Planning Usability Into Your Product
The How and When of Usability Evaluation

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Preview

- How Do We Make Technology Serve People?
- What is Usability Evaluation?
- When Should We Plan Usability Evaluations?
- How Do We Manage Usability Evaluations?
How Do We Make Technology Serve People?

Usability Defined

Usability:
The extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use.

ISO 9241-11

- Effective: Accomplishes user’s goal
- Efficient: Accomplishes the goal quickly
- Satisfaction: User enjoys experience (Engaging)
- Error Tolerant: Hard to make mistakes, easy to recover
- Easy to Learn: No or small learning curve
A Few Myths

- Usability is just concerned with first-time users
  - Good design supports users through the life of the product
- Making software usable penalizes advanced users
  - Supporting all users well makes everyone work better
- An emphasis on supporting work creates boring, dull interfaces
  - Visual design can support usability and still be attractive and engaging

“usability is not a quality that can be spread out to cover a poor design like a layer of peanut butter”
- Clayton Lewis

A User-Centered Approach

- Learn from users
  - Observe people in context to understand work environment and requirements for success
- Design with the user in mind
  - Create a conceptual model for the interface that matches how real people work
- Evaluate the design at key milestones
  - Usability evaluation of prototypes saves development time and costs
But That’s Not A Manager’s Job...

- Managers are paid to wear the “Get it done” hat rather than the “Get it done right” hat.

- “Somebody’s got to actually get the thing to market.”

- The manager’s tools:
  - Schedule, scope, and budget
  - Risk assessment
  - Resource allocation

What is Usability Evaluation?
The DVD Quandary

- Can you figure out how to eject a DVD using this remote?

- Answer: Hold down the 1 button for 3 seconds.

Usability Evaluation

- **Metrics**: A way to objectively measure a site’s usability
- **Design**: A way to get feedback on whether an approach is working
- **Risk Management**: A way to avoid late-stage crises
- **CYA**: A way to justify and sell changes to upper management
What Information Do You Want?

- **Formative Usability Tests**
  - Refine a design
  - Show if the design matches users’ mental models
  - Tend to yield qualitative data
  - Can be informal or formal

- **Summative Usability Tests**
  - Measure usability
  - Show if users can complete tasks on time and with few mistakes
  - Tend to yield quantitative data
  - Tend to be formal

Informal Usability Tests

- May take place anywhere
- Relies on facilitator or note-taker to record results
- Needs only enough users to see problems: 3-5 users per user group
- Uses paper or working prototype
- May take 1-5 days and several hundred dollars
Formal Usability Tests

- May take place in a lab
- Use cameras and video equipment
- Show users’ faces inset in a picture of the screen
- Produce highlights tapes
- Uses a working prototype
- Needs 6-8 users per user group
- May take 3-5 weeks and thousands of dollars

Heuristic (Expert) Reviews

- Conducted by usability experts
- Experts log usability issues and compare them to usability best practices
- Best done on a completed UI or working prototype
- Faster and cheaper than formal usability testing
- Based on opinion (albeit expert opinion) rather than observation
When Should We Plan Usability Evaluations?

The LUCID Framework

- LUCID is a methodology framework for managing the design and testing of the user interface
  - To provide designers with a framework within which apply best practices
  - To allow for seamless integration with software development methodologies
  - To support a user-centered approach to interface design
  - To enhance the usability of the final software
The LUCID Framework Planning Usability

The 6 Stages of LUCID

- envision: align the agendas of all stakeholders with organizational strategy and the need for “extreme usability,” develop a clear, shared product vision.
- discovery: study users to determine high-level user requirements.
- design foundation: develop a conceptual design and create a key screen prototype.
- design detail: flesh out the high-level design into a complete screen specification.
- build: support the build process through review and late-stage change.
- release: develop a roll-out plan to support for users’ transition to the new product; document lessons learned.

