Low-Fidelity Prototypes:
How Paper and Scissors can Help YOU

Outline

- Introduction: Why Prototype?
- Low-Fidelity Prototypes: When and Why?
- Low Vs. High Fidelity Prototypes
- Examples of Low-Fidelity Prototypes
- Summary
Why Prototype?

- Get feedback on our designs faster (usability issues, potential flaws, etc.).
- Experiment with alternative designs and sequences of operations.
- Fix problems before code is written.
- Keep the design centered on the user.

Dimensions to Prototyping

- Vertical vs. Horizontal
- Global vs. Local
- Rapid vs. Modular (Incremental) vs. Reusable (Evolutionary)
- Low vs. High Fidelity
The Fidelity Dimension

Low-Fidelity occurs when one or more of these dimensions are lacking:

- **Breadth of features**: the number of features.
- **Degree of Functionality**: the extent to which the details of its operation are complete.
- **Similarity of interaction**: how you communicate with the product as opposed to the real thing.
- **Aesthetic refinement**: choice of colors and graphic design.

**Why Ever Use Low-Fidelity?**

- Easier and faster to create, quicker to change
- Less Costly
- Less Detail needed before user feedback can be obtained. So you can obtain quick user feedback throughout the design process
- Users and developers find it easier to change things since less (time and effort) has been invested in it
- Low implementation skills (kindergarten scissor cutting 101 required) means more people can be involved
Examples of Low-Fidelity

- **Story Boards**: Go through a non-functional Paper demo while asking users opinions on things (design walkthrough).
- **Paper and Pencil**: using paper (or overheads since easier to erase) as the background, post-its as the pull-down menus and pop-up windows and an experimenter to animate it all.
- **Chauffeured Prototypes**: Designer steps through the system while the user says what they would like to do (done on experimental systems with many bugs and designer knows how to avoid them).
- **Wizard of Oz**: As just talked about (user interacts with a system that is manipulated by the experimenter).

Paper and Pencil Process

- Create the Prototype using paper or overheads, scissors, card stock, post-its, correction tape, markers.
- Design some tasks, pick representative users, design questionnaires.
- Need two experimenters, one note-taker and one who is the computer. Also need video camera if available.
- Give user a task to do and observe.
- Make changes in real time if another observer is present.
- Give post-questionnaire asking specific questions and overall impression.
- Go over all the problems, change the prototype and do the next user.
When to Use Low-Fidelity

Before the Beginning: To show proof of concept to senior management.

In the Beginning: To gather initial user requirements.

After the Beginning: To validate evolving user requirements.

In the Middle Stages: To validate system specifications.

In Middle and Later Stages: To pre-train users or to create a marketing demo.

In Middle and Later Stages: To find usability problems.

In the Later Stages: To explore solutions to specific usability or design problems.

Typical Process

http://web.cs.bgsu.edu/maner/domains/Proto.gif
Study by Virzi, Sokolov and Karis (1996)

Goal: Can low-fidelity prototypes be used as effectively as high-fidelity prototypes for finding usability problems in later design phases.

Two Experiments: Electronic Book and Interactive Voice Response

High-Fidelity: Electronic Book and Computer Simulation with actual phone

Low fidelity: Paper Based and Human Experimenter

Participants: 20 Subjects for each experiment, 10 in each condition.

Task: Chose representative tasks for each and recorded problems by viewing videotape and analysing verbal protocol.

Analysis: Classified problems and count number of problems per person and per group.

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Study Ö Continued

Results: Found same number and types of problems!

Limited to experiments using verbal protocol and system features that can be modeled by low-fidelity prototypes.
When not to

- **Testing for performance**: Times, number of tasks completed and steps to complete a task.
- **Aesthetics**: Testing for fonts, images and colors that cannot be achieved with the low-fidelity prototype.
- Communication with client and marketing department.
- Communication with developers.
- Communicating with documenters or trainers.
- Testing a wide range of features.

Conclusion

Both low and high fidelity prototypes serve different purposes. Both should be used to achieve a comprehensive and thorough design.

- Low-Fidelity more for rough problems, but also usability problems.
- High-Fidelity more for specific problems (further along in the design stage).
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<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
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<tr>
<td>Easier and faster to create</td>
<td>Cannot test for performance</td>
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<tr>
<td>Quicker to change</td>
<td>Cannot usually test for detailed aesthetics</td>
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<td>Users and developers find it</td>
<td>Cannot use for communicating with client or marketing department</td>
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<td>easier to change things</td>
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<td>since less (time and effort)</td>
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<td>has been invested in it</td>
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<td>Low implementation skills means</td>
<td>Cannot use as effectively to communicate with developers</td>
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<td>more people can be involved</td>
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<td>Less costly</td>
<td>Cannot use as effectively to communicate with documenters and trainers</td>
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<td>Can obtain quick user feedback</td>
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<td>throughout the design process</td>
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