Information Design

Goal: identify methods for representing and arranging the objects and actions possible in a system in a way that facilitates perception and understanding.

Stages of Action in HCI

- Making sense
- Perception
- GULF OF EVALUATION
- System goal
- Action plan
- Execution
- Focus of interaction design
- Focus of information design
Refresher

• We covered perception last time
• Interpretation
• Making sense

Designing for Interpretation

• Seeing a set of objects and groups (through perceptual channels) allows interpretation
• Seeing rectangles, groups, etc isn’t enough, we need to interpret what those things are
Visual Languages

- Shapes, terms, groupings used in a regular and consistent fashion
  - Tuesday’s activity (you pinpointed this)
  - Windows vs Java “Look and Feel”
- Good design = recognizable visual language
- 3 ways:
  - Choosing familiar images, symbols, or words
  - Refining design elements through abstraction
  - Selecting images or words that suggest tasks

Familiarity

- Choose a user interface “vocabulary” that people are used to reading or seeing
  - Display vs. Render; Copy vs. Reproduce
  - Document container icons are folders, not boxes
- Caution: many familiar words are ambiguous
  - View, update, object, enter
- 2nd caution: consider audience carefully
  - What is familiar to an adult may not be to a child; what is expected by one culture may be surprising to another

Check out the many examples in the Interface Hall of Shame: http://www.iarchitect.com/
Example

- Mailbox icon in Italy looks like a trashcan here
- Our mailbox icon would be confusing to them
- Their mailbox icon would be misleading to us

Images: Realism and Refinement

- Realistic images recognized more accurately, but are more complex, take longer to process
- Analyze task carefully, remove unnecessary detail
Refinement

- Only show enough detail to get the point across
- Too much detail leads to complexity and confusion

Realism

- Realistic pictures can be recalled better
  - Accurate
  - Long lasting
- More of an instance rather than a concept
- Each designer must consider this tradeoff in terms of specific problem
Affordances

- “Perceived and actual properties of the thing, primarily those fundamental properties that determine just how the thing could possibly be used” -- DOET
- Chair affords sitting
- Glass affords seeing thru (and breaking)
- Wood affords support (and carving)

Poor Affordances
Non-Obvious Affordances?

Window Affordances

• Rolling down the window:
  – Up?
  – Down?
  – Automatic?
Wiper Affordances

- Turning on the windshield wiper
  - Front wipers?
  - Rear wipers?
  - Speed controls?
Making Sense

- Relate information they see and interpret to what they understand about their task
- See if their goal has been achieved
- Information integration
  - Connect to whatever knowledge they already have

Consistency

- Similar elements presented in similar ways
  - Across different platforms
- Visual design program
  - Superset of visual language
  - Design features, information layout
- Internal and External types
Advantages of Consistency

- People can create and benefit from expectations
- When things go as planned, easier to make sense
- Can impair user performance if consistency competes with other elements

Advantages Continued

- Transfer of learning
  - What is learned can be used in a new situation
  - Example:
    - Use similar wordings
      - “Move Forward” and “Move Backward”
      - Not “Move Forward” and “Reverse” or “Back”
Visual Metaphors

- Already talked about conceptual metaphors
- Visual ones are pervasive in interfaces
  - “messy desktop”
  - Ledger metaphor in spreadsheets
  - Electronic paper in word processors
  - Email: any guesses?

Visual Metaphors

- Balance between consistency and familiarity with inconsistency and innovation
- Don’t take them too literally
  - Desktop calculator
  - Too much like real calculator
Information Models

- Set of concepts, relationships, and representations to make sense of large data sets
- Hierarchy – every node has unique parent, parents have many children
- Web – many siblings, multiple parents, multiple children
- Sequential – one parent, one child
Tradeoffs

- Good for helping understand, predict
  BUT artificial data can cause confusion
- Breadth vs Depth
  - Many choices at each level is good (breadth)
    + Fewer levels, less navigation
    - A single level has too many choices (depth)
  - Broad and shallow are best

Information Visualization

- Visual features are used to code information
  - Position
  - Color
  - Size
  - Area
  - Shape
Information Visualization

Dynamic Displays

- Fish-eye views
- Focus + context
Semantic Filtering

- Visualization with controls
  - Houses for sale in DC area

- Sliders change attributes
- Houses appear and disappear

Multiple Coordinated Views

- Many views of same data
- Each view shows one important feature
- A change in one updates the others
Final Thoughts

- Ultimate goal of information design is **SENSE MAKING**
- Different tasks require different visualization strategies
  - Browsing vs searching
- Dependency is why we have this design process