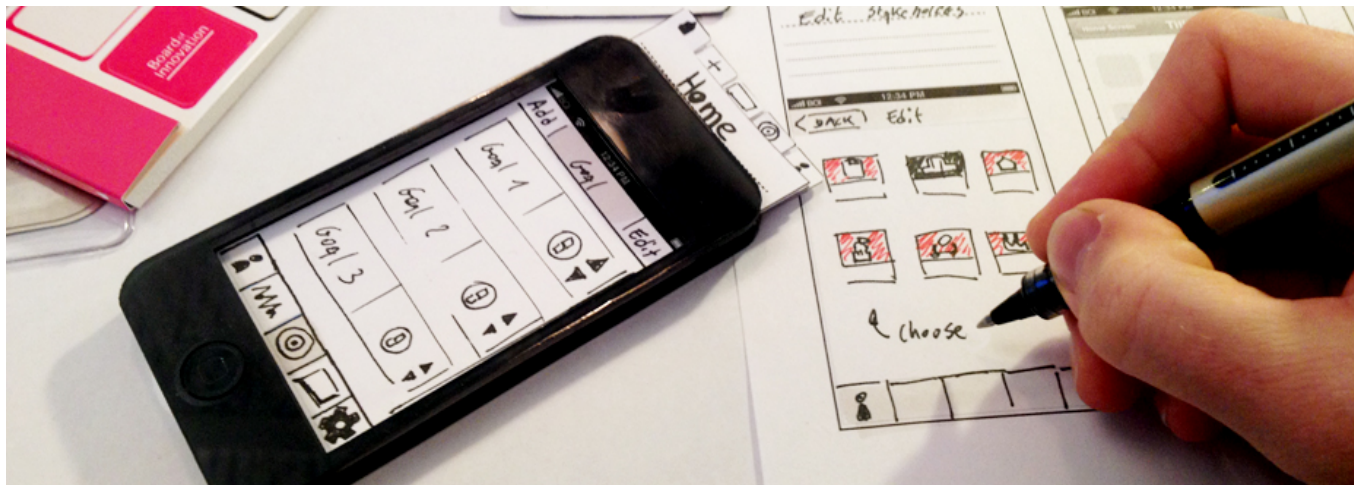# HCI and Design

SPRING 2016

Before we start…

Have you all submitted assignment 1?

If you still need project teams/ideas come and talk to me after class!

Topics for today

- Discussion: Design of Everyday Things, chapters 6-7
  - Mark, Shreyas, Bill

- Prototyping

How do we design for usability?

Problem:

- We can't evaluate a design until it's built
  But…

- After building, changes to the design are difficult
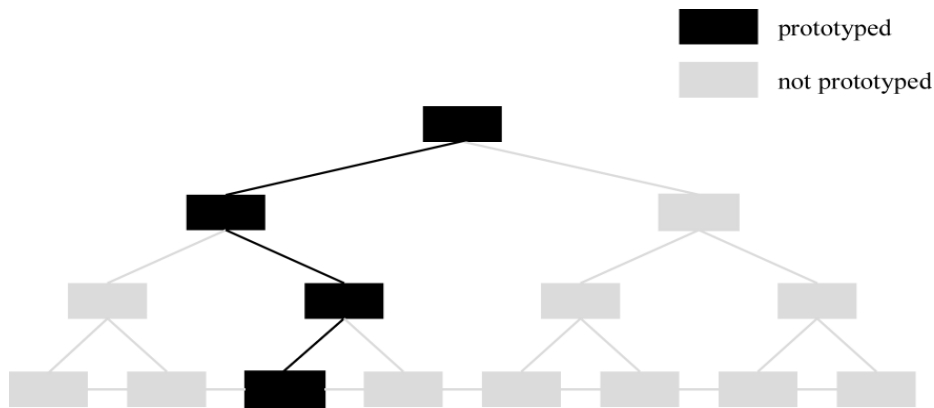
- What to do?

