Usability Testing with Paper Prototypes

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CS290GW04
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Agenda

- What is usability testing?
- Why do usability testing?
- How to do usability testing.
- Why paper prototypes?
- Comparison of usability evaluation techniques.
- Usability testing demo.
What is usability testing?

- An empirical approach to evaluating how well users can use a system.
- A technique to involve real users in evaluation of a software product.
- A technique to evaluate how easy it is to perform real tasks using a software product.
Why do usability testing?

- Ensure that software actually addresses users’ needs
- Get input from users before it’s too late to make changes
- Combat classic testing mistakes
- Find more usability problems than other techniques
Classic Testing Mistakes

- Not reporting usability problems
- A testing effort biased toward functional testing
- Not testing the documentation
- Not testing the installation procedures
- An overreliance on beta testing
- Testers are not domain experts
- Insisting that testers be able to program
- A testing team that lacks diversity
- Test suites that are understandable only by their owners
- Attempting to automate all tests
- Embracing code coverage with the devotion that only simple numbers can inspire

Usability Testing vs. Other Techniques

- Usability testing finds more global usability problems than other techniques.
- Usability testing finds most significant problems; finding & fixing more problems may not be worth the effort.
- Usability testing costs more than other techniques, but has lower per-problem-found cost.
- Using any technique, software engineers are bad at finding usability problems.
Technique Comparison Data

<table>
<thead>
<tr>
<th>Guidelines</th>
<th>Heuristic</th>
<th>Walkthru</th>
<th>Testing</th>
</tr>
</thead>
<tbody>
<tr>
<td>most severe</td>
<td>12</td>
<td>28</td>
<td>9</td>
</tr>
<tr>
<td>least severe</td>
<td>11</td>
<td>52</td>
<td>10</td>
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</table>

Jeffries, 1991

<table>
<thead>
<tr>
<th>Testing</th>
<th>Team WT</th>
<th>Individual WT</th>
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</thead>
<tbody>
<tr>
<td>system 1</td>
<td>13</td>
<td>1</td>
</tr>
<tr>
<td>system 2</td>
<td>8</td>
<td>0</td>
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</table>

Karat, 1992

<table>
<thead>
<tr>
<th># problems</th>
<th>% problems</th>
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<tbody>
<tr>
<td>Testing</td>
<td>25</td>
</tr>
<tr>
<td>Heuristic</td>
<td></td>
</tr>
<tr>
<td>Expert</td>
<td>11</td>
</tr>
<tr>
<td>SE</td>
<td>4</td>
</tr>
<tr>
<td>Non-expert</td>
<td>2</td>
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<tr>
<td>Walkthru</td>
<td></td>
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<tr>
<td>Expert</td>
<td>7</td>
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<td>SE</td>
<td>4</td>
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<tr>
<td>Non-expert</td>
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Desurvire, 1992

How to do usability testing.

- Set testing goals.
- Identify items to test.
- Establish test execution team.
- Invite testers.
- Prepare materials.
- Execute tests.
- Evaluate results.
- Take action!
Set Testing Goals

- What do I need to know?
- When do I need to know it?
- What are the most risky aspects of the user experience?
Identify Items to Test

- **Software**
  - Which components?
  - Which user tasks

- **Documentation**
  - On-line
  - Off-line

- **Administrative functions**

- **Support functions**
Establish Test Execution Team

- “Computer”
- Interviewer
- Note-taker
- Observers
Invite Testers

- Who needs to participate?
  - User level (novice, power, etc.)
  - User background
  - Non-traditional users (e.g. sysadmins, support staff)
- How many people need to participate?
- Who is available at the right time?
Prepare Materials

- Create paper prototypes
  - Paper screen shots for each screen the testers may reach
  - Sticky notes to represent drop-down menus
  - Sticky notes for making on-the-fly adjustments
- Note-taking materials for testers
- Information packets, thank-yous, non-disclosure agreements, etc. for participants
Execute Tests

- Interviewer discusses goals with participant and describes task
- Participant attempts to complete task while thinking aloud
- Interview interjects questions as necessary to understand what participant is thinking
- “Computer” operates paper prototype
- Note-taker records participant actions, thought processes, and other observations
Evaluate Results

- Identify areas where design failed to meet participant expectations
- Identify areas where participants showed confusion
- Identify tasks or actions participants were unable to complete
Take Action

Testing of any sort only has value if the results are used to improve the product!
# Why paper prototypes?

<table>
<thead>
<tr>
<th></th>
<th>Paper</th>
<th>On-Line</th>
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<tbody>
<tr>
<td>Pros</td>
<td>● Cheap</td>
<td>● Closely mimics actual user experience</td>
</tr>
<tr>
<td></td>
<td>● Fast</td>
<td>● Catches many usability problems</td>
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<tr>
<td></td>
<td>● Can be done very early in design</td>
<td></td>
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<tr>
<td></td>
<td>● Can be easily iterated</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Catches major problems</td>
<td></td>
</tr>
<tr>
<td>Cons</td>
<td>● Doesn’t mimic real use closely</td>
<td>● Expensive to create</td>
</tr>
<tr>
<td></td>
<td>● Doesn’t catch as many minor problems</td>
<td>● May set unrealistic performance expectations</td>
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<tr>
<td></td>
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<td>● Hard to iterate</td>
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<tr>
<td></td>
<td></td>
<td>● Cannot be done as early</td>
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<tr>
<td></td>
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<td>● Strong temptation to use prototype in final product</td>
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Usability Testing Demo

- **Persona:** you are an average user. You work with a distributed team and need to share information with teammates around the world.
- **Task 1:** locate the exercise about risk management from a class you took last year.
- **Task 2:** share the project plan for the Profiled Content Management project.
References

- Demo: e2open customized for Seagate.