strange notion …
- Is the UI appropriate?
  - Sound effects in a computer game? How about a business application?
- Does the UI handle errors well?
  - If there is no Undo/Redo feature critical operations may fail.
- Is the feedback fast enough or too fast?
  - E.g., waiting for cash to come out of the ATM
- Does excessive use cause harm?
  - E.g., Emacs hand


Why are we hiding from the police, daddy?
Because we use vi son, they use emacs.

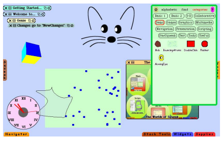
Correct UI

- Marketing differences
  - Are there extra or missing functions from what the marketing material states?
- Language and spelling
  - Error messages often have speling mistakes
- Bad media (icons, images, sounds, videos) that should come with the software UI.
- WYSIWYG
  - E.g., does the printed Adobe Acrobat file look like the one on the screen?

Useful UI

- When testing a UI feature, ask if the feature you see actually contributes to the software's value.
- Many applets have useless features
  - E.g., dancing elves
- Useless UI features waste time for the user, developer, and tester.

Useful UI



Useless UI

Accessibility Testing (testing for the disabled)

- Nearly 20% of American have some form of disability according to the 1997 US Census.
- The following impairments make using computers especially difficult:
  - Visual
    - E.g., color blindness, tunnel vision, cataracts.
  - Hearing
    - E.g., partial or complete deafness.
  - Motion
    - E.g., injury can make using a keyboard or mouse difficult or impossible.
  - Cognitive and language
    - E.g., dyslexia or memory problems and using complex UIs

Accessibility features in software

- If the software being tested does not run on a platform that has specified accessibility features?
  - Accessibility features will have to be specified, programmed, and tested.
- If your platform has built in accessibility features your software?
  - Software only needs to adhere to the platform's standard for communicating with peripheral devices.
- Remember to create test cases specifically to test for accessibility.
  - Add them to your configuration testing equivalence partitions.

Microsoft Windows accessibility features

- **Sticky-keys**: Allow Shift, Ctrl, Alt keys to stay in effect until the next key is pressed.
- **Filter-keys**: prevents brief repeated keystrokes from being recognized.
- **Toggle-keys**: plays tones when Caps Lock, Scroll Lock, or Num Lock keyboard modes are enabled.
- **Sound-sentry**: creates a visual warning whenever the system generates a sound.
- **Show-sounds**: instructs program to display captions for any sounds or speech they make.

Microsoft Windows accessibility features (cont'd)

- **High contrast**: sets up the screen with colors and fonts designed to be read by the visually impaired.
- **Mouse-keys**: allows the use of keyboard keys instead of the mouse to navigate.
- **Serial-keys**: sets up a communication port to read in key strokes from an external (non-keyboard) device.

Microsoft's accessibility website

Guides by Impairment: Overview 09/17/2007 09:44 AM

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Accessibility Resource Centers
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Business Resources
Microsoft's Commitment
Accessibility Info for Developers
Text version

Guides by Impairment

These guides organize information from this site into helpful resources for various types of difficulties and impairments.

Each guide provides a list of assistive technology products and links to Step by Step Tutorials for accessibility features that are helpful for specific types of difficulties and impairments.

Guides available for:

- Vision Difficulties and Impairments
- Dexterity Difficulties and Impairments
- Hearing Difficulties and Impairments
- Learning Difficulties and Impairments
- Language and Communication Difficulties and Impairments
- Aging Computer Users

Last updated: Monday, August 27, 2007

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Microsoft's Commitment
Accessibility Info for Developers
Microsoft Accessibility Technology for Everyone

Accessibility

Discover accessibility settings that are already on your PC, and make your computer more comfortable, and easier to see, hear, and use.

Accessibility Solutions
Learn about accessibility features and settings in Microsoft products and specialty assistive technology products.

- Accessibility features in Microsoft products
- Assistive technology products for Windows

Tutorials and Training
Find tutorials, demonstrations, and experts to help.