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
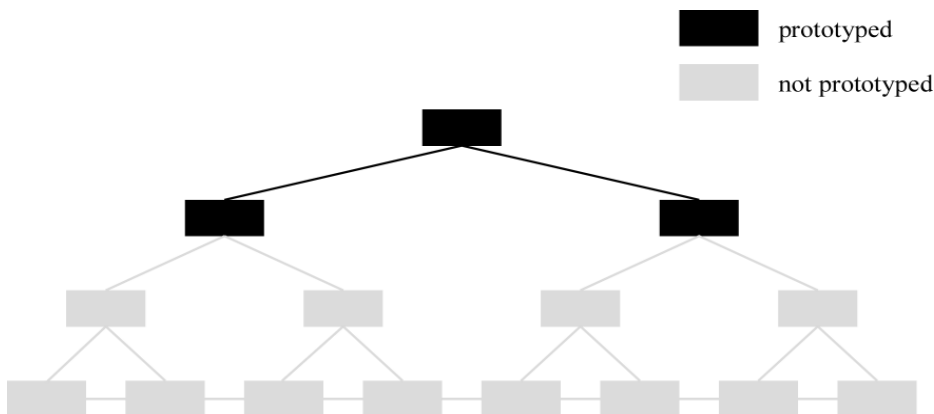 - Don't kill crazy ideas!

How to prototype?

Vertical - "Deep" prototyping

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

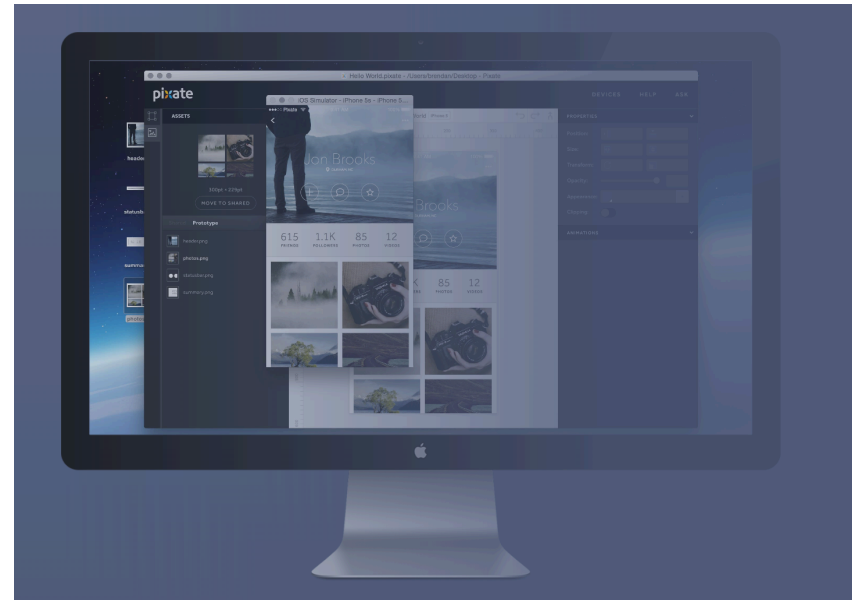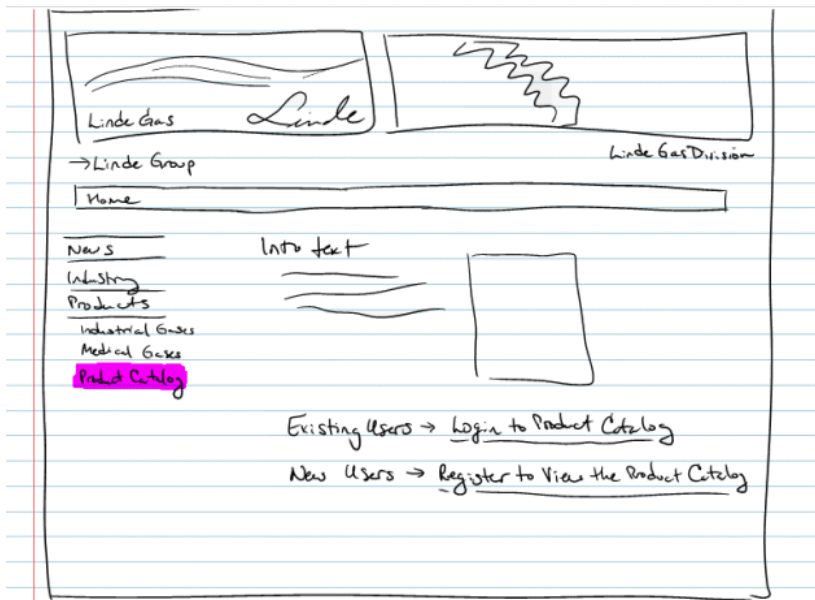**Horizontal** - "Broad" prototyping

