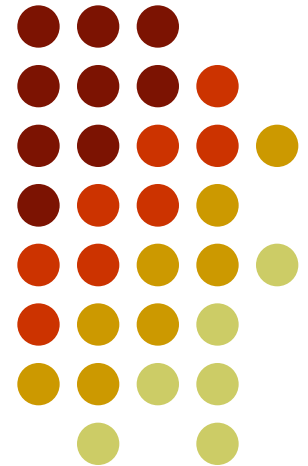


CSC 408 HCI

Heuristic Evaluation





The benefits of testing

- Usability sells, if the user has a choice
- Initial designs *always* have faults
- Valuable to get a different perspective
 - The designer is a poor choice to test or evaluate her own site, because she knows too much (Doesn't have to search for buttons, because she put them there)
- Engineering parallel with software development: no matter how carefully you planned, would you ship a product that had never been tested?

Test early



- You're designing and building a house. Compare the cost of moving a bathroom:
 - ... When you're looking at the architect's drawing, before anything has been built
 - ... After concrete floors have been poured
 - ... When the walls are plastered and painted, and you're ready to move in
- Writing your XHTML, Cascading Style Sheets, and JavaScript (or other) isn't *quite* like pouring concrete, but it's close

Formative vs summative evaluation



- Formative: during development
- Summative: at completion

“When the cook tastes the soup in the kitchen, that’s formative evaluation; when the guests taste the soup at the dinner table, that’s summative evaluation.”

- Formative: make the design better!
- Summative: how good is the design?



Purposes of evaluation...

- To discover usability problems
- To rank usability problems in order of severity, problems which...
 - May result in task failure
 - May result in user error
 - May result in user confusion or inconvenience
- To test whether usability specifications have been met

Heuristic Evaluation



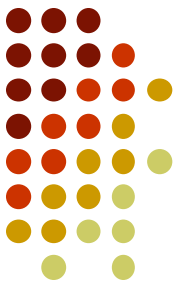
- “Developed” by Jacob Nielsen in the early 1990s
- Takes generally accepted *heuristics* (rules-of-thumb) for good design and tests whether any of these have been *violated* by the proposed design.
- Design guidelines form a basis for developing heuristics
- Various authors have developed sets of usability heuristics for particular kinds of interface
- **NOT a substitute for doing user testing!**



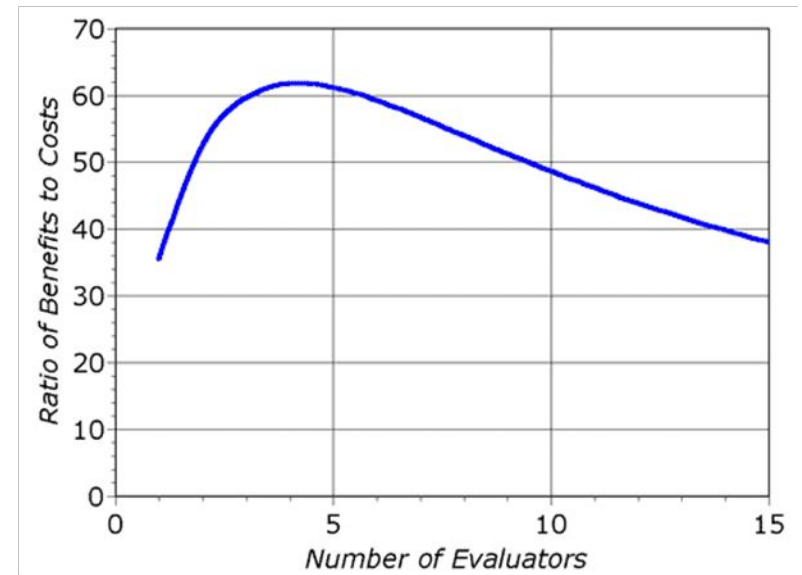
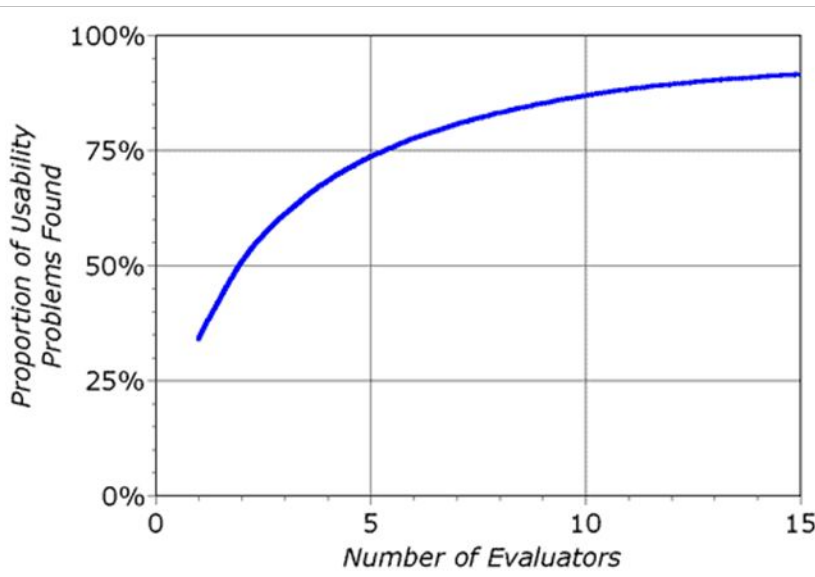
Heuristic Evaluation

