SEEK

SCIENCE ENVIRONMENT FOR ECOLOGICAL KNOWLEDGE

Usability

Laura L. Downey

Introduction

- Who am I?
- What is usability and how is it beneficial?
- How will usability be incorporated on the SEEK project and elsewhere?

What is usability?

- Formal – "[Usability refers to] the extent to which a product can be used by specified users to achieve specified goals with **effectiveness, efficiency and satisfaction** in a specified context of users." (ISO 9241-11)

- Practical - Usability is an approach that **incorporates direct user feedback** throughout the development cycle in order to **reduce costs and create products and tools that meet user needs**. (UPA via upassoc.org)

Benefits of Usability

- Increased productivity
- Increased sales and revenues
- Decreased training and support costs
- Reduced development time and costs
- Reduced maintenance costs
- Increased customer satisfaction

A Real-World Example

- After move.com completed the redesign of two problem features, **users ability to find a home increased from 62% to 98%, sales lead generation to real estate agents increased over 150%,** and [move.com's] ability to sell advertising space on move.com improved significantly. *(Vividence, 2001, via upassoc.org)*

User Interface + Functionality = Usability

- Elegant or sophisticated internal algorithms don't make any difference if the interface keeps people from using and/or exploiting the functionality of the system.
- A well-designed interface means little if the right functionality is not provided efficiently and effectively in the system internals.

Relationship between Usability Engineering & Software Engineering

- Historically, UI code was 30-35% of total LOC, but now it is almost **50-60%**.
- GUI is minimally **30%** of the SW budget, and can command **40%** of the development effort.
- 80% of SW life cycle costs occur during maintenance and **80%** of maintenance costs are due to unmet or unforeseen user requirements, while only 20% are bugs or reliability problems.

Relationship between Usability Engineering & Software Engineering (cont.)

- The typical software program is released with **40** usability design problems.
- Over **70%** of CIO's state that one of their biggest problems is communicating with users to understand their needs.

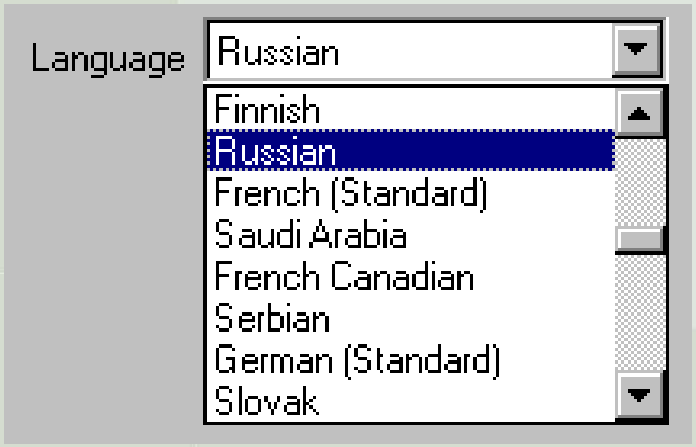
How will we SEEK usability?

- Apply good human factors and design principles
- Conduct user research
- Conduct task analysis (interviews and observation)
- Perform iterative design
- Gather user feedback and input
  - Individual interviews
  - Group discussions
  - Usability evaluation and testing
  - Categorization and ranking exercises
  - Self-reporting
  - Surveys

General Design Principles

- Use a minimalist approach but provide details on demand
- Apply consistent visual & information design (readability, coding, color, icons, metaphors, data organization)

