Evaluation

• Formative vs. summative
• Four paradigms
  – Informal feedback
  – Walkthroughs
  – Field studies
  – Predictive evaluation
• Goals: find problems or new opportunities, check conformity with guidelines, standards, requirements, …
Evaluation planning

• Determine high-level goals
• Explore questions to be answered
• Choose evaluation paradigm and techniques
• Identify practical issues
• Decide how to handle ethical issues
• Evaluate, interpret, and present results
Designing a study

- Reliability: results are repeatable
- Validity: measuring what you want to measure
- Biases: should not be introduced by process
- Scope: breadth of findings’ applicability
Interviews

- Structured/scripted vs. unstructured/open-ended
- Avoid long, compound questions
- Avoid unfamiliar terms
- Avoid questions that embody assumptions
- Avoid biases
- Intro, warm-up, main body, cool-off, closing
Questionnaire development

• Paper vs. electronic, closed vs. open-ended
• Checkboxes, rating scales, prose responses
• Design
  – Start off-line even if goal is electronic
  – Questions all positive, all negative, mixed
  – Pilot-test questions for clarity, sufficient space
  – Consider analysis
Increasing questionnaire response

- Expect 20%–40% rate (less online)
- Make purpose clear
- Promise anonymity
- Design well
- Offer short version
- Provide stamped return envelope
- Follow up
- Provide incentive
Expert critiques

• Heuristic evaluation w/ guidelines (Nielsen)
  - Brief 3–5 experts
  - Each works separately 1–2 hours, two passes
  - Debrief experts together

• Cognitive walkthrough
  - Tell expert assumptions, context, task
  - Expert walks through prototype w/ usage scenarios
  - Will user know what to do? Will user see correct action is available? Will user understand response?
Usability walkthroughs

• Make an explicit test scenario (test plan)
• Test the test (pilot study)
• Recruit subjects
• Conduct test
• Debrief subjects
Roles in walkthroughs

• Greeter gets user settled
• Facilitator talks to user during testing
• Computer (a person) manipulates interface elements
• Observer(s) take notes
Observing users

• In the lab
  – Walkthroughs with low-fi prototypes
  – Instrumented sessions with higher-fi systems

• In the field

• Consider, as always, who’s involved, their goals, their actions, their feelings, the relevant objects and events
User testing

• A part of usability testing
• Smaller-scale, less formal, more focused than full-blown usability research
• Can be quantitative: time to complete, number of errors, number of help requests, number of users completing task successfully
• Can include keystroke-level monitoring
• How many users?
Le mieux est l’ennemi du bien. 
(The best is the enemy of the good.)

— Voltaire

[“Dramatic Art” in Philosophical Dictionary, 1764]
Evaluation exercise

- Start with your ticket reservation system
- Decide on the one aspect that most needs testing/evaluation
- Design an evaluation plan to test that aspect (give specific task, technique, design)
- Describe your plan on one page (informally, possibly with outline or sketches)
- Present to another group for critique (9:20)
- Turn in page with names of group
Hypermedia and the WWW

• Nodes (info in many media)
• Visible links to other nodes
• HCI view: navigation between pages, information presentation, multimedia layout
• More than just HCI design • • • •
Hypermedia organization

- Shape can be hierarchical, linear/multipath, network/web, matrix
- Unrestricted linking makes orientation hard
- Network/web structures hard for beginners
HCI for Web (Farkas & Farkas)

- 1.1: All links indicate they’re links
- 1.2: Help viewers notice links
- 1.3: Links clearly indicate destinations
- 2.1: Effective breadth and depth in hierarchies
- 2.2: Add secondary/shortcut links where approp.
- 2.3 Allow branches to converge where approp.
- 2.4 Reveal underlying information structure
HCI for Web (Farkas & Farkas) 2

- 3.1: Clear, conspicuous orientation at top
- 3.2: Support exploration
- 4.1: Use site maps for structure and direct access
- 4.2: Provide search facility or index for direct access
- 4.3: Provide links to home page throughout
“Information scent”

• Link should “smell right” to user: confidence before clicking, feel closer afterwards

• Practical measure (Spool 1998):
  – Ask users before clicking what they think they’ll get
  – Ask how confident they are (–2 to +2)
  – Ask users after clicking if they felt closer (–2 to +2)
  – Add the two figures
  – Accumulate those sums as you go from link to link; the result should keep increasing
Advance information

• What’s possible now? What will happen next? What can I do now?

• Prevent errors, unexpected results

• Guidelines
  – Give visual indicators, not just text •
  – Distinguish unselectable menu items, objects
  – Change cursor shape •
  – Show submenus on rollover •
  – Show data entry format •
  – Indicate long operations, ask permission •
Feedback

- User action, system reaction (ideally < 0.1 sec)
- Guidelines
  - Highlight items on rollover
  - Mark selected items •
  - Show path in navigation hierarchy
  - Report errors immediately
  - Use status or progress indicators
  - Use visual, auditory, and tactile modes
  - Make reaction time uniform
Undo

• Encourages users to explore functionality

• Guidelines
  – Special-purpose undo (e.g., backspace) supplements general
  – Try to make everything undoable (external effects clearer to users than internal)
  – Multiple undo (undo/redo or linear sequence)
Error avoidance

• Provide advance information
• Keep dangerous controls away from frequently used ones
• Warn users of irreversible effects; don’t make them the default; request confirmation
• Turn safety options on by default
• Recognize errors and react ASAP
Error messages and actions

• Explain nature of problem, how user can solve it (at least with correct examples)
• Describe in terms of user’s task
• Use polite language • • •
• On crash, give opportunity to save
• Support force quit and relaunch
Shneiderman’s error message guidelines

• Avoid “fatal,” “invalid,” “bad”
• Avoid ALL CAPS, cryptic numbers
• Give control over audio feedback
• Give precise messages
• Provide context-sensitive help