



HCI: HEURISTICS

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Neilson's 10 Heuristics

“Heuristics” are simple rules that can be easily applied and are true in most situations. Using the ten heuristics to the right we can detect a large percentage of usability issues.

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. Aesthetics and minimalist design
9. Help users recognize, diagnose, and recover from errors
10. Help and documentation

Heuristic Evaluation

- Basic idea: Have one or more experts evaluate an interface based on a common set of criteria
- Heuristic Evaluation is very easy to do
- Pros
 - Can be done by even a single person
 - No ethics, recording, or other human-related problems
 - Minimal expense to find a large number of potentially expensive problems
- Cons
 - Experts are not the same as end users, they will miss some things
 - Heuristics are the most common types of problems but they do not represent all problems

Stages of a heuristic evaluation

- Briefing session to tell experts what to do
- Evaluation period of 1-2 hours where:
 - Each expert works separately
 - Take one pass to get a feel for the product
 - Take a second pass to focus on specific features
- Debrief session in which experts work together to prioritize problems.

No. of evaluators & problems

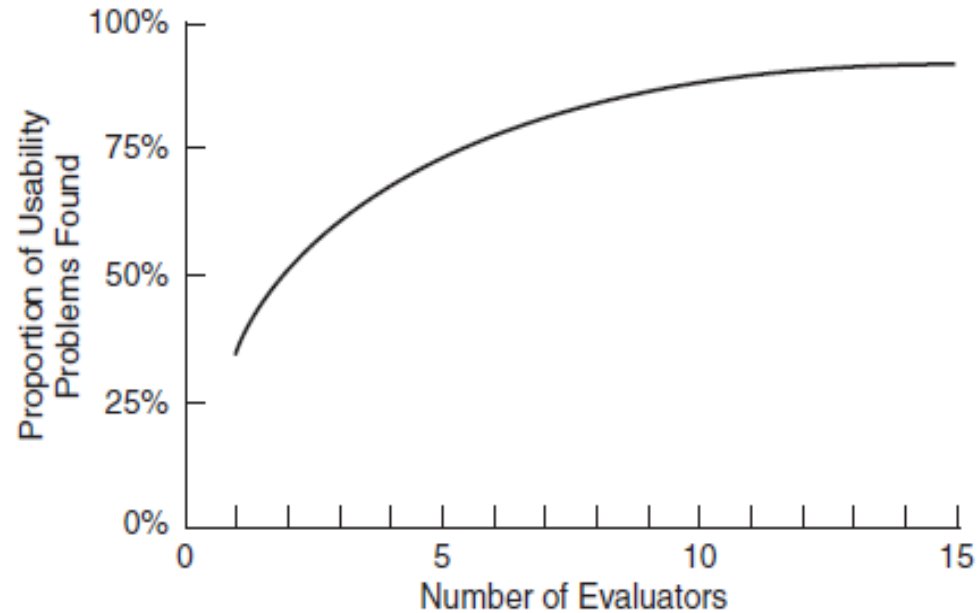


Figure 15.1 Curve showing the proportion of usability problems in an interface found by heuristic evaluation using various numbers of evaluators. The curve represents the average of six case studies of heuristic evaluation

Source: Usability Inspection Methods, J. Nielsen & R.L. Mack ©1994. Reproduced with permission of John Wiley & Sons Inc.

Number of evaluators

- Nielsen suggests that on average 5 evaluators identify 75-80% of usability problems.
- Cockton and Woolrych (2001) point out that the number of users needed to find 75-80% of usability problems depends on the context and nature of the problems.

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Visibility of system status

Me adding
the Q&A
session to
my Google
calendar

The screenshot shows the Google Calendar event creation page. At the top, there is a search bar and navigation buttons: a back arrow, a red 'SAVE' button, 'Discard changes', 'Delete', and a 'More Actions' dropdown menu. The event title is 'Hci QandA'. The date and time are set for 10/6/2016 from 2:00pm to 4:00pm in the (GMT+01:00) London time zone. There are checkboxes for 'All day' and 'Repeat...'. Below this, there are tabs for 'Event details' and 'Find a time'. The 'Where' field is empty with the placeholder 'Enter a location'. The 'Video call' option is 'Add video call'. The 'Calendar' is set to 'Kami Vaniea'. The 'Description' field is empty. On the right side, there is an 'Add guests' section with a text input 'Enter guest email address' and an 'Add' button. Below that, the 'Guests can' section has checkboxes for 'modify event' (unchecked), 'invite others' (checked), and 'see guest list' (checked). At the bottom, there are options for 'Attachment' (Add attachment), 'Event color' (a row of color swatches with the first one checked), 'Notifications' (No notifications set, Add a notification), 'Show me as' (Available, Busy selected), and 'Visibility' (Calendar default selected, Public, Private). A note at the bottom states: 'By default this event will follow the sharing settings of this calendar: event details will be visible to anyone who can see details of other events in this calendar. Learn more'. A 'Publish event' link is also present.

