Revision

Reading List

- Sharp, H., Rogers, Y., & Preece, J. (2010/2007). <u>Interaction Design: beyond human-computer interaction</u>. New York: John Wiley & Sons, Inc.

  - NOTE THE HANDOUTS AND LECTURE NOTES DO NOT REPLACE THE CORE READING

- Gamberini, L. Chittaro, L. and Paternò, F. Human-Computer Interaction, Pearson, 2012.
- .

On-line resources

- http://www.id-book.com/
  - companion website for Preece et al.’s book
- http://hcc.cc.gatech.edu/
  - web portal maintained by Georgia Tech.
- http://www.baddesigns.com/
  - illustrated examples of things that are hard to use because they do not follow human factors principles

Interaction design

- Interaction design
  - a goal-directed problem solving process informed by <u>intended use, target domain, materials, cost, and feasibility</u>
- PACT analysis
- User-centred system design
  - Identify needs and establish requirements
  - Design potential solutions (re-design)
  - Choose between alternatives (evaluate)
  - Build the artefact
- Usability and User experience goals

Design principles

- Visibility

- Feedback

- Constraints – cultural – logical - physical

- Mapping

- Consistency

- Usability principles

User requirements

- Requirements type
  - Elicitation techniques
  - Problems with data gathering
- Task descriptions
  - Scenarios
- Early prototyping
  - Story-board
  - Sketches

Understanding user needs

- Ask the user
  - Questionnaire – several type of scale
  - Interviews
  - Watch the user
    - observation

	Usability testing	Field studies	Analytical
Users	do task	natural	not involved
Location	controlled	natural	anywhere
When	prototype	early	prototype
Data	quantitative	qualitative	problems
Feed back	measures & errors	descriptions	problems
Type	applied	naturalistic	expert

Method	Usability testing	Field studies	Analytical
Observing	X	X	
Asking users	X	X	
Asking experts		X	X
Testing	X		
Modeling			X

Field studies

- Observer immerse in the field – must have a very good knowledge of the context
  - Data is collected primarily by
    - observing natural behaviour
    - interviewing people
    - participants may also be required to fill out electronic or paper diary – distance evaluation

User based evaluation

- Formative – summative
- Techniques
  - Observing users, asking users, testing user performance
  - questionnaire
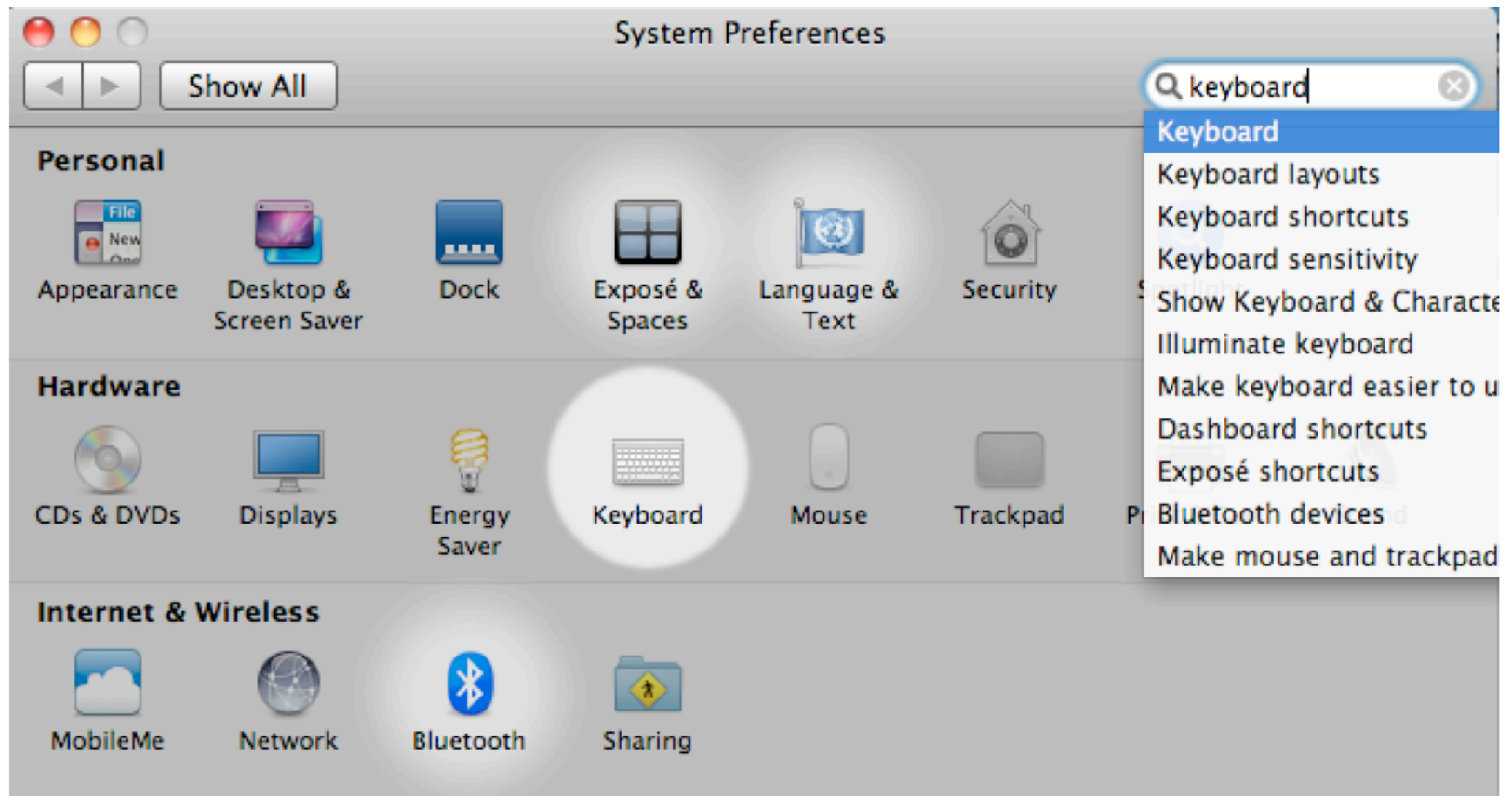- DECIDE framework

