

Analytical Usability Evaluation:

Heuristic Evaluation,
Standard inspections and
Consistency inspections

What is an Heuristic Evaluation?

- Usability experts judge whether each element of a user interface follows established usability principles
- The principles are available as a list (called heuristics, guidelines, checklist)

How do you do it? (1)

- Get usability experts
- Decide which heuristics to use
- Let each expert perform the evaluation on their own (without knowing the results of the other experts!)
- Do not give the experts more info than necessary on the interface
- Session should last at most two hours

How do you do it? (2)

- Expert should go through the interface at least twice
 - first time to get a feel for the flow of interaction and the general scope of the system,
 - second time to focus on specific interface elements
- Record findings while they are generated
- Compare the findings of the experts

Which heuristics do you use?

- In pairs, discuss for two minutes possible heuristics.

For example “Use a large enough font” can be an heuristic.

- I will ask some pairs for examples

Which heuristics do you use?

- Many lists exist
- Important that list is not too long
- Nielsen's list of 10 heuristics is based on a factor analysis of 249 usability problems to derive a set with maximal explanatory power
- Keith Instone gives examples of how to use Nielsen's heuristics for Web designs
- Same heuristics still used for mobile apps.

Nielsen's Heuristics (1)

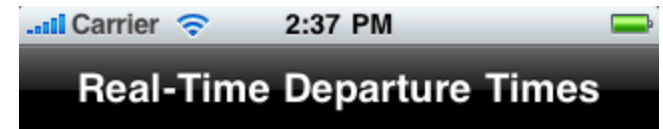
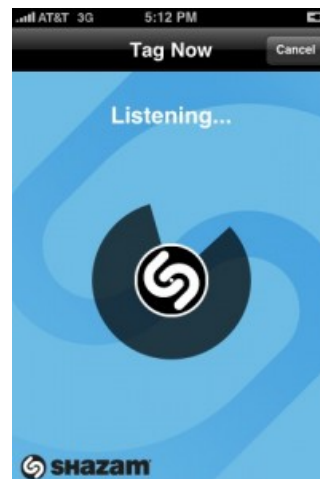
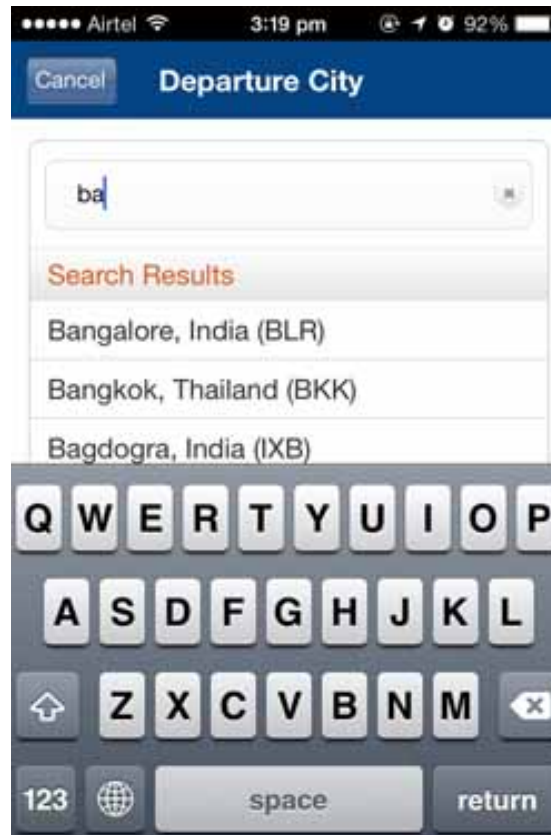
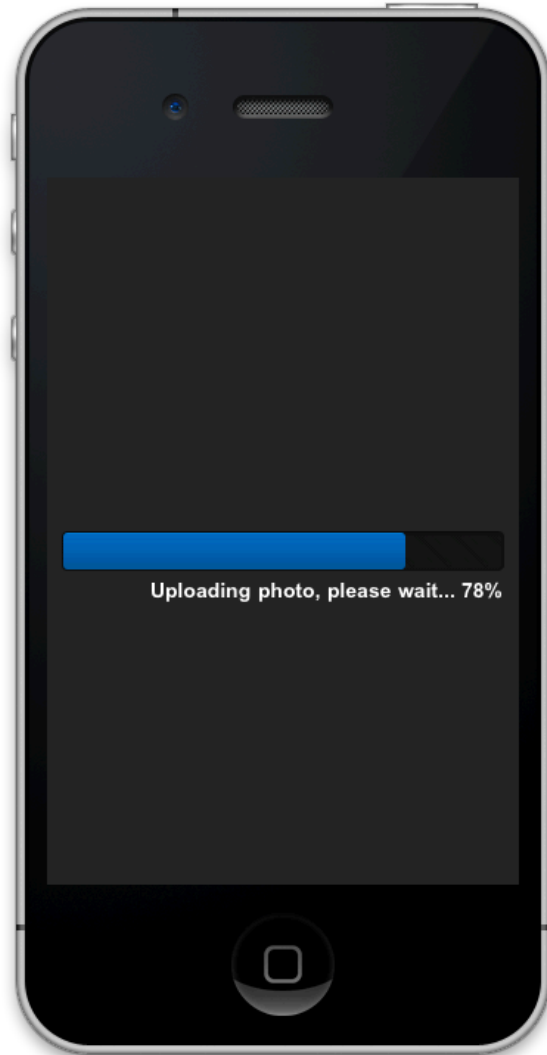
Visibility of system status

