CLEMSON
College of ENGINEERING, COMPUTING AND APPLIED SCIENCES

HCI Evaluation

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Why, what, where and when to evaluate

- Iterative design & evaluation is a continuous process that examines:
- Why: to check users' requirements and that they can use the product and they like it.
- What: a conceptual model, early prototypes of a new system and later, more complete prototypes.
- Where: in natural and laboratory settings.
- When: throughout design; finished products can be evaluated to collect information to inform new products.

Why you need to evaluate..

“Iterative design, with its repeating cycle of design and testing, is the only validated methodology in existence that will consistently produce successful results. If you don’t have user-testing as an integral part of your design process you are going to throw buckets of money down the drain.”

Bruce Tognozzi

Types of evaluation

- Controlled settings involving users, eg usability testing & experiments in laboratories and living labs.
- Natural settings involving users, eg field studies and in the wild studies to see how the product is used in the real world.
- Settings not involving users, e.g. to predict, analyze & model aspects of the interface analytics.

2 specific approaches to evaluation

- Evaluating with users
  - User observation
    - Concurrent- user says what they are doing and why while performing the task
    - Retrospective- user tells what they did and why after the task…could be in conjunction with them watching their interaction with a technology
  - User feedback
    - Interviews
    - Questionnaires
  - User Experimentation

Activity: Compare the user observations methods

- Compare concurrent and retrospective methods.
- What are the strengths and weaknesses of both?
- What different situations are each appropiate?
- How would you implement using each in a user evaluation?

Approaches to evaluation

- Evaluating with evaluators
  - Heuristic evaluation- testing usability principle against which the system is evaluated by trained evaluators
  - Cognitive Walkthrough- evaluators walk through a task and evaluate it based on usability

Living labs

- People’s use of technology in their everyday lives can be evaluated in living labs.
- Such evaluations are too difficult to do in a usability lab.
- Evaluation is done within the context of where the product will be implemented.
- Installations in real life settings with the objective of medium and long term iterations of technology
- Eg the Aware Home was embedded with a complex network of sensors and audio/video recording devices (Abowd et al., 2000).

Making evaluation choices..there are many combinations

- Controlled vs Uncontrolled
- User vs Evaluator
- Methods (interview, survey, cog walkthrough, etc)
- Iteration of these things

- End goal dictates how you should decide

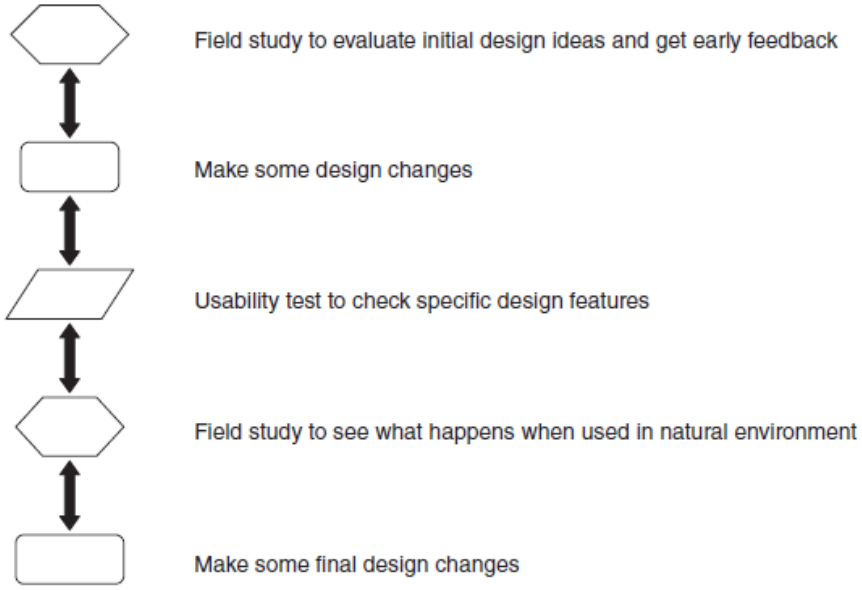

Figure 13.1 Example of the way laboratory-based usability testing and field studies can complement each other

What can we learn from the case studies in the book?

- How to observe users in natural settings.
- Unexpected findings resulting from in the wild studies.
- Having to develop different data collection and analysis techniques to evaluate user experience goals such as challenge and engagement.
- The ability to run experiments on the Internet that are quick and inexpensive using crowdsourcing.
- How to recruit a large number of participants using Mechanical Turk.Test text

Participants' rights and getting their consent

Participants need to be told why the evaluation is being done, what they will be asked to do and their rights.

Informed consent forms provide this information.

The design of the informed consent form, the evaluation process, data analysis and data storage methods are typically approved by a high authority, eg. Institutional Review Board.

Things to consider when interpreting data

Reliability: does the method produce the same results on separate occasions?

Validity: does the method measure what it is intended to measure?

Ecological validity: does the environment of the evaluation distort the results? How valid is the testing to the real world.

Biases: Are there biases that distort the results?

Scope: How generalizable are the results?

Key points

Evaluation and design are very closely integrated.

Some of the same data gathering methods are used in evaluation as for establishing requirements and identifying users' needs, e.g. observation, interviews, and questionnaires.

Evaluations can be done in controlled settings such as laboratories, less controlled field settings, or where users are not present.

Usability testing and experiments enable the evaluator to have a high level of control over what gets tested, whereas evaluators typically impose little or no control on participants in field studies.