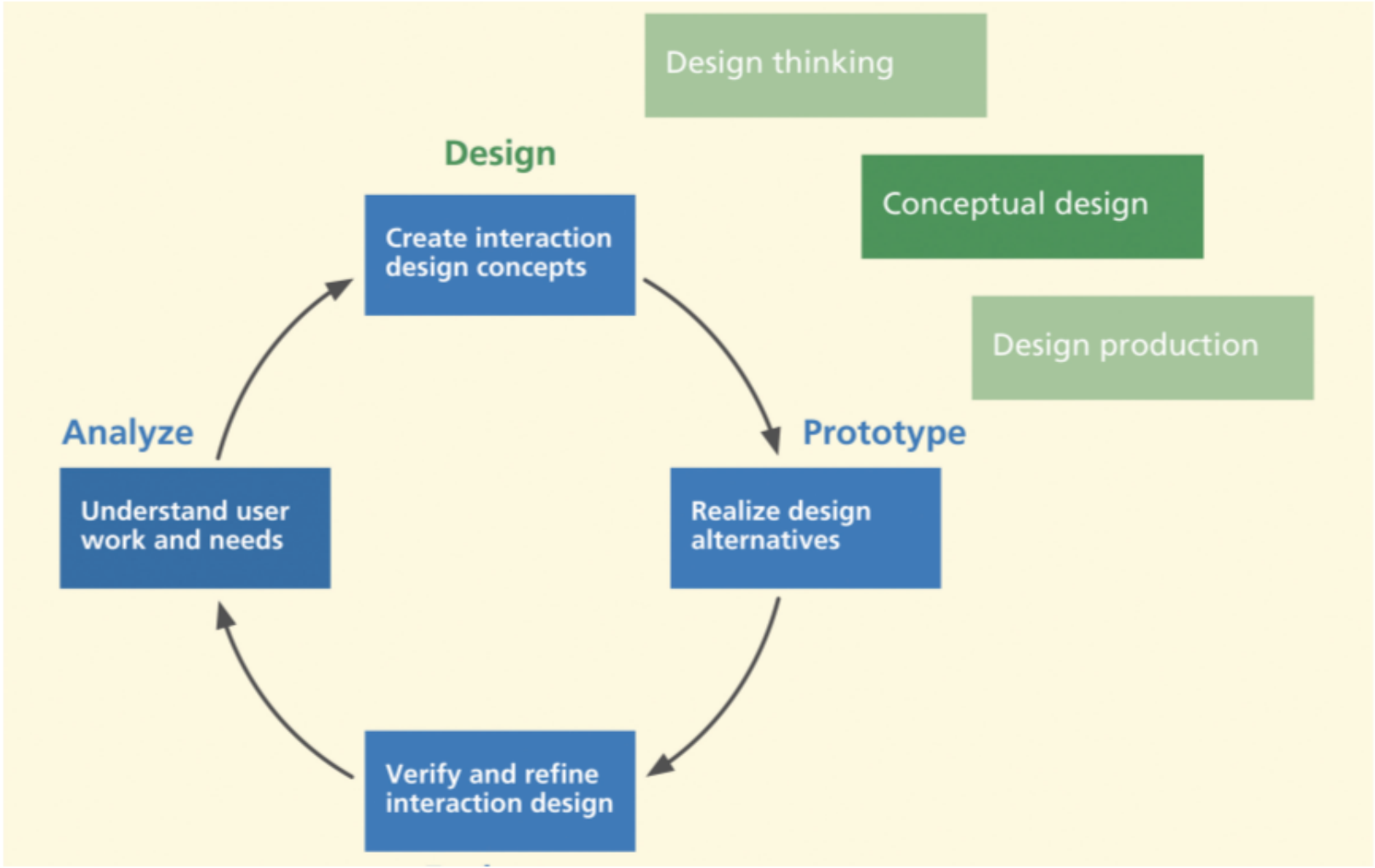
Conceptual Design

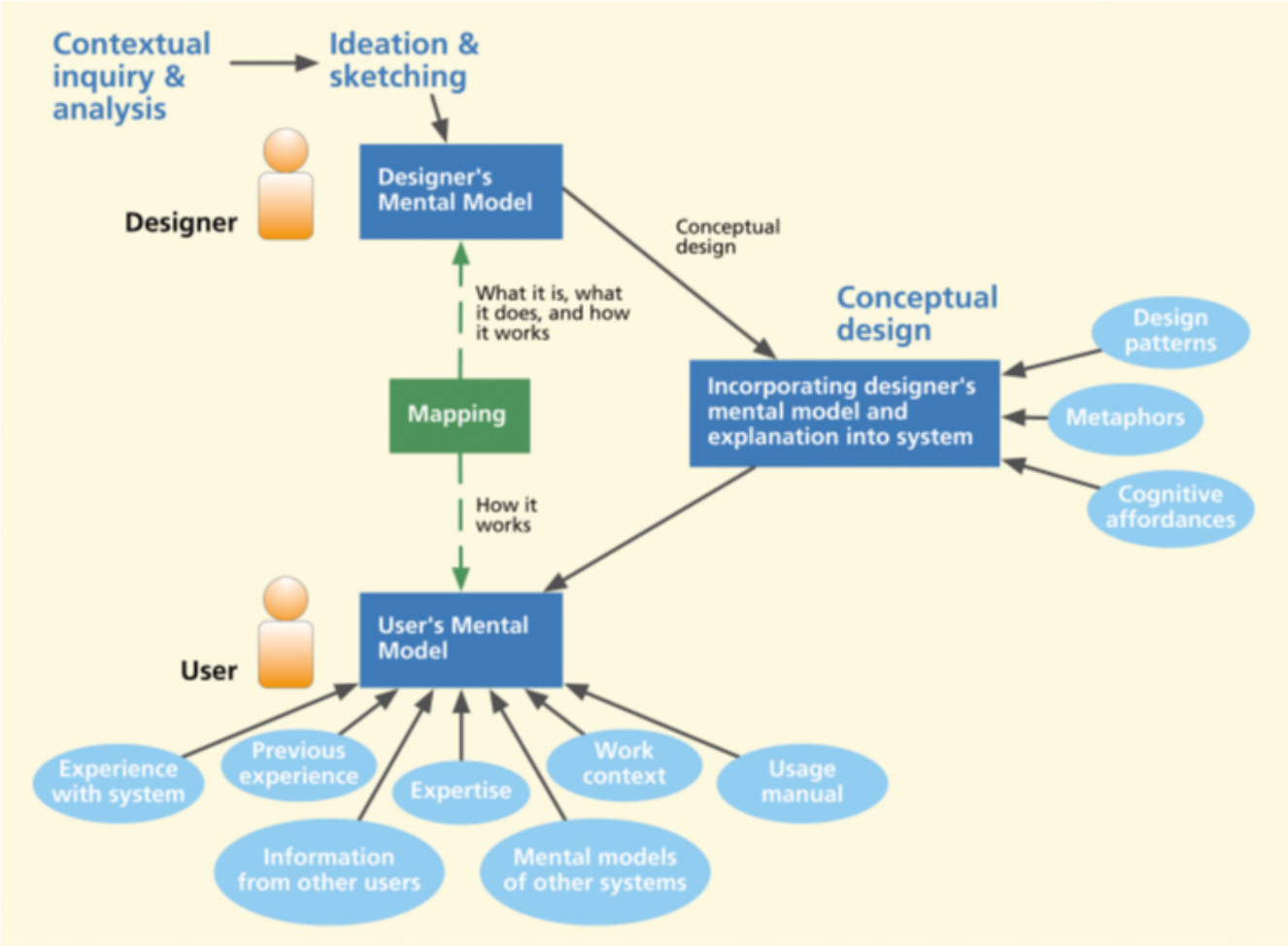
SWEN-444

Selected material from *The UX Book*, Hartson & Pyla


Design thinking
Design
Conceptual design
Create interaction design concepts
Design production
Analyze
Prototype
Understand user work and needs
Realize design alternatives
Verify and refine interaction design

Conceptual Design