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

Keith Instone's example

- User needs to know “Where am I” and “Where can I go?”
- Brand every page and indicate to which section it belongs.
- Clearly mark links to other pages

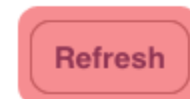
=> Stress test



Closest Station: Downtown Berkeley
**Don't update automatically -
but the user doesn't know**

Fremont: 10 min, 25 min
Millbrae: 3 min, 18 min, 33 min
Richmond: 5 min, 11 min, 21 min

**No indication this button
has resulted in any action**



Nielsen's Heuristics (2)

Match between system and the real world

The system should speak the users' language, with words, phrases and concepts familiar to the user, rather than system-oriented terms. Follow real-world conventions, making information appear in a natural and logical order.

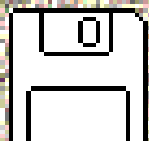


Insérez la disquette

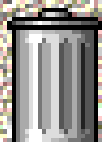


Veuillez insérer le disque 'Windows 95 CD-ROM'
puis cliquez sur OK.

OK



Transfer Disk



Trash

Language

Russian

Finnish

Russian

French (Standard)

Saudi Arabia

French Canadian

Serbian

German (Standard)

Slovak

Nielsen's Heuristics (3)

User control and freedom

Users often choose system functions by mistake and will need a clearly marked "emergency exit" to leave the unwanted state without having to go through an extended dialogue. Support undo and redo.

Keith Instone's example

- Do not block “emergency exits” of the browser
- Home button on every page provides user control
- Be careful when forcing users into fonts, colors, etc
- Watch out for “advanced technologies” like animated gifs



Delete does not ask for confirmation, no way to undo actions

Tue 30 Apr – Tue 30 Apr x 1

Change Search



Best price **£461** | Get price alerts

Economy

Change your dates?

01 May - 02 May **£1,060**
02 May - 03 May **£1,041**
01 May - 03 May **Get prices**
Whole month (Apr - Apr)

Change your airport?

From **Birmingham** (97 mi) **£802**
From **Manchester** (157 mi) **£802**
To **Boston** (188 mi) **£888**
To **Toronto (Any)** (349 mi) **£1,400**
To **Everywhere**

Stops

☒ Direct **£461**
☒ 1 stop **£1,037**
☐ 2+ stops **none**

Departure times

Outbound 00:00 - 23:59

Return 00:00 - 23:59

Compare prices

Compare times

Compare airlines

40 of 43 results (show all)

sort by Price per adult

Operator	Outbound	Tue 30 Apr ▶	Return	Tue 30 Apr ▶	Price per adult
Kuwait Airways	16:35 LHR - 18:55 JFK direct 7h 20		21:45 JFK - 10:00 LHR direct 7h 15 (+1)		£461 <div>Select</div>
<div> Details Or book with: ebookers £493 CheapOair £507 </div>					
Aer Lingus +	12:00 LHR - 18:00 JFK		21:45 JFK - 10:00 LHR		£1,037

Crystal Travel
Checked 42mins ago

Nielsen's Heuristics (4)

Consistency and standards

Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform conventions.

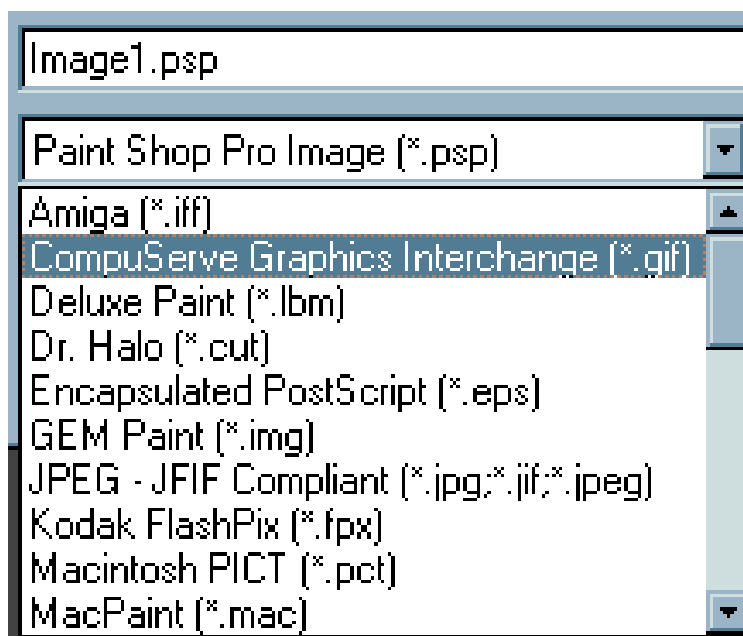
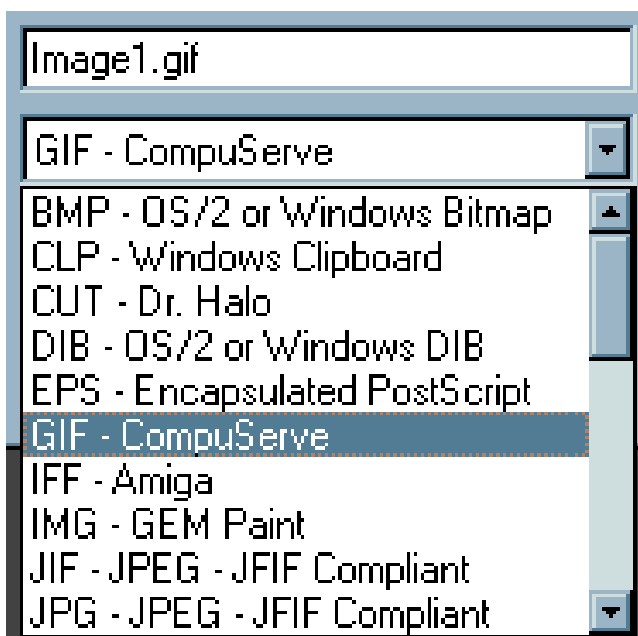
Keith Instone's examples

