CHAPTER 5:
Evaluation and the User Experience

Designing the User Interface:
Strategies for Effective Human-Computer Interaction

Sixth Edition

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Evaluation and the User Experience

Topics

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Introduction

- Designers can become so entranced with their creations that they may fail to evaluate them adequately
- Experienced designers have attained the wisdom and humility to know that extensive testing is a necessity
- The determinants of the evaluation plan include:
  - Stage of design (early, middle, late)
  - Novelty of project (well-defined vs. exploratory)
  - Number of expected users
  - Criticality of the interface (life-critical medical system vs. museum exhibit support)
  - Costs of product and finances allocated for testing
  - Time available
  - Experience of the design and evaluation team

Introduction (concluded)

- Usability evaluators must broaden their methods and be open to non-empirical methods, such as user sketches, consideration of design alternatives, and ethnographic studies.
  - Recommendations needs to be based on observational findings
- The design team needs to be involved with research on the current system design drawbacks
  - Tools and techniques are evolving
  - The range of evaluation plans might be anywhere from an ambitious two-year test with multiple phases for a new national air-traffic control system to a three-day test with six users for a small internal web site
  - The range of costs might be from 20% of a project down to 5%.
- Usability testing has become an established and accepted part of the design process

Expert Reviews and Heuristics

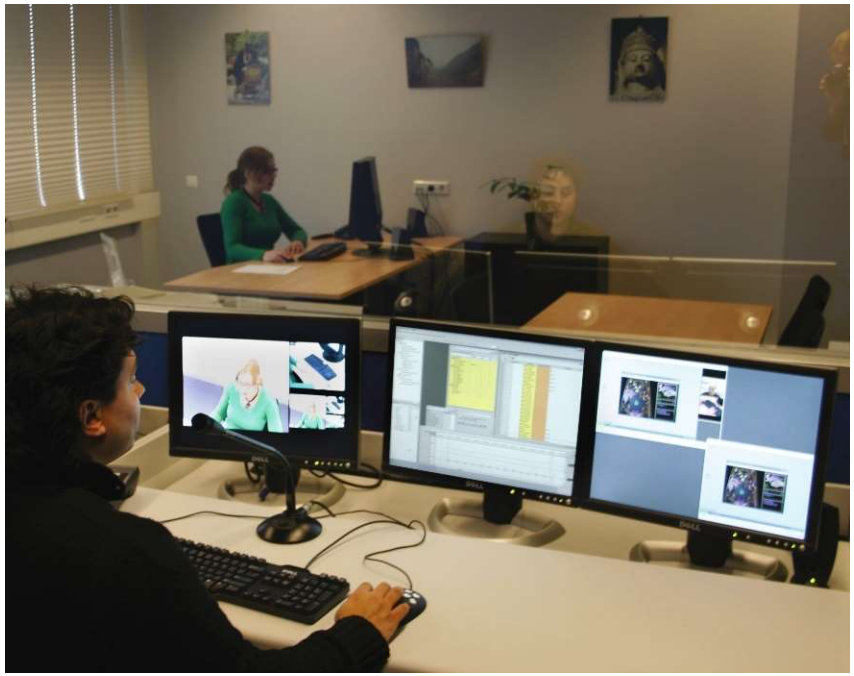
- While informal demos to colleagues or customers can provide some useful feedback, more formal expert reviews have proven to be effective
- Expert reviews entail one-half day to one week effort, although a lengthy training period may sometimes be required to explain the task domain or operational procedures
- There are a variety of expert review methods to chose from:
  - Heuristic evaluation
  - Guidelines review
  - Consistency inspection
  - Cognitive walkthrough
  - Formal usability inspection

Expert Reviews and Heuristics (concluded)