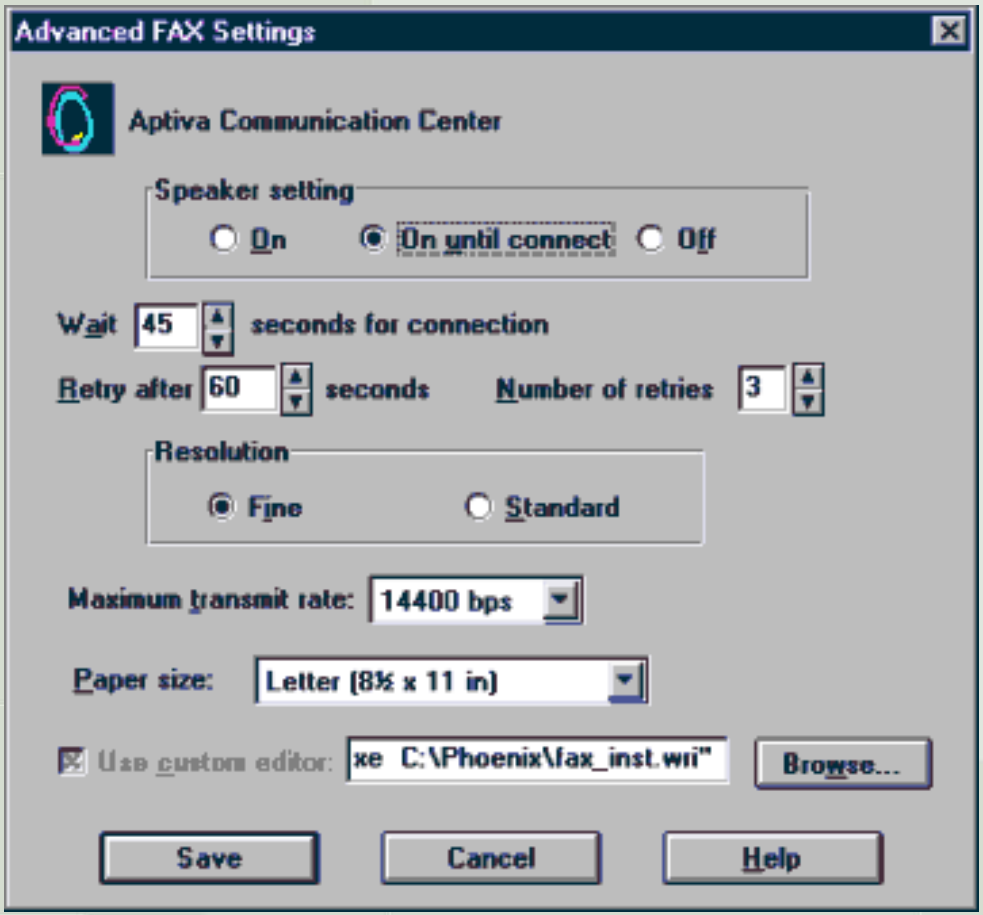
From Interface Hall of Shame



General Design Principles (cont.)