LUCID Fits Within a Larger Development Process

Development Activities

LUCID Activities
Stage 1: Envision

- Envision = alignment + collaboration
  - Competitive usability testing
  - Summative usability testing (for usability baseline)
  - Early formative usability testing
  - Heuristic (expert) reviews

Stage 1: Envision Methods

<table>
<thead>
<tr>
<th>Technique</th>
<th>What you get...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competitive usability testing</td>
<td>Measure of how usable the competition is so that you know what you have to beat</td>
</tr>
<tr>
<td>Need: Competing product</td>
<td></td>
</tr>
<tr>
<td>Summative usability testing</td>
<td>A baseline so that you can demonstrate that you have improved a product’s usability</td>
</tr>
<tr>
<td>Need: Previous release</td>
<td></td>
</tr>
<tr>
<td>Early formative usability testing</td>
<td>Measure of whether users respond to the basic product concept</td>
</tr>
<tr>
<td>Need: Concept sketches</td>
<td></td>
</tr>
<tr>
<td>Heuristic (expert) review</td>
<td>List of issues to resolve and recommendations for resolving them</td>
</tr>
<tr>
<td>Need: Previous release</td>
<td></td>
</tr>
</tbody>
</table>
Stage 2: Discovery

Discovery = user/task modeling + requirements
- Summative usability testing (for prioritization)
- Early formative usability testing
- Contextual inquiry (for establishing or re-engineering workflow)

Stage 2: Discovery Methods

<table>
<thead>
<tr>
<th>Technique</th>
<th>What you get...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summative usability testing</td>
<td>A clear record of where users make mistakes and get confused - insight into their mental models and expectations</td>
</tr>
<tr>
<td>Need: Previous release</td>
<td></td>
</tr>
<tr>
<td>Early formative usability testing</td>
<td>Measure of whether users respond to the basic product concept</td>
</tr>
<tr>
<td>Need: Concept sketches</td>
<td></td>
</tr>
<tr>
<td>Contextual inquiry (site visits)</td>
<td>A clear record of how your product fits into the users' work life, and a clear model of the users' workflow so that you can re-engineer it</td>
</tr>
<tr>
<td>Need: Current customer</td>
<td></td>
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</tbody>
</table>
Stage 3: Design Foundation

- Design Foundation = user interface concept
  - Formative usability testing
  - Heuristic (expert) reviews
  - Prototype walkthroughs

Stage 3: Design Foundation Methods

<table>
<thead>
<tr>
<th>Technique</th>
<th>Questions answered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formative usability testing</td>
<td>Do users understand the basic concept and navigation?</td>
</tr>
<tr>
<td>need: Paper or working prototype</td>
<td></td>
</tr>
<tr>
<td>Heuristic (expert) reviews</td>
<td>What are the most likely findings of a usability test?</td>
</tr>
<tr>
<td>need: Paper or working prototype</td>
<td></td>
</tr>
<tr>
<td>Prototype walkthroughs</td>
<td>Do screens match users’ mental models of the work?</td>
</tr>
<tr>
<td>need: Paper or working prototype</td>
<td>Do the screens match the users expectations?</td>
</tr>
</tbody>
</table>

Key idea: Do not demo a prototype - ask people to use it!
Stage 4: Design Detail

- Design Detail = specifications + style guide
  - Formative usability testing
  - Heuristic (expert) reviews
  - Prototype walkthroughs (for less task-based evaluation)

Stage 4: Design Detail Methods

<table>
<thead>
<tr>
<th>Technique...</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Formative usability testing</td>
<td>Can users execute specific task flows?</td>
</tr>
<tr>
<td>Need: Paper or working prototype</td>
<td></td>
</tr>
</tbody>
</table>

| Heuristic (expert) reviews | What are the most likely findings of a usability test? |
| Need: Paper or working prototype |

| Prototype walkthroughs | Do screens match users’ mental models of the work? Do the screens match the users expectations? |
| Need: Paper or working prototype |
Stage 5: Build

- **Build** = development + user assistance
  - Formative usability testing
  - Summative usability testing (for verifying improvements)
  - Heuristic (expert) reviews

### Stage 5: Build Methods

<table>
<thead>
<tr>
<th>Technique...</th>
<th>Questions answered...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formative usability testing</td>
<td>What is the best way to optimize specific screens?</td>
</tr>
<tr>
<td>Need: Functional screens</td>
<td></td>
</tr>
<tr>
<td>Summative usability testing</td>
<td>Is the new version more usable than the last version?</td>
</tr>
<tr>
<td>Need: Functional screens</td>
<td></td>
</tr>
<tr>
<td>Heuristic (expert) reviews</td>
<td>What are the most likely findings of a usability test?</td>
</tr>
<tr>
<td>Need: Functional screens</td>
<td></td>
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</table>

**Key Idea:** Evaluation carries some risk at this stage.
Stage 6: Release

- **Release = product rollout + follow-up**
  - Summative usability testing (for verifying improvements)
  - Out-of-the-box usability testing (for measuring initial experience)
  - User surveys (for measuring user opinion)