- Use wording in content and buttons consistently
- Check titles and headers for pages against links that point to them
- Realize that your site is not an island

Installation Program Message



This will uninstall JAWS for Windows.
This will remove your JFW directory and everything in it.
If you have files you wish to save in the JFW directory
or any subdirectories under it, abort this uninstall
by pressing ESCAPE and save them now.
Press ENTER to continue, ESCAPE to abort.



Nielsen's Heuristics (5)

Error prevention

Even better than good error messages is a careful design which prevents a problem from occurring in the first place.

Keith Instone's example

Inputting information on the web is a common source of errors.

- Use JavaScript to prevent some errors before users submit



Home Role User System Template Inventory Order

Customer Management — Add Customer

Fields marked with * are compulsory fields.

Name * <input type="text" value="Bob"/>	Address * <input type="text" value="Bukit Timah Avenue"/>
Mobile Contact * <input type="text" value="8123"/>	
Office Contact <input type="text" value="eg. 68761234"/>	

Add Customer **Reset**

4 digit mobile numbers should not be accepted!



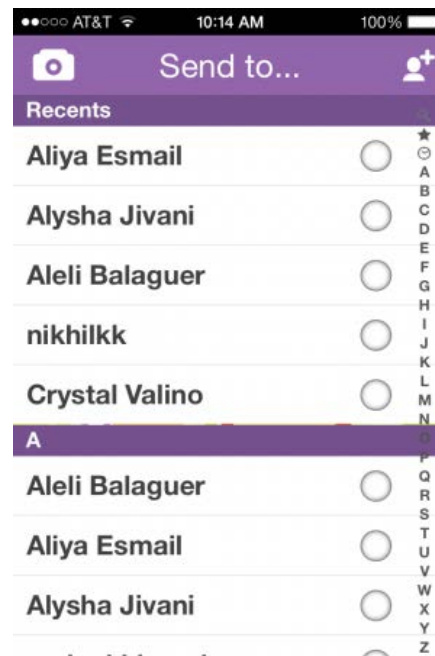
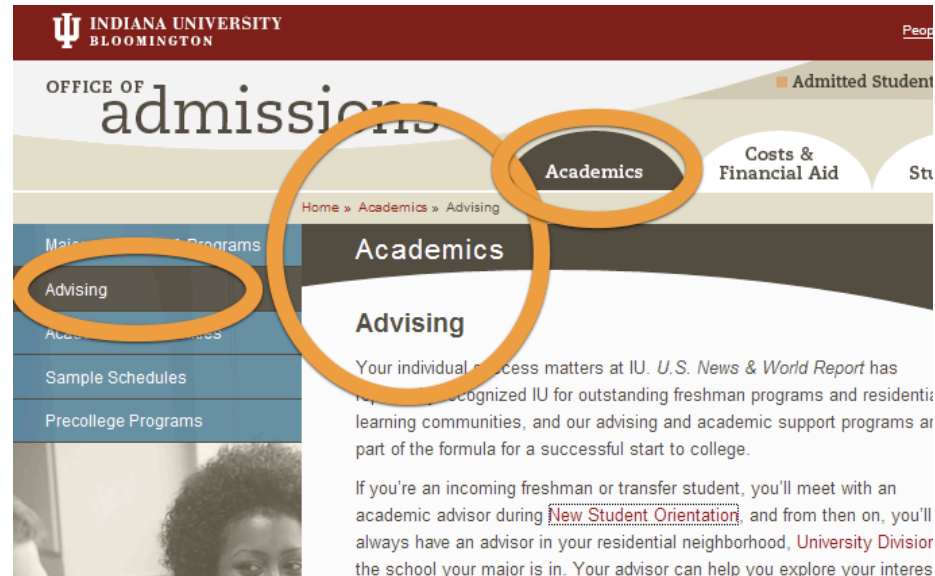
Nielsen's Heuristics (6)

Recognition rather than recall

Make objects, actions, and options visible. The user should not have to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate.