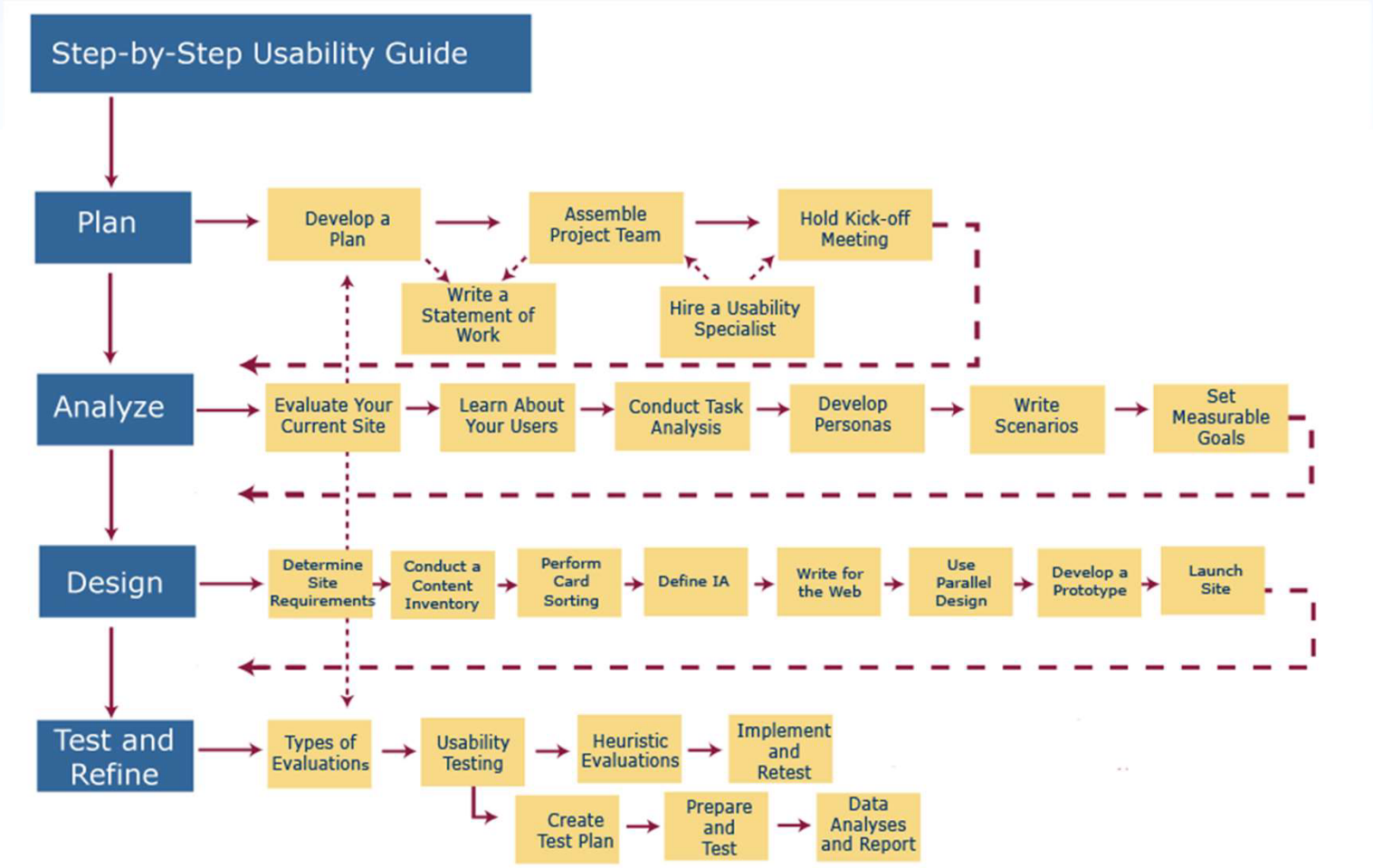
- Expert reviews can be scheduled at several points in the development process when experts are available and when the design team is ready for feedback
- Different experts tend to find different problems in an interface, so 3-5 expert reviewers can be highly productive, as can complementary usability testing
- The dangers with expert reviews are that the experts may not have an adequate understanding of the task domain or user communities
- Even experienced expert reviewers have great difficulty knowing how typical users, especially first-time users, will really behave

