Sketches vs. Prototypes

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— Buxton, Sketching User Experiences
Hi-Fi vs. Lo-Fi Prototypes

- Prototypes
  - Get ideas for real system
  - Perform usability testing
  - Do advance demos

- Hi-Fi prototypes
  - Often use computer-based tools
  - Provide look & feel of a real system
  - Slow creation/turnaround

- Lo-Fi prototypes
  - Often use paper (and other low-tech material)-based tools
  - Provide rough approximation of a system
  - Fast creation/turnaround

Wireframe: A design artifact that expresses the basic screen contents/layout/interactivity of a UI, typically using simplified graphics

Paper Prototype Ingredients

- Paper
  - Construction paper
  - Index cards
  - Post-it notes

- Scissors

- Glue
  - Permanent
  - Temporary (e.g., 3M Scotch® Restickable Adhesive Glue Stick)

- Tape
  - Permanent
  - Single-sided temporary tape (e.g., 3M Scotch® 811 Removable Magic™ Tape)
  - Double-sided temporary tape (e.g., 3M Scotch® 667 Removable Double-Coated Tape)

- Markers
- Transparent overlays
Paper Prototype Participants

- Team
  - Designs/builds paper prototype
- User
  - Team member (during early design) or external participant (when prototype is ready) interacts with prototype
- Greeter/Facilitator
  - Team member(s) greets/guides user
- Computer
  - Team member manipulates prototype in response to user interaction, follows “program logic"
- Observer(s)
  - Team members take notes

Paper Prototype Approach

1. Design prototype
   - Work fast because it’s easy to change
   - Sketch ideas
   - Design for interactivity
     - Use a separate piece of paper for everything that moves/changes
     - Use removable tape/Post-It notes/transparencies for user input
     - Place moving components on transparencies to keep hands out of the way
Paper Prototype Approach

1. Design prototype (cont.)
   - Photocopy/modify or scan/edit/print to speed up changes to existing components
2. Prepare scenario
   - Choose tasks and prepare output data
3. Assign team members roles
4. Practice
5. Recruit participants (users)

6. Run experiment
   - Greeter greets participant
   - Facilitator gives instructions for tasks and elicits “thinking aloud” comments from participant
   - Computer responds to participant’s interaction
   - Observers take notes silently on cards
   - Team members debrief participant after experiment
**Paper Prototype Approach**

7. Analyze results
   - Sort and prioritize observation cards
   - Group observation cards according to
     - Issues noted
       - Lay out by problem
       - Lay out by heuristic
     and/or
     - UI components affected
       - Lay out near relevant components of UI

8. Design changes
   - Discuss and agree on changes
   - Flag affected components
     - Use annotations on Post-it notes
     - Evaluate changes for consistency

9. Implement changes
10. Test the revised prototype
Paper Prototype Example

- Material from a 4170 prototyping session

Lo-Fi Advantages

- No “programming” needed!
- Fast turnaround
  - Costs less
  - Allows more iterations
- Human computer
  - Can be (re)programmed quickly
  - Cannot crash
- Changes can be made on the fly
  - Developers feel less affection for status quo because changes are easy
- Developers can work together around a common workspace
  - Large, 3D display (i.e., table)
  - Simultaneous multi-user, multi-hand input
- Rough “sketchy” appearance
  - Emphasizes content instead of appearance
    - Avoids low-level critiques of visual detail
  - Users are more willing to criticize high-level problems and less willing to blame themselves if something doesn’t work

Group bonding/fun!