Prototyping

- Low Fidelity
  - Story board
  - Sketching
  - Experience prototyping
  - Role play
  - Videos
- Medium fidelity
  - Pictive
  - WOZ
  - Photoshop
- High Fidelity
- Vertical/horizontal

Users

- Attention
- Perception and recognition
- Memory
- Mental models

Fig. 1: Search in System Preferences in MAC OS X.

Attention

- Set of mechanisms which regulate cognitive processes and feelings
- 3 different cognitive networks supporting 3 types of task
  - Alerting: achievement and maintenance of a state of arousal, or sensitivity to incoming stimuli
  - Orienting: selection of information from a source of incoming stimuli
  - Executive attention: maintain or suppress information, focussing to relevant parts of the perceptual field, while ignoring tasks irrelevant stimuli.

Gestalt psychology

- Perception = recognition of objects from basic visual elements

- The whole (gestalt) is greater than the sum of its parts

- When elements are placed in groups that define an object we tend to see the group and not the object

- Discover the principles used by the *visual* system to group elements

Gestalt principles

- Principles to describe how people tend to organise visual elements into a meaningful whole
  - Figure/Ground
  - Proximity
  - Similarity
  - Symmetry
  - Continuity
  - Closure
  - http://graphicdesign.spokanefalls.edu/tutorials/process/gestaltprinciples/gestaltprinc.htm

Techniques for design

- Reducing a design to its essence
- Regularising the elements of the design
- Combining elements for maximum leverage

Types of memory
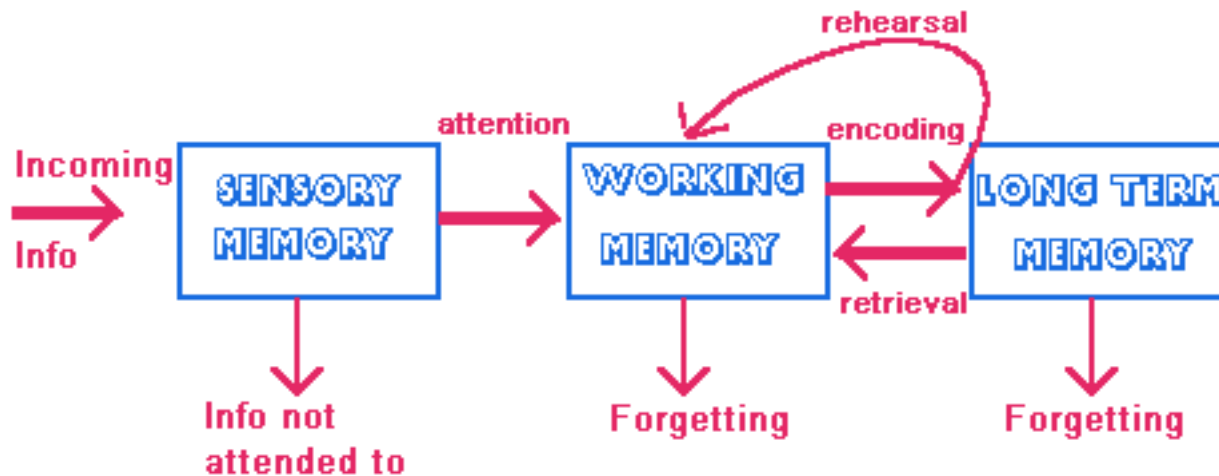
Mental models

- mental models = internal constructions of some aspect of the external world enabling predictions to be made

- Involves unconscious and conscious processes, where images and analogies are activated (people understand new things based on their knowledge)

- Deep versus shallow models (e.g. how to drive a car and how it works)