Visibility of system status

Better add a reminder or I might forget to go

The screenshot shows the Google Calendar event creation interface. At the top, there's a search bar and navigation buttons: a back arrow, a red 'SAVE' button, 'Discard changes', 'Delete', and a 'More Actions' dropdown. The event title is 'Hci Qanda'. The date and time are set for 10/6/2016 from 2:00pm to 4:00pm in the London time zone (GMT+01:00). There are checkboxes for 'All day' and 'Repeat...'. Below this is the 'Event details' section with a 'Find a time' button. The 'Where' field is empty. There's a 'Video call' link and a 'Calendar' dropdown set to 'Kami Vaniea'. The 'Description' field is empty. On the right side, there's an 'Add guests' section with an input field and an 'Add' button, and a 'Guests can' section with checkboxes for 'modify event', 'invite others', and 'see guest list'. At the bottom, there's an 'Attachment' section with an 'Add attachment' link. The 'Event color' section shows a row of colored squares with the first one (blue) selected. The 'Notifications' section has a dropdown set to 'Notification', a value of '10', and a unit of 'minutes', with an 'Add a notification' link. The 'Show me as' section has radio buttons for 'Available' and 'Busy', with 'Busy' selected. The 'Visibility' section has radio buttons for 'Calendar default', 'Public', and 'Private', with 'Calendar default' selected. A note at the bottom explains the default visibility settings and includes a 'Publish event' link.

Google Search Calendar

← SAVE Discard changes Delete More Actions

Hci Qanda

10/6/2016 2:00pm to 4:00pm 10/6/2016 (GMT+01:00) London Time zone

All day Repeat...

Event details Find a time

Where Enter a location

Video call Add video call

Calendar Kami Vaniea

Description

Attachment Add attachment

Event color |

Notifications Notification 10 minutes ×
Add a notification

Show me as Available Busy

Visibility Calendar default Public Private

By default this event will follow the [sharing settings](#) of this calendar: event details will be visible to anyone who can see details of other events in this calendar. [Learn more](#)

[Publish event](#)

Add guests
Enter guest email address Add

Guests can
 modify event
 invite others
 see guest list



Search Calendar



SAVE

Discard changes

Delete

More Actions

Hci QandA

10/6/2016

2:00pm

to

4:00pm

10/6/2016

(GMT+01:00) London [Time zone](#)

All day Repeat...

Event details

[Find a time](#)

Where

Video call [Add video call](#)

Calendar

Description

Attachment [Add attachment](#)

Event color |

Notifications

[Add a notification](#)

Show me as Available Busy

Visibility Calendar default Public Private

By default this event will follow the [sharing settings](#) of this calendar: event details will be visible to anyone who can see details of other events in this calendar. [Learn more](#)

[Publish event](#)

Is the
reminder
saved?

Add guests

Add

Guests can

modify event

invite others

see guest list

Visibility of system status

I click the back button without clicking “save” and get a warning

The screenshot shows the Google Calendar event creation interface. At the top, there is a search bar and navigation buttons: a back arrow, a red 'SAVE' button, 'Discard changes', 'Delete', and a 'More Actions' dropdown menu. The event title is 'Hci QandA'. The date and time are set to 10/6/2016 from 2:00pm to 4:00pm in the (GMT+01:00) London time zone. There are checkboxes for 'All day' and 'Repeat...'. Below the event details, there is a 'Where' field, a 'Video call' link, a 'Calendar' dropdown set to 'Kami Vaniea', and a 'Description' text area. A modal dialog box titled 'Your Event' is centered on the screen, displaying the message 'Your event has not been saved.' and two buttons: 'Discard changes' and 'Continue editing'. To the right of the event details, there is an 'Add guests' section with an input field and an 'Add' button, and a 'Guests can' section with checkboxes for 'modify event', 'invite others', and 'see guest list'. At the bottom, there are options for 'Attachment', 'Event color', 'Notifications' (set to 10 minutes), 'Show me as' (set to Busy), and 'Visibility' (set to Calendar default). A 'Publish event' link is also visible at the bottom.

