PUI – Prototyping Lab

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Human Computer Interaction Institute
Carnegie Mellon University
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Overview

• When to prototype?
• How to prototype?
• Part Two
  – Visual Perception & Interface Design
Why prototype?

• Prototyping can help estimate complexity

• Usability testing ensures it is a worthwhile (or better) decision

• Informs a cost vs. benefit decision

• Demonstrate your idea
When to prototype?
When to prototype

• Brainstorm different representations
• Choose a representation
• “Rough out” interface
• Task-centered walkthrough and redesign
• Fine tune interface, screen design
• Heuristic evaluation and redesign
• Usability testing and redesign
• Limited field testing
• Alpha/Beta tests
When to prototype

- Brainstorm different representations
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How to Prototype

• A series of screen sketches (paper)
• A cardboard mock-up
• A storyboard, i.e. a cartoon-like series of scenes illustrating key points of a scenario
• A PowerPoint Slide show
• A video simulating the use of a system
• A piece of software with limited functionality written in the target language or in another language
Paper/Cardboard

• **Pro**
  – Readily available
  – Easy to manipulate
  – Scissor, tape

• **Con**
  – Clearly fake
  – Falls apart
Low-fi Prototypes

• Traditional methods take too long
  – Sketches->beta version->evaluate->iterate

• Can simulate the prototype
  – Sketches->evaluate->iterate
  – Sketches are the prototypes
  – Designer “plays computer”
  – Other design team members observe and record

• Purpose
  – Flesh out competing representations
  – Elicit user reactions
  – Elicit user modifications / suggestions
  – Clients don’t fixate on look and feel, but rather functionality
Paper/Cardboard

• Sketching is important to low fidelity prototyping

• Don’t be inhibited about drawing ability

• Practice simple symbols

• Develop your own symbols and icons
Storyboard

• A series of “key” frames
  – Used in film to get idea of a scene
  – Snapshots of the interface at important points in the interaction
Powerpoint

- Great for slightly higher fidelity prototypes
- Graphics, logos
- Easily updatable, sharable
Webpages

• Slightly higher fidelity prototypes...
• Graphics, logos
• Easily updatable, sharable
Flex

- Slightly higher fidelity prototypes...
- Graphics, logos
- Easily updatable, sharable
Questions?
Overview

• When to prototype? & How to prototype?

• Visual perception & Interface design
iPhone 5s
Forward thinking.
Vision & Perception

• High bandwidth
  – Color, shape, size, orientation, ordering...
Vision & Perception

• Fast
  – Can glance 10 milliseconds
  – Extract information quickly and reliably
• A wrought-iron structure erected for the World Exhibition of 1889. With a height of 984 feet (300 m), it was the tallest man-made structure for many years.
Vision & Perception

• Fill in missing information
Vision & Perception

• Highly parallel
  – Can simultaneously process entire field of vision
Find the adjective!

Car  Run
Boat  Drive
Load  Yield
Scramble  Large
Fix  Pickle
Tie  Germany
Jump  Flight
Swing  Cat
Build  Wing
Art  Numbers
Truck  Keyboard
Find the adjective!

Car
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Germany
Flight
Cat
Wing
Numbers
Keyboard
Information Visualization

- Information Visualization
  - Leverage perceptual strengths
  - Increase information density
  - More data at same level of visual complexity

- A picture is worth a thousand words
Information Visualization

• Visualize large data sets
  – Scan over data quickly
  – Analyze several dimensions simultaneously
  – Reduces short term memory burden
  – Find complex trends, relationships, patterns …
Gestalt Grouping Principles

• Binding and grouping information
Gestalt Grouping Principles

• Similarity
Gestalt Grouping Principles

• Similarity
Gestalt Grouping Principles

• Proximity
Gestalt Grouping Principles

• Proximity
Gestalt Grouping Principles

- Common Region
Gestalt Grouping Principles

• Connectedness
Gestalt Grouping Principles

• Connectedness
Questions?