- HCI experts systematically hunt for violations of guidelines
 - Exactly *where* is violation?
 - *Which* guideline violated?
 - *How* does feature violate guideline?
- Double experts better than single experts
 - Know about HCI and application domain
- Needs **multiple evaluators**
 - Experts disagree!
 - Beware *evaluator effect* on evaluations

Multiple Evaluators: Diminishing returns



- Empirical evidence suggests that on average 5 evaluators identify 75-80% of usability problems
problems found



- *Caveat: graphs for a specific example*

Nielsen's heuristics



- Visibility of system status
- Match between system and real world
- User control and freedom
- Consistency and standards
- Help users recognize, diagnose, recover from errors
- Error prevention
- Recognition rather than recall
- Flexibility and efficiency of use
- Aesthetic and minimalist design
- Help and documentation

More specific heuristics...



- Nielsen's 10 and Ben Shneiderman's golden rules are just categories of types of problems
- Many much longer sets of more detailed, concrete heuristics for specific types of systems



More specific heuristics...

- **Jakob Nielsen** & Co produce expensive reports based on empirical research
- One you can have for free: *113 Design Guidelines for Web Homepage Usability* by Jakob Nielsen
 - <http://www.nngroup.com/articles/113-design-guidelines-homepage-usability/>
 - No. 22 “Avoid single-item categories and single-item bulleted lists”
 - No. 37 “Allow link colours to show visited and unvisited states”
 - No. 42 “Don’t have multiple navigation areas for the same type of links”
 - No. 48 “Search input boxes should be wide enough for users to see and edit standard queries on the site”
 - No. 56 “Use graphics to show real content, not just to decorate”



Phases of Heuristic Evaluation

- 1) *Pre-evaluation training*
 - Give evaluators needed domain knowledge and information on the scenario
- 2) *Evaluation*
 - Individuals evaluate and then aggregate results
- 3) *Severity rating*
 - Determine how severe each problem is (priority)
- 4) *Debriefing*
 - Discuss the outcome with design team

Performing Evaluation



- At least two passes for each evaluator
 - First to get feel for flow and scope of system
 - Second to focus on specific elements
- If system is walk-up-and-use or evaluators are domain experts, then no assistance needed
 - Otherwise might supply evaluators with scenarios
- Each evaluator produces *list of problems*
 - Explain **why** with reference to heuristic or other information
 - Be specific and list each problem separately



S: Enter 1 for account information, 3 for transfers between accounts...

U: 3# (interrupts)

S: Enter account to transfer from

U: 1234567890#

S: Enter account to transfer to

U: # (default)

S: Enter amount in pence

U: 100000#

S: From account number 1234567890 to account number
primary account, transfer of 1000 pounds is to be made.

Press 1 to confirm, 0 to cancel

U: 1#

S: You do not have access to use this function



S: Enter 1 for account information, 3 for transfers between accounts...

U: 3# (interrupts)

S: Enter account to transfer from

U: 1234567890#

S: Enter account to transfer to

U: # (default)

S: Enter amount in pence

U: 100000#

S: From account number 1234567890 to account number primary account, transfer of 1000 pounds is to be made.

Press 1 to confirm, 0 to cancel

U: 1#

S: You do not have access to use this function

Don't read number before menu item description

(Minimise Users' Memory Load)



S: Enter 1 for account information, 3 for transfers between accounts...

U: 3# (interrupts)

S: Enter account to transfer from

U: 1234567890#

S: Enter account to transfer to

U: # (default)

S: Enter amount in pence

U: 100000#

S: From account number 1234567890 to account number primary account, transfer of 1000 pounds is to be made.

Press 1 to confirm, 0 to cancel

U: 1#

S: You do not have access to use this function

Avoid gap in menu numbers
between 1 and 3

(Simple and Natural Language)



S: Enter 1 for account information, 3 for transfers between accounts...

U: **3#** (interrupts)

S: Enter account to transfer from

U: **1234567890#**

S: Enter account to transfer to

U: **#** (default)

S: Enter amount in pence

U: **100000#**

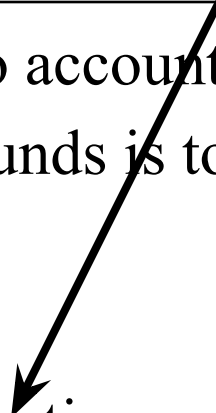
Error message appears too late
(Simple and Natural Dialogue)

S: From account number 1234567890 to account number
primary account, transfer of 1000 pounds is to be made.

