

KAIST Spring 2025

# CS374: Intro to HCI

[hci.cstlab.org](http://hci.cstlab.org)

## **Class 05: Prototyping**

2025.03.11

Joseph Seering

# ADMIN NOTES

- Mini project (Studio 3/20, reflections due 3/21)
- HW1: UI Hall of Shame released (due 3/25)
- DP0: Team Formation released (due 3/25)

# MINI PROJECT

- Today's class: I'll discuss Stage 3 in the first 40 mins, and the rest of work time in your teams.
  - TAs have left feedback on your POV, via comments on your slides.
- 3/20 (Thu)
  - Mini Project Presentations
  - No Nanoquiz
- 3/21 (Fri)
  - Individual Reflections due (20% of your grade!)

# HW: UI HALL OF SHAME

- HW1 has been released!
  - See the Assignments tab on the course website
  - This is an individual assignment due 3/25
- In this assignment, you will find two user interface examples that you think have very bad usability
  - For each, you will perform a Heuristic Evaluation
  - We will go over Heuristic Evaluation in class on 3/19
  - This should not take longer than 2 hours

# DPO: TEAM FORMATION

- Teams for the semester project must be chosen by 3/25
  - We will have teams of 3, 3, 3, and 4 in this class.
  - If multiple teams want to work in a group of 4, the first team to submit the form can stay as 4. Others will need to form groups of 3.
  - We will have a team formation session after the Mini-project studio on 3/20 for any students who need help finding a team

# NANOQUIZ

- Simple questions about the pre-class material
- 3 minutes
- Open book, open notes, but they won't help much.

# PREVIOUSLY ON CS374



NOURISHEASE

**DOLBY** DOLBY.COM CONSUMER PERSONAS **bolt|peters** DATA EXPERIENCE

**TIM the ESCAPIST**  
SKILLFUL SOLITARY IMMERSIVE  
"Perfecting audio settings is a stress reliever."

• DEVICES TIM USES

- GAMES Tim plays immersion games online for a couple of hours to unwind.
- MOVIES Absorb cinematic experiences Tim likes to playing games that set up his surround system.
- AUDIO He's looking for productivity related heritage and a vibrant sound.
- MOBILE Even his headphones aren't adequate He'll put those on when working.

TO TIM, DOLBY MEANS: **ALGORITHMS.**  
**DOLBY SHOULD MEAN:** Perfectly calibrated sound for complete escape.

• CORE DIMENSIONS OF TIM'S PERSONALITY

|                          |            |
|--------------------------|------------|
| TECH CAPABILITY          | EXPERT     |
| SHOPPING                 | EVALUATIVE |
| ENTERTAINMENT MOTIVATION | SELF       |

TO MEGAN, DOLBY MEANS: **THEATER STUFF.**  
**DOLBY SHOULD MEAN:** A way to provide the next best thing to being there.

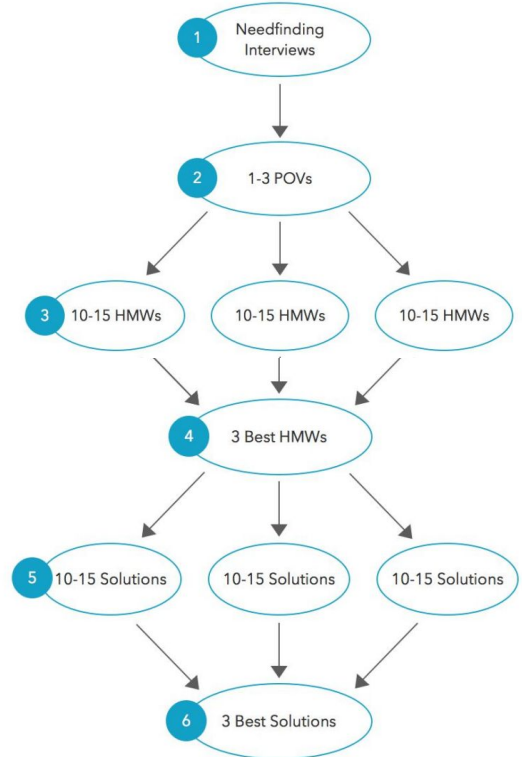
• CORE DIMENSIONS OF MEGAN'S PERSONALITY

|                          |         |
|--------------------------|---------|
| EQUIPMENT DESIRE         | LATEST  |
| ENTERTAINMENT MOTIVATION | SOCIAL  |
| TYPE OF QUALITY          | EXTREME |

