

Heuristic Evaluation

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Stanford University

CS 147
Autumn 2017
November 1, 2017

Hall of Fame or Shame?

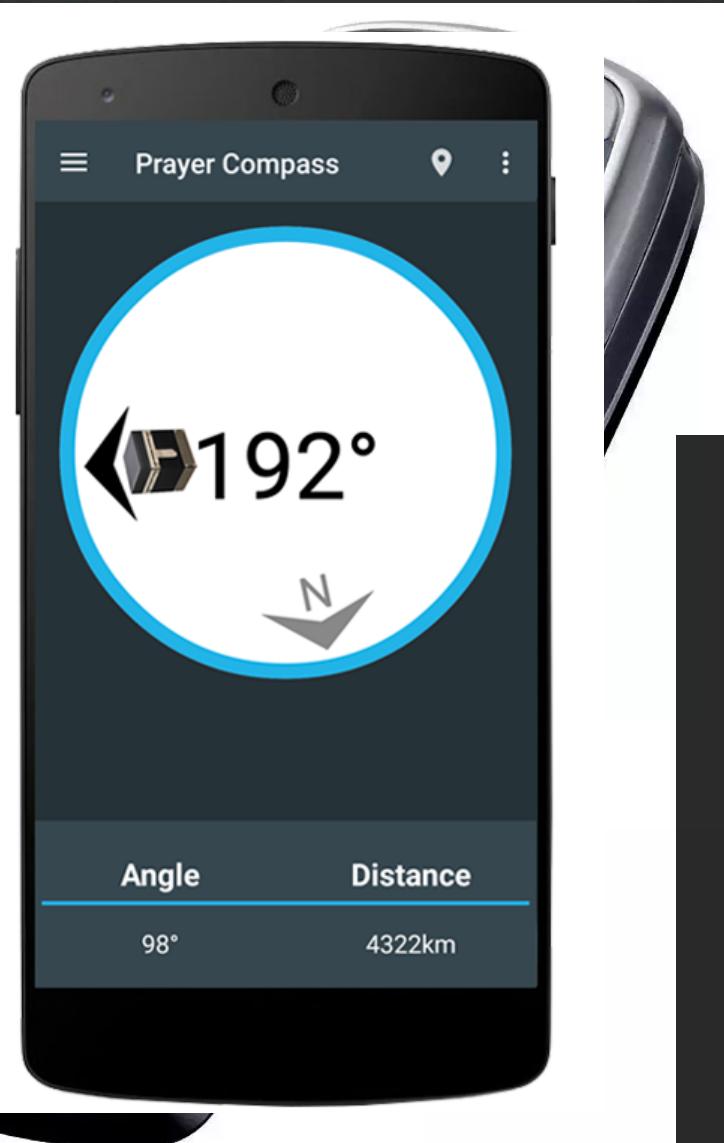


LG F7100

courtesy of Genevieve Bell, Intel

Launched in 2004 in UAE,
Saudia Arabia, North Africa,
India, Malaysia

Hall of Fame!



LG F7100

courtesy of Genevieve Bell, Intel

Launched in 2004 in UAE,
Saudi Arabia, North Africa,
India, Malaysia

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

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

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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- Much more important for hard to implement features
 - speech & handwriting recognition
 - how would we do it for VR/AR?