Keith Instone's example

- If users can recognize where they are, they are less likely to get lost
- Use good labels and descriptive links, be careful with using image maps



Snapchat:
Send which photo?

Nielsen's Heuristics (7)

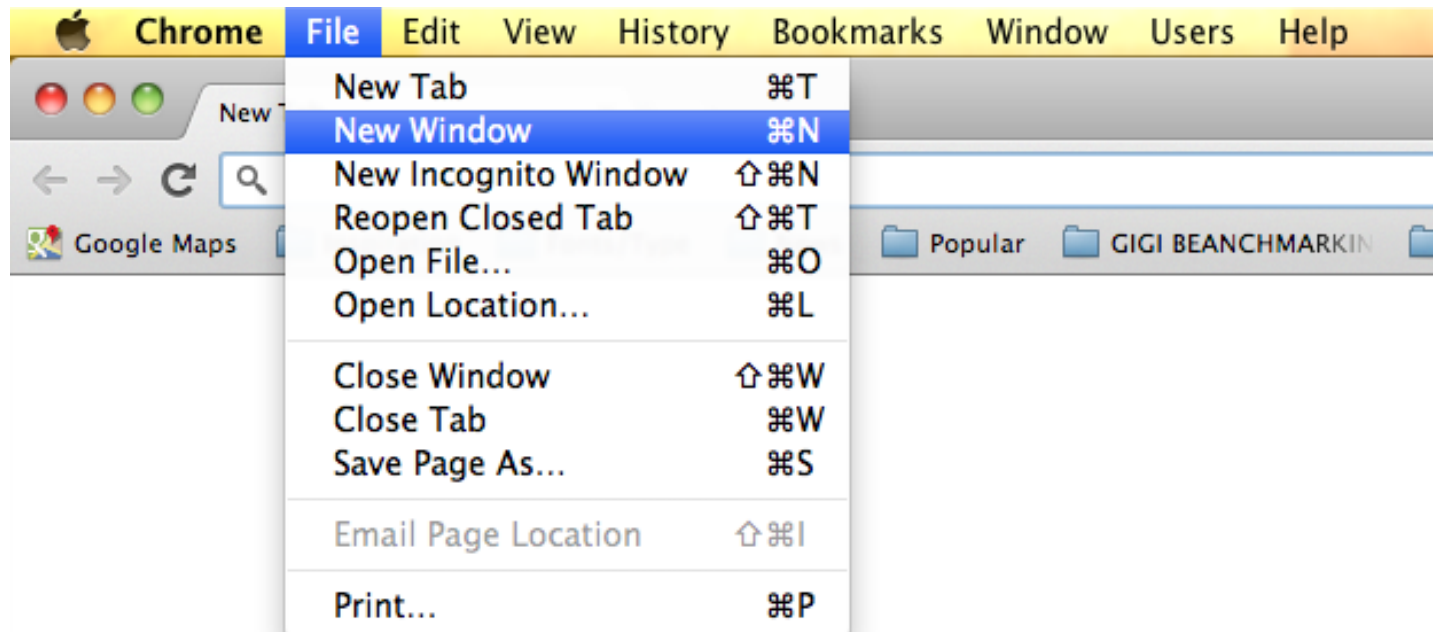
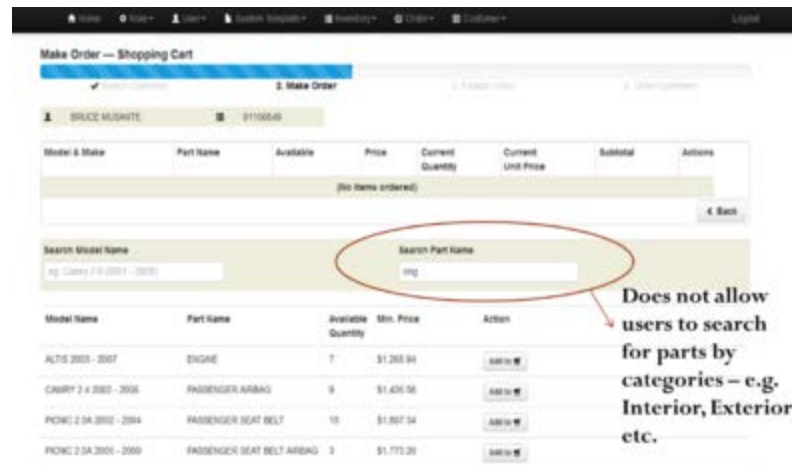
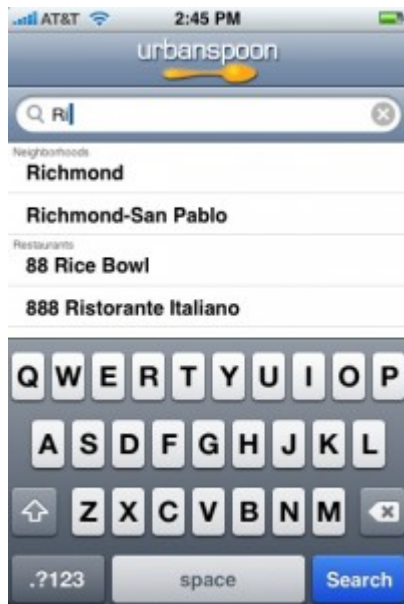
Flexibility and efficiency of use

Accelerators -- unseen by the novice user -- may often speed up the interaction for the expert user such that the system can cater to both inexperienced and experienced users. Allow users to tailor frequent actions.