◦ 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?

Prototyping techniques

◦ Scenarios
◦ Storyboard
◦ Sketches
◦ Mockups
◦ Paper prototypes
◦ Functional interface
◦ Wizard of Oz

Scenarios

Fictional stories with characters, products, events and environments.

Typically narratives, but can be videos, simulations

Nicki's class just got out and she wants to know whether to take the subway or walk back to her apartment. She opens her phone and starts the web browser. She opens her bookmarks and clicks on the subway page. The page displays a list of the subway stops nearby. She selects the closest stop. The next page is a list of subway lines at that stop. She scrolls down and selects the A line. The page then displays that the next A train should arrive in 2 minutes. Nicki leaves the building to head down to the subway stop to wait for the train.

Scenarios

Pros:
- Engaging and interesting
- Another person's shoes – easy to imagine
- Facilitates feedback and opinions
- Explore errors or mistakes
- Good for accompanying sketches, mockups, etc.

Cons:
- Bad for visualizing UI layout
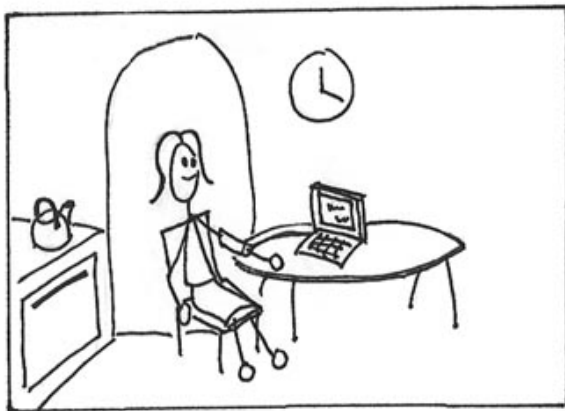- Descriptions can quickly get long and involved

Storyboard

Step by step graphical representation of interaction/product
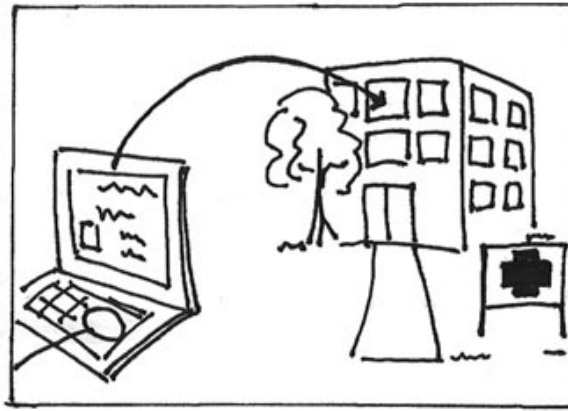
Determine the story
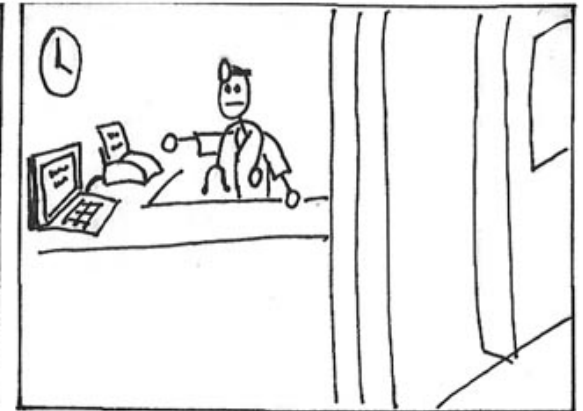- Do a lot of brainstorming and iterating