Wizard of Oz Technique

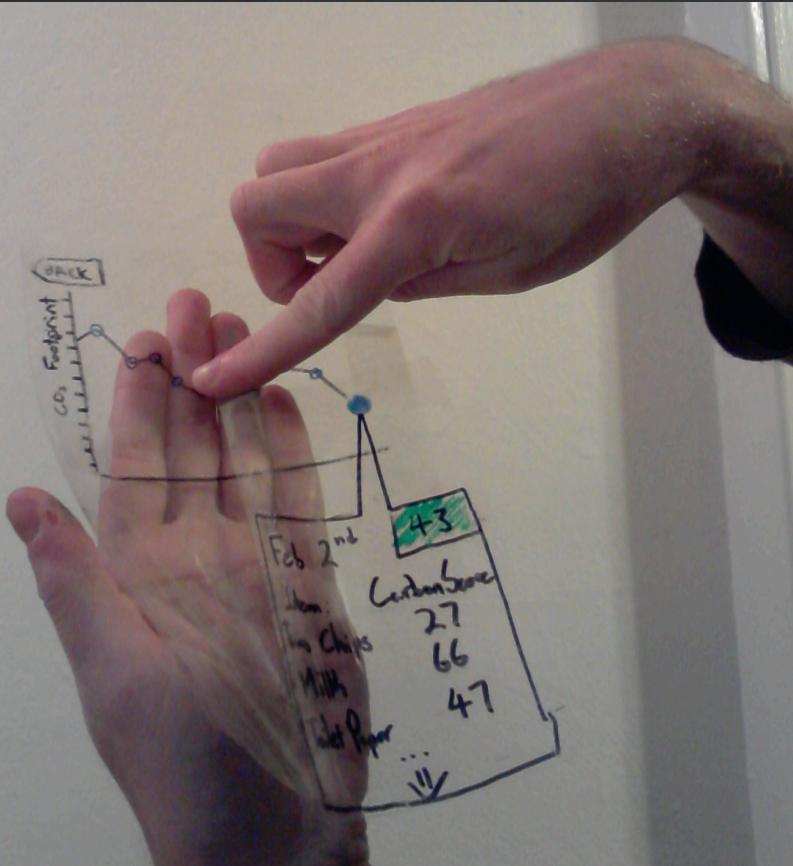


Carbon
Shopper

- Much more important for hard to implement features
 - speech & handwriting recognition
 - how would we do it for VR/AR?