Press 1 to confirm, 0 to cancel

U: **1#**

S: You do not have access to use this function





S: Enter 1 for account information, 3 for transfers between accounts...

U: **3#** (interrupts)

S: Enter account to transfer from

U: **1234567890#**

S: Enter account to transfer to

U: **#** (default)

S: Enter amount in pence

U: **100000#**

Do not require pound
amounts to entered in pence

(Speak the Users' Language)



S: From account number 1234567890 to account number
primary account, transfer of 1000 pounds is to be made.

Press 1 to confirm, 0 to cancel

U: **1#**

S: You do not have access to use this function



S: Enter 1 for account information, 3 for transfers between accounts...

U: **3#** (interrupts)

S: Enter account to transfer from

U: **1234567890#**

S: Enter account to transfer to

U: **#** (default)

S: Enter amount in pence

U: **100000#**

S: From account number 1234567890 to account number primary account, transfer of 1000 pounds is to be made.

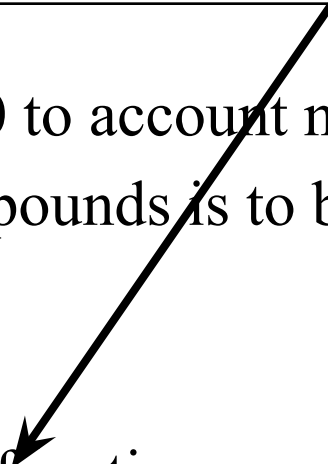
Press 1 to confirm, 0 to cancel

U: **1#**

S: You do not have access to use this function

Error message is imprecise

(Precise and Constructive
Error Messages)





S: Enter 1 for account information, 3 for transfers between accounts...

U: **3#** (interrupts)

S: Enter account to transfer from

U: **1234567890#**

S: Enter account to transfer to

U: **#** (default)

S: Enter amount in pence

U: **100000#**

S: From account number 1234567890 to account number
primary account, transfer of 1000 pounds is to be made.

Press 1 to confirm, 0 to cancel

U: **1#**

S: You do not have access to use this function

Use alternative and proper
English phrase

(Speak Users' Language)





Car audio and electronics

- What's wrong with this?
- Let's apply Nielsen's principles...

Microsoft Internet Explorer window showing a shopping cart page titled "Your vehicle - Microsoft Internet Explorer". The page displays a shopping cart for a 1989 Toyota Tercel. A prominent error message states: "PLEASE NOTE: This component is NOT recommended for your vehicle. We suggest removing this item (b-oldd in red below) from your cart. Please call us toll-free at 1-888-955-6000 and we'll be glad to provide further assistance." The cart table lists items such as Denon DVM-4800 DVD Video Changer, Bose EL570 5x7" 2-way speakers, Sony DSC-F50 Digital Still Camera, and Panasonic DVD-LA95 Portable DVD-A/V Player. The total order amount is \$2,596.24. The page includes instructions for updating the cart and a "Done" button at the bottom.

Car's Car Audio and Electronics - Shopping Bag

what fits my car? [logout](#) [continue shopping](#)

Your vehicle: 1989 Tercel
To select a different vehicle, click "What Fits My Car" above

PLEASE NOTE
Message
204EL570 This component is **NOT** recommended for your vehicle. We suggest removing this item (b-oldd in red below) from your cart. Please call us toll-free at 1-888-955-6000 and we'll be glad to provide further assistance.

Quantity	Item #	Remove?	Item Description	Price	Total
3	#033DVM4800	<input type="checkbox"/>	Denon DVM-4800 DVD Video Changer	\$1,199.95	\$1,199.95
1	#204EL570	<input type="checkbox"/>	Bose EL570 5"x7" 2-way speakers Vehicle: 1989 Toyota Tercel Liftback with equalizer or radio delete option (change)	\$79.95	\$79.95
1	#158DSCP50	<input type="checkbox"/>	Special Sony DSC-F50 Digital Still Camera, 2.1 Mega Pixel Save \$100! Was \$399.95, Now: \$299.95	\$299.95	\$299.95
1	#133DVDLA95	yes <input type="checkbox"/> no <input type="checkbox"/>	Panasonic DVD-LA95 Portable DVD-A/V Player with 9" Screen -- This item is temporarily out of stock --	\$999.95	\$999.95
1	#170GXT160	<input type="checkbox"/>	Maxell GX-Silver T-160 VHS Video Tape	\$2.49	\$2.49

Total

Merchandise Total	\$2,582.29
Standard Shipping Charge	\$13.95
Alternative shipping options available before final checkout	
Order Total	\$2,596.24

[Update Cart](#) [Clear Cart](#)

- To change an item's quantity, enter the correct number in the **Quantity** column, then press **Update Cart**.
- To remove an item, check the box in the **Remove?** column, then press **Update Cart**.
- To order an item that appears in your printed Crutchfield catalog, enter the item number into the Cart and click **Update Cart**.
- International visitors, please [click here](#).

