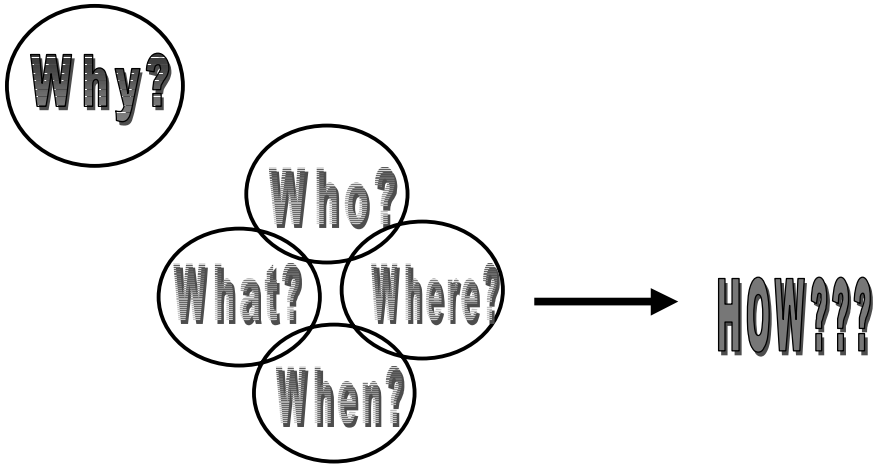
Usability Evaluation



Why?

- Organizational perspective:
  - To make a better product
    - Is it *usable* and *useful*?
    - Does it improve productivity?
  - Reduce development and support costs
- Designer & developer perspective:
  - Understanding the real world
    - What should it do?
  - Compare designs
  - Is it good enough?
  - Does it do what it should do?

Who?

- Who is your target population?
- Do you want expert usability advice or user feedback?
- Who do you have access to?
- Who are you going to select to evaluate?
- Who will conduct the evaluation?

What?

- What do you want to know?
  - What do users want?
  - Is the product *usable*? Is it *useful*?
  - What does the system need to do?
  - How easy is the product to learn?
  - How powerful is the product for expert users?
  - Does it do what it claims to?
  - What problems occur when using the system?
- What scope of the product will you evaluate?
  - Full functionality vs. prototype components

Where?

- Where will the study take place?
  - Field study
  - Lab Study

When?

- When in the design/development cycle will your evaluation take place?
- Will there be several iterations of evaluation?
- How long will it last?

How Not To????

- "I checked everything and it all works"
- "My Mom likes it"
- "It never crashes when I use it"
- "The guy down the street said that he would buy it"
- "It looks *really* nice"
- "It compiles"

Evaluation Choices

- design vs. implementation
- lab vs. field studies
- subjective vs. objective
- qualitative vs. quantitative
- level of information
- immediacy of response
- intrusiveness

Usability Methods

- Inquiry
- Inspections
- Testing

- www.best.com/~jthom/usability/

Usability Methods - Inquiry

- contextual inquiry
- field observations
- interviews & focus groups
- surveys
- questionnaires
- journaled sessions
- self-reporting logs
- screen snapshots

Usability Methods - Inquiry

- Contextual Inquiry
  - Understanding the context in which a product is used
  - The user is a partner in the design process
  - The usability design process must have a focus
- Field Observation
  - Artifacts are physical object in use at a site
  - Outcroppings are noticeable physical traits that characterize the site
- Interviews and Focus Groups
  - Ask users about their experiences and preferences with your product
  - Focus groups enable you to identify common problems that people experience.

Usability Methods - Inquiry

- Surveys
  - Ad hoc interviews, where the interviewer asks a set list of questions and records the responses.
- Questionnaires
  - A written list of questions that you distribute to your users
- Journaled Sessions
  - They are often used as a remote inquiry method for software user interface evaluation.

Usability Methods - Inquiry

- Self-Reporting Logs
  - Paper and pencil journals where users log their actions and observations while interacting with a product.
- Screen Snapshots
  - The user takes screen snapshots at different times during the execution of a task or a series of tasks.

Usability Methods - Inspection

- heuristic evaluation
- cognitive walkthroughs
- formal usability inspections
- pluralistic walkthroughs
- feature inspection
- consistency inspections
- standards inspections
- guideline checklists

Usability Methods - Inspection

- Heuristic Evaluation
  - Usability specialists judge whether each element of a UI follows established usability principles.
- Cognitive Walkthrough
  - The person conducting the walkthrough constructs scenarios from a specification or early prototype and role plays the part of a user working with that interface.
- Formal Usability Inspections
  - Adapts the software inspection methodology to usability evaluation.
  - Typically the roles include: moderator, owner, recorder, and inspectors

Usability Methods - Inspection

- Pluralistic Walkthroughs
  - Meetings where users, developers, and usability professionals step through a scenario, discussing and evaluating each element of interaction.
- Feature Inspection
  - Analyze the feature set of a product, usually given end user scenarios.
- Consistency Inspections
  - These are used to ensure consistency across multiple products from the same development effort.

Usability Methods - Inspection

- Standards Inspections
  - Ensure compliance with industry standards. (e.g. software products for the Windows environment should have common elements, such as the same functions on the File menu, Help menu, etc.)
- Guideline Checklists
  - Usually checklists are used in conjunction with many of the usability inspection methods. (The checklist gives the inspectors a basis by which to compare the product.)

Usability Methods - Testing

- general principles
  - what are you trying to find out
  - design your test
  - get some users
  - set up the test
  - run the test
  - analyze your data
- think-aloud protocol
- co-discovery method
- question asking protocol
- performance measurement

Usability Methods - Testing

#1 determine what you are trying to find out
- what do you want to know?
- describe this goal in a few objectives

#2 design your test
- identify your users
  - should match the expected user population as closely as possible
  - determine sample size, cost vs. precision -- rule of thumb at least 10 subjects
- identify your variables
  - independent variables (controlled)
  - dependent variables (measured)
  - Your design must also account for possible confounding factors

Usability Methods - Testing

#2 design your test (continued)
- experimental design
  - how you will order and run your experiment to eliminate non-interesting variables from the analysis
    - between-groups and within-groups
    - random assignment and counter-balancing
- develop the tasks the users will perform
- specify the experiment equipment
    - methods and data collection techniques to be used
    - physical set-up
- Identify required research personnel
- decide how you will analyze the results recorded
    - e.g. will you generate statistics?

Usability Methods - Testing

#3 get your users
- selection from population
  - how narrow will your selection be?
  - selection procedure
  - Gather information from your subjects

#4 setup the test
- setup **all** components of the equipment and make sure it is all working

#5 run the test and collect the data
- follow your experimental design EXACTLY

#6 analyze the data
- find the big problems first
- summarize the quantitative and qualitative data gathered

Usability Methods - Testing

- Thinking aloud protocol
  - ask the participant to vocalize his/her thoughts, feelings, and opinions while interacting with the product
- Co-discovery method
  - have two participants perform the task together
- Question-asking protocol
  - prompt the user to vocalize his/her thoughts, feeling and opinions by asking direct questions about the product
- Performance measurement
  - usability test designed to determine hard, quantitative data
  - quantitative data is gathered

Theory vs. Reality

- Time constraints
- Financial constraints
- Technology constraints
- Working with human subjects
- Ethical approval
- Video data
- Planning, planning and more planning