Heuristic Evaluations

Systems Usability Scales

What are these all about?
(recap from previous class)

Heuristic Evaluations

A heuristic...

- any approach to problem solving, learning, or discovery that employs a practical method (not an optimal or perfect method) that is “sufficient or good enough.”

- simple rules that explain how people make judgements or solve problems when the problem is complex or lacks complete information.

- e.g., rules-of-thumb (e.g., People should figure out how to turn the product off.)

- e.g., Nielsen’s heuristics as used for usability studies.

→ Focus of this class
Heuristic Evaluations identify problems participants have using your prototype(s).

Participants perform a task with your prototype and you:

- capture the number and kinds of errors they make
- record the time it takes users to perform the task
- can compare errors and time of participants working with your prototype to not working with your prototype (the “control”)
- can compare errors and time of participants working with alternative prototypes.
Heuristic Evaluations

Two kinds of Heuristic Evaluations:

• Field Studies (‘in the wild’) involve the deployment of prototypes in natural settings (e.g. in participants’ homes, workplaces, or outside) to discover how people interact with technology in the real world.

• Usability Studies (‘US’):
  • take place in a controlled lab
  • focus on performance measures, e.g. how many errors are made when completing predefined tasks; what kinds of errors are made
Heuristic Evaluation vs. “Science Research”

“Scientific Method”
- Discover knowledge
- Many participants
- Results validated statistically
- Must be replicable
- Strongly controlled conditions

Heuristic Evaluation
- Improves the design
- Few participants
- Results inform the design
- May not be fully replicable
- Conditions controlled as possible
The main goal:

- to identify problems associated with the design and its use.
- (in other words,) to judge the compliance of the design with recognized usability principles (the "heuristics").
- These heuristics, for a Usability Study, are (most typically) Jakob Nielsen’s heuristics for usability (1994).
Nielsen’s 10 heuristics for usability


1. Visibility of system status → system communicates its current state
2. Match between system and the world → system is natural/familiar
3. User control and freedom → user can turn-off, un-do, re-do
4. Consistency and standards → functionality is consistent
5. Error prevention → users discover how to minimize errors
6. Recognition rather than recall → minimize user’s memory load
7. Flexibility and efficiency of use → usable by both experts & novices
8. Aesthetic and minimal design → (now contested!)
9. Help users recognize, diagnose, and recover from errors
10. Help and documentation → provided and helpful
System Usability Scale (SUS)

Instructions: For each of the following statements, mark one box that best describes your reactions to the website today.

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th></th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I think that I would like to use this prototype frequently.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. I found this prototype unnecessarily complex.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3. I thought this prototype was easy to use.</td>
<td></td>
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<tr>
<td>4. I think that I would need assistance to be able to use this prototype</td>
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<tr>
<td>5. I found the various functions in this prototype were well integrated.</td>
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<tr>
<td>6. I thought there was too much inconsistency in this prototype</td>
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<tr>
<td>7. I would imagine that most people would learn to use this prototype very quickly.</td>
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<td></td>
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<tr>
<td>8. I found this prototype very cumbersome/awkward to use.</td>
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<tr>
<td>9. I felt very confident using this prototype</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. I needed to learn a lot of things before I could get going with this prototype</td>
<td></td>
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</tbody>
</table>

(t h i s   i s   n o t   a   U X   s t u d y!)
System Usability Scale (SUS)

This survey aims to measure usability and user experience of the first assignment for SE2521.

1. I enjoyed interacting with this prototype. *
   - Strongly Disagree: 1 2 3 4 5
   - Strongly Agree: 1 2 3 4 5

2. I found this prototype unnecessarily complex. *
   - Strongly Disagree: 1 2 3 4 5
   - Strongly Agree: 1 2 3 4 5

3. I thought this prototype was easy to interact with. (I knew what to do.) *
   - Strongly Disagree: 1 2 3 4 5
   - Strongly Agree: 1 2 3 4 5

4. I needed more guidance from the designer to be able to use this prototype. *
   - Strongly Disagree: 1 2 3 4 5
   - Strongly Agree: 1 2 3 4 5

5. I found the user experience of the prototype was well considered by the designer. *
   - Strongly Disagree: 1 2 3 4 5
   - Strongly Agree: 1 2 3 4 5

6. From my experience with this prototype, I believe that the designer was not sufficiently clear about design goals and interaction. *
   - Strongly Disagree: 1 2 3 4 5
   - Strongly Agree: 1 2 3 4 5

7. I imagine that most people would learn to interact with this prototype very quickly. *
   - Strongly Disagree: 1 2 3 4 5
   - Strongly Agree: 1 2 3 4 5

8. I found the prototype very easy to use. *
   - Strongly Disagree: 1 2 3 4 5
   - Strongly Agree: 1 2 3 4 5

9. I felt confident that I knew how to interact with this prototype. *
   - Strongly Disagree: 1 2 3 4 5
   - Strongly Agree: 1 2 3 4 5

10. I needed to learn a lot more about how to interact with the prototype before I could interact with it as intended by the designer. *
    - Strongly Disagree: 1 2 3 4 5
    - Strongly Agree: 1 2 3 4 5

What's the best aspect of this prototype? *

What is one thing you would improve about this prototype? *
System Usability Scale (SUS)

• to identify problems associated with the design and its use.

• Created by John Brooke in 1986 for DEC (the Digital Equipment Corporation) to test …
System Usability Scale (SUS)

- found to be 91% reliable.
- has become an industry standard.

(this is not a UX study!)
System Usability Scale (SUS)

**SCORING:**

- For each **even** numbered question: count score as-is (e.g., 3 is a 3).
- For each **odd** numbered question: subtract score from 4 (e.g., 4-1=3)
- Add up scores for all 10 questions x 2.5 to get an SUS score on a 100-point scale.

*(this is not a UX study!)*
(this is not a UX study!)

System Usability Scale (SUS)

- SIGNIFICANCE OF SCORES
  - 68 or more is considered good
  - 80.3 means someone is “likely to recommend your product to a friend”