HCI and Design

Assignments

Assignment 2 is due in one week!

March 2nd before class

Part A: Alone

Part B: In pairs

(How qualitative analysis is done in the real world)

Next week

Nicki is away at a conference

Guest lectures from Phil Chung and Seth Thomas (Designers @ Google)

Today

Paper prototyping

- An essential tool in your design toolbox!

How do we design things that actually fit user needs?

Problem:

- We can't evaluate a design until it's built
  But…
- After building, changes to the design are difficult
- What to do?

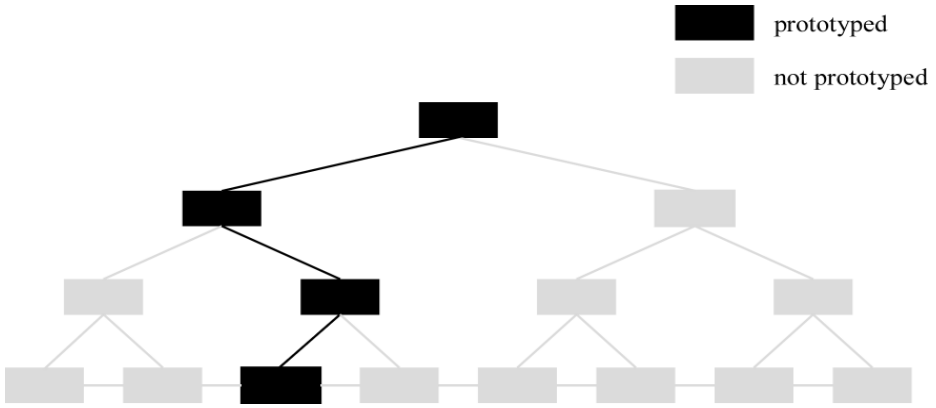
Solution

- Prototype!

Prototyping

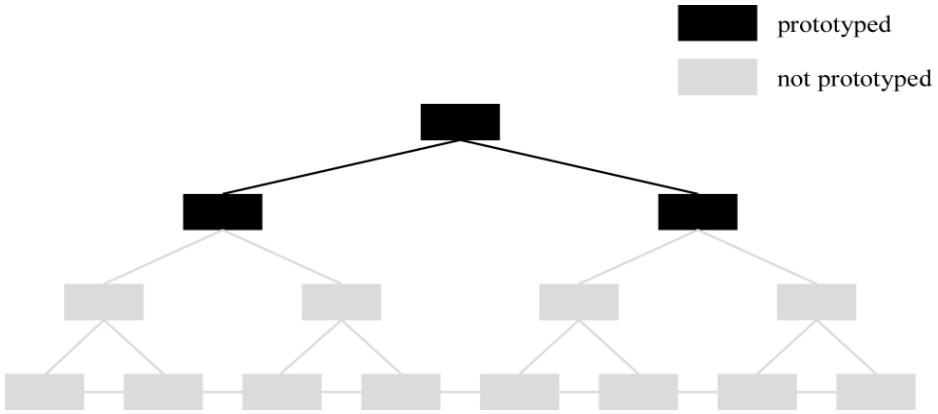
- Simulate the design in low-cost manner
- Make it fast. Make it cheap.
- Facilitate iterative design and evaluation
  - Your first idea is rarely your best!
- Promote feedback
- Allow lots of flexibility for radically different designs
  - Don’t kill crazy ideas!

How to prototype?



