Analyzing Existing Systems

Lecture 3: Media Computing Project
Where to evaluate: Lab

+ Equipment (A/V, see-through mirrors, special computers)
+ No disruptions, quiet
+ Controlled (no surprises)

- Natural environment missing
- Unnatural situation
Where to evaluate:  
In the field

• Studies in the users’ natural environment

  + More realistic (also because of disruptions)
  + Situations and behavior more natural
  + Better suited to long-term studies

  - Noise, task interruptions
  - Will still feel like a test situation
Evaluation Techniques

Evaluating With Users

Qualitative
- E5 Model Extraction
- E6 Silent Observation
- E7 Think Aloud
- E8 Constructive Interaction
- E9 Retrospective Testing

Quantitative
- E10 Controlled Experiments
  + Interviews, questionnaires,...
E5: Model Extraction

• Designer shows user prototype or screen shots
• User tries to explain elements and their function
  + Good to understand naïve user’s conceptual model of the system
  – Bad to understand how the system is learned over time
E6: Silent Observation

• Designer watches user in lab or in natural environment while working on one of the tasks
• No communication during observation
  + Helps discover big problems
  – No understanding of decision process (that lead to problems) or user’s mental model, opinions, or feelings
E7: Think Aloud

• As E7, but user is asked to say aloud
  • What she thinks is happening (state)
  • What she is trying to achieve (goals)
  • Why she is doing something specific (actions)

• Most common method in industry

+ Good to get some insight into user’s thinking, but:
  – Talking is hard while focusing on a task
  – Feels weird for most users to talk aloud
  – Conscious talking can change behavior
E8: Constructive Interaction

• Two people work on a task together
  • Normal conversation is observed (and recorded)
  • More comfortable than Think Aloud

• Variant of this: Different partners
  • Semi-expert as “trainer”, newbie as “student”
  • Student uses UI and asks, trainer answers
  • Good: Gives insight into mental models of beginner and advanced users at the same time!
E9: Retrospective Testing

- Additional activity after an observation
- Subject and evaluator look at video recordings together, user comments his actions retrospectively
- Good starting point for subsequent interview, avoids wrong memories
- Often results in concrete suggestions for improvement
E10: Controlled Experiments

- Quantitative, empirical method
- Steps:
  - Formulate hypothesis
  - Design experiment, pick variable and fixed parameters
  - Choose subjects
  - Run experiment
  - Interpret results to accept or reject hypothesis
Other evaluation methods

• Before and during the design, with users:
  • Questionnaires
  • Personal interviews

• After completing a project:
  • Email bug report forms
  • Hotlines
  • Retrospective interviews and questionnaires
  • Field observations
    (observe running system in real use)
Assignment

• Conduct survey about the general usability of the existing system
• Perform user tests on at least 3 identified problems with at least 5 participants