Sketch on pen + paper
- Use taglines / captions
- Keep it short

1. At home, Mary checks her blood pressure.

2. After a few simple key presses, her blood pressure readings get sent to a clinic.
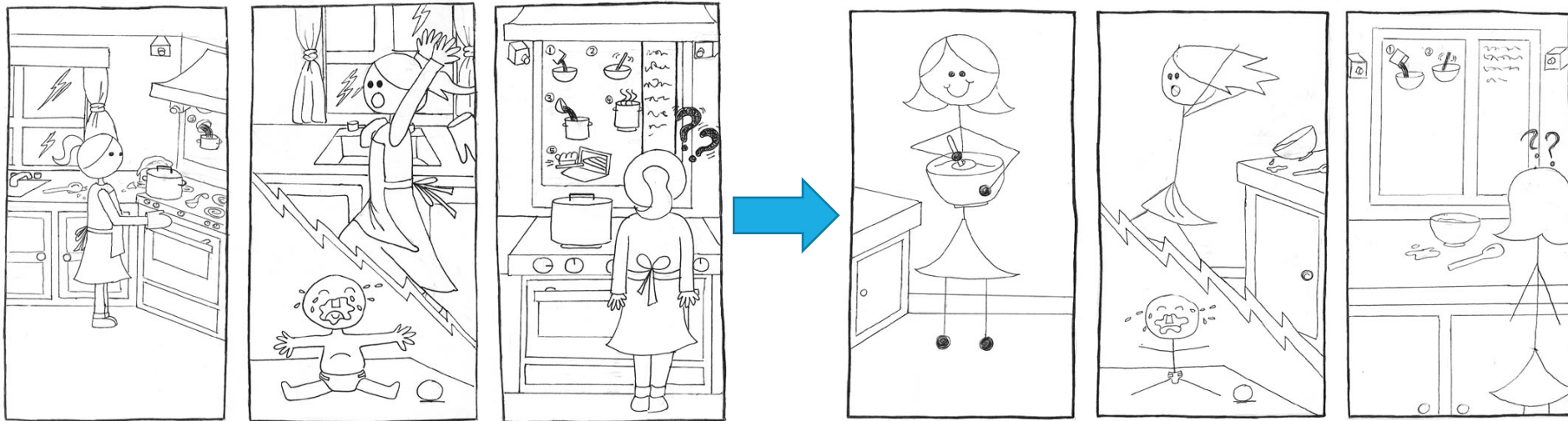
3. The information is made available to her doctor.

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.