Vertical - “Deep” prototyping

- Show only portion of interface, but large amount of those portions

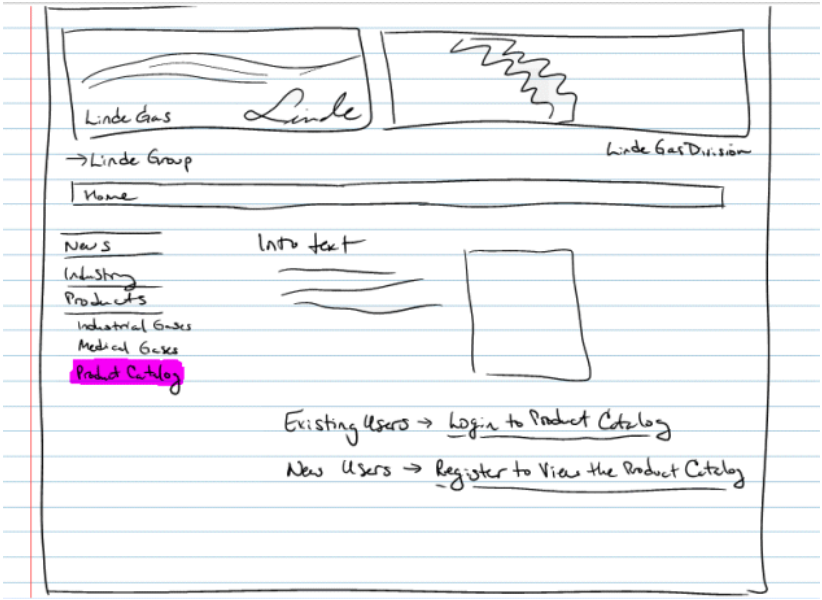


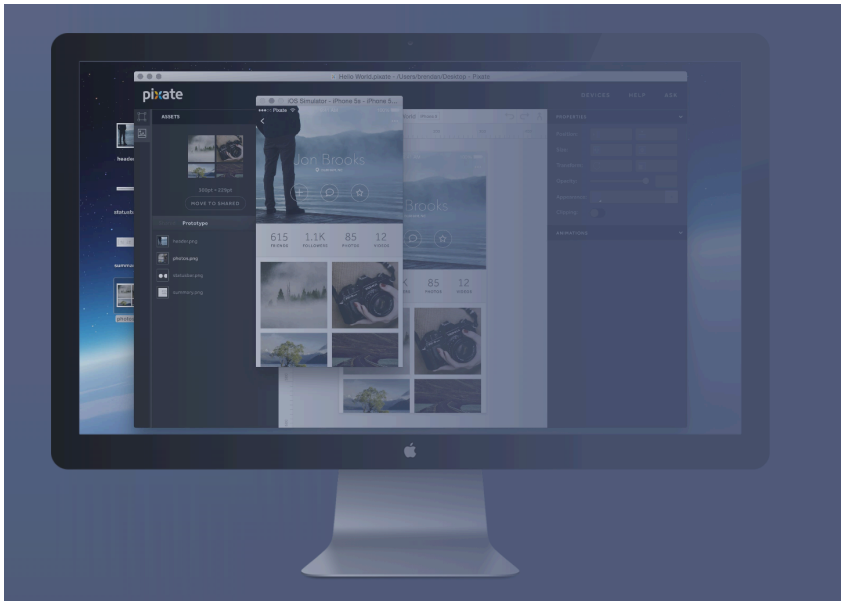
Horizontal - “Broad” prototyping

- Show much of the interface, but in a shallow manner

How to prototype?

Low fidelity vs. High fidelity

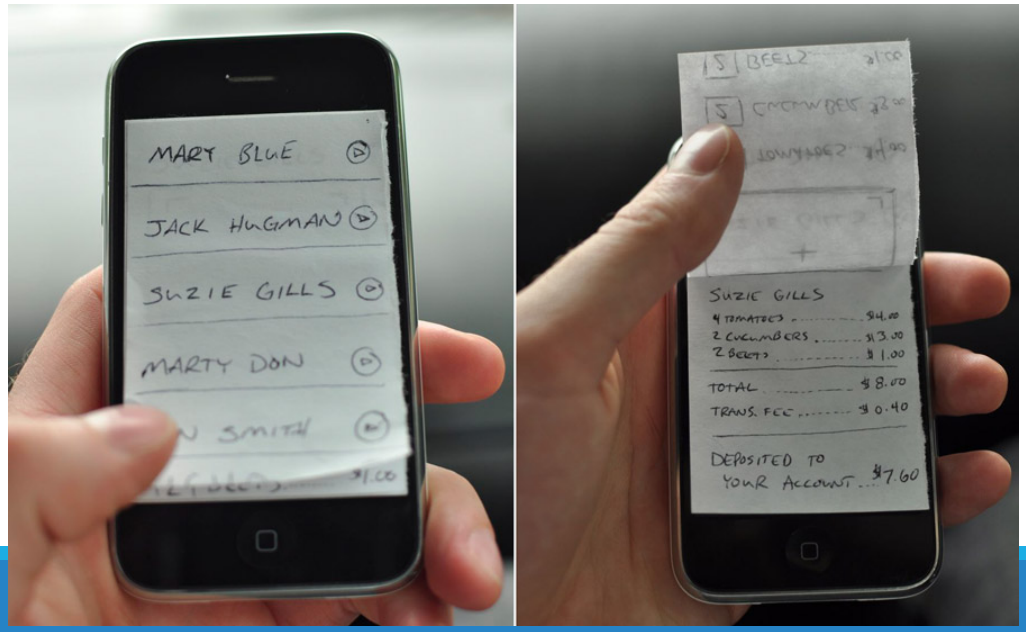




Amount of polish should reflect maturity of the prototype... Why?