- Guides to accessibility by type of impairment
- Tutorials for accessibility in Microsoft products
- Microsoft accessibility resource centers list

More Information

- Case studies and news articles about accessible technology
- Business resources for integrating accessible

Current Headlines

- Guide for Aging Computer Users
- Senior PCs
- Creating a Positive Work Environment

Information for:

- Computer Users
- Aging Computer Users
- Business Managers
- Educators
- Developers
- IT Professionals
- Government
- Journalists

Free Resources

- Downloads
- Accessibility CD Set

http://www.microsoft.com/enable/ Page 1 of 2

Apple's accessibility website

commitment to accessibility is
throughout the Mac OS X oper
system, which is not only easy
design, but also includes a wi
technologies specifically desig
disabilities. Apple refers to the
Access and has integrated the
Q W E R T Y U I O P
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Apple - Accessibility 09/17/2007 09:37 AM

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Since 1985 Apple has been committed to helping people with disabilities access their personal computers. Apple's commitment to accessibility is evident throughout the Mac OS X operating system, which is not only easy to use by design, but also includes a wide variety of features and technologies specifically designed to provide access to users with disabilities. Apple refers to these features collectively as Universal Access and has integrated them into the operating system so they can be used in conjunction with a variety of applications from Apple and other developers. Apple is also changing the ways people interact with technology through innovative products like the iPhone, which bring new possibilities for making user interfaces accessible to users with disabilities.

VoiceOver
The Spoken Interface for Mac OS X.
Learn More...

Accessibility Technologies in Mac OS X

- Zoom
- Full keyboard navigation
- Sticky Keys and Slow Keys
- Mouse Keys
- Closed-Captioning in QuickTime
- Visual alert
- Spoken items
- Talking alerts
- Speech recognition
- Display adjustment

iPhone Accessibility

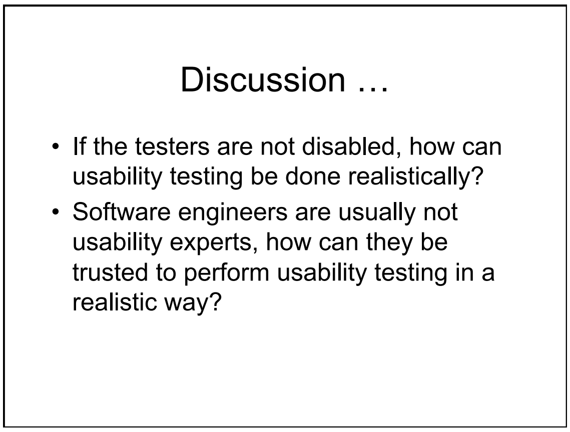
- Zoom
- TTY support
- Predictive text entry
- Giant fonts for Mail messages
- Large numeric keypad for dialing
- Network-based voice dialing
- Hands-free speakerphone
- Audible, visible, and vibrating alerts
- Assignable ringtones
- Visual Voicemail
- Chat-like SMS
- Automtatic sync using iTunes
- Alternative Format users's guide

Voluntary Product Accessibility Template (VPAT)

- Mac OS X Tiger
- Mac OS X Panther
- iMac
- eMac
- MacBook Pro
- Power Mac G5
- Apple Cinema Displays
- iPhone

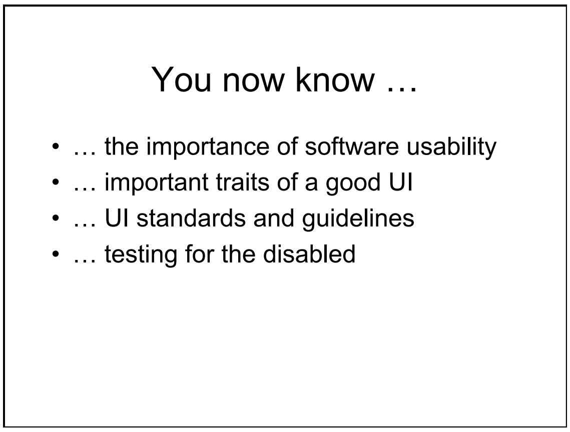
For information on Section 508

http://www.apple.com/accessibility/ Page 1 of 2



Discussion …

- If the testers are not disabled, how can usability testing be done realistically?
- Software engineers are usually not usability experts, how can they be trusted to perform usability testing in a realistic way?



You now know …

- … the importance of software usability
- … important traits of a good UI
- … UI standards and guidelines
- … testing for the disabled