dt + UX DESIGN THINKING FOR USER EXPERIENCE DESIGN + PROTOTYPING + EVALUATION

Heuristic Evaluation

Prof. James A. Landay 刘哲明
Computer Science Department
Stanford University

CS 147
Autumn 2015
October 29, 2015

Hall of Fame or Shame?

LG F7100
courtesy of Genevieve Bell, Intel

Hall of Fame!

LG F7100
courtesy of Genevieve Bell, Intel

Good
- targeted at Muslim audience
- need to pray 5x/day pointing towards Mecca

Hall of Fame or Shame?

WhatsApp
mobile messaging

Hall of Fame!

WhatsApp
mobile messaging

Good
- do not have to pay expensive SMS
- can contact people on other phones
- works on "feature" phones → led to rapid take-off in developing world

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Outline

- Visual Design Review
- Wizard of Oz
- Heuristic Evaluation Overview
- The Heuristics
- Exercise
- Team Break

Visual Design Review

- Start with *context*
  - what is the nature of the information?
  - what is the most important?
- Avoid clutter, focus on the essence of your tasks – CUT!
- Design first in?
  - grayscale to focus on hierarchy
  - use proximity & size to indicate importance
- Small changes help us see
  - key differences (e.g., small multiples)
- Use color properly – not for
  - ordering!
- Only use 1-2 colors at a time, unless absolutely necessary

Wizard of Oz Technique

- Faking the interaction. Comes from?
  - the film "The Wizard of OZ"
    - "the man behind the curtain"
- Long tradition in computer industry
  - e.g., prototype of a PC w/ a DEC VAX behind the curtain

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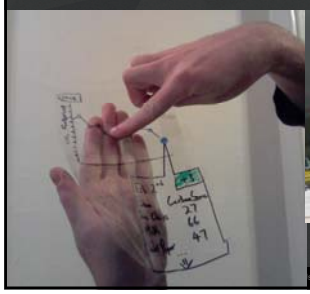
- Long tradition in computer industry
  - e.g., prototype of a PC w/ a DEC VAX behind the curtain
- Much more important for hard to implement features
  - speech & handwriting recognition

Evaluation

- About figuring out how to improve design
- Issues with lo-fi tests?



Evaluation

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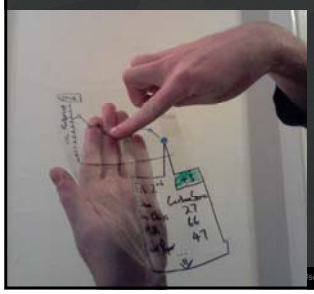


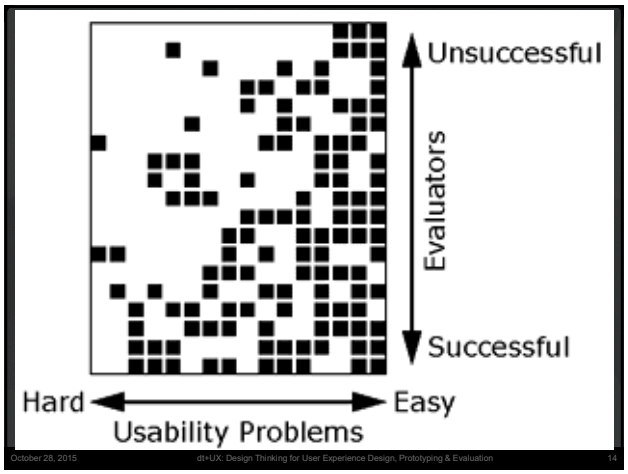
Not realistic
- visuals & performance

Not on actual interface
- can't test alone

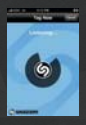
Need participants
- can be hard to find repeatedly

Heuristic Evaluation

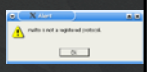
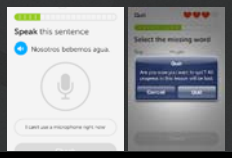
- Developed by Jakob Nielsen
- Helps find usability problems in a UI design
- Small set (3-5) of evaluators examine UI
  - independently check for compliance with usability principles ("heuristics")
  - evaluators only communicate afterwards
    - findings are then aggregated
  - use violations to redesign/fix problems
- Can perform on working UI or on sketches



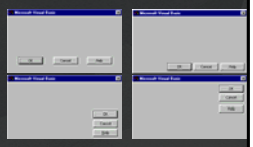
Heuristics

H2-1: Visibility of system status
H2-2: Match between system & real world
H2-3: User control & freedom

Heuristics (cont.)