“Mixed” fidelity

- Easy access to cameras makes is easy to blur the lines between lo-fi and hi-fi prototypes
- Photos of hand-drawn prototypes can easily be captured and displayed on real screens
- Sequences of photos can also be animated to simulate interaction



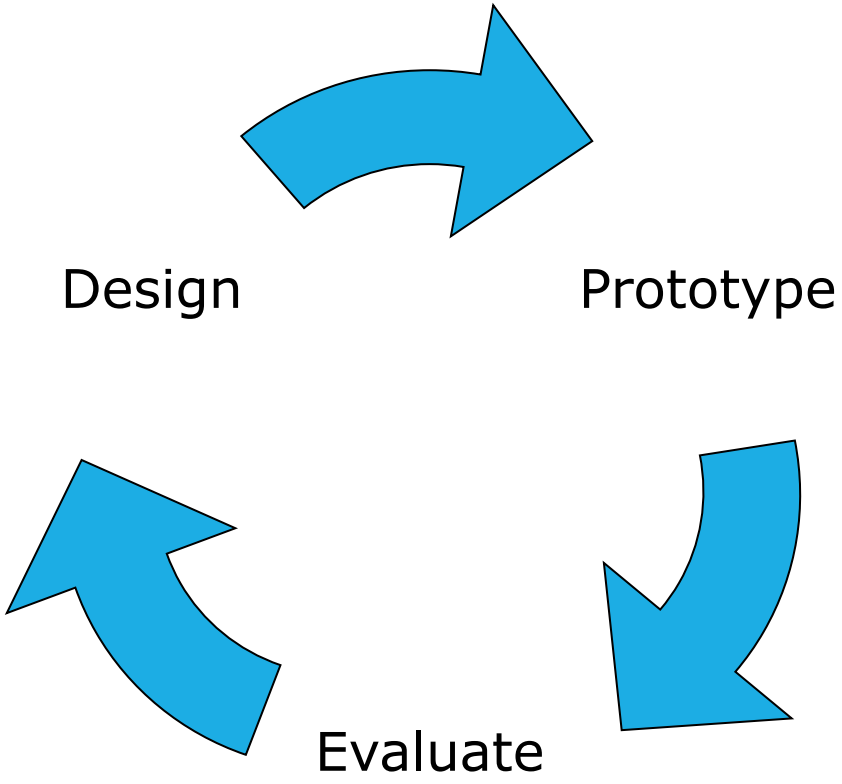
Today: Focus on Paper-prototyping

An iterative design method where potential users perform realistic tasks by interacting with a paper version of the interface that is manipulated by a person ‘playing computer,’ who doesn’t explain how the interface is intended to work.

Why do it?

Principle of iterative design

- Quality is partially a function of the number of iterations and refinements it undergoes



Why do it?

Low cost

Fast to implement

- Typical hi-fi prototype takes a few weeks as opposed to a few hours

Allows you to merge the design and prototyping phase together

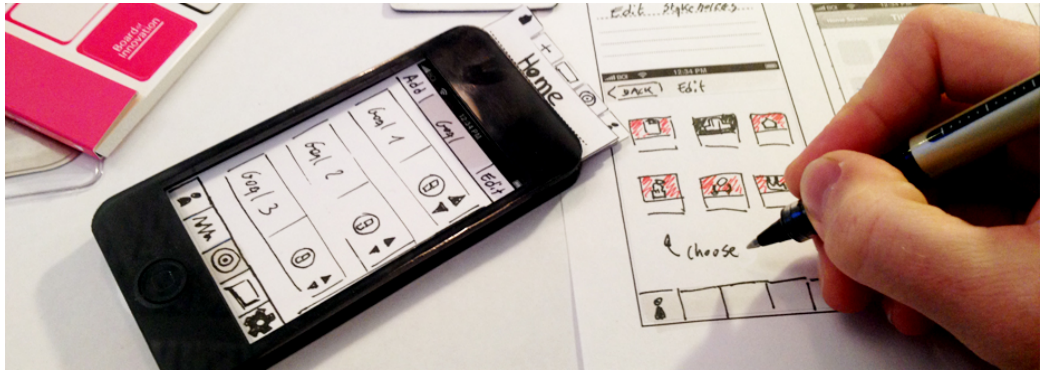
It gets everyone involved!

- Builds teamwork in groups with diverse skill sets
- So simple, no one gets left out

Why do it?