Design Sketches

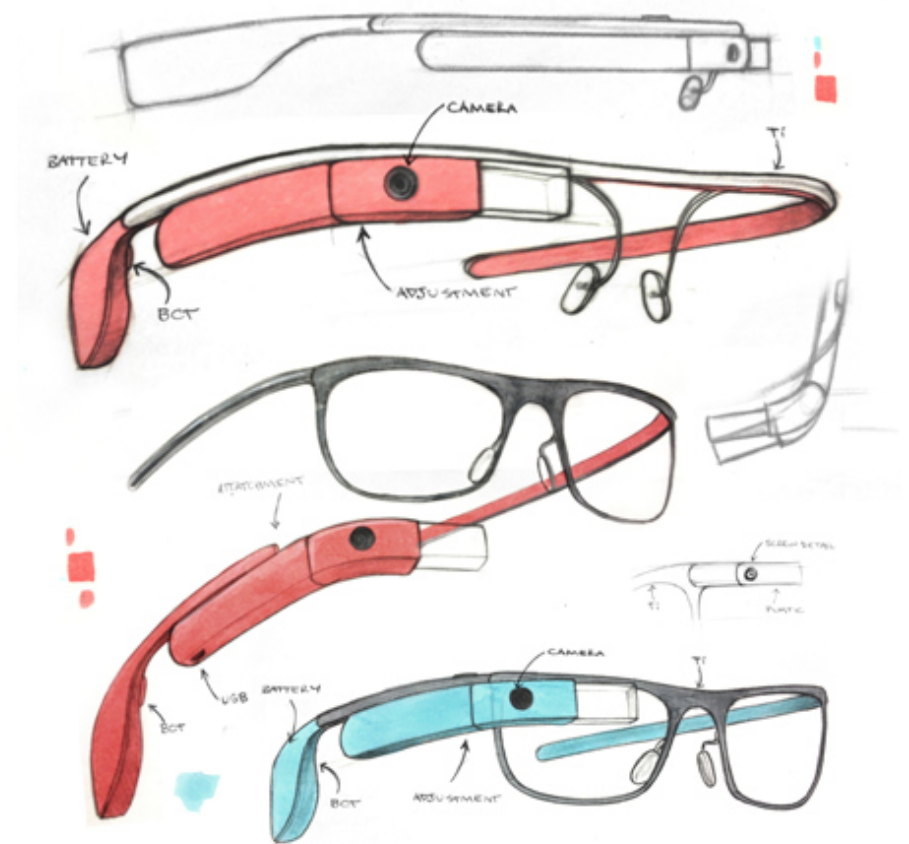Static representation of a product

Pros:

Good for depicting physical aspects of system

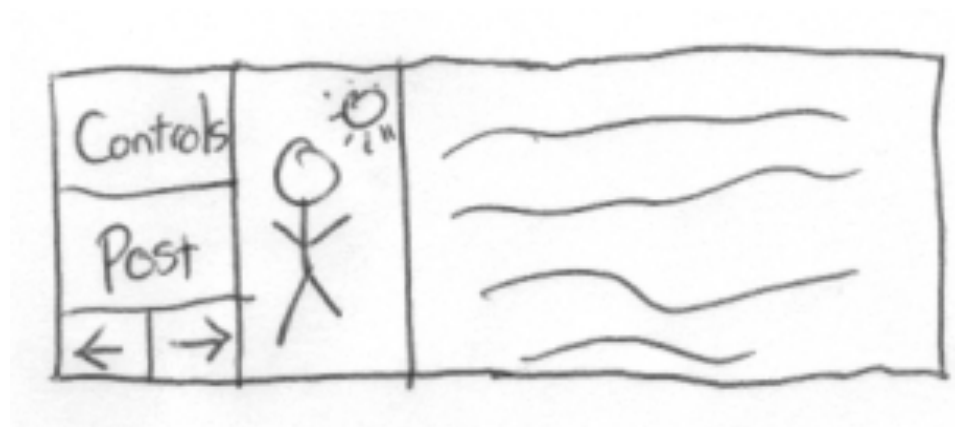Good for giving people the idea of a product

Good for static designs
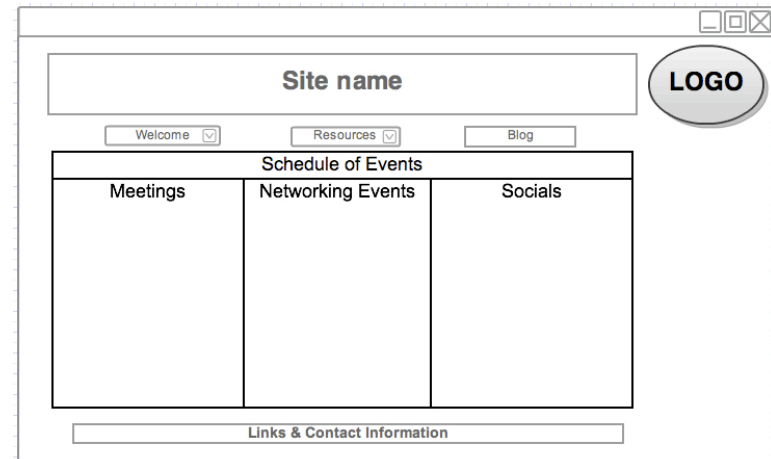
Cons:

Bad for interaction

Mockups / Wireframes

Sketch that demonstrates the appearance/functionality of a product/design.