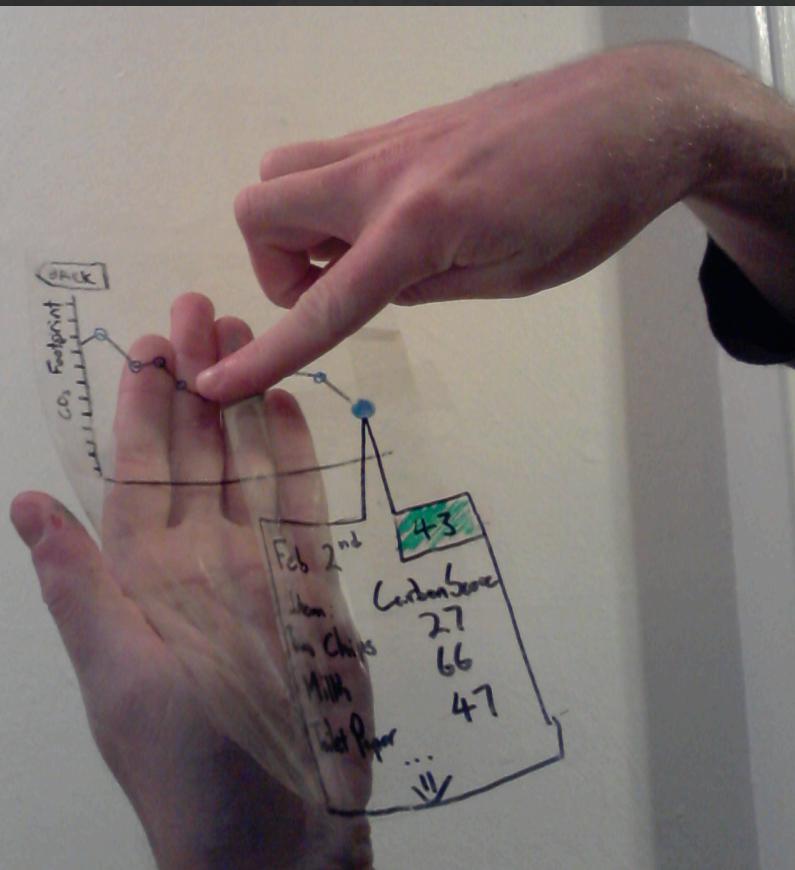
Evaluation

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



Evaluation

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



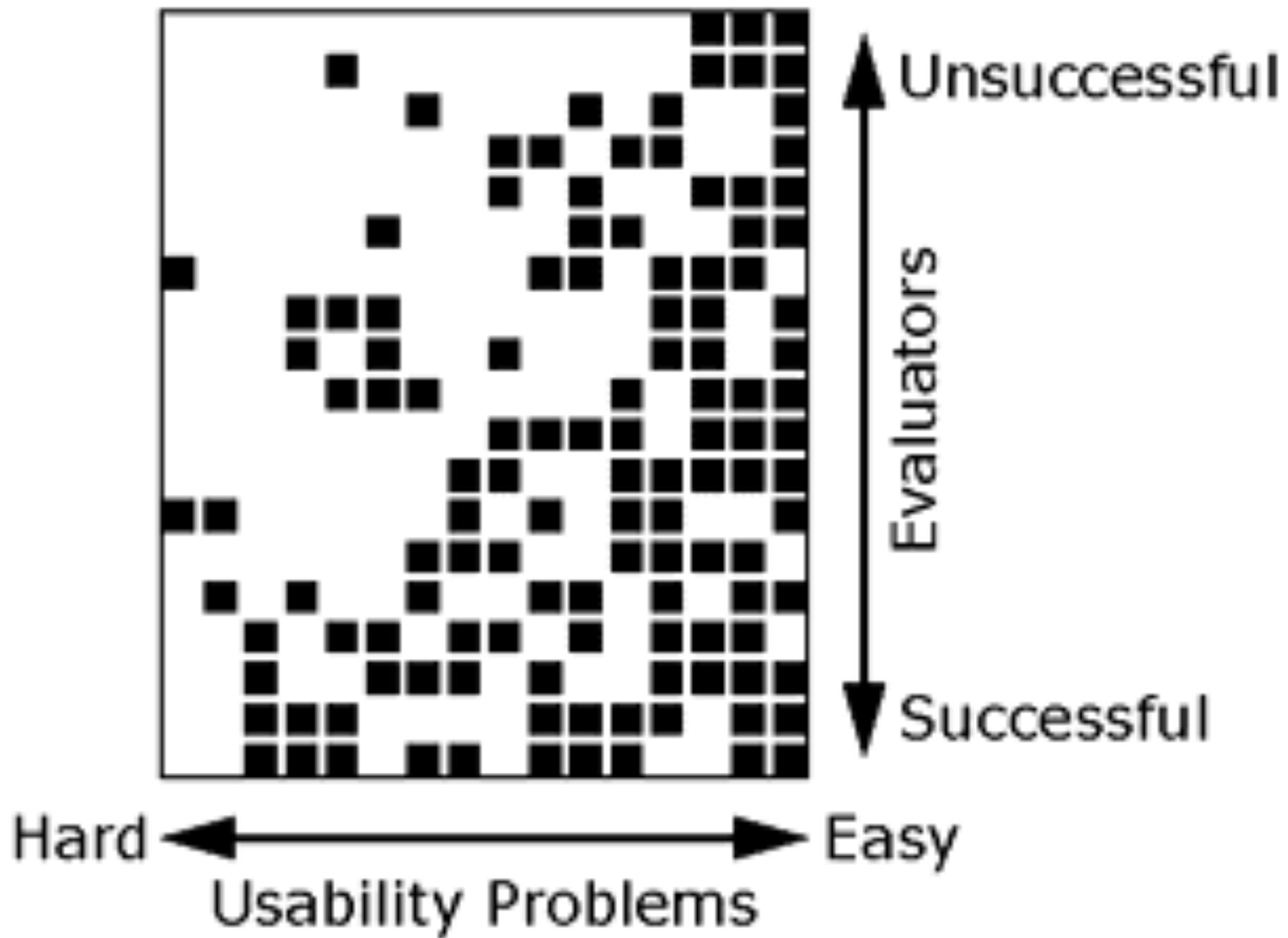
Not realistic
– visuals & performance

Not on actual interface
– can't test alone

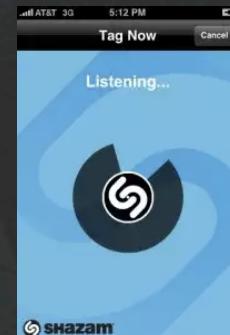
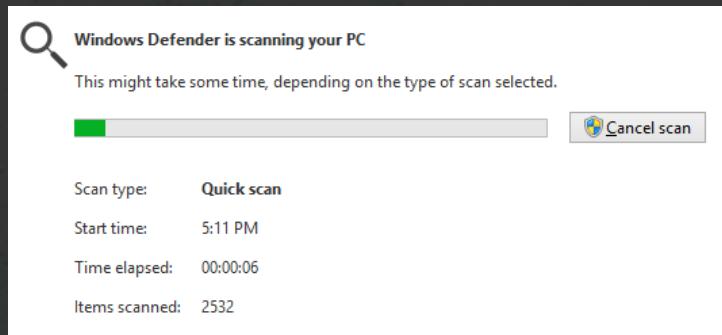
Need participants
– can be hard to find repeatedly

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



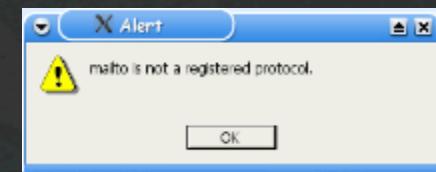
Heuristics



H1: Visibility of system status

H2: Match between system & real world

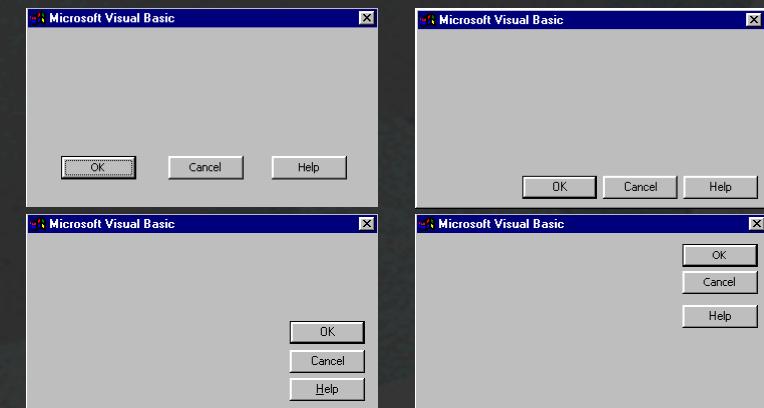