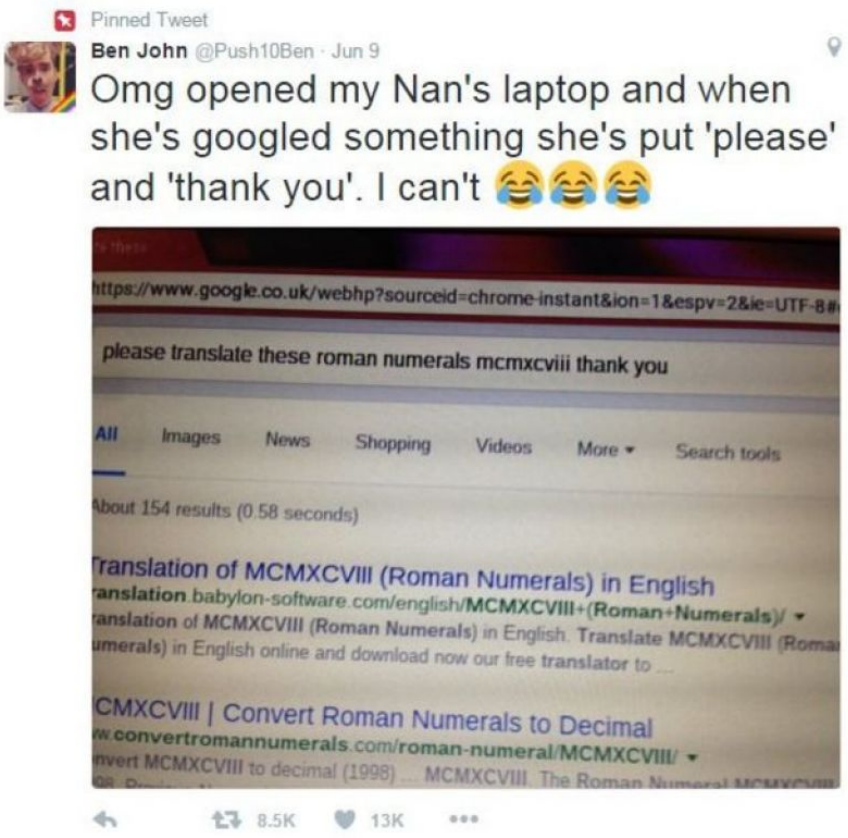
- Establish a conceptual design for the system, the system metaphor or theme
  - Innovate and brainstorm
- Derived from the designer's mental model
- Must map to the perceived user's mental model
- Critique and compare multiple design concepts
- Choose metaphors … ecological (starting point), then interactive and emotional perspectives