Carl's Car Audio and Electronics - Shopping Bag

what fits my car? [logout](#) [continue shopping](#)

Your vehicle: 1989 Tercel
 To select a different vehicle, click 'What Fits My Car' above

PLEASE NOTE

Item #	Message
204EL570	This component is NOT recommended for your vehicle. We suggest removing this item (bolded in red below) from your cart. Please call us toll-free at 1-888-955-6000 and we'll be glad to provide further assistance.

Cart					
Quantity	Item #	Remove?	Item Description	Price	Total
3	#033DVM4800	<input type="checkbox"/>	Denon DVM-4800 DVD Video Changer	\$1,199.95	\$1,199.95
1	#204EL570	<input type="checkbox"/>	Bagooka EL570 5"x7" 2-way speakers Vehicle: 1989 Toyota Tercel Liffback with equalizer or radio delete option (change)	\$79.95	\$79.95
h	#158DSCP50	<input type="checkbox"/>	Special Sony DSC-P50 Digital Still Camera, 2.1 Mega Pixel Save \$100! Was \$399.95, Now: \$299.95	\$299.95	\$299.95
1	#133DVDLA95	yes <input type="checkbox"/> no <input type="checkbox"/>	Panasonic DVD-LA95 Portable DVD-A/V Player with 9" Screen -- This item is temporarily out of stock --	\$999.95	\$999.95
1	#170GXT160	<input type="checkbox"/>	Maxell GX-Silver T-160 VHS Video Tape	\$2.49	\$2.49
1					

Total	
Merchandise Total	\$2,582.29
Standard Shipping Shipping Charge: Alternative shipping options available before final checkout	\$13.95
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Your vehicle - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://gui.berkeley.edu/courses/cs160/spring2002/badsite.htm

Links Salon NY Times Hotmail CNN Google M-W Mail GUIR JavaDocs GUIR JAVA

Carl's Car Audio and Electronics - Shopping Bag

what fits my car? [logout](#) [continue shopping](#)

Your vehicle: 1989 Tercel
To select a different vehicle, click 'What Fits My Car' above

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Cart

Quantity	Item #	Remove?	Item Description	Price	Total
<input type="text" value="3"/>	#033DVM4800	<input type="checkbox"/>	Denon DVM-4800 DVD Video Changer	\$1,199.95	\$1,199.95
<input type="text" value="1"/>	#204EL570	<input type="checkbox"/>	Bagooka EL570 5"x7" 2-way speakers Vehicle: 1989 Toyota Tercel Cabback with equalizer or radio delete option (change)	\$79.95	\$79.95
<input type="text" value="h"/>	#158DSCP50	<input type="checkbox"/>	Special Sony DSC-P50 Digital Still Camera, 2.1 Mega Pixel Save \$100! Was \$399.95, Now: \$299.95	\$299.95	\$299.95
<input type="text" value="1"/>	#133DVDLA95	yes <input type="checkbox"/> no <input type="checkbox"/>	Panasonic DVD-LA95 Portable DVD-A/V Player with 9" Screen -- This item is temporarily out of stock --	\$999.95	\$999.95
<input type="text" value="1"/>	#170GXT160	<input type="checkbox"/>	Maxell GX-Silver T-160 VHS Video Tape	\$2.49	\$2.49
<input type="text" value="1"/>					

Total

Merchandise Total	\$2,582.29
Standard Shipping Charge: Alternative shipping options available before final checkout	\$13.95
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- To order an item that appears in your printed Crutchfield catalog, enter the item number into the Cart and click **Update Cart**.
- International visitors, please [click here](#).

Done Internet

Consistency

4th item in list has different checkboxes in the *Remove?* column

Your vehicle - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://gui.berkeley.edu/courses/cs160/spring2002/badsite.htm

Links Salon NY Times Hotmail CNN Google M-W Mail GUIR JavaDocs GUIR JAVAI JavaDocs

Carl's Car Audio and Electronics -- Shopping Bag

what fits my car? [logout](#) [continue shopping](#)