H3: User control & freedom



Two screenshots of a language learning application. The left screenshot shows a microphone icon and the text "Speak this sentence" above a recording button. Below it is a sentence in Spanish: "Nosotros bebemos agua." The right screenshot shows a "Select the missing word" exercise with a sentence fragment "Soy _____ mujer." A modal dialog box asks "Are you sure you want to quit? All progress in this lesson will be lost." with "Cancel" and "Quit" buttons.

Heuristics (cont.)

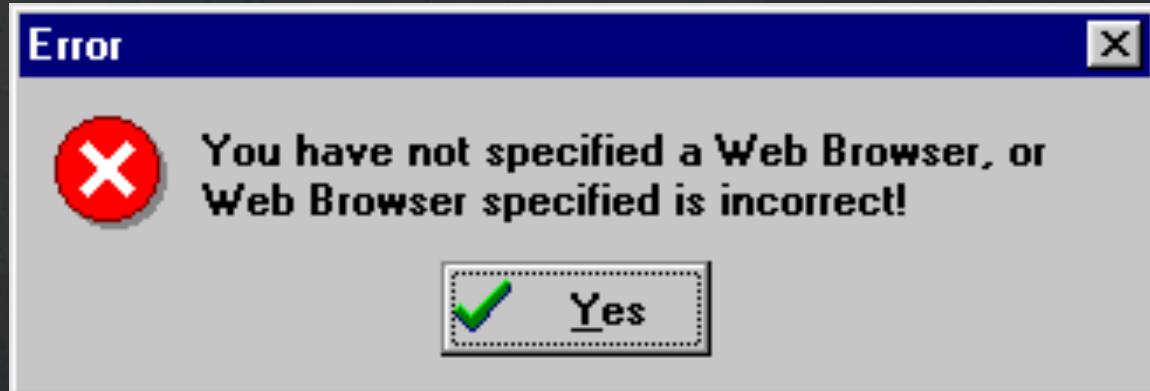
- H4: Consistency & standards
- H5: Error prevention
- H6: Recognition rather than recall