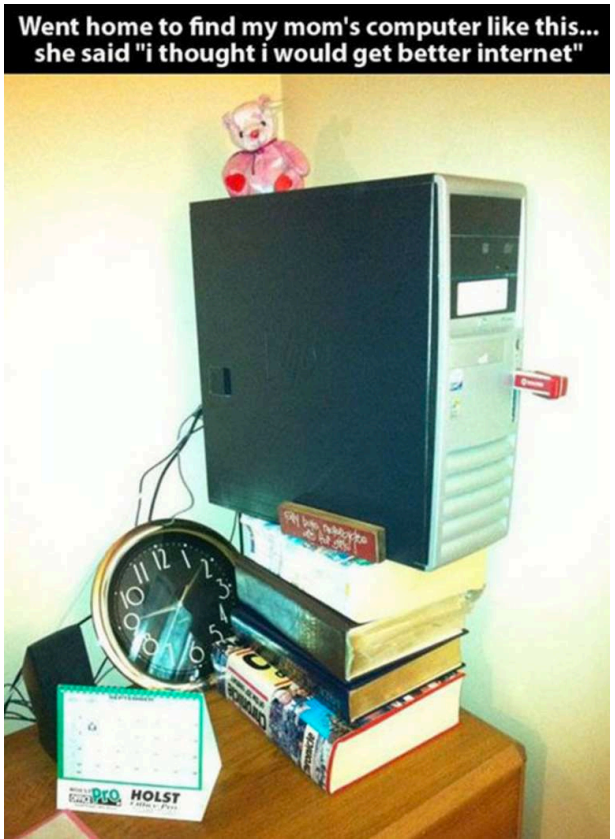

Contextual inquiry & analysis
Ideation & sketching
Designer
Designer's Mental Model
Conceptual design
What it is, what it does, and how it works
Mapping
How it works
Conceptual design
Design patterns
Incorporating designer's mental model and explanation into system
Metaphors
Cognitive affordances
User
User's Mental Model
Experience with system
Previous experience
Expertise
Work context
Usage manual
Information from other users
Mental models of other systems

Mental Models

- A mental model is a cognitive representation of something that defines a logical and believable estimation as to how a thing is constructed or how it functions; i.e., how we think of things
- Designs that align with a user's mental model will be easier for him or her to use
  - Transparent objects expose their functions
    - Bicycles
  - Opaque objects hide their functions
    - Computers