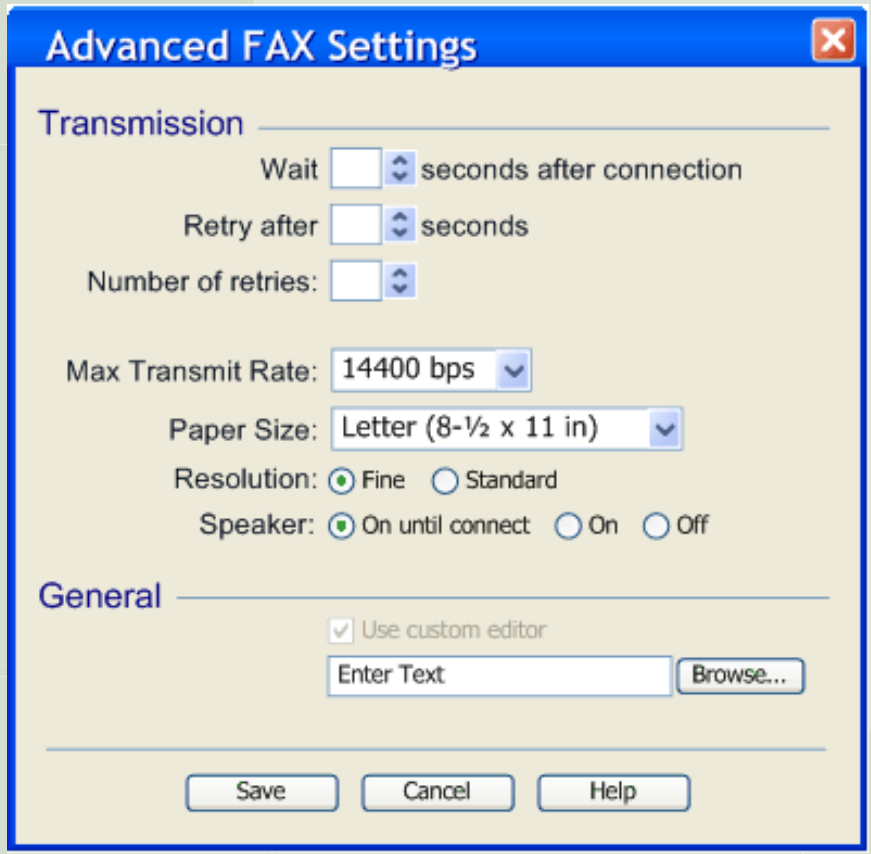
- Cluttered
- Poorly organized

From Interface Hall of Shame



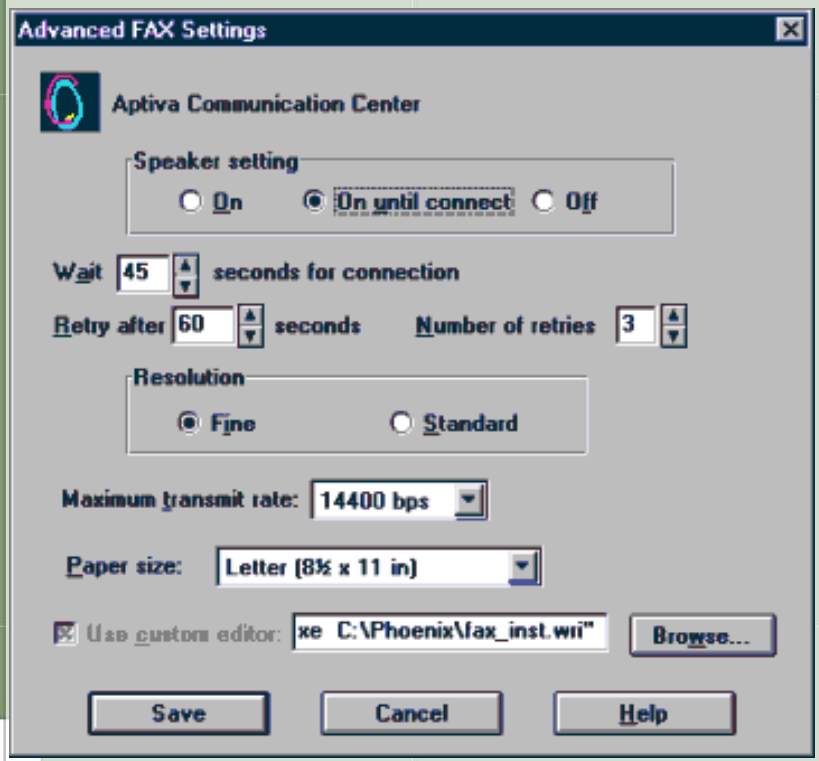
General Design Principles (cont.)