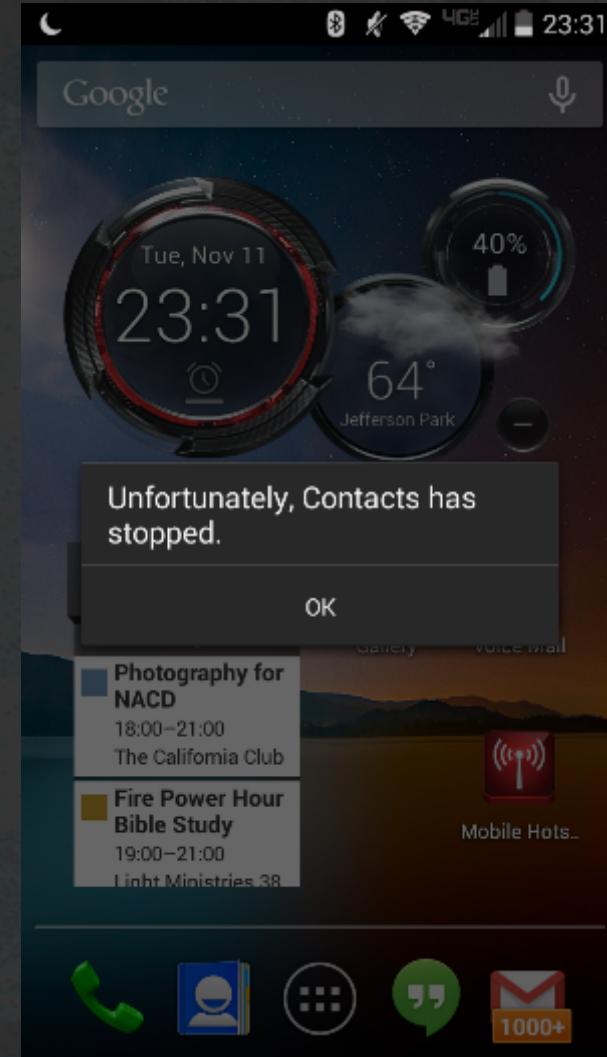
- H7: Flexibility and efficiency of use
- H8: Aesthetic & minimalist design

Heuristics (cont.)