Users' Mental Models

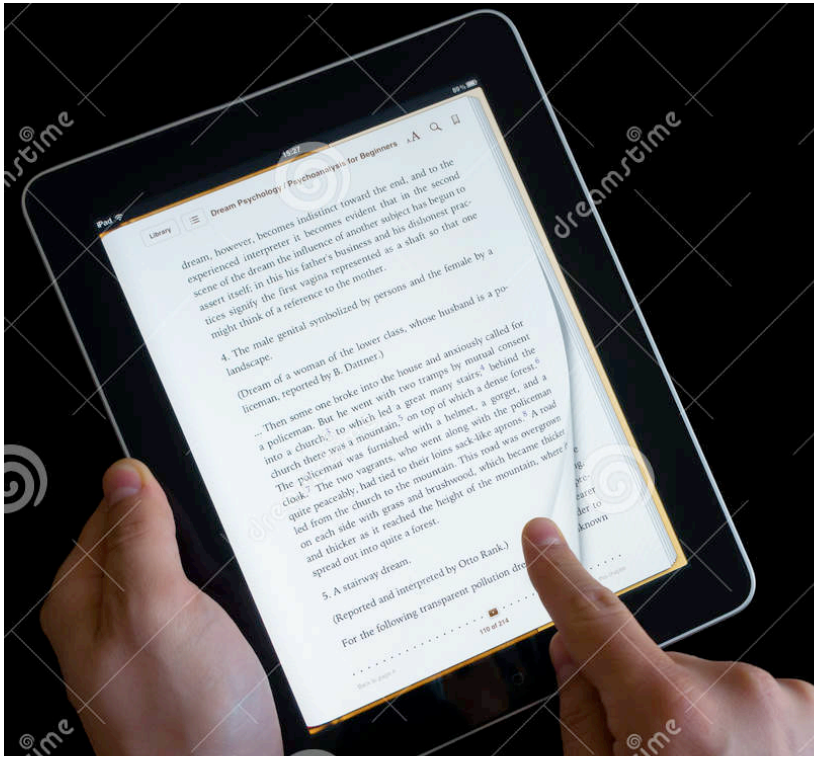


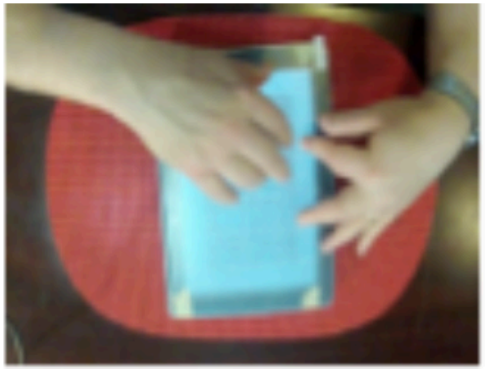


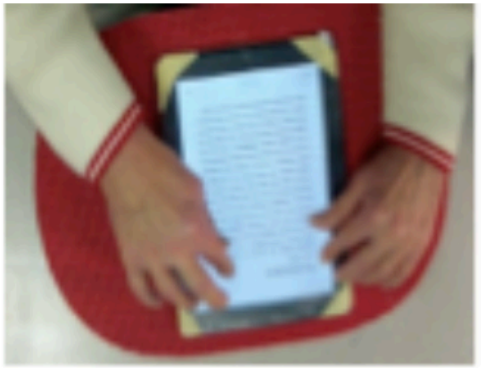
Designer's Mental Model Perspectives

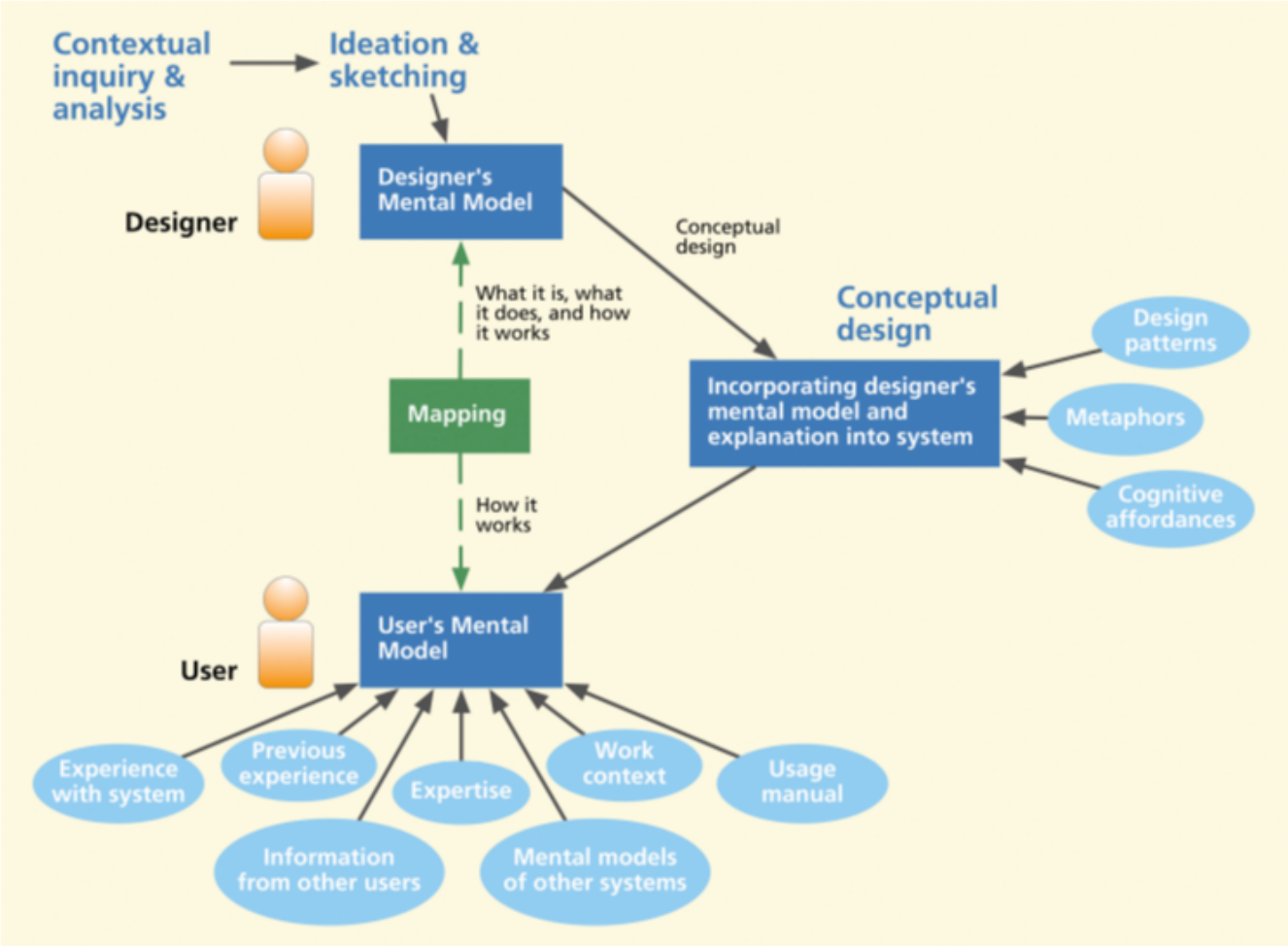
- Ecological – the system in its environment
  - Thermostat – role in the context of the heating system
- Interaction – user operation
  - Thermostat – current temperature, target temperature, control to change the target, plus understanding of its behavior
- Emotional – expected user emotional response
  - Thermostat – reliability, aesthetics in home decor