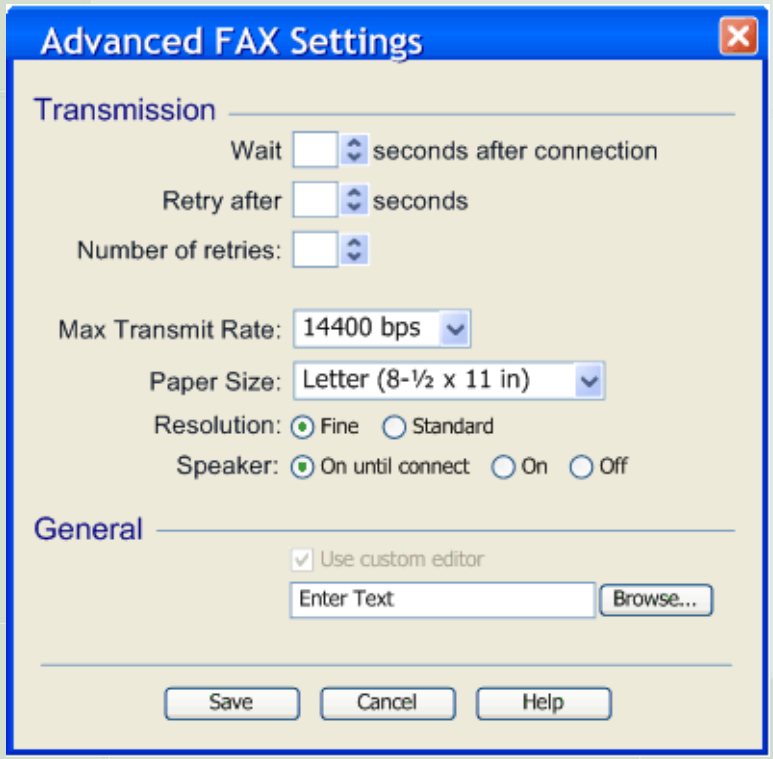
- Reduced clutter
- Better organized



General Design Principles (cont.)

Side by Side Comparison

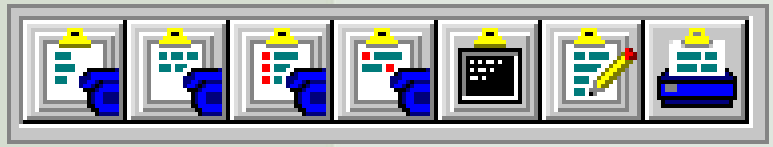




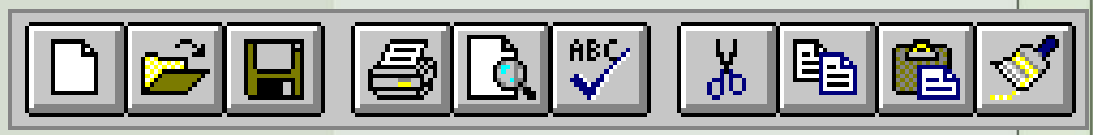
General Design Principles (cont.)

- Too many colors
- Icons too complex

- Icons too similar



- Limited color set
- Good use of shape



From Interface Hall of Shame

General Design Principles (cont.)

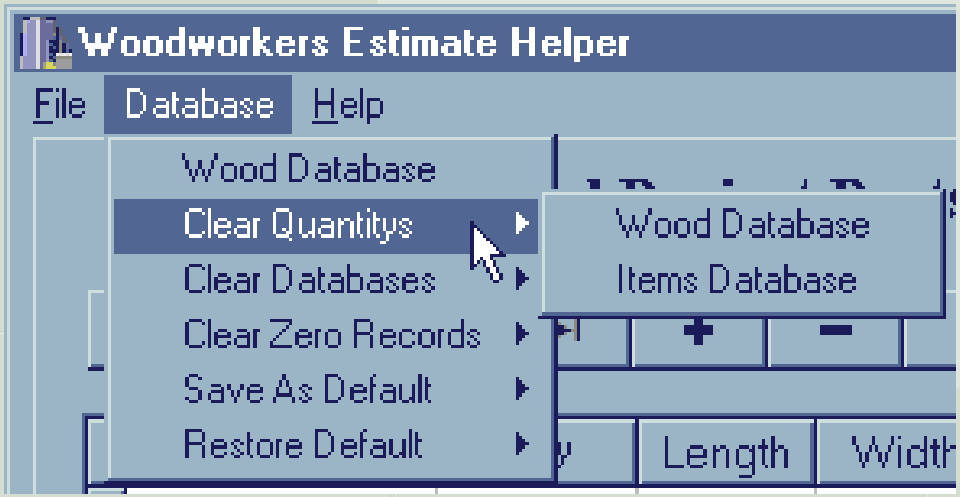
- Apply appropriate interaction design (tasks and users' understanding)
- Minimize memory and attention load (memory and processing information limitations)

  http://www.laoairlines.com/
- Speak the users' language (user terminology not geek-speak)

General Design Principles (cont.)