Keith Instone's example

Browser provides good accelerators, namely bookmarks

- Make pages at your site easy to bookmark: be careful with frames, do not generate temporary URLs, etc



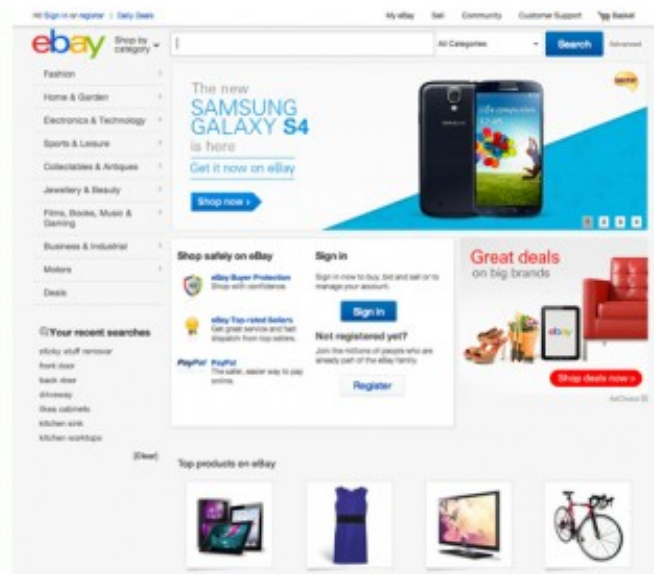
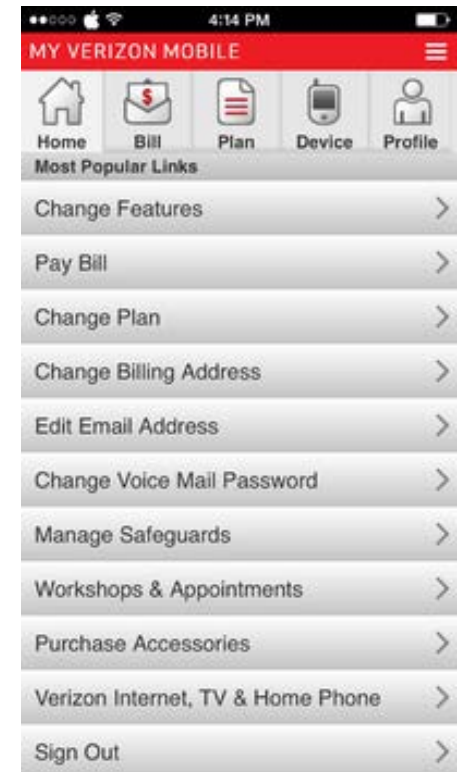
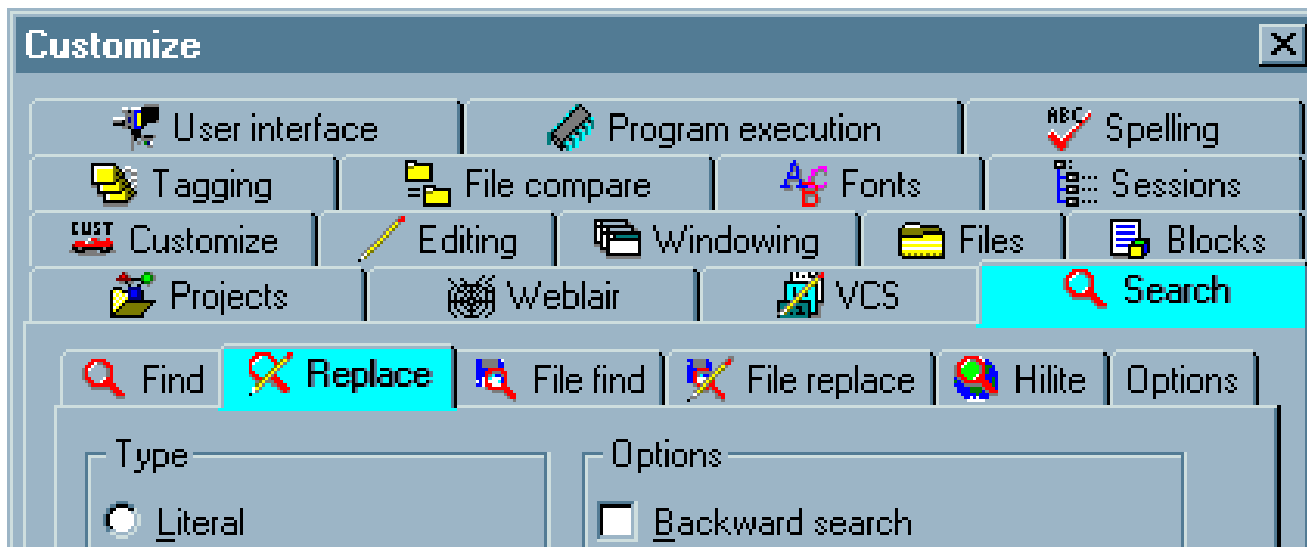
Nielsen's Heuristics (8)

Aesthetic and minimalist design

Dialogues should not contain information which is irrelevant or rarely needed. Every extra unit of information in a dialogue competes with the relevant units of information and diminishes their relative visibility.