bad

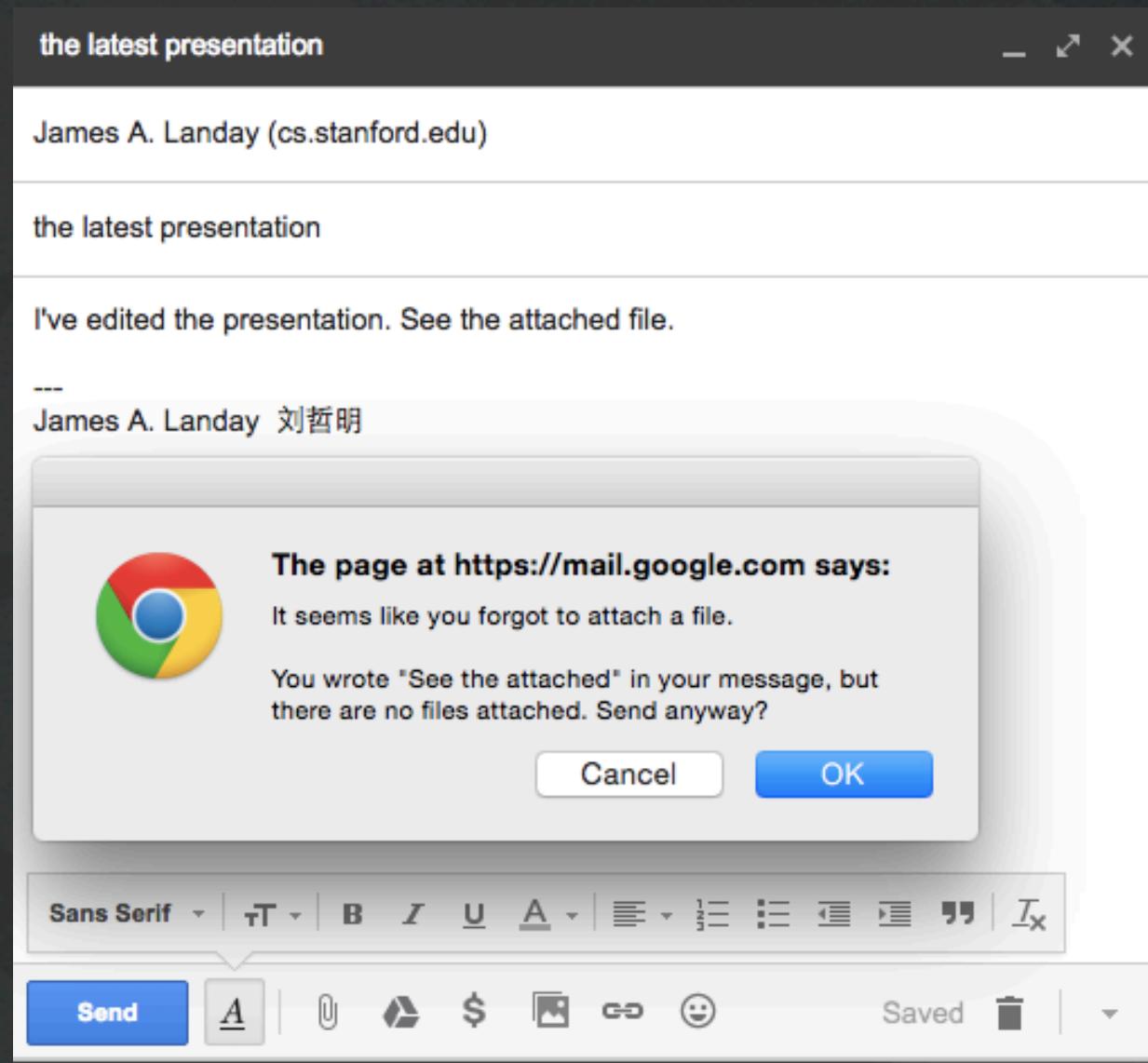


H9: Help users recognize,
diagnose, & recover from errors



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

The screenshot shows a car insurance quote form with the following sections:

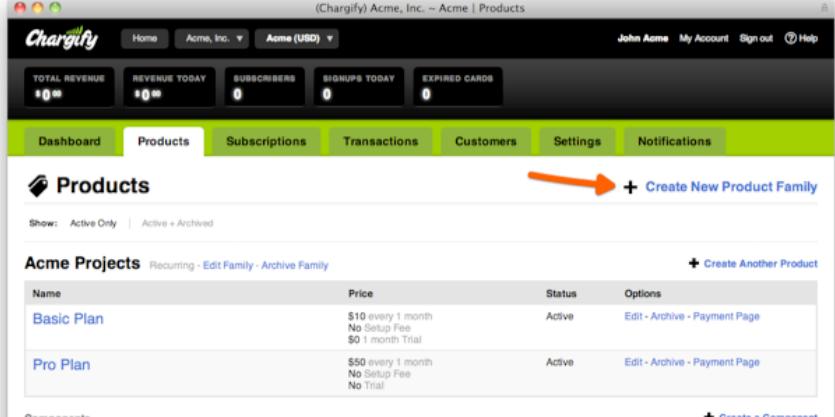
- Top Header:** K Tyre & Auto Service logo, "Need help with your quote? Call us on 1300 590 766", and "CAR INSURANCE from the car experts".
- Section 1 (Red Box):** "Your premium estimate". It contains a red exclamation mark icon and the text "To continue, please...". Below this, it says "Answer these questions:" followed by a bullet point: "Does the car have any non-standard accessories or modifications?". A green circle with the number 1 is positioned to the right of the section header.
- Section 2 (Blue Box):** "For one year of comprehensive car insurance, your premium will be about \$443*". Below this, a note states "*May change depending on your particular circumstances". A green circle with the number 2 is positioned to the right of the section header.
- Section 3 (Grey Boxes):** "Get an exact quote". It includes fields for "What type of insurance are you looking for?" (set to "Comprehensive"), "When would you want your new policy to start?", "Who currently insures your car?", "Is the car under finance?", "Where is the car kept overnight?", and "Does the car have any non-standard accessories or modifications?". A green circle with the number 3 is positioned to the right of the section header.
- Right Side (Information):** "Information you have provided" section showing details like "Car 2003 Holden Commodore S Manual 4D Sedan Change", "Kept overnight In postcode 2607 Change", "Main driver 32 year old male Change made no car insurance claims in the last 3 years Change", and "Cover for drivers under 25? No Change".