- Woodworker and cabinet maker user interface
- Designed to help in calculating price quotes for their projects
- Databases, records etc are not user terms

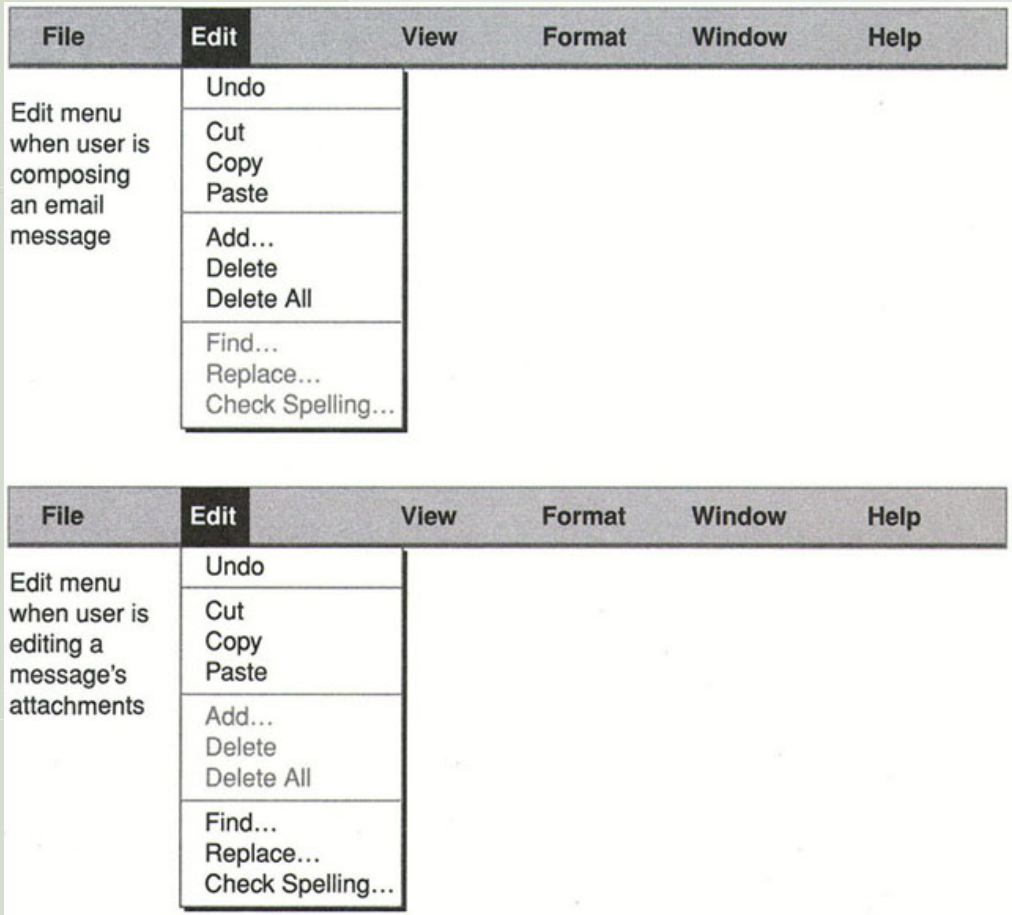
From Interface Hall of Shame



General Design Principles (cont.)

- Prevent errors (e.g. context of use)

From GUI Bloopers



General Design Principles (cont.)

- Provide flexibility (shortcuts, RCMs, wizards)
- Provide status and feedback
- Provide meaningful error and feedback messages

(most likely couldn't find the file)

From Interface Hall of Shame

Usability Activities

- Kepler – November 2004, December 2004, Janurary 2005 (and ongoing)
- Morpho – February 2005
- Data Registries – February 2005
- SEEK Taxon – February 2005

Summary

- My job is to make technology work for scientists instead of them working to use the technology.
- Any issues or ideas on the usability of the data registries then contact me:

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References

- Usability Professionals Association, www.upassoc.org
- Human Factors presentation, Tanya Yuditsky, FAA
- GUI Bloopers: Don'ts and Do's for Software Developers and Web Designers by Jeff Johnson, Morgan Kaufmann Publishers © 2000,
- Interface Hall of Shame, http://digilander.libero.it/chiediloapippo/Engineering/iarchitect/shame.htm