## formative evaluation— intrinsic

- scenarios and claims analysis
  - downsides and upsides that guide design thinking
- user models—simulating an expert user
  - e.g., the GOMS family of methods (may also be used in conjunction with pay-off studies)
  - best for low-level complexity or consistency concerns
- the many variants of usability inspection
  - heuristic evaluation, cognitive walkthrough
  - goal is to identify usability problems, usually go on to classify by severity
  - a popular notion: “discount usability engineering”
usability testing

◆ planning the testing activities
  – IRB approval, consent form, tasks, instructions
  – recruiting appropriate test participants

◆ conducting the test
  – pre-test, post-test, debriefing
  – think-aloud, video, behavioral observations

◆ analyzing the results
  – mental models, critical incidents, assessing specs

ethical treatment of human subjects

◆ what issues are we concerned with?

◆ at Virginia Tech: Internal Review Board
  – application for using human subjects, includes informed consent, task descriptions, instructions, other materials
  – meet just once a month: submit prior to April 12
informed consent
(see H&H p. 300)

◆ participation must be voluntary
◆ signature indicates they understand and agree to what is about to happen
  – summary of procedure (task activities, data collection, think aloud, etc.)
  – special mention of things like videotaping or logging
  – right to withdraw with no penalty, to review data
  – opportunity to ask questions (plus contact info for later)
◆ how will you approach this for the two forms of testing you will be doing as part of phase 4?

recruiting test participants

◆ operationalizing “representative”
  – should already have done this to some extent if you have written user class descriptions, etc.
  – what would you do in a real world testing situation?
◆ choosing a reasonable number
  – goals of the test are critical here...why?
◆ random assignment to interface conditions
  – sometimes might consider matching (when?)
testing preliminaries
(see H&H p. 299)

◆ instructions as brief as possible: introduce system, your usability goals, general procedures
  – if short, can read aloud, otherwise have them read silently
◆ participant info collected via short questionnaire
  – focus on personal characteristics, background, and/or expectations you expect to influence behavior
  – confidentiality and role of this information must be clear
◆ later you will use participant info to...
  – characterize your participant sample
  – aid in interpreting other results (statistically, and/or qualitatively via discussion and caveats)

collecting data — what and how?

freeform notes

pre-defined behavior/error categories

video or audio taping

screen capture or other software logging

rating scales

open-ended questions

interviews
analysis & interpretation — what and how?

participant background data

benchmark times and/or errors

critical incidents (negative)

critical incidents (positive)

user reactions (ratings)

user reactions (opinions, suggestions)

mental models

what guides re-design? how?

◆ quantitative analyses

◆ qualitative analyses