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Cart

Quantity	Item #	Remove?	Item Description	Price	Total
3	#033DVM4800	<input type="checkbox"/>	Denon DVM 4800 DVD Video Changer	\$1,199.95	\$1,199.95
1	#204EL570	<input type="checkbox"/>	Paokooka EL570 5"x7" 2-way speakers Vehicle: 1989 Toyota Tercel Liftback with equalizer or radio delete option (change)	\$79.95	\$79.95
h	#158DSCP50	<input type="checkbox"/>	Special Sony DSC-P50 Digital Still Camera, 2.1 Mega Pixel Save \$100! Was \$399.95, Now: \$299.95	\$299.95	\$299.95
1	#133DVDLA95	yes <input type="checkbox"/> no <input type="checkbox"/>	Panasonic DVD-LA95 Portable DVD-A/V Player with 9" Screen -- This item is temporarily out of stock --	\$999.95	\$999.95
1	#170GXT160	<input type="checkbox"/>	Maxell GX-Silver T-160 VHS Video Tape	\$2.49	\$2.49
1					
Total				Merchandise Total	\$2,582.29
				Standard Shipping Charge: Alternative shipping options available before final checkout	\$13.95
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- To order an item that appears in your printed Crutchfield catalog, enter the item number into the Cart and click **Update Cart**.
- International visitors, please [click here](#).

Done Internet

Error Prevention

Non-numeric value in the Quantity column.
Do not allow.

Microsoft Internet Explorer

Address: <http://gui.berkeley.edu/courses/cs160/spring2002/badsite.htm>

Links: Salon NY Times Hotmail CNN Google M-W Mail GUIR JavaDocs GUIR

Carl's Car Audio and Electronics -- Shopping Bag

what fits my car? [logout](#) [continue shopping](#)

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Cart

Quantity	Item #	Remove?	Item Description	Price	Total
3	#033DVM4800	<input type="checkbox"/>	Denon DVM-4800 DVD Video Changer	\$1,199.95	\$1,199.95
1	#204EL570	<input type="checkbox"/>	Bagooka EL570 5"x7" 2-way speakers Vehicle: 1989 Toyota Tercel Liffback with equalizer or radio delete option (change)	\$79.95	\$79.95
h	#158DSCP50	<input type="checkbox"/>	Special Sony DSC-P50 Digital Still Camera, 2.1 Mega Pixel Save \$100! Was \$399.95, Now: \$299.95	\$299.95	\$299.95
1	#133DVDLA95	yes <input type="checkbox"/> no <input type="checkbox"/>	Panasonic DVD-LA95 Portable DVD-A/V Player with 9" Screen -- This item is temporarily out of stock --	\$999.95	\$999.95
1	#170GXT160	<input type="checkbox"/>	Maxell GX-Silver T-160 VHS Video Tape	\$2.49	\$2.49
1					

Total

Merchandise Total	\$2,582.29
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- International visitors, please [click here](#).

Done Internet

Match between system and real world

Vehicle selection link not language I'd expect

Visibility of system status

Unclear which item to remove based on error message (“red/bold”)

Carl's Car Audio and Electronics -- Shopping Bag

what fits my car? [logout](#) [continue shopping](#)
Your vehicle: 1989 Tercel
To select a different vehicle, click 'What Fits My Car' above

PLEASE NOTE

Item # Message
204EL570 This component is **NOT** recommended for your vehicle. We suggest removing this item (bolded in red below) from your cart. Please call us toll-free at 1-888-955-6000 and we'll be glad to provide further assistance.

Quantity	Item #	Remove?	Item Description	Price	Total
3	#033DVM4800	<input type="checkbox"/>	Denon DVM-4800 DVD Video Changer	\$1,199.95	\$1,199.95
1	#204EL570	<input type="checkbox"/>	Barooka EL570 5"x7" 2-way speakers Vehicle: 1989 Toyota Tercel Liftback with equalizer or radio delete option (change)	\$79.95	\$79.95
h	#158DSCP50	<input type="checkbox"/>	Special Sony DSC-P50 Digital Still Camera, 2.1 Mega Pixel Save \$100! Was \$399.95, Now: \$299.95	\$299.95	\$299.95
1	#133DVDLA95	yes <input type="checkbox"/> no <input type="checkbox"/>	Panasonic DVD-LA95 Portable DVD-A/V Player with 9" Screen -- This item is temporarily out of stock --	\$999.95	\$999.95
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Reliability in usability evaluation



- Reliability is related to repeatability and consistency.
- Are different people using the same method or instrument on similar data able to obtain similar results?

- A concern for both analytic and empirical usability evaluation

Predictive validity of expert evaluation



- Are we able to correctly predict the user's problems:
 - Do our predictions match with the observations?
 - Do we miss problems?
 - Do we predict false problems?