H10 – Help & Documentation

- Better if the system can be used without documentation, but it may be necessary
- How
 - easy to search
 - focused on task
 - list concrete steps

Creating Product Families

Product Families are created via your [Site](#) Dashboard from the "Products" tab. Clicking the "Create New Product Family" will take you where you want to go.



The screenshot shows the Chargify dashboard with the following details:

- Header:** (Chargify) Acme, Inc. ~ Acme | Products, Home, Acme, Inc., Acme (USD), John Acme, My Account, Sign out, Help.
- Dashboard Metrics:** TOTAL REVENUE \$0.00, REVENUE TODAY \$0.00, SUBSCRIBERS 0, SIGNUPS TODAY 0, EXPIRED CARDS 0.
- Navigation:** Dashboard, Products, Subscriptions, Transactions, Customers, Settings, Notifications.
- Products Section:** Shows 'Acme Projects' with two plans: 'Basic Plan' and 'Pro Plan'. Both are active and have no setup fees or trials.
- Action Buttons:** '+ Create Another Product' and '+ Create a Component'.



Table Action Properties

Action Type: Redirect Custom (1)

Action Label: Import Contacts (2)

Action Icon: ui-silk-user-add (3)

1. Choose **Redirect** as the action type.
2. Name your action something inspirational, like **Import**.
3. Choose a helpful icon.

<http://blog.screensteps.com/10-examples-of-great-end-user-documentation>

Heuristic Violation Examples

1. [H6 Recognition Rather Than Recall]

Can't copy info from one window to another

- user needs to memorize the data & retype
- fix: allow copying

2. [H4 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

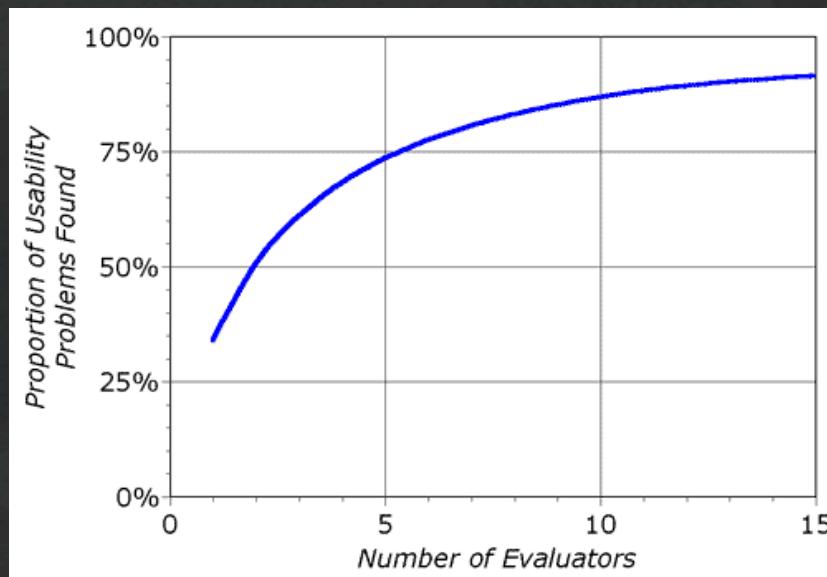
1. [H4 Consistency & Standards] [Severity 3]

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.