Keith Instone's example

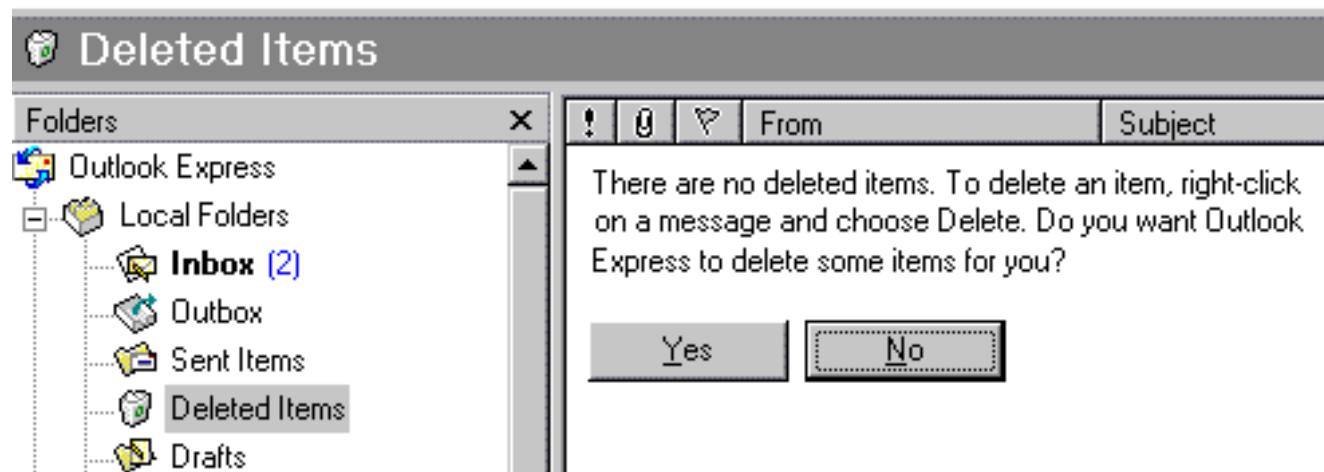
- Make rarely needed information accessible via link
- Use progressive levels of detail



Nielsen's Heuristics (9)

Help users recognise, diagnose and recover from errors

Error messages should be expressed in plain language (no codes), precisely indicate the problem, and constructively suggest a solution.



Change?

There is no record to change!

OK

OzWin II



List index out of bounds.

OK

çlça.g0E+f0OrqA



An internal error occurred. The BeyondMail internal error code is displayed above.

