



Heuristic Evaluation

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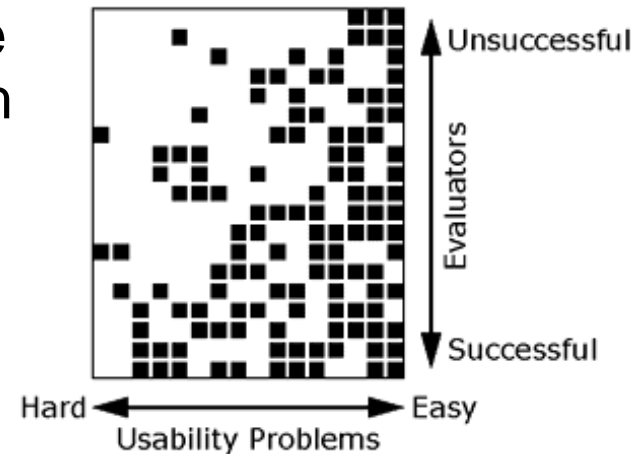
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Learning Goals

- Understand heuristic evaluation as analytical evaluation method
- Understand when and how heuristic evaluations can be used
- Learn strengths and weaknesses

Heuristic Evaluation

- A small set of evaluators examines the interface and judge its compliance with recognized usability principles (the "heuristics").
- Goal: identifying any problems associated with the design of user interface
- Main question: Is the interface compatible with the intended users' needs and preferences



Nielsen, J., and Molich, R. (1990). Heuristic evaluation of user interfaces, Proc. ACM CHI'90 Conf. (Seattle, WA, 1–5 April), 249–256
Nielsen, J. 1992. Finding usability problems through heuristic evaluation. Proceedings ACM CHI'92 Conference (Monterey, CA, May 3-7), 373-380./

Heuristic Evaluation

- A small group of reviewers/experts examine the interface and judge its compliance with recognized usability principles (the “heuristics”)
 - Either just by inspection or by scenario-based walkthrough
 - Critical issues list, weighted by severity grade
 - Opinions of evaluators are consolidated into one report
- Implicit assumptions
 - There is a fixed list of desirable properties of user interfaces (the “heuristics”)
 - These heuristics can be checked by the experts with a clear and defined result

Example: Checklist

Usability Techniques Heuristic Evaluation - A System Checklist

By Deniese Pierotti, Xerox Corporation

Heuristic Evaluation - A System Checklist

1. Visibility of System Status

The system should always keep user informed about what is going on, through appropriate feedback within reasonable time.

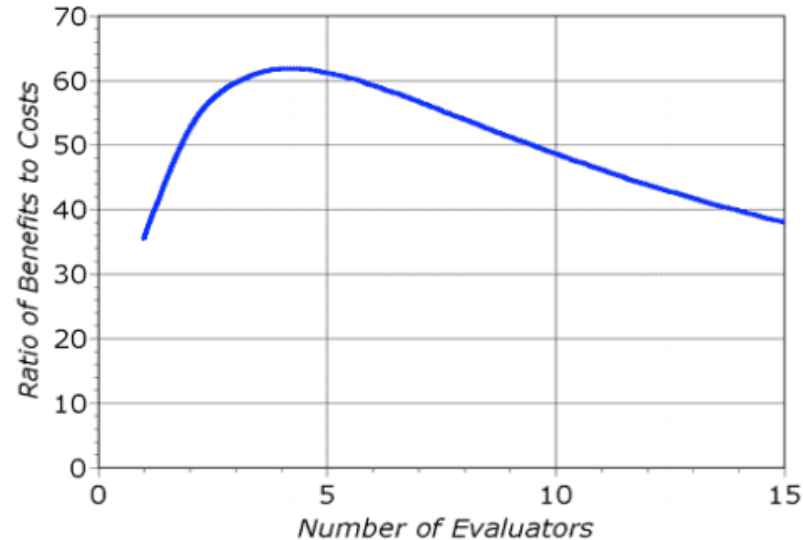
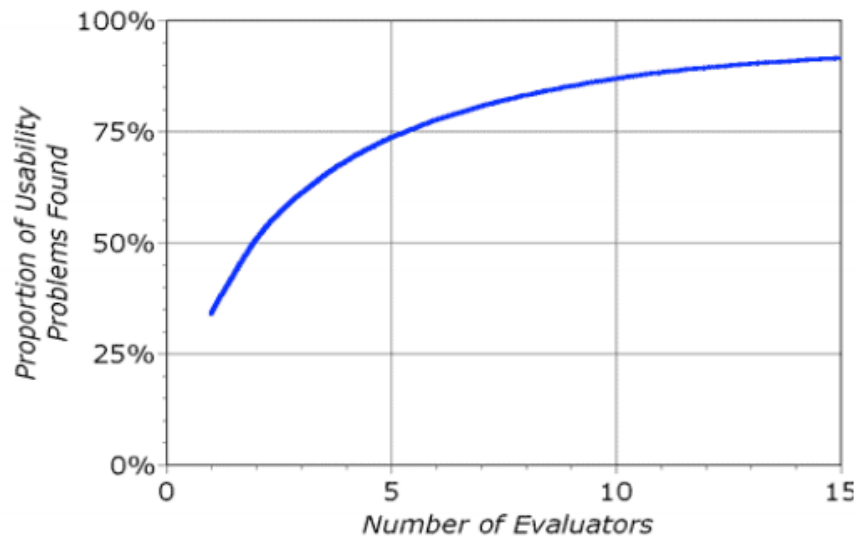
#	Review Checklist	Yes No N/A	Comments
1.1	Does every display begin with a title or header that describes screen contents?	<input type="radio"/> <input type="radio"/> <input type="radio"/>	
1.2	Is there a consistent icon design scheme and stylistic treatment across the system?	<input type="radio"/> <input type="radio"/> <input type="radio"/>	
1.3	Is a single, selected icon clearly visible when surrounded by unselected icons?	<input type="radio"/> <input type="radio"/> <input type="radio"/>	
1.4	Do menu instructions, prompts, and error messages appear in the same place(s) on each menu?	<input type="radio"/> <input type="radio"/> <input type="radio"/>	
1.5	In multipage data entry screens, is each page labeled to show its relation to others?	<input type="radio"/> <input type="radio"/> <input type="radio"/>	
1.6	If overwrite and insert mode are both available, is there a visible indication of which one the user is in?	<input type="radio"/> <input type="radio"/> <input type="radio"/>	
1.7	If pop-up windows are used to display error messages, do they allow the user to see the field in error?	<input type="radio"/> <input type="radio"/> <input type="radio"/>	
1.8	Is there some form of system feedback for every operator action?	<input type="radio"/> <input type="radio"/> <input type="radio"/>	
1.9	After the user completes an action (or group of actions), does the feedback indicate that the next group of actions can be started?	<input type="radio"/> <input type="radio"/> <input type="radio"/>	
1.10	Is there visual feedback in menus or dialog boxes about which choices are selectable?	<input type="radio"/> <input type="radio"/> <input type="radio"/>	
1.11	Is there visual feedback in menus or dialog boxes about which choice the cursor is on now?	<input type="radio"/> <input type="radio"/> <input type="radio"/>	