Usability Testing and Laboratories

- The usability lab consists of two areas: the testing room and the observation room
  - The testing room is typically smaller and accommodates a small number of people
  - The observation room, can see into the testing room typically via a one-way mirror. The observation room is larger and can hold the usability testing facilitators with ample room to bring in others, such as the developers of the product being tested



Step-by-Step Usability Guide from http://usability.gov/



Usability Testing and Laboratories (continued)

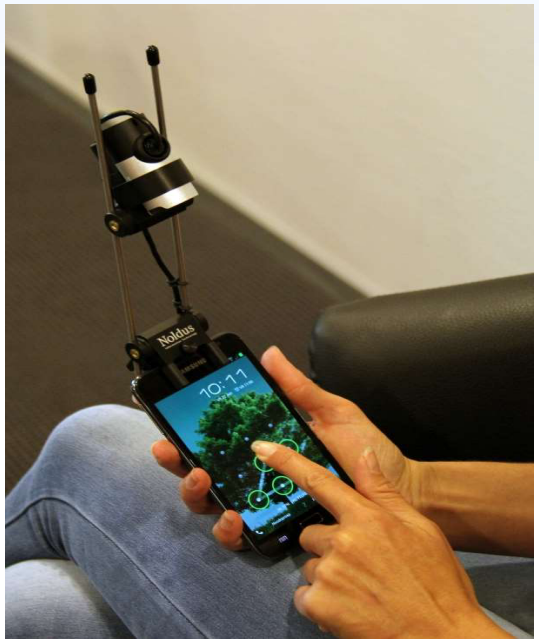
- This shows a picture of glasses worn for eye-tracking
  - This particular device tracks the participant's eye movements when using a mobile device
  - Tobii is one of several manufacturers

Usability Testing and Laboratories (continued)

- Eye-tracking software is attached to the airline check-in kiosk
  - It allows the designer to collect data observing how the user “looks” at the screen
  - This helps determine if various interface elements (e.g. buttons) are difficult (or easy) to find

Usability Testing and Laboratories (continued)

- The special mobile camera to track and record activities on a mobile device
  - Note the camera is up and out of the way still allowing the user to use their normal finger gestures to operate the device



Usability Testing and Laboratories (continued)

- The emergence of usability testing and laboratories since the early 1980s
- Usability testing not only sped up many projects but that it produced dramatic cost savings
- The movement towards usability testing stimulated the construction of usability laboratories
- A typical modest usability lab would have two 10 by 10 foot areas, one for the participants to do their work and another, separated by a half-silvered mirror, for the testers and observers
- Participants should be chosen to represent the intended user communities, with attention to:
  - background in computing and experience with the task
  - motivation, education, and ability with the natural language used in the interface.

Usability Testing and Laboratories (continued)

- Participation should always be voluntary, and informed consent should be obtained
- Professional ethics practice is to ask all subjects to read and sign a statement like this:
  - I have freely volunteered to participate in this experiment.
  - I have been informed in advance what my task(s) will be and what procedures will be followed.
  - I have been given the opportunity to ask questions, and have had my questions answered to my satisfaction.
  - I am aware that I have the right to withdraw consent and to discontinue participation at any time, without prejudice to my future treatment.
  - My signature below may be taken as affirmation of all the above statements; it was given prior to my participation in this study.
- Institutional Review Boards (IRB) often governs human subject test process

Usability Testing and Laboratories (concluded)

- Videotaping participants performing tasks is often valuable for later review and for showing designers or managers the problems that users encounter
  - Use caution in order to not interfere with participants
  - Invite users to think aloud (sometimes referred to as concurrent think aloud) about what they are doing as they are performing the task
- Many variant forms of usability testing have been tried:
  - Paper mockups
  - Discount usability testing
  - Competitive usability testing
  - A/B testing
  - Universal usability testing
  - Field test and portable labs
  - Remote usability testing
  - Can-you-break-this tests
  - Think-aloud and related techniques
- Usability test reports