OK

Microsoft Internet Explorer



Internet Explorer cannot open the Internet site

The server returned extended information

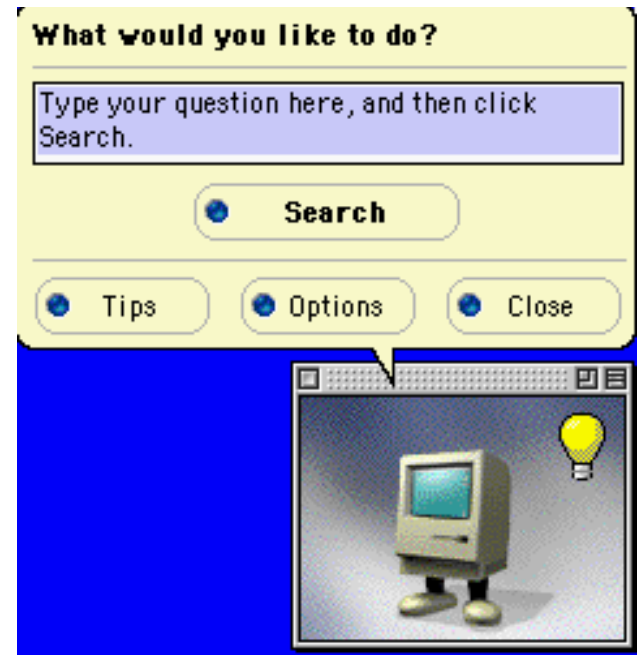
OK

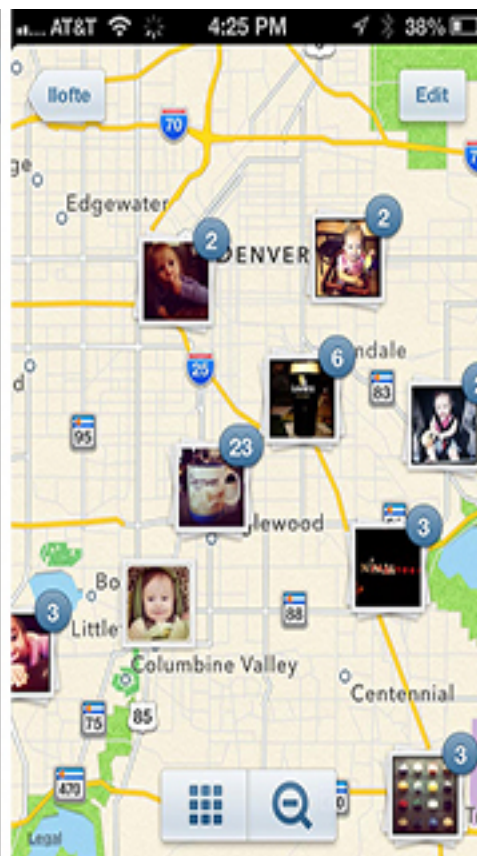


Nielsen's Heuristics (10)

Help and documentation

Even though it is better if the system can be used without documentation, it may be necessary to provide help and documentation. Any such information should be easy to search, focused on the user's task, list concrete steps to be carried out, and not be too large.





Help Center

friends list

Search

Using Facebook

Added Applications

Help Discussions

Getting Started

Safety

Facebook FAQs Expand All

How many friends can I have?

You can have up to 1,000 friends

How can I remove someone removing them as a friend?

You can remove friends from you

Using the car

When did you start driving this car?

From ☒ -- Month --

January

February

Are ☐ March

April

May

June

What ☐ July

August

September

Enter the year

☐ I don't have the car yet

the registered keeper of the car?

for?

Q. [My car is not listed](#)

Q. [What is a modification?](#)

Car ownership

Tell us from when you started driving this car. Try to be as accurate as you can.

Additional heuristic I tend to use

Privacy

Users should be informed about and can decide about what data is captured about them (and why), and how the data is stored and used. Users should be able to provide consent for monitoring.

Small change to heuristic I use

Aesthetic, minimalist, *and safe* design

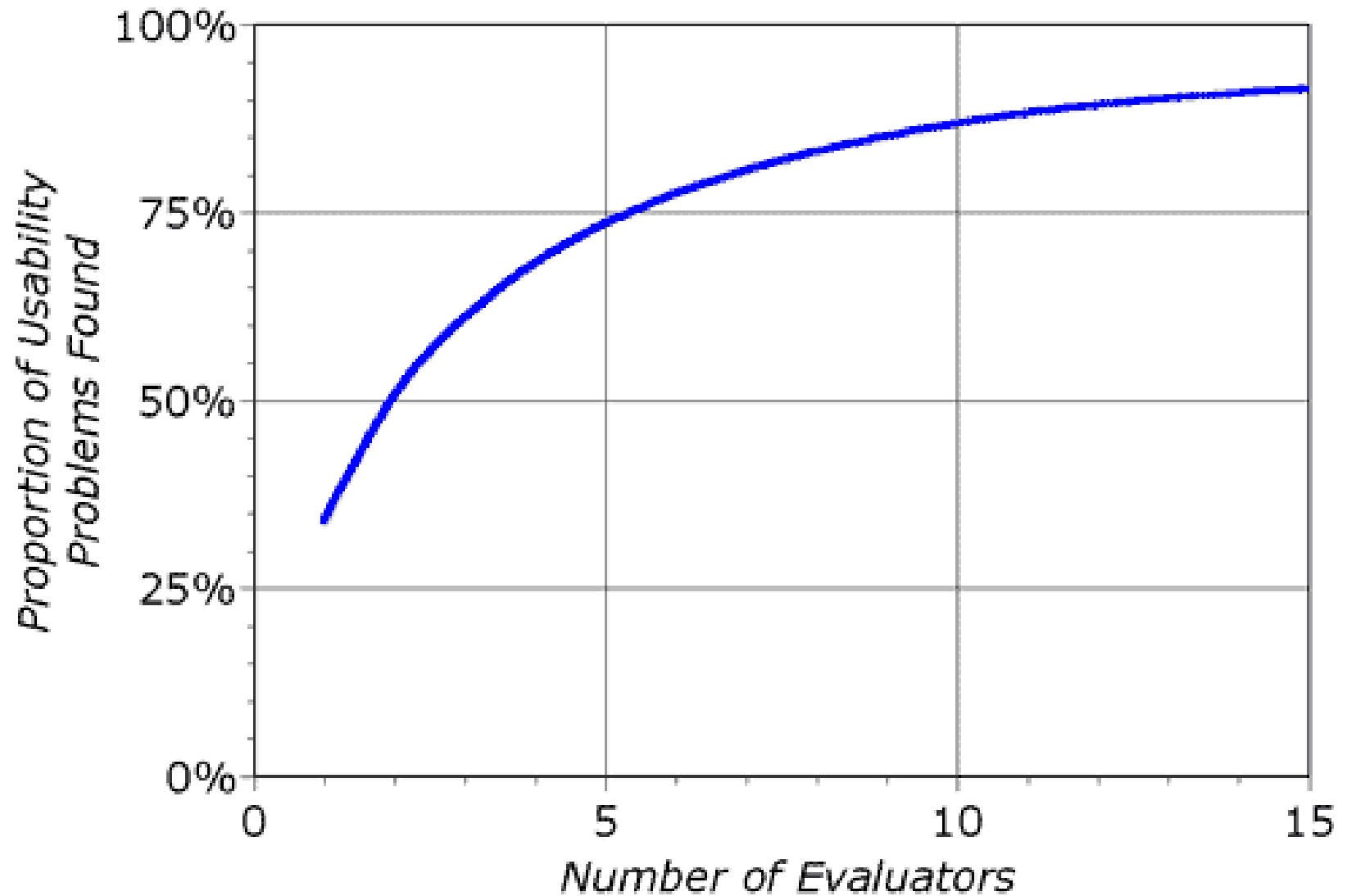
- For my transport apps, it is important that users should not be distracted from driving.