Deniese Pierotti, Xerox Corporation, From <https://uxmanager.net/heuristics/xerox-13-usability-heuristics>

Number of Evaluators

- The number of usability problems found in a heuristic evaluation:

$$ProblemsFound(i) = N(1 - (1 - l)^i)$$



Nielsen, J., & Landauer, T. K. (1993, May). A mathematical model of the finding of usability problems. In Proceedings of the INTERACT'93 and CHI'93 conference on Human factors in computing systems (pp. 206-213).

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 recognize, diagnose, and recover from errors
10. Help and documentation

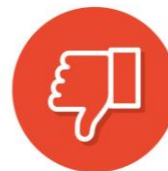
Nielsen, Jakob (1994). Usability Engineering. San Diego: Academic Press. pp. 115–148. ISBN 0-12-518406-9.

Example

- Removing files



- Dismount drive



Images from Sarah Diefenbach, UX Evaluation, 2017

Weinschenk's & Barker's Heuristics

1. User Control
2. Human Limitations
3. Modal Integrity
4. Accommodation
5. Linguistic Clarity
6. Aesthetic Integrity
7. Simplicity
8. Predictability
9. Interpretation
10. Accuracy
11. Technical Clarity
12. Flexibility
13. Fulfillment
14. Cultural Propriety
15. Suitable Tempo
16. Consistency
17. User Support
18. Precision
19. Forgiveness
20. Responsiveness

Weinschenk, S and Barker, D. (2000) Designing Effective Speech Interfaces. Wiley.

Cognitive Engineering Principles

1. Automate unwanted workload
2. Reduce uncertainty
3. Fuse data
4. Present new information with meaningful aids to interpretation
5. Use names that are conceptually related to function
6. Group data in consistently meaningful ways
7. Limit data-driven tasks
8. Include in the displays only that information needed by the user at a given time
9. Provide multiple coding of data when appropriate
10. Practice judicious redundancy

Advantages and Disadvantages

- Advantages
 - Quick, cheap, easy evaluation of early UI design
- Disadvantages
 - Heuristic evaluation relies very much on creativity and experience of the evaluators
 - Available knowledge about decision only available in the heads of the experts

“Usability checklists and inspections can produce rapid feedback, but may call attention to problems that are infrequent or atypical in real worlds use.” [1]

[1] Rosson, M. B., Carroll, J. M., & Hill, N. (2002). Usability engineering: scenario-based development of human-computer interaction. Morgan Kaufmann.

References

- Nielsen, J., and Molich, R. (1990). Heuristic evaluation of user interfaces, Proc. ACM CHI'90 Conf. (Seattle, WA, 1–5 April), 249–256
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- Nielsen, Jakob (1994). Usability Engineering. San Diego: Academic Press. pp. 115–148. ISBN 0-12-518406-9.
- <https://www.nngroup.com/>