H2-4: Consistency & standards
H2-5: Error prevention
H2-6: Recognition rather than recall

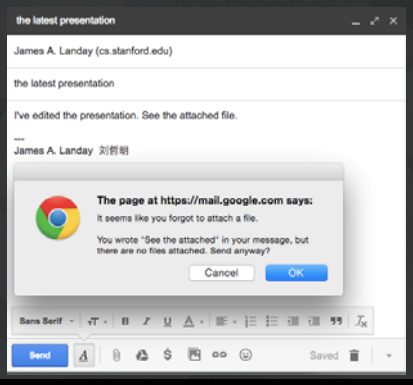
H2-7: Flexibility and efficiency of use
H2-8: Aesthetic & minimalist design
H2-9: Help users recognize, diagnose, & recover from errors

Heuristics (cont.)

bad

Heuristics (cont.)

good



Good Error Messages

- Clearly indicate what has gone wrong
- Human readable
- Polite
- Describe the problem
- Explain how to fix it
- Highly noticeable

Heuristic Violation Examples

1. [H1-3 Minimize the users' memory load]
   Can't copy info from one window to another
   – fix: allow copying
2. [H2-4 Consistency and Standards]
   Typography uses different fonts in 3 dialog boxes
   – slows users down
   – probably wouldn't be found by user testing
   – fix: pick a single format for entire interface

Severity Ratings

0 - don't agree that this is a usability problem
1 - cosmetic problem
2 - minor usability problem
3 - major usability problem; important to fix
4 - usability catastrophe; imperative to fix

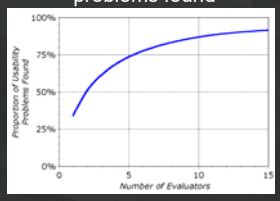
Severity Ratings Example

1. [H1-4 Consistency] [Severity 3]

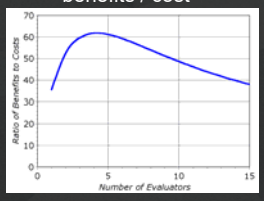
The interface used the string "Save" on the first screen for saving the user's settings, but used the string "Store" on the second screen. Users may be confused by this different terminology for the same function.

Decreasing Returns

problems found



benefits / cost

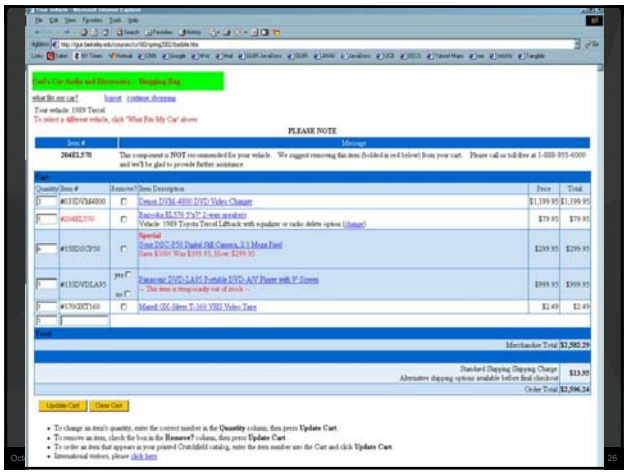


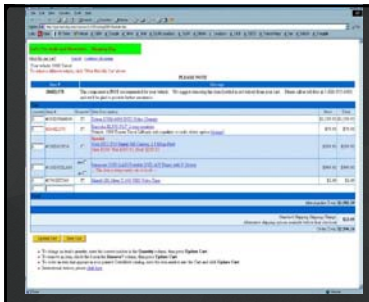
* Caveat: graphs for a specific example

Heuristic Evaluatoin Summary

- Have evaluators go through the UI twice
- Ask them to see if it complies with heuristics
  – note where it doesn't & say why
- Combine the findings from 3 to 5 evaluators
- Have evaluators independently rate severity
- Alternate with user testing