How many experts?

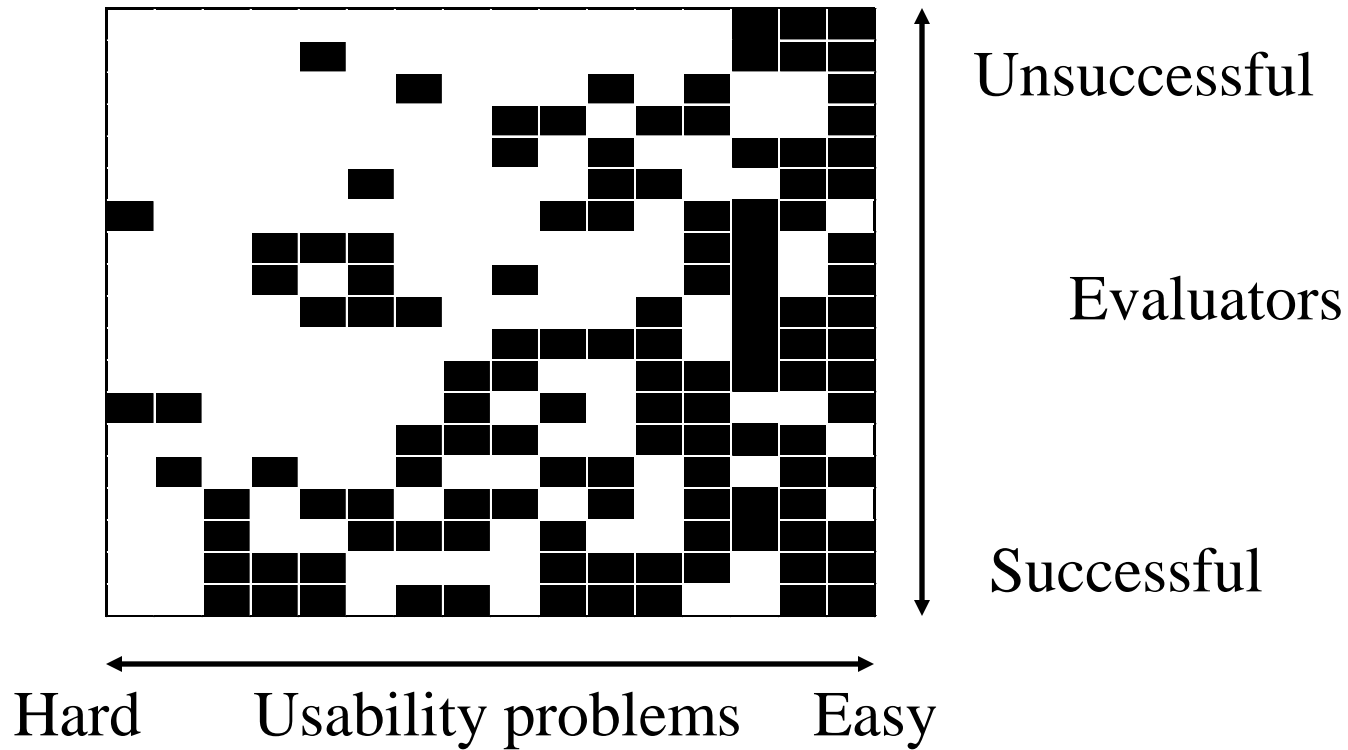
- In pairs, discuss how many experts you should use.

How many experts?

- Experience shows different people find different problems
- Several investigations show that using only one evaluator results in finding only 35% of the usability problems
- Use at least three experts (preferably five)



Average over six case studies from Nielsen



What are the results?

Output =

- list of problems with reference to principles
- descriptions as specific as possible
- list each problem separately
- compile in meeting between experts
- sort by severity

Advantages

- It is cheap
- It is intuitive and it is easy to motivate people to do it
- It does not require advanced planning
- It can be used early in the development process

Disadvantages

- Sometimes identifies usability problems without providing direct suggestions to solve them
- Experts are not real users

Standard inspections

Usability expert

with extensive knowledge of the standard

analyzes elements of the product

for their use of the industry standard

Consistency inspections

Ensure consistency across multiple products from the same development effort

Usability expert

analyzes the interfaces to all of the products noting how each product implements a particular user interaction or function

Team decides on the one implementation