

User Interface Design Process

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CS 2000: Systems Analysis and
Design

Agenda

- Inception Phase due next week!
 - *Deadline for questions and/or feedback is Noon, Sunday, Sept. 25th!*
- Questions on Readings / Rose Installations
- Continue discussion on Use Case Modeling
- Discuss UI Concepts

UI Overview

- A UI is anything that interacts with a user.
 - Anything includes data entry screens, error and status messages, installation instructions, reports, help text, navigation. Any others?
 - What might this also include for an ATM?
- UI Shop of Horrors:
 - Automobile Dash Boards / Radios
 - Three Mile Island!
 - A former hardware manufacturer
 - A former employer
 - Check out www.webpagesthatsuck.com

UI Overview (cont'd)

- A well designed UI is important because:
 - To many people, the UI is the application.
 - It sells – first sale and future ones
 - It can save money / support costs
 - It can save lives!
- Consider your feelings when:
 - You are baffled by a bad / indecipherable error message.
 - You have trouble installing the application (ala Rose!)
 - You have to wait forever to get telephone support.

UI overview (cont'd)

- A good UI is one that effectively communicates with a user.
- We think of GUI as a way to communicate effectively, but this can also include:
 - Text / command line based systems.
 - Voice response systems.
 - Kiosk / Menu driven systems.
 - Multimedia based systems.
- A slick UI is not necessarily an effective UI!

UI Overview (con't)

- Human Computer Interaction (HCI) is a specialized field. Areas of study typically include:
 - Psychology
 - Linguistics
 - Anthropology (cultural norms)
 - Computer Science
 - Graphic Art
 - Sociology
 - Engineering

User Centered Design

- A set of techniques that place the user at the center of the development process.
- Developed by Gould (et.all) in mid-80's. Consists of 4 key steps:
 - Early and continuous focus on users.
 - Integrated design
 - Early and continued user testing
 - Iterative Design
- Do these principles sound a little familiar? Note the time period.

User Centered Design (cont'd)

- Early and continuous focus on users is much like traditional analysis with:
 - Direct contact: interviews, observations, surveys.
 - Understanding the cognitive, behavioral, attitude, and characteristics of users and their jobs.
 - Use cases fold nicely into this paradigm:
 - Clear system boundary
 - Focus on users and their interaction with the system.

User Centered Design (cont'd)

- Integrated Design consists of:
 - Considering all aspects of *usability*, such as installation, help, navigation, etc.
 - Insure all aspects are considered, developed, and delivered as part of the system.
- Definitions:
 - *Usability*: the degree by which a system is easy to learn and use
 - *Usability Engineering*: a discipline that places usability in advance and ensures that the software is developed to meet that level.

User Centered Design (cont'd)

- Early and continuous user testing:
 - Design for and perform actual testing through observation and testing.
 - Examples: time to perform tasks, usability labs, surveys.
 - Objective vs. subjective measures.
 - Heuristic vs. scientific
- Iterative Design
 - Repeat the first 3 steps until user's needs are satisfied.
- *Note how iterative development synthesizes with user-centered design!*

Usage Centered Design

- What is usage-centered design? (from www.foruse.com)
 - Usage-centered design is a systematic, model-driven approach to improving product usability. A few simple but powerful models--of user roles, tasks, and interface content--guide the user interface design toward a better fit with the real needs of users. Often, the result is also smaller, simpler systems _that nevertheless fulfill all the genuine functional requirements.
- What's the difference between usage-centered design and user-centered design?
 - In usage-centered design the focus is on usage--on the work users are doing and the tasks they are trying to accomplish. Users, rather than being the center of attention, are involved in limited and highly focused ways to help designers build tools that will better support the work being done.

Usage Centered Design (cont'd)

- RUP vs Usage-Centered Design is one of many great methodology debates.
- There is not one right answer!
- People, people, people!
- For more information on Usage Centered Design check:
 - www.foruse.com
 - Constantine and Lockwood, “Software For Use: A Practical Guide to the Models and Methods of Usage-Centered Design”, Addison Wesley, 1999.

UI Golden Rules

- Any interactive interface should follow these golden rules:
(Source Ben Schneiderman)
 - Strive for consistency
 - Provide shortcuts
 - Offer informative feedback
 - Design dialogs to yield closure
 - Offer simple error handling
 - Permit easy reversal of actions
 - Let the user feel like they are in control
 - Reduce short-term memory load.

UI Prototyping

- Typically a UI prototype is included as an appendix to a use case to help visualize the interaction between the system and the user.
- Use the simplest tool possible to develop your UI prototype.
 - Stress to your stakeholders that this is just a prototype. Actual results may vary!
- Sometimes it is helpful to develop a UI prototype at the same time you are trying to develop your use case.

UI Prototyping (cont'd)

- Quite frequently Analysts are expected to develop prototypes for the UI, which can include:
 - The data entry screens.
 - Navigation
 - Logical grouping of like fields.
 - Colors
 - Messages (help messages, error messages, etc.)
 - Reports (on-line and printed)

Top 10 UI Books

- If you are interested in learning more about UI design, here is a list of the top 10 books from Amazon (as of Sept. 2005)
 1. "Don't Make Me Think", Krug
 2. "Designing with Web Standards", Zeldman
 3. "The Elements of User Experience", Garrett
 4. "Designing Web Usability", Nielsen
 5. "Observing the User Experience", Kuniavsky
 6. "Paper Prototyping", Snyder
 7. "User Interface Design for Programmers", Spolsky
 8. "Homepage Usability", Nielsen (same author as above)
 9. "The Humane Interface", Raskin
 10. "Handbook of Usability Testing", Rubin

Closing Thoughts

- Which web pages or applications do / don't you like and why?
- Congratulations, your application is going global! What are some of the issues you may want to consider when developing the user interface?
 - How might this effect your use cases?
- Has anybody taken a UI course? How was it?