Predictive validity of expert evaluation - review of 6 studies



Study	Analytic UEM	Hits %	False alarms %	Misses %
Fu, Salvendy & Turley (2002)	Heuristic evaluation	47 %	53 %	24 %
Law & Hvannberg (2002)	Heuristic evaluation	44 %	56 %	48 %
Cockton & Woolrych (2002)	Heuristic evaluation	~45 %	~55 %	~46 %
Dimitrova, Sharp & Wilson (2001)	Multimedia cognitive walkthrough	63 %	37 %	76 %
	Interactive multimedia checklist	50 %	50 %	31 %
	Multimedia taxonomy	70 %	30 %	35 %
Jacobsen & John (2000)	Cognitive walkthrough	6 % / 0 %	94 % / 100 %	87 % / 100 %
Cuomo & Boven (1994)	Guideline based inspection	22 %	78 %	79 %
	Heuristic evaluation	46 %	54 %	69 %
	Cognitive walkthrough	58 %	42 %	73 %

Predictive validity of expert evaluation - review of 6 studies



Study	UEM	Comparison between	Detection rate %	Any-two agreement %	Short description about the results
Cockton & Woolrych (2002)	Heuristic evaluation	Individual	43 %	55 %	12 evaluators participated in heuristic evaluation. Total number of usability problems was 16. Overlap between evaluators ranged from 0 to 16 problems. Five evaluators found a single usability problem each. 56 % of the problems were such that only 1-4 evaluators found them. 3 problems were found by all evaluators.
Kessner, Wood, Dillon & West (2001)	Usability testing	Group	36 %	23 %	Six teams conducted a usability study, whose reports were used to create a list of 36 unique usability problems. None of them was found by all teams, and one team found 16 problems. Those 16 usability problems did not overlap with any other team.
Molich et al. (1999)	Usability testing	Group	22 %	7 %	Four commercial usability labs inspected the hotmail.com website. Only one of all 141 problems was found by all labs. Eleven problems were such that they were reported by two labs. 128 problems were found by a single lab.

Predictive validity of expert evaluation - review of 6 studies



Study	UEM	Comparison between	Detection rate %	Any-two agreement %	Short description about the results
Hertzum & Jacobsen (1999)	Cognitive walk-through	Individual	18 %	17 %	11 evaluators inspected interface using cognitive walkthrough. 90 % of the all 33 problems were found by only three evaluators. None of the problems were found by all evaluators.
Molich et al. (1998)	Usability testing	Group	37 %	6 %	Four separate evaluation teams reported 4, 25, 35 and 98 usability problems.
Jacobsen, Hertzum & John (1998)	Usability testing	Individual	52 %	42 %	Same test data recorded on video was used. 46 % of all problems were extracted by single observer and overlap of observed problems between 2, 3 and 4 observers were 20 %, 13 % and 20 %, respectively.

Summary



Reading



- A simple, straightforward article on doing a heuristic evaluation, with pointers to several sets of heuristics
 - <https://uxmastery.com/how-to-run-an-heuristic-evaluation/>

Appendix: Nielsen's Heuristics



- We've explained Jakob Nielsen's standard set of principles for good interface design elsewhere...
- Nielsen claims that they cover large majority of major interface problems



Nielsen's heuristics

- Visibility of system status
- Match between system and real world
- User control and freedom
- Consistency and standards
- Help users recognize, diagnose, recover from errors
- Error prevention
- Recognition rather than recall
- Flexibility and efficiency of use
- Aesthetic and minimalist design
- Help and documentation

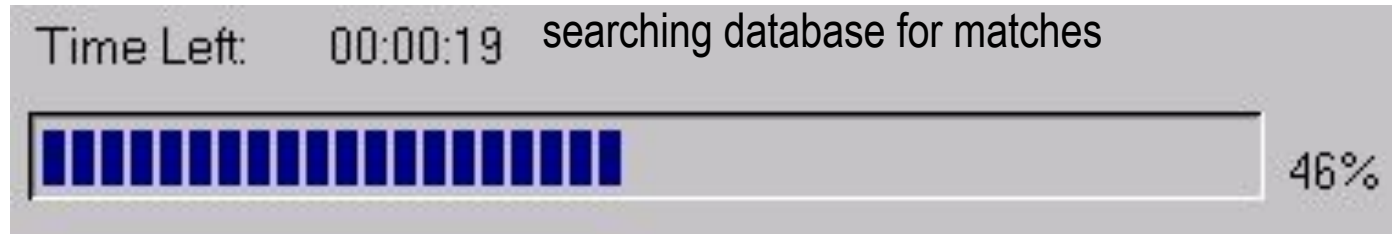
Visibility of system status



- Keep the user informed of what is going on
- Provide appropriate feedback
- Respond within a reasonable time
- Examples:
 - Norton AntiVirus Progress indicator
 - Web browser status bar



Visibility of system status



- H1: Visibility of system status
 - Inform users about system behavior
 - For example, pay attention to response time
 - 0.1 sec: no special indicators needed
 - 1.0 sec: user tends to lose track of data
 - 10 sec: max duration if user to stay focused on action
 - for longer delays, use percent-done progress bars

Match system to real world

- Speak the user's language
- Avoid system-oriented terms
- Follow real-world conventions
- Present info in a natural and logical order
- Examples:
 - URLs vs. Yahoo! Catalog