**MEGAN the ENTERTAINER**  
COMMUNITY ATMOSPHERE COMPATIBILITY  
"I want to be in the middle of the action with my friends and neighbors."

• DEVICES MEGAN USES

- TV & MOVIES She loves just to watch the big game or the latest Blu-ray on her Samsung and surround.
- MOBILE Occasionally she'll listen to music on-the-go.
- GAMES Occasionally she'll play casual games when groups of friends create ones.
- AUDIO She uses her nice quality surround system to play the game on TV or for background music.



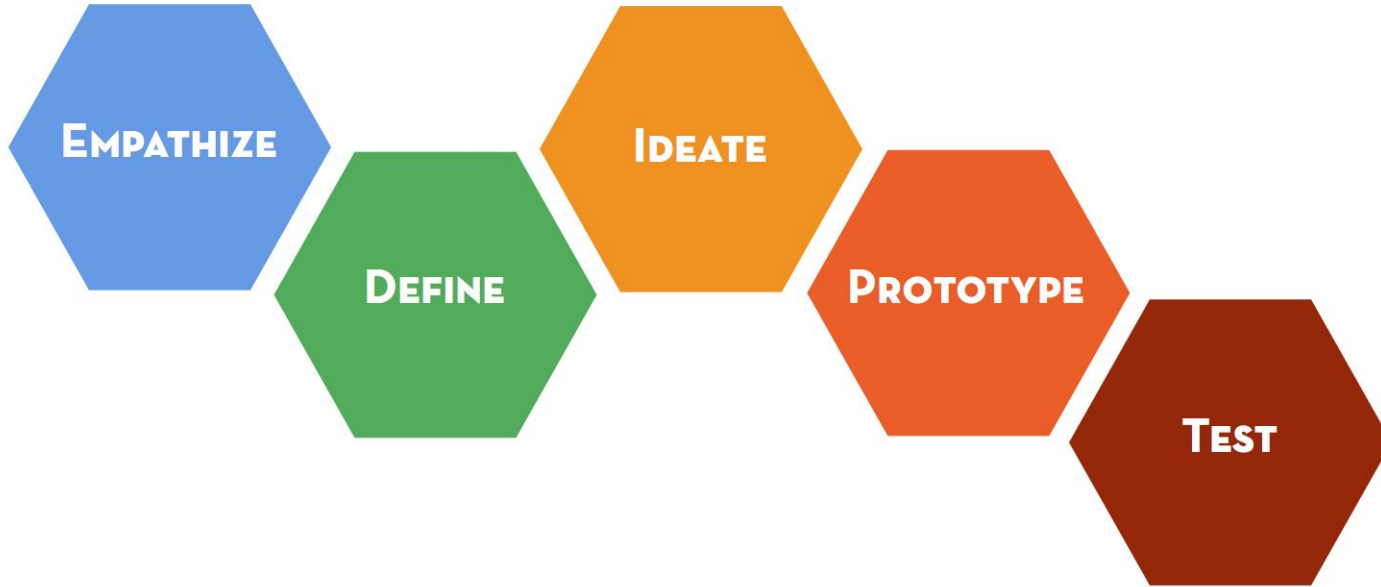
# LEARNING OBJECTIVES

After this class, you should be able to...

- Discuss the dimensions and value of prototyping.
- Compare different prototyping methods.
- Practice prototyping to your own mini project.



# USER-CENTERED DESIGN PROCESS



# WHAT IS A PROTOTYPE?

