

Comp 388/441 - Human-Computer Interface Design

Week 5 - 18th February 2016

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Design for Memory - I

Design Considerations - Part I

- ensure interface is designed to reduce or eliminate need to memorise and recall
 - *interface elements etc within structure*
- Don Norman outlines this concept as the notion of
 - **knowledge in the world** vs **knowledge in the head**
- eg: creating menus or lists of options for users is a good example of
 - **knowledge in the world**
- user will be able to view the menu, read and recognise options, make selection
 - *no need to recall or memorise related information beyond the basics...*
- this same option on the command line requires memory of command...
 - *user would need to recall **knowledge in the head***
 - *increases potential for error and application issues*

Design for Memory - 2

Design Considerations - Part 2

- we can guide users through sequenced tasks
 - *provision of defined sequence of steps*
 - *guide user through the task flow step by step*
- present forms and controls in a logical and sequential order
- might even consider a **wizard** style interface
 - *user can navigate multiple pages with standard **next** & **previous** links*
- trying to reduce the amount of navigation details required by the user
- thereby reducing the amount the user needs to memorise and recall

Design for Memory - 3

Design Considerations - Part 3

- interface design enhanced with recognisable icons and names
 - *user can easily find interface elements as they scan a list, menu...*
- icons can act as clarifying elements
 - *icons should represent concrete and recognisable things*
- goal is to make it easier for users to create hooks from working to long-term memory
- user should not have to memorise or struggle to recognise unfamiliar icons
 - *defeats the point of using simpler graphical representations*
- if you use abstract, original icons then add some accompanying text to help the user

Design for Memory - 4

Design Considerations - Part 4

- naming schemes & patterns in UIs are also important
 - *helps users remember & recall information*
 - *arbitrary names are harder to recall than representative names*
- non-representative naming schemes may add to user's cognitive burden
- command line interfaces violate this principle on a regular basis
 - *consider Unix commands **more** & **less***

Design for Memory - 5

Design considerations - 5

- good help system and search tool
 - *allows a user to quickly check and recall lost or forgotten information*
 - *user can quickly reference documentation, check usage pattern or concept...*
- in search and index systems
 - *allow users to use variations, synonyms*
 - *user may not remember the exact term, query, spelling...*
- try to avoid personalised terminology for standard UI elements, interaction concepts
- try to avoid using abbreviations or acronyms unless they are obvious or standard practice
 - eg: **GUI**, **WYSIWYG** are well known examples...
- be consistent in your UIs application of actions and methods
 - *eg: an action should perform in the same manner from one context to another*

Cognitive Load - I

- consider the physical act of interacting with a computer
 - *using a mouse, keyboard, touchscreen...touching, swiping, shaking*
- physical actions incur a cost of time and effort
 - *varying degrees of effort, both physical and mental*
- cognitive load refers to the mental taxation exerted on a user
 - *whilst performing a given task*
 - *refers to amount of sustained attention and cognitive effort required per task*
- the more complex the task, the higher the level of focused attention
 - *cognitive load will be higher as a result*
- good design strategy to try to reduce a user's cognitive load
- try reducing the amount a user has to think about
 - *general concepts, points of interaction, basic navigation, interface elements...*
- "Don't make me think , revisited: A common sense approach to web usability."
 - *Steve Krug, 2014.*

Cognitive Load - 2

Cognitive load may be impacted by the following interactions:

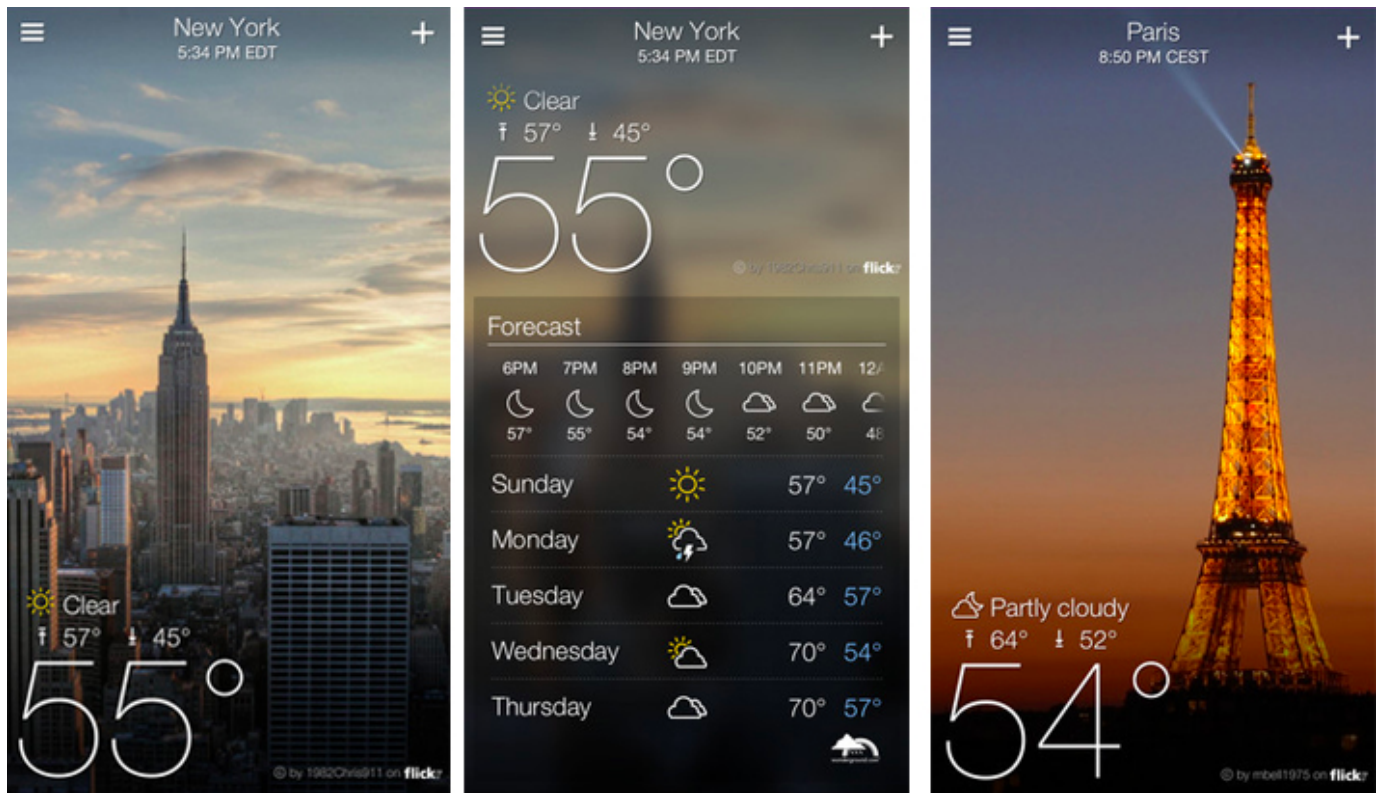
- scrolling, navigating, searching within an application
- choosing options such as menus, lists, forms...
- reading instructions, labels, titles...
- switching contexts (eg: switching between windows, tabs, pages...)
- switching visual attention
 - *reading text, then referring to an image, and then back to the text*
- memory recall for a specific ID, name, action, task sequence...
- simply waiting for the system or application to respond...
- recovering from a specific distraction
 - *such as an interruption not relevant to the current task at hand...*

Cognitive Load - Weather.com

The screenshot displays the Weather.com homepage. At the top, there's a navigation bar with links for FORECASTS, MAPS, VIDEO, PHOTOS, NEWS, TV, and HURRICANES. Below this, a search bar allows users to find weather for specific locations. The main content area features a large map of the United States with a prominent snowstorm forecast over the central and eastern regions. A sidebar on the left shows the current weather for Chicago, IL (50601), with a temperature of 11°F and a sunny forecast. Below the main map, there's a section titled 'Upcoming Snowstorm to Last DAYS' with a 'Read the Story' button. The bottom section contains a grid of various articles and videos, including 'Big Pattern Change Coming', 'Bad News For Tuna Lovers', 'Blackbeard's Pirate Ship Yields Frightening Finds', 'Be Thankful You We're Not on This Flight', 'You DON'T Want to Live Here!', 'China Released It Into the Air, And Now It's Altering Our Weather', 'A Snow Castle That GLOWS', and 'You CAN Be At Two Places At Once...'. On the right side, there's an advertisement for '\$0.99 Domain Names' and a section titled 'Our Favorite Things' featuring food forecasts and weather-related content.

Source - Weather.com

Cognitive Load - Yahoo Weather App



Source - Yahoo! Weather Mobile App

References

- Card, S.K., Moran, T.P. and Newell, A. *The psychology of human-computer interaction*. Lawrence Erlbaum Associates. 1983.
- Krug, S. *Don't make me think, revisited: A common sense approach to web usability*. 3rd Edition. New Riders. 2014.