Designer's Mental Model Perspectives





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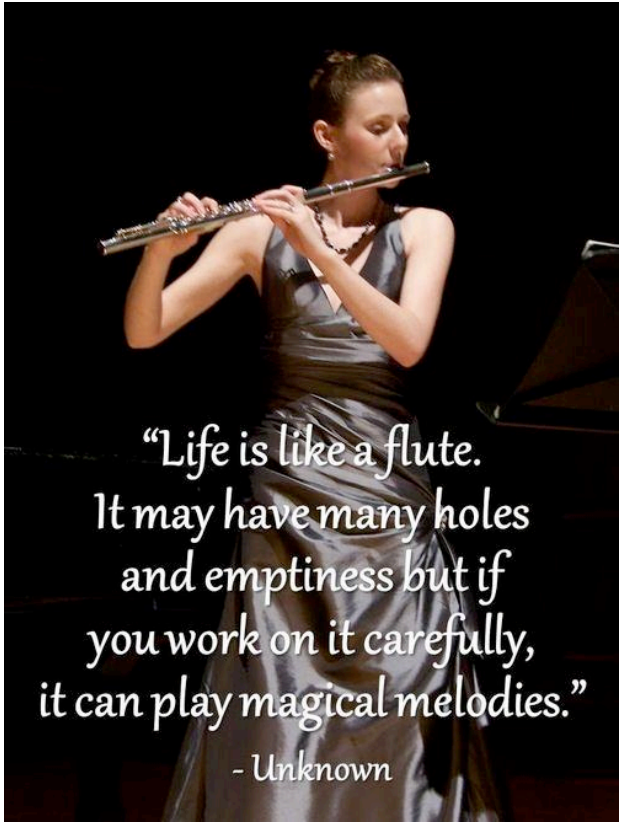
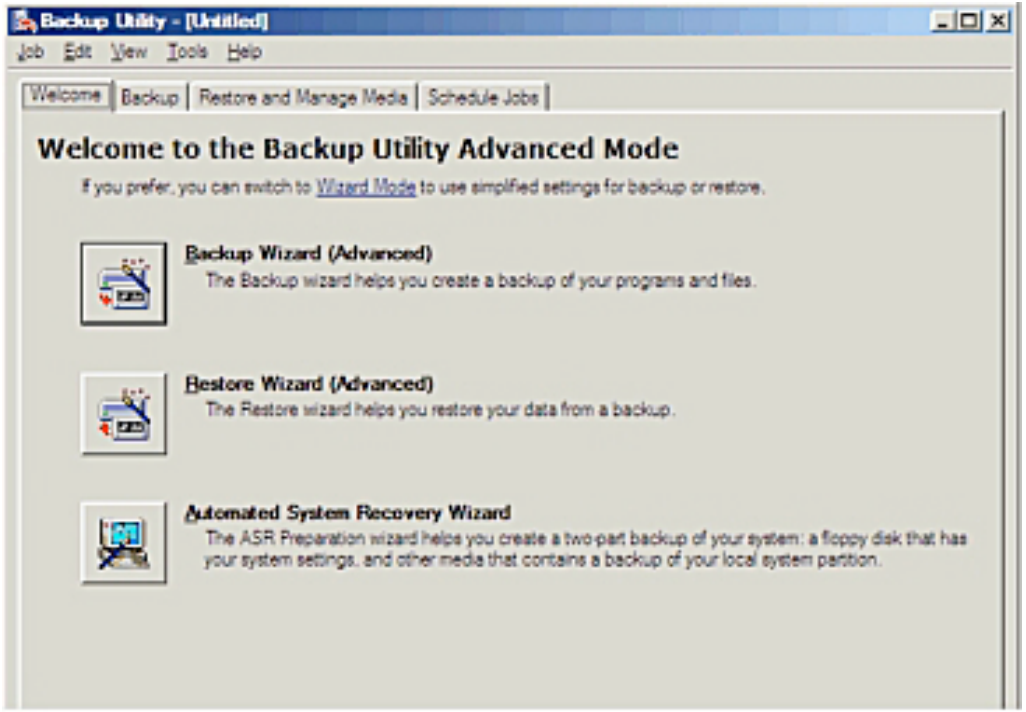
Metaphors

- Visual representation of real world objects to create a mental model
- Analogies for communication and explanations
  - Explain unfamiliar using familiar conventional knowledge
  - Use what users already know about existing system or phenomena
- Adapt to help users learn how to use new system
- Bad metaphors contradict user expectations or real world behavior



Metaphors

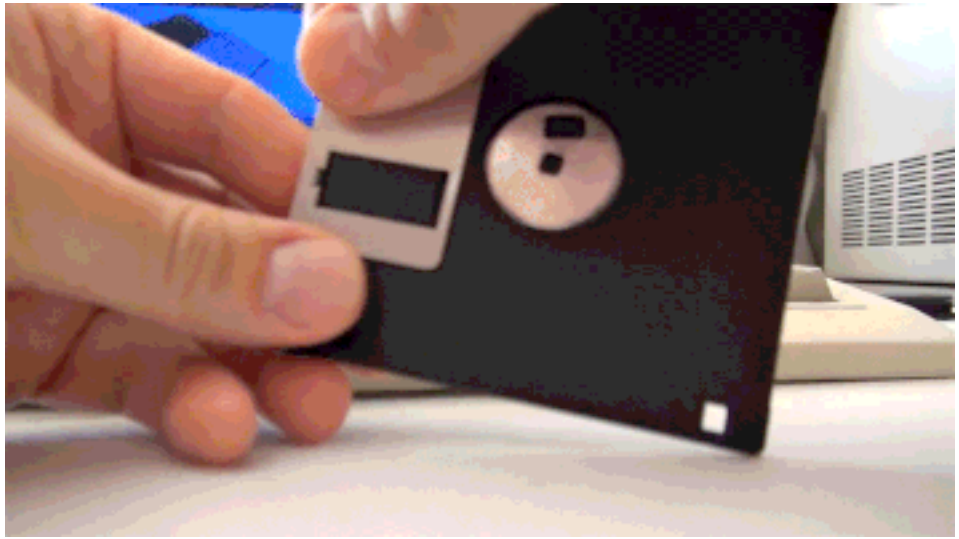

Backup Utility - [Untitled]
Job Edit View Tools Help
Welcome
Backup
Restore and Manage Media
Schedule Jobs
Welcome to the Backup Utility Advanced Mode
If you prefer, you can switch to Wizard Mode to use simplified settings for backup or restore.
Backup Wizard (Advanced)
The Backup wizard helps you create a backup of your programs and files.
Restore Wizard (Advanced)
The Restore wizard helps you restore your data from a backup.
Automated System Recovery Wizard
The ASR Preparation wizard helps you create a two part backup of your system: a floppy disk that has your system settings, and other media that contains a backup of your local system partition.