Pros: Good for brainstorming, focuses people on high-level design notions, fast, cheap, easy to iterate.

Cons: Bad for illustrating flow, challenging for participants to understand interaction.

Paper prototyping

"Paper prototyping is a variation of usability testing where representative 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."

Carolyn Snyder, Paper Prototyping

Pros: Low cost, fast to iterate, focus on high-level ideas, gives good feedback, highlights problems/errors.

Cons: May seem unprofessional to some users, hard to represent some interactions/effects.
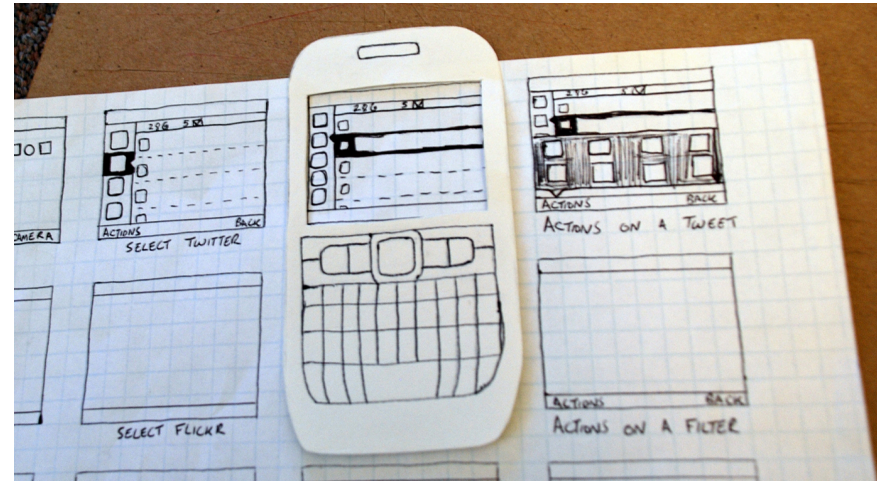
Simulations / Interface builders

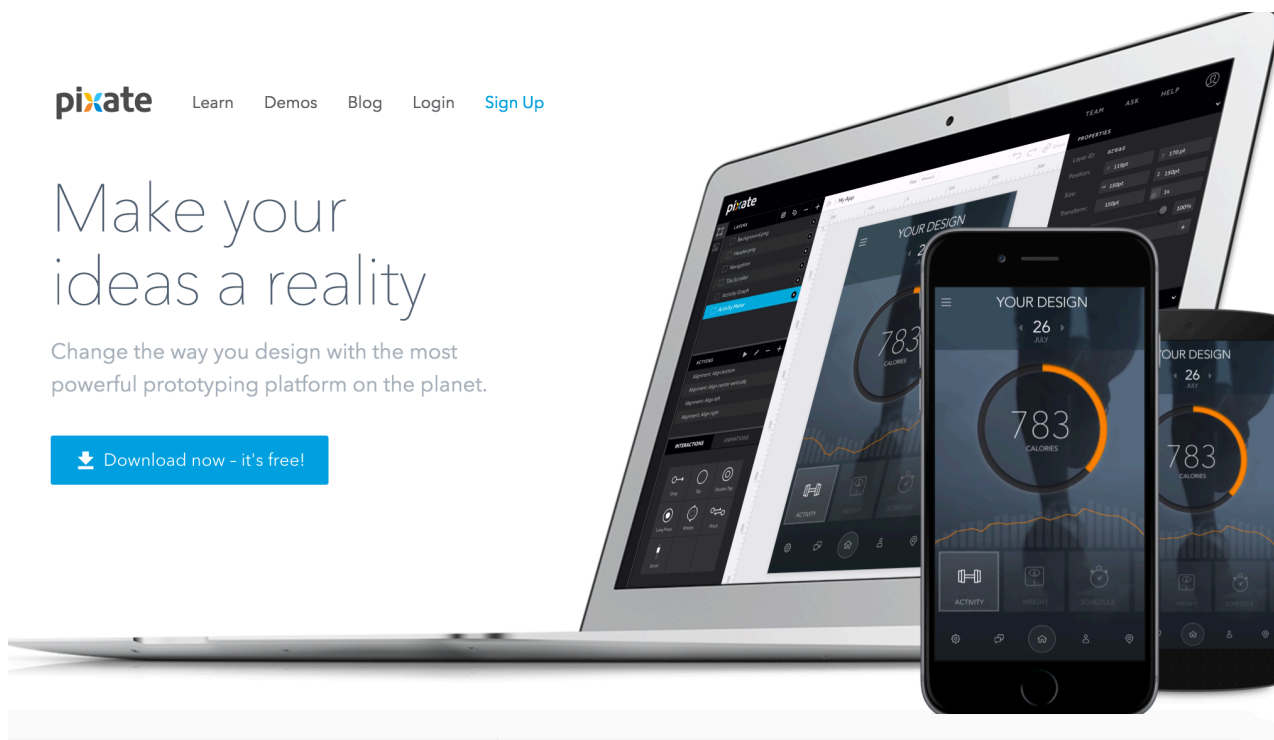- Storyboard-like views down with animated transitions