Feedback on the BIG things

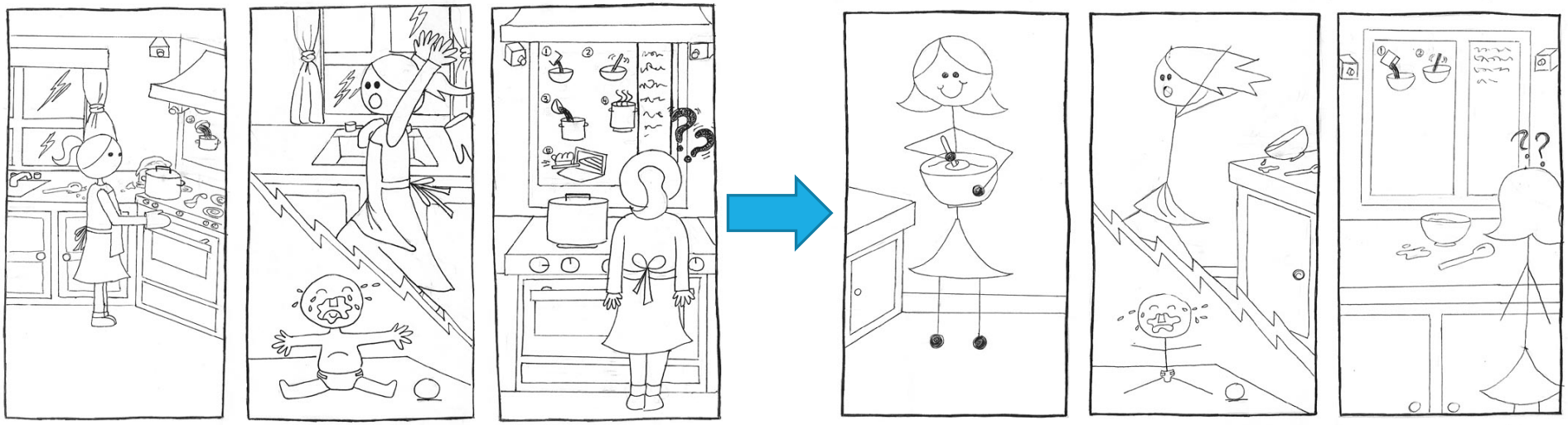
- Lo-fi nature forces users to consider usability issues related to layout, control mechanism
- Nit picking over choice of colors, buttons sizes, font choice ignored
- Focus on *Content* as opposed to *Appearance*



But I can’t draw!

Drawing *is* hard… But it doesn’t have to be

Spending too much time drawing details is unnecessary!



Also, you don’t have to draw – take photos, etc.

Why not to do it?

Does not produce anything concrete

May seem unprofessional to some users

- *Maybe not the right prototype for the VCs* ☺

Can't represent some effects with paper

Typically, you start with several rounds of paper prototyping, and move towards high-fidelity prototyping as the design becomes more finalized.

Building a lo-fi prototype

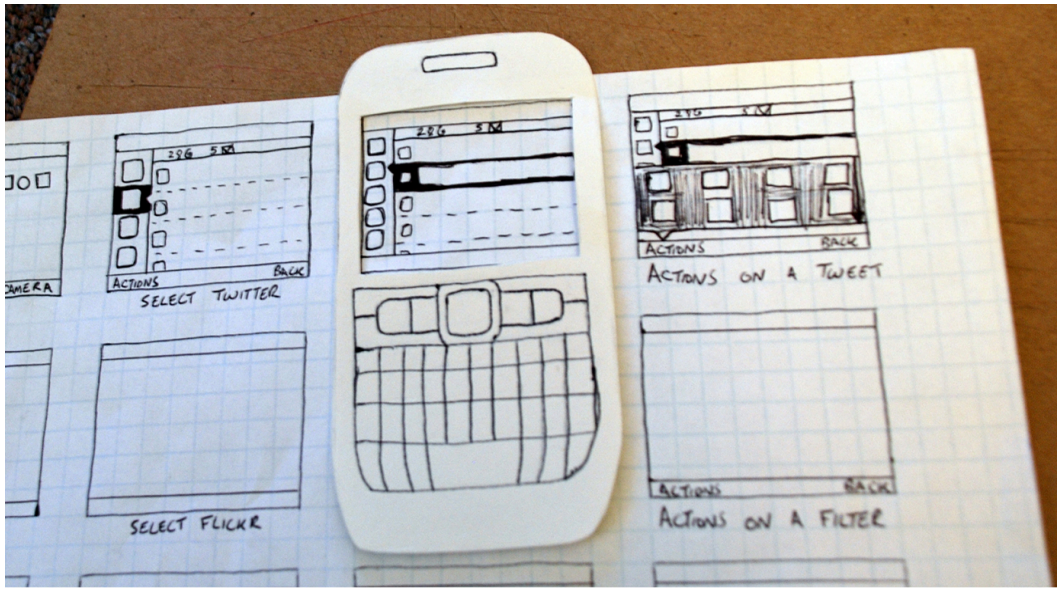
Gather essential materials

- White unlined paper
- 5 by 8 inch cards
- Adhesives
- Markers
- Sticky pads
- Scissors
- Anything else you think of!!!