Match system to real world

- Bad example: Mac desktop
 - Dragging disk to trash
 - should delete it, not eject it
- H2: Match between system & real world
 - speak the users' language
 - follow real world conventions



User Control and Freedom



- Accommodate users who make mistakes
- Provide “emergency exits” to tasks
- Support undo and redo
- Examples:
 - Stop button, back button in web browsers
 - Can’t undo after save in Office products



User Control and Freedom

- Wizards
 - Must respond to Q before going to next
 - For infrequent tasks (e.g., modem configuration.)
 - Not for common tasks
 - Good for beginners
 - have 2 versions (WinZip)
- H3: User control & freedom
 - “Exits” for mistaken choices and support undo and redo
 - Do not force user down fixed paths



Consistency and Standards

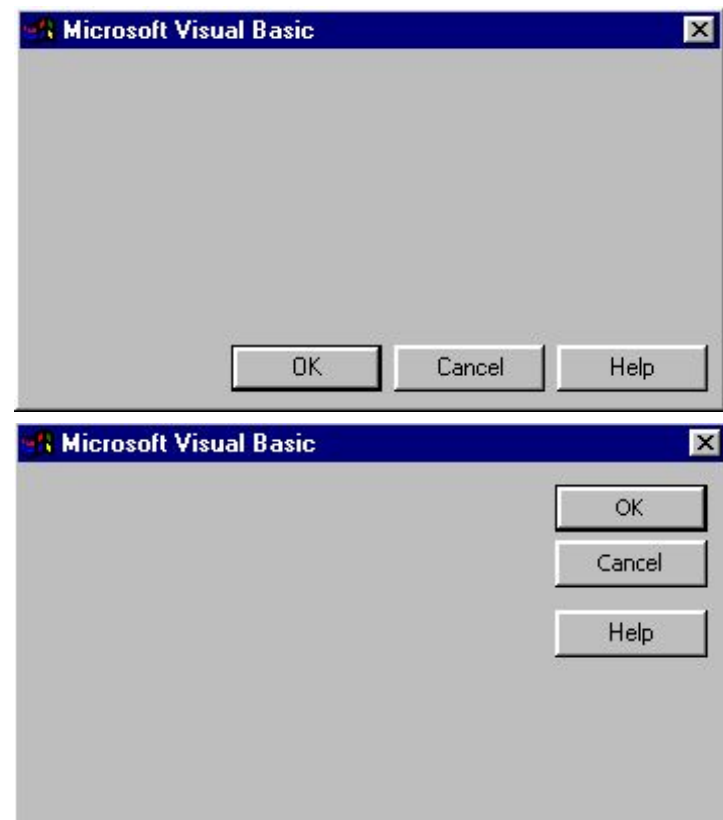
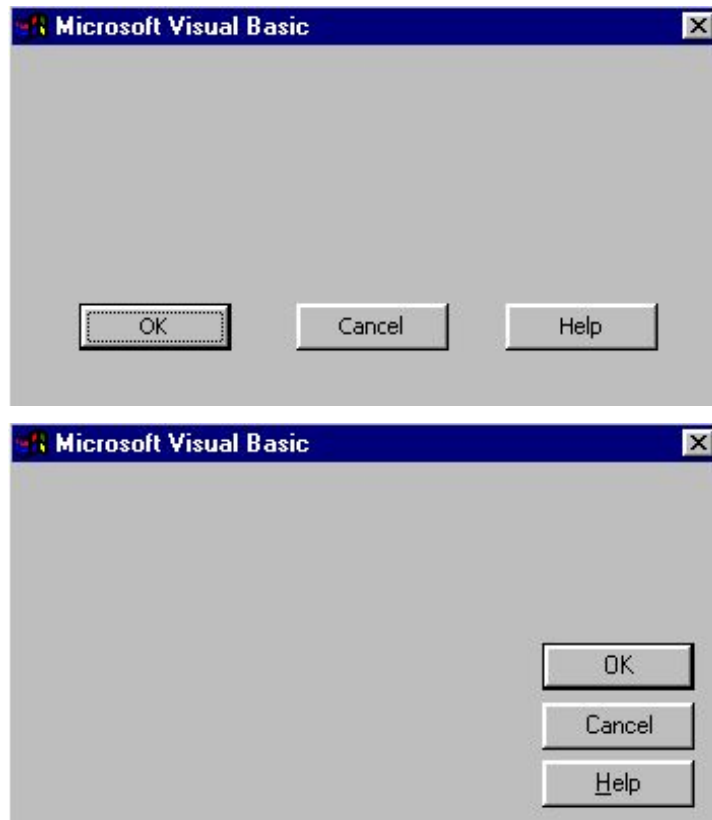


- Follow platform conventions
- Words should always have the same meaning
- Actions should have the same result
- Examples:
 - Enter key for the default action in web pages
 - Selection in a drop-down list
 - Accelerator keys for cut, copy, and paste