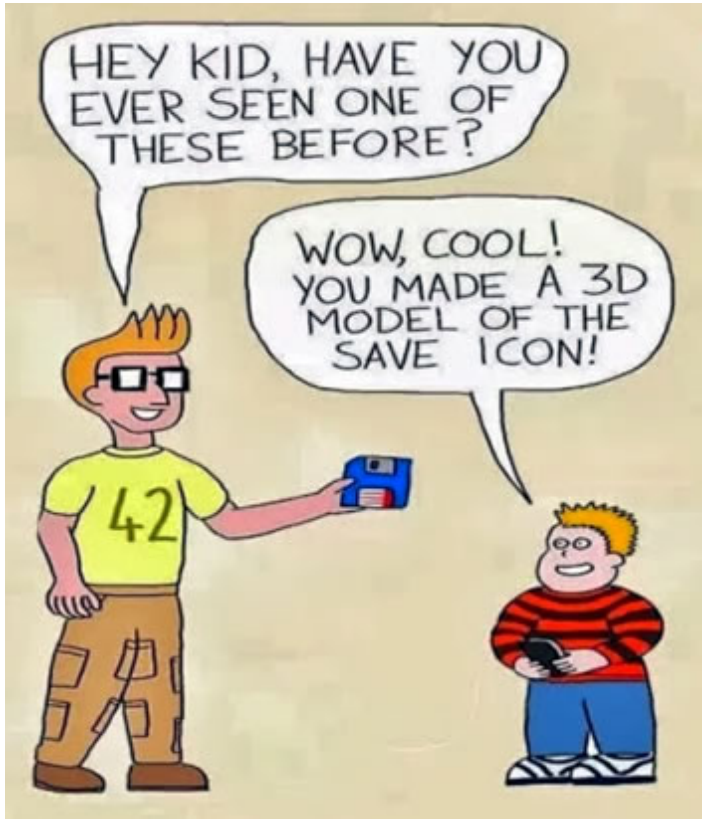
Metaphors

Time Machine
Show All
Time Machine
OFF
ON
Select Backup Disk...
Time Machine keeps copies of everything on your Mac, including system files, applications, and settings, as well as your music, pictures, and other important files. Since Time Machine keeps daily backups, you can revisit your Mac as it appeared in the past.
Show Time Machine status in the menu bar
Click the lock to prevent further changes.
?