- Examples: PowerPoint, HTML, Pixate, Origami, Marvel, more…

Simulations / Interface builders

- Storyboard-like views down with animated transitions

- Examples: PowerPoint, HTML, Pixate, Origami, Marvel, more...

- **Pros**
  - Can give participants very specific script/sequence to follow
  - Good look and feel (wow!)
  - Some allow adding back-end functionality
  - Easy to develop and modify

- **Cons**
  - Easy to design things that might not be implementable
  - Easy to spend too much time on details

Wizard of Oz

◦ Person simulates and controls system from "behind the scenes"

◦ Use mock interface and interact with users

◦ Good for simulating system/functionality that would be difficult to build

◦ Voice recognition, NLP, ML, computer vision, etc.

Wizard of Oz

Pros:
- Allows designer to be immersed in situation
- See how people respond, how they specify tasks
- Figure out if it's a good idea before spending a lot of time implementing

Cons:
- Can be challenging to set up / pull off
- Can do things that might not be implementable

Summary of prototyping

- Simulate the design in low-cost manner

- Make it fast! Make it cheap!

- Allow lots of flexibility for radically different designs

- Promote feedback

- Facilitate iterative design and evaluation

- Choose your prototyping techniques carefully
  - Consider the pros and cons

Next time…

- Heuristic evaluation (usability *testing*)

- Reading posted on the class website
  - Usability Evaluation Considered Harmful (Some of the Time)

Activity: Teams of 2-3

Prototype an app/website that allows someone to design:

- A pair of sunglasses
- A pair of shoes
- The perfect NYC apartment layout
- Something else of your choice…

First iteration: Spend 5 minutes developing a quick prototype. *Use whatever method you want! (you will have to submit it!)*

- Create prototype that allows the customer to explore your UI.
- Think about the stages of interaction you want your customer to go through. What are the transitions like?

Prototyping techniques

◦ Scenarios
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◦ Functional interface
◦ Wizard of Oz

Activity

Feedback: Present your prototype to another group and get their feedback.

Iterate: Go back to your prototype and make changes based on the feedback received.

Wrap Up:
◦ What did you learn about your idea from the rapid prototyping?
◦ What did you learn about the overall process?
◦ What are the benefits of this kind of prototyping?
◦ What are the limitations?

Write your names on your prototype and give it to Zaid (if paper) or send it to tech_hci_7b45@sendtodropbox.com