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Stage 6: Release Methods

<table>
<thead>
<tr>
<th>Technique</th>
<th>Questions answered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summative usability testing</td>
<td>Is the new version more usable that the last version?</td>
</tr>
<tr>
<td>Need: Finished product</td>
<td></td>
</tr>
<tr>
<td>Out-of-the-box usability testing</td>
<td>What is the user’s initial experience with the product?</td>
</tr>
<tr>
<td>Need: Packaged product</td>
<td></td>
</tr>
<tr>
<td>User Surveys</td>
<td>What are users’ subjective opinions about the product?</td>
</tr>
<tr>
<td>Need: Product and surveys</td>
<td></td>
</tr>
</tbody>
</table>

*Key Idea: Feed usability results into the next Envision...*
How Do We Manage Usability Evaluations?

- How much?
  - Labor costs
  - Fixed costs (lab, equipment, incentives, recruiting)

- How long?
  - Can estimate based on a “Work Breakdown Structure.”
  - Can estimate based on a rule of thumb.
  - First estimate labor hours required.
  - Then distribute them into a calendar schedule.
Common Risks

- **Access to users**
  - Marketing/Sales are often gatekeepers
  - Concerns about “responsible” contact must be met
  - Development partners and user groups are often good sources

- **Getting something to test**
  - Use a testing environment for late stage tests
  - Do a dry run with prototype/product

**Key Idea:** Develop repeatable solutions!

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WBS for Usability Tests

- **Create Evaluation Plan**
  - Determine product availability
  - Review and learn product
  - Establish goals for the usability evaluation
  - Coordinate test platform
  - Design evaluation tasks
  - Create Evaluation Plan

- **Recruit Participants**
  - Identify participants to recruit
    - Develop recruitment screeners
    - Obtain contact information for participants
    - Recruit/Schedule participants

- **Prepare Evaluation Materials**
  - Set up product to test (may include screen prints, portable demo, or data entry in specified environment, etc.)
  - Create and assemble materials (questionnaires, scripts, scenarios, release forms, etc.)
  - Coordinate facilities (find lab, set up equipment)
  - Conduct dry run with lab equipment

- **Conduct Evaluation**
  - Conduct usability evaluations (x participants in y days)
  - Analyze evaluation data

- **Present Findings**
  - Prepare draft report/presentation
  - Review draft report/presentation
  - Prepare final report/presentation
  - Present final report/presentation
  - Facilitate decision-making
WBS for Heuristic Reviews

- **Review Kickoff**
  - Establish goals of review
  - Establish usability goals for product
  - Establish project schedule
  - Introduce reviewer(s) to product
  - Allow reviewer(s) to ask questions about product

- **Initial Review**
  - Conduct independent reviews of product
  - Merge review observations and questions
  - Submit questions about product

- **Second Review**
  - Meet with project team to answer question
  - Finish product review

- **Heuristic Report**
  - Write draft heuristic report
  - Review/revise report with secondary reviewers
  - Review/revise report with project team
  - Complete final report

- **Results Presentation**
  - Present results/recommendations to project team
  - Facilitate decision making
  - Consult with project team during implementation of recommendations

Worksheets and Templates

- Templates provided can guide planning, management, and design of usability evaluations.

- Electronic versions and additional design and management tools will soon be available at the LUCID web site:
  - www.cognetics.com/lucid/
  - Coming Soon: Free access to tools with registration
Summary

Take Home Messages

- User-centered design (UCD)
  - Allows you to “Do it right” while still getting it done
  - Provides a manageable approach to UI design
  - Reduces costs by finding and fixing problems early

- Knowing what you get from tests at each stage of a project helps you recommend only the right ones

- Providing estimates and work plans to managers shifts the discussion from “whether” to “how”
Thanks!

Thanks for your attention!

Any questions?

Additional Resources

Usability: What and Why (for managers)


Usability: How-To (for UI designers)

About Cognetics

- We bring a complete, real-world perspective and an award-winning design team to creating information and knowledge management tools.
  - User-centered interface design
  - Evaluation and testing
  - Consulting and methodology
  - Staff coaching and development
- Our approach creates design that goes beyond surface aesthetics
  - Understand the user’s perspective and workflow
  - Simplify where possible
  - Work with the technology
  - Execute rapidly, test frequently, manage tightly