Usability Aspect Reports (UAR)

- Similar to a bug report, but for usability issues
- Can be about good or bad features
- Should link to a heuristic

<i>No. HE-</i>	Problem/Good Aspect:
Name:	
Evidence <i>Heuristic:</i> <i>Interface aspect:</i>	
Explanation	
Severity or Benefit <i>Rating:</i> <i>Justification (Frequency, Impact, Persistence)</i> <i>Frequency:</i> <i>Impact:</i> <i>Persistence:</i> <i>How I weighted the factors:</i>	
Possible solution and/or trade-offs	
Relationships	

HE-01	Problem/Good Aspect: Problem
Name: Saved status not visible for calendar changes	
Evidence Heuristic: Visibility of status Interface aspect:	
Explanation: When a calendar event element is changed it is not clear if it is automatically saved or not. As a result a user may try and leave the page when it is not saved.	
Severity or Benefit Rating: Low Justification: A warning box pops up preventing accidental loss of data Frequency: Medium Impact: Low Persistence: High (happens every time) How I weight the factors: The error is very recoverable and the warning is clear, so this may be an issue but it is a low importance one.	
Possible solution and/or tradeoff: Automatic saving is possible, but that may lead to other issues	
Relationships: None	

The screenshot shows the Google Calendar event creation page for an event titled "Hci Qanda". The event is scheduled for 10/6/2016 from 2:00pm to 4:00pm in the (GMT+01:00) London time zone. The interface includes a search bar at the top, navigation buttons (back, save, discard changes, delete, more actions), and a form for event details. The "Where" field is empty, and the "Calendar" is set to "Kami Vaniea". The "Event color" is selected as blue, and the notification is set to "Notification" 10 minutes before. The "Show me as" status is "Busy", and the "Visibility" is "Calendar default". A note at the bottom states: "By default this event will follow the sharing settings of this calendar: event details will be visible to anyone who can see details of other events in this calendar. Learn more". A "Publish event" link is also present.

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Match between system and the real world

- The interface should use concepts, language and real-world conventions that are familiar to the user.
- Why
 - The user already has knowledge from the outside world. A user interface can leverage that knowledge
 - If the interface does not match the way the world typically works people will become confused
 - Metaphors and affordances are useful here

Next

Back

User control and freedom

- Allow the user to have control of the interaction. Users should be able to undo actions, exit from any sequence of actions, and not be forced into a series of actions.
- Why
 - Users make errors sometimes
 - They need the ability to go back and correct the errors

Consistency and standards

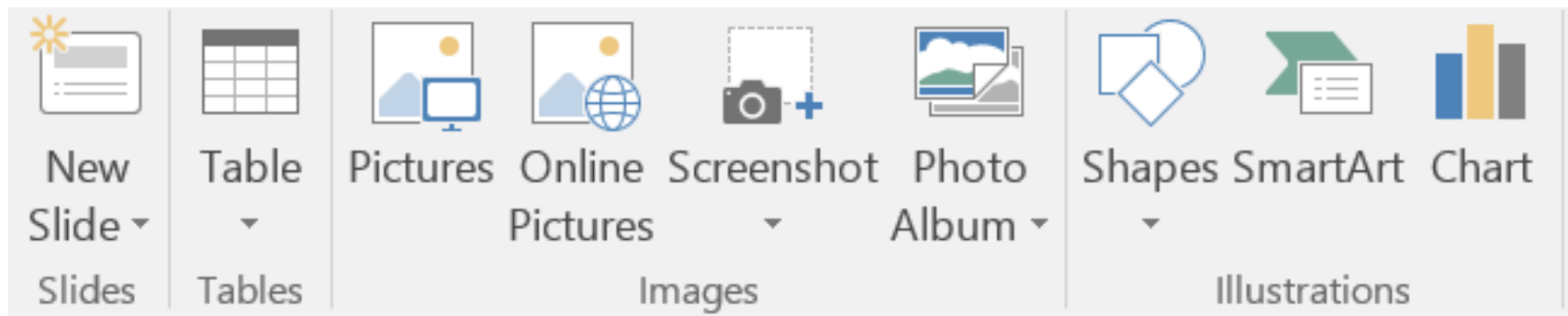
- Information that is the same should appear to be the same
- Information that is different should be expressed differently
- Developers need to know the conventions being used in the software
- Why
 - Similar to the real world heuristic, people can leverage things they already know
 - They will expect that something they learned will continue to be true