Building a lo-fi prototype

Don’t get carried away with design!

- Goal is to get as much user feedback as possible
- Set a deadline – forget minor details

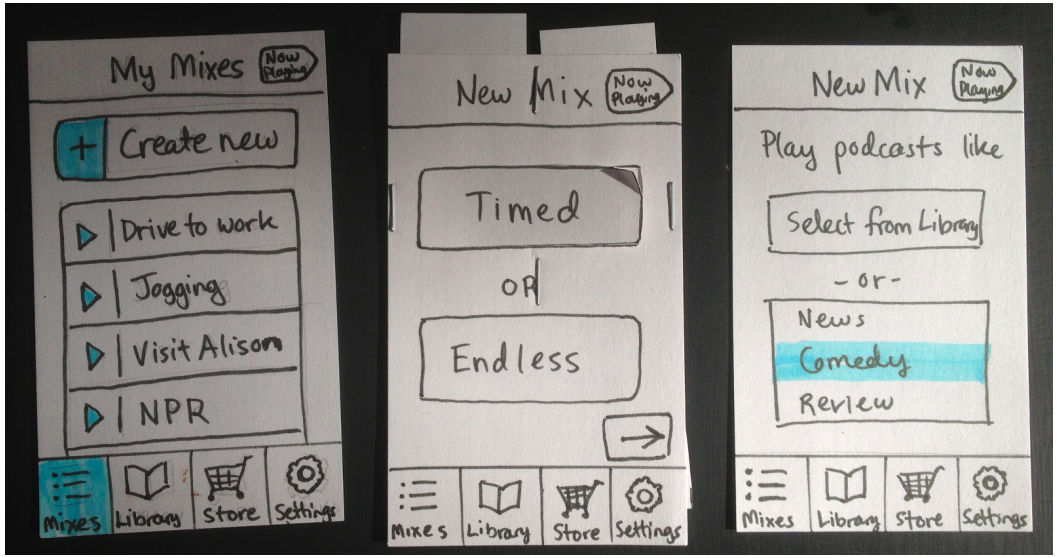


Building a lo-fi prototype

Draw generic frames

Make everything needed to simulate effects

Photocopier/camera is your friend!



Preparing for a test

Select users

- Perform user and task analysis
- Find out educational background, knowledge of computers, typical tasks required
- Get testers who fit the final user profile

Preparing for a test

Ready test scenarios

Practice

- Sort out bugs/hitches before the real testing
- Get everyone comfortable with their role

Conducting a test

Facilitator

- Encourage user to express thoughts
  - (don’t influence decisions!!!!)
- Giving instructions
- Making sure timing is met

Conducting a test

"Computer" person

- Arranges the paper prototype according to user input
- Needs to be organized
- Knows the prototype well
- Make changes quickly

Conducting a test

Observers

- Take notes
- Write possible solutions to problems faced
- Cannot react to user's actions

Evaluating results

Summarize problems (e.g., make a list)

- Usability issues
- Missing (or mis-specified) functional requirements
- Preferences for different alternatives
- User priorities
- Issues outside the user interfaces (e.g., high-level understanding)

Prioritize problems

Construct revised prototype

Iterate, iterate, iterate!

Conclusion: Paper Prototyping

- An important prototyping tool (but not the only tool!)
- Quick to build/refine, thus enabling rapid design interactions. Useful tool for speeding up the process of iterative design
- Requires minimal resources and materials (cheap!)
- Detects usability problems at a very early stage before implementation.
  - Focus on the “right” things early on
- Promotes communication between stakeholders. Team members gain understanding of user needs and priorities
- I recommend you always do a few rounds of paper prototyping for every new design/app/system/solution that you create!

Let's practice

You want to design an interface for a self-driving car

- Work in teams of two
- Pick one (or two) concrete tasks to focus on
- Create a paper prototype for those tasks
  - Work quickly! Set a deadline.
  - Be creative… don't just make it like a normal car!
- Evaluate your paper prototype with another team
  - Take turns
- Write down the results from testing your prototype
- (If time) Iterate!