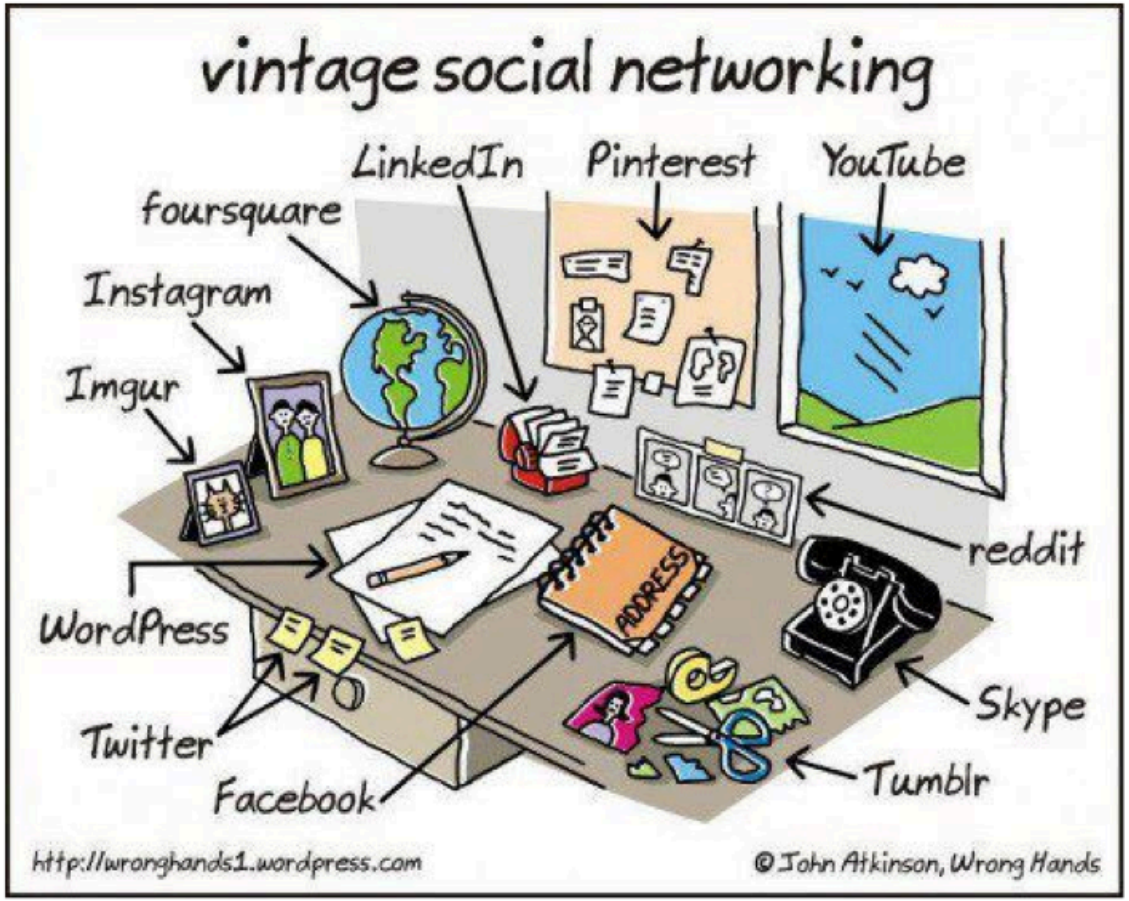
Metaphors

Metaphors




HEY KID, HAVE YOU EVER SEEN ONE OF THESE BEFORE?
WOW, COOL! YOU MADE A 3D MODEL OF THE SAVE ICON!
42

Mental Models



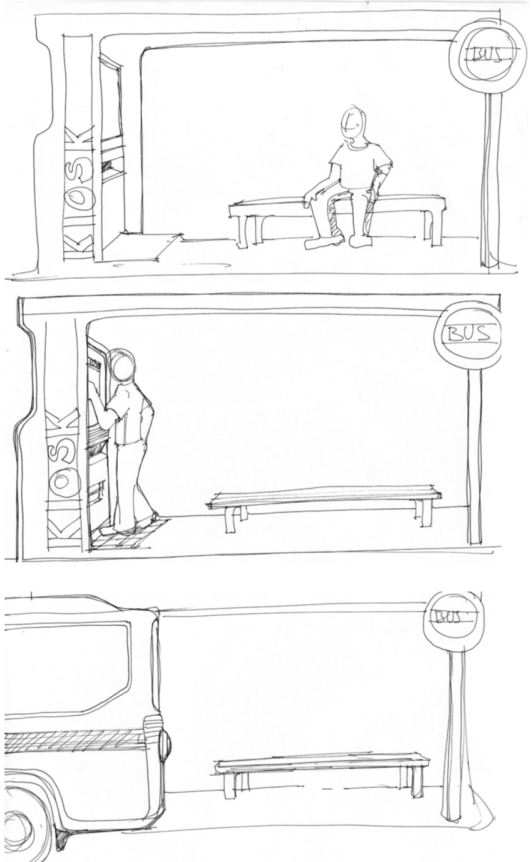
Storyboards

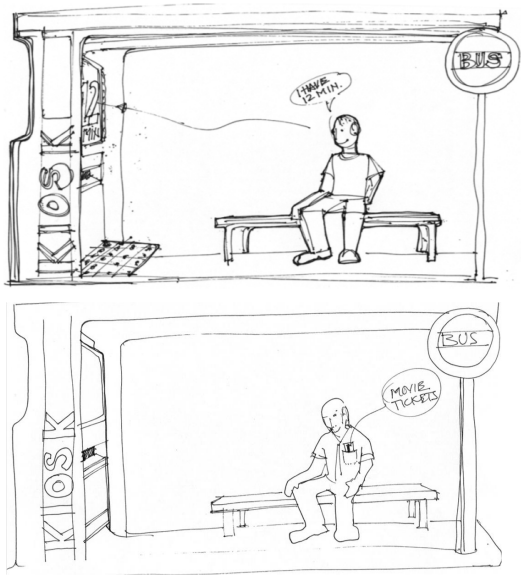
- Sequence of visual “freeze-frame” sketches to show how people will interact with the system
  - Adapted from the movie/animation industry
- Visual, intuitive representation of written scenarios
- Show all perspectives
  - Actors
  - Screens
  - Interaction
  - Dialogue showing sequences of flow from frame to frame

Importance of Frame Transitions

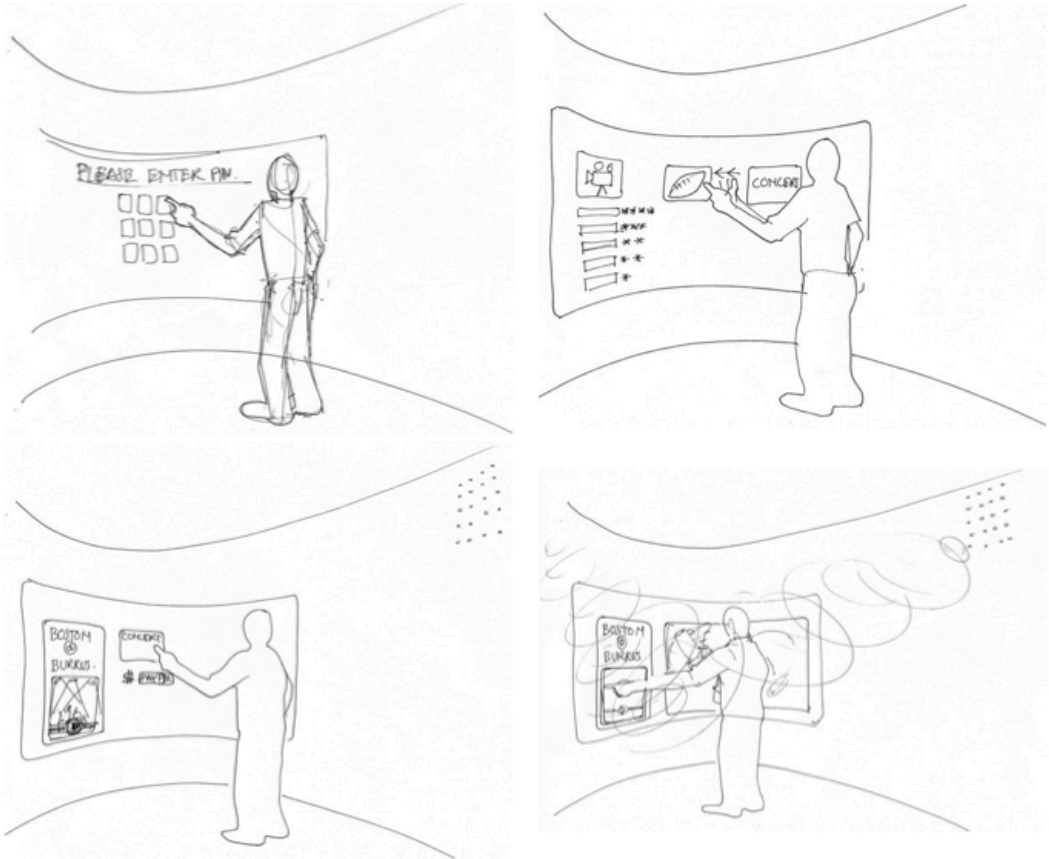
- Storyboard frames – static states
- Frame-to-frame progression (transition) shows interaction over time
- Transitions are where user experience lives, where users think about what to do next
- Source of most problems for users, challenges for designers
- So make actions between frames part of what is sketched
  - Add frames that show circumstances that lead to transitions
  - User thought bubbles, gestures, reactions