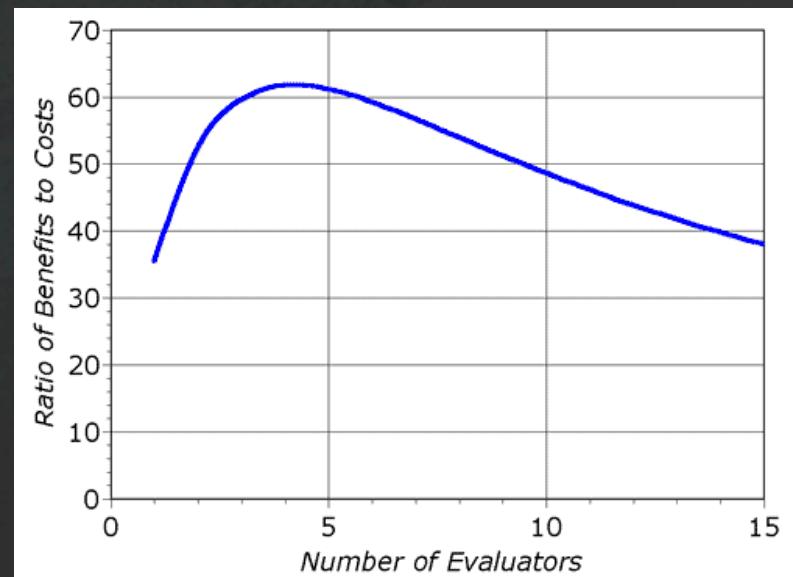
Fix: Use “Save” everywhere in the application.

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
- Have evaluators independently rate severity
- Combine the findings from 3 to 5 evaluators
 - come to agreement on problems, fixes & severity
- Alternate with user testing

EXERCISE

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"/>	Bazooka 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-P50 Digital Still Camera, 2.1 Mega Pixel Save \$100! Was \$399.95, Now: \$299.95	\$299.95	\$299.95
1	#133DVDLA95	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	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: **\$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](#).

[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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6	#158DSCP50	<input type="checkbox"/>	Special Sony DSC-P50 Digital Still Camera, 2.1 Mega Pixel Save \$100! Was \$299.95, Now: \$299.95	\$299.95	\$299.95
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<http://hci.stanford.edu/courses/cs147/2017/au/assignments/simple-heuristic-evaluation.pdf>
<https://goo.gl/vkhHVy>
 Find 12-15 Heuristic Violations

Problems Found

1. H3 – no purchase button [100]
2. H4 – remove column has check boxes and then one entry w/ yes/no [100]
3. H5 – illegal input (text) allowed in quantity field [90]
4. H1 – not clear who is logged in [10]
5. H2 – “what fits my car” is not a good term that people would know [20]
6. H5 – user can add “out of stock” items [80]

Problems Found Last Year

1. H5 Error Prevention

allows non-numeric data in the quantity field. fix: don't allow it. [90]

2. H5 Error Prevention

quantity field doesn't multiply by the price to give a correct total. fix: make it work. [55]

3. H10 Help & Documentation

link for international visitors hidden at bottom & may not be readable by non-english speakers. fix: move up to prominent location & include flags? [30]

4. H5 Error Prevention

"Remove item bolded in red", but red used for multiple purposes. Fix: get rid of ads in the checkout! More direct way to remove out of stock item or not even let me add a item that is out of stock. [100]

5. H5 Error Prevention

No way to check out. [110]

Problems Found Two Years Ago

1. H4 Consistency
remove column, 4th item is different w/ checkboxes. [150]
2. H9 Error prevention
non-numeric data in the quantity. Do not allow. [125]
3. H2 Match between system & real world
vehicle selection link not language I'd expect [100]
4. H1 Visibility of System Status
unclear which item to remove based on error message (“red/bold”). [150]

Further Reading

Heuristic Evaluation

- Longer lecture
 - <https://drive.google.com/file/d/0BweiB6wu4sBaN2tfZGxKb2tuOTg/view>
- Books
 - *Usability Engineering*, by Nielsen, 1994
- Web site
 - <http://www.nngroup.com/articles/>