Consistency and Standards



- H4: Consistency & standards



Error Prevention



- Prevent problems from occurring
- Better than good error messages
- Examples:
 - Type ahead features in browsers
 - Auto-spell and correct features in word processors
 - Preventing invalid entries in text fields

Recognition rather than recall



- Make objects, actions, and options visible
- Minimize user memory load
- Move user data automatically
- Instructions should be visible with dialogs
- Examples:
 - Help window that covers dialog being explained
 - Wizards with explanation of how to do it
 - Command line interface



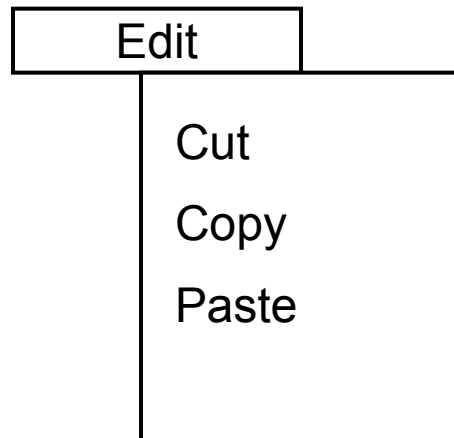
Flexibility and Efficiency

- Provide short-cuts for expert users
- Enable creation of repeating sequence of actions (macros)
- Examples:
 - Menu short-cut keys
 - Command line interface
 - Recording menu / key sequence as a macro
 - Wizards that save actions as commands



Flexibility and Efficiency

- H7: Flexibility and efficiency of use
 - Accelerators for experts (e.g., gestures, keyboard shortcuts, etc.)
 - Allow users to tailor frequent actions (e.g., macros)



Aesthetic and Minimalist Design



- Don't include rarely-needed information
- Don't include rarely-used functions
- Examples:
 - Providing every option all at once
 - Only showing some / used menus in MS Office



Aesthetic and Minimalist Design

- H8: Aesthetic and minimalist design
 - Only relevant information in dialogues

Form Title -- (appears above URL in most browsers and is used by WWW search)		Background Color:
Q&D Software Development Order Desk		FFFBF0
Form Heading -- (appears at top of Web page in bold type)		Text Color:
Q&D Software Development Order Desk <input checked="" type="checkbox"/> Center		000080
E-Mail responses to (will not appear on)	Alternate (for mailto forms only)	Background Graphic
dversch@q-d.com		
Text to appear in Submit button	Text to appear in Reset button	<input type="radio"/> Mailto
Send Order	Clear Form	<input checked="" type="radio"/> CGI
Scrolling Status Bar Message (max length = 200 characters)		
****WebMania 1.5b with Image Map Wizard is here!!****		
<input type="button" value=" << Prev Tab"/>		<input type="button" value=" Next Tab >>"/>

Help Users with Errors

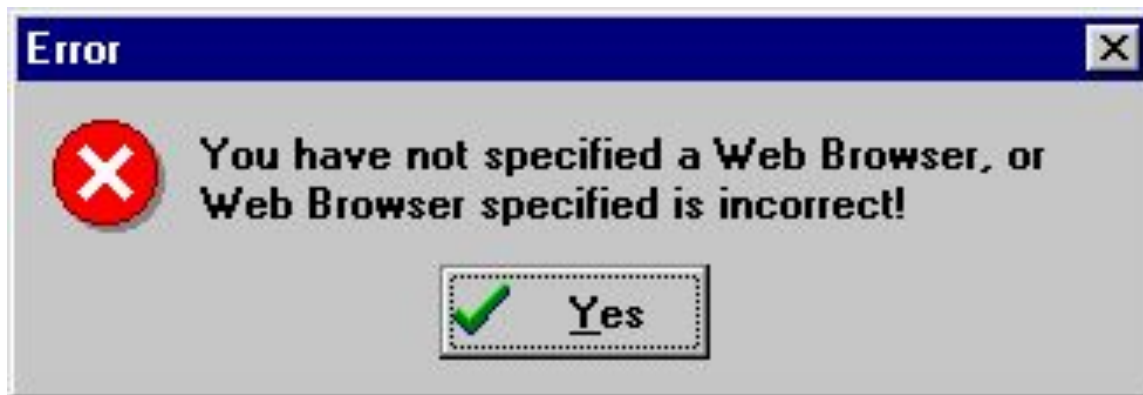


- Error message should be in plain language
- Precisely indicate the problem
- Suggest possible solutions
- Example:
 - “Network connection refused” in web browser



Help Users with Errors

- H9: Help users recognize, diagnose, and recover from errors
 - Error messages in plain language
 - Precisely indicate the problem
 - Constructively suggest a solution



Help and Documentation



- Easy to search
- Focused on the user's tasks
- List concrete steps to be carried out
- Not too long

- If possible, solve problems in the UI first!