Storyboard Example: Ecological Perspective

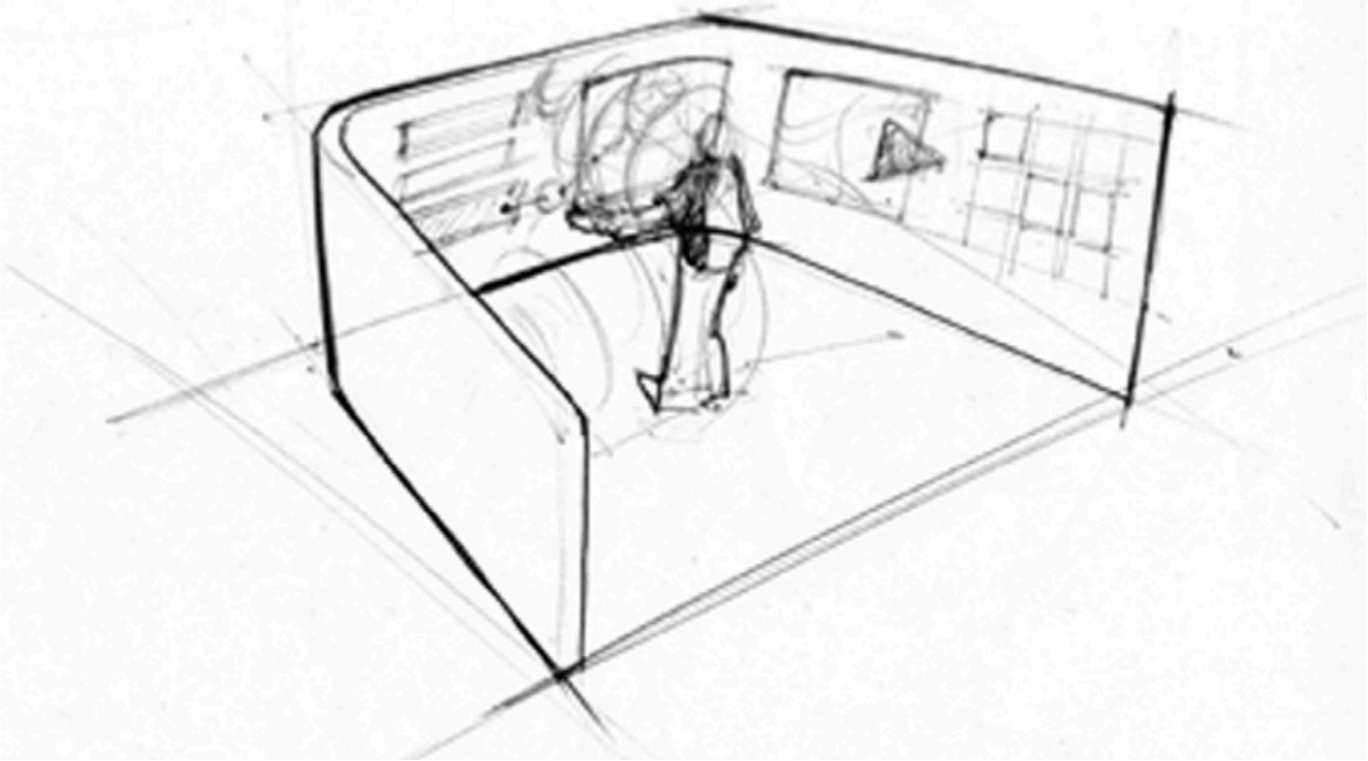




Storyboard Example: Interaction Perspective



Storyboard Example: Emotional Perspective



Activity

- Create a storyboard for each design perspective (ecological, interaction, emotional) of at least one task for a work role in the work environment
  - Hand-sketched pictures annotated with a few words
  - Work practice that is part of the task, devices, screens
  - Physical user actions
  - Cognitive user actions in “thought balloons”

  *Hint: see work flow model, social model, HTA, usage scenario
- What metaphors were considered?