

Lecture 5

Heuristic evaluations & Early prototype Evaluations

HEIM, CHAPTERS 5.4-5.6

Learning objectives

To be aware of a range of heuristic evaluation options appropriate to the analysis and design phase

- In particular well known heuristics of usable systems
 - Nielsen's heuristics
 - Schneiderman's rules

To understand the difference evaluation challenges of early prototypes with limited functionality

Be aware of the requirements for assignment 1



Heuristic evaluations

Expert evaluation

• An expert looks at a system using common sense and/ or guidelines (e.g. Nielsen's Heuristics)



More <u>http://www.upassoc.org/upa_publications/jus/2008november/JUS_Kirmani_Nov2008.pdf</u>

Evaluation – *Heuristic Evaluation*

Heuristic evaluations are performed by usability experts using a predetermined set of criteria designed to measure the usability of a proposed design.

The evaluator follows a scenario through the design and tests each step against the heuristic criteria.

Carrying out a heuristic evaluation is an excellent way to get an understanding of a system that you are going to usability test....

• But be careful, it can prejudice your study design

Or a heuristic evaluation can be stand-alone with the evaluator making observations and recommendations based on their experience.

Evaluation – *Nielsen's Heuristics*

In collaboration with Rolf Molich, Jakob Nielsen developed a set of 10 heuristics for interface design.

The revised set based on an analysis of 249 usability problems.

http://www.useit.com/papers/heuristic/heuristic_list.html

Nielsen's Heuristics

- 1. Visibility of System Status
- 2. Match between System and the Real World
- 3. User Control and Freedom
- 4. Consistency and Standards
- 5. Error Prevention
- 6. Recognition Rather Than Recall
- 7. Flexibility and Efficiency of Use
- 8. Aesthetic and Minimalist Design
- 9. Help Users to Recognise, Diagnose, and Recover from Errors
- **10**. Help and Documentation

Nielsen's heuristic #2

Does the vocabulary match the user's expectations and knowledge?

- Are you calling the objects on the screen by terms that the user understands (and finds natural)?
 - E.g. 'student #' or 'user id' or 'UPI'

Does the workflow match the task?

- Will the user have all the required information at the time I am asking?
- Are they copying from a paper source that lays out the material differently than my data input screen?
- Am I making them stop in the middle of a task they'd rather not interrupt?

Nielsen heuristic #6

If I can put the item on a dropdown list, then I should

• Why make them type it in and maybe choose an option that's not available?

Show the user *something*

- Maybe you'll get lucky and it'll be just what they want!
- E.g. I hate a search that makes me specify whether I want those options available starting with 'A' or 'B' etc. (or even worse, just a blank)
 - You can give me shortcuts to those, but have an alphabetic list visible (maybe have most frequent, or last selected options at very top!)

Basically, use menus and lists instead of relying on blanks

Nielsen's Advice for Heuristic Evaluations 100% Found

- Use multiple independent evaluators
- Use an observer to record evaluator
- ion of Usability Problems Go through the interface several times
- Compare interaction against list of heuristics
- Use heuristics specific to design
- List heuristic problems and how the heuristic is violated

In assignment 1, we have you heuristically evaluate the interface



Shneiderman's 8 Golden Rules

- **1**. Strive for consistency
 - E.g. exact same terms for objects, same command syntax throughout
- 2. Enable frequent users to use shortcuts
- 3. Offer informative feedback
- 4. Design dialogs to yield closure
- 5. Offer error prevention and simple error handling
- 6. Permit easy reversal of actions
- 7. Support internal locus of control
 - Make users initiators rather than responders (e.g. direct manipulation!)
- 8. Reduce short-term memory load
 - What the user needs to know should be readily visible

A world of heuristics

Can be devised for more specific domains

- For physical format e.g. web pages <u>http://www.psu.edu/webconference/Web2004/Materials/Heuristic.pdf</u>
 - Domain specific concepts like good background graphics
 - 'Housekeeping' like correct spelling & grammar
 - May want to evaluate the search function
- For task domain e.g. in health...
 - Is patient name and date-of-birth clearly visible at all times?
 - Does the interaction fit to clinical workflow?

Can be quite long

 About 100 heuristics for mobile apps: <u>www.tmap.net/sites/tmap.../Checklist</u> Mobile App Testing 0.docx

Evaluating *Prototypes*

Evaluating early prototypes is a bit different to evaluating fully functional systems because of the lack or limited functionality.

The system could just be a block of wood with some dials drawn on it!

Or could be a semi functional prototype in a prototyping environment or UI design tool

Half time distraction

Pay no attention to that man behind the curtain" • <u>www.youtube.com/watch?v=YWyCCJ6B2WE</u>

Wizard of Oz prototype evaluation

"Can make a 'functional' prototype where a key function is performed by a human, **Wizard of Oz**

- This was done for early testing of speech-to-text interfaces (a 'listening typewriter')
- The speech-to-text function was implemented by a good [human] typist!

Great for testing usability of systems with an AI before the AI is implemented

• E.g. in some types of video games

The less realistic the prototype the more creative user feedback you will receive

• So really good for disruptive technologies.

Functional prototypes

Functional prototypes are interactive prototypes that represent various degrees of functionality

Functioning prototypes can be created using

- Prototyping tools (eg Balsamiq see next slide)
- Or RAD environments, such as:
 - Microsoft
 - Visual Studio
 - Adobe
 - Flash
 - Dreamweaver
 - Director

Prototyping tools

• Closer to the real interface and can explore the functionality a bit more

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Assignment 1

The purpose of assignment 1 is to get you to DO some of this.

Your job is to analyse a UI and then plan a usability test for parking meters on Princes St.

- STN of the interface.
- Heuristic evaluation of the interface
- Plan a usability test (we will cover this in the next couple of lectures).

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Full specification https://www.cs.auckland.ac.nz/courses/compsci34 5s1c/assignments/

Due Sunday 22 March 2014 https://adb.auckland.ac.nz/

Summary

Heuristic evaluations are

- Expert reviews and often include
- Modelling the interface (eg HTA)
- Evaluating against a set of guidelines
 - •
 - •
- Early prototype evaluations vary from functional systems evaluations depending on the stage of development and amount of functionality provided.

Assignment 1 requires you to undertake a heuristic evaluation and plan a usability test