E X E R C I S E





http://hci.stanford.edu/courses/cs147/2015/au/assignments/simple-heuristic-evaluation.pdf
Find 12-15 Heuristic Violations
Turn in on Coursework after we discuss

Problems Found

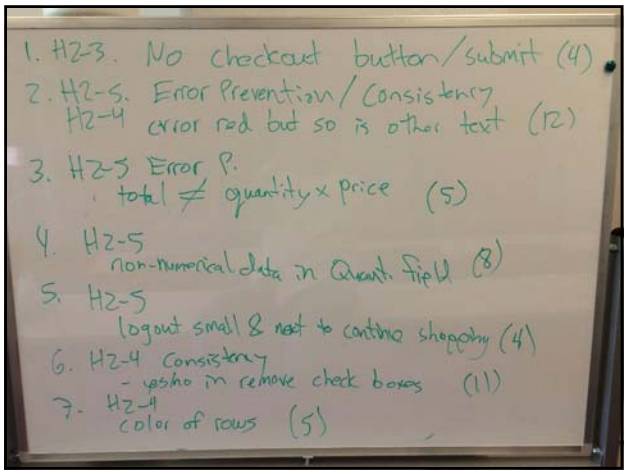
1. H2-4 Consistency
   remove column, 4th item is different w/ checkboxes. [150]
2. H2-9 Error prevention
   non-numeric data in the quantity. Do not allow. [125]
3. H2-2 Match between system & real world
   vehicle selection link not language I'd expect [100]
4. H2-1 Visibility of System Status
   unclear which item to remove based on error message ("red/bold"). [150]

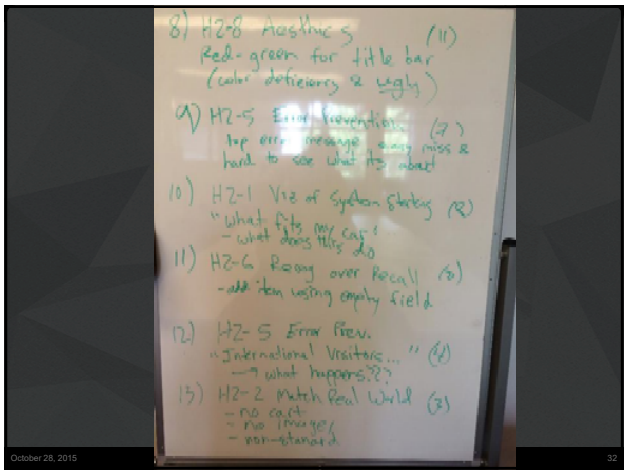
Further Reading
Heuristic Evaluation

- Books
  - *Usability Engineering*, by Nielsen, 1994
- Web site
  - http://www.nngroup.com/articles/

Next Time

- Lecture
  - Conceptual Models & Interface Metaphors
- Read
  - "The Psychology of Everyday Things" (Ch. 1), from *The Design of Everyday Things* by Donald Norman
- Studio
  - Medium-fi Prototype Presentations
  - Break early


1. H2-3. No checkout button/submit (4)
2. H2-5. Error Prevention/Consistency
H2-4 error red but so is other text (12)
3. H2-5 Error P.
total ≠ quantity x price (5)
4. H2-5
non-numerical data in Quant. field (8)
5. H2-5
logout small & next to continue shopping (4)
6. H2-4 Consistency
- yesho in remove check boxes (11)
7. H2-4
color of rows (5)


8) H2-8 Aesthetics (11)
Red-green for title bar
(color deficiency & ugly)
9) H2-5 Error Prevention (7)
hard to see what its about
10) H2-1 Viz of System Status (8)
"what fits my car?"
- what does this do
11) H2-6 Recog over Recall (6)
- add item using empty field
12) H2-5 Error Prev.
"International Visitors..." (4)
→ what happens???
13) H2-2 Match Real World (3)
- no cart
- no image
- non-standard
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