Error prevention

- If possible, prevent errors from happening in the first place
- Similar to visibility of system status, but specifically involves preventing an error from happening
- Example: if the user needs to select 3 things, don't wait till the next screen to tell them that they have selected 4
- Why
 - Users are not machines, they do not always perceive all the information available and they can temporarily forget things
 - Computers are really good at using all the information available and remembering the last few things

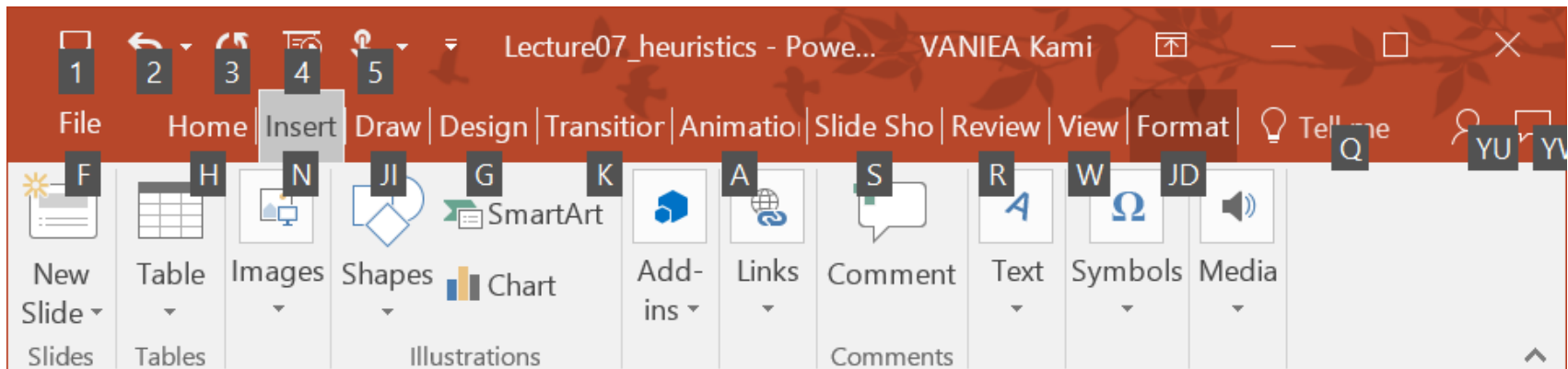
Recognition rather than recall

- Show all the options available to the user rather than expecting them to remember them all
- Do not require users to remember information from one screen to the next
- Why
 - People are less good at remembering (recall) than they are at recognizing (recognition)



Flexibility and efficiency of use

- Experts should have a way to use the interface faster or more efficiently
- Design should have accelerators like keyboard shortcuts to allow skilled users to move faster
- Why
 - Using the mouse is MUCH slower than the keyboard. Users who know what they want should be able to find it quickly and efficiently



Aesthetics and minimalist design

- Get rid of clutter
- See most of the “Don’t make me think” book
- Why
 - The more things there are to look at, the harder it is for a user to process the data

Help users recognize, diagnose, and recover from errors

- Error messages should be clear, written in plain English, explain the problem, give constructive advice on how to solve the problem
- Why
 - Errors should only be shown to users when the system can no longer make a choice on their behalf. The error needs to be clear about what it is the user needs to do or provide input on

Help and documentation

- Unless the system is extremely simple, some people will need help documentation
- Why
 - People learn about things in different ways. Some people learn by playing around and pushing buttons, other people learn by reading. The system needs to support all people.

Heuristics for websites focus on key criteria (Budd, 2007)

- Clarity
- Minimize unnecessary complexity & cognitive load
- Provide users with context
- Promote positive & pleasurable user experience

Advantages and problems

- Few ethical & practical issues to consider because users not involved.
- Can be difficult & expensive to find experts.
- Best experts have knowledge of application domain & users.
- Biggest problems:
 - Important problems may get missed;
 - Many trivial problems are often identified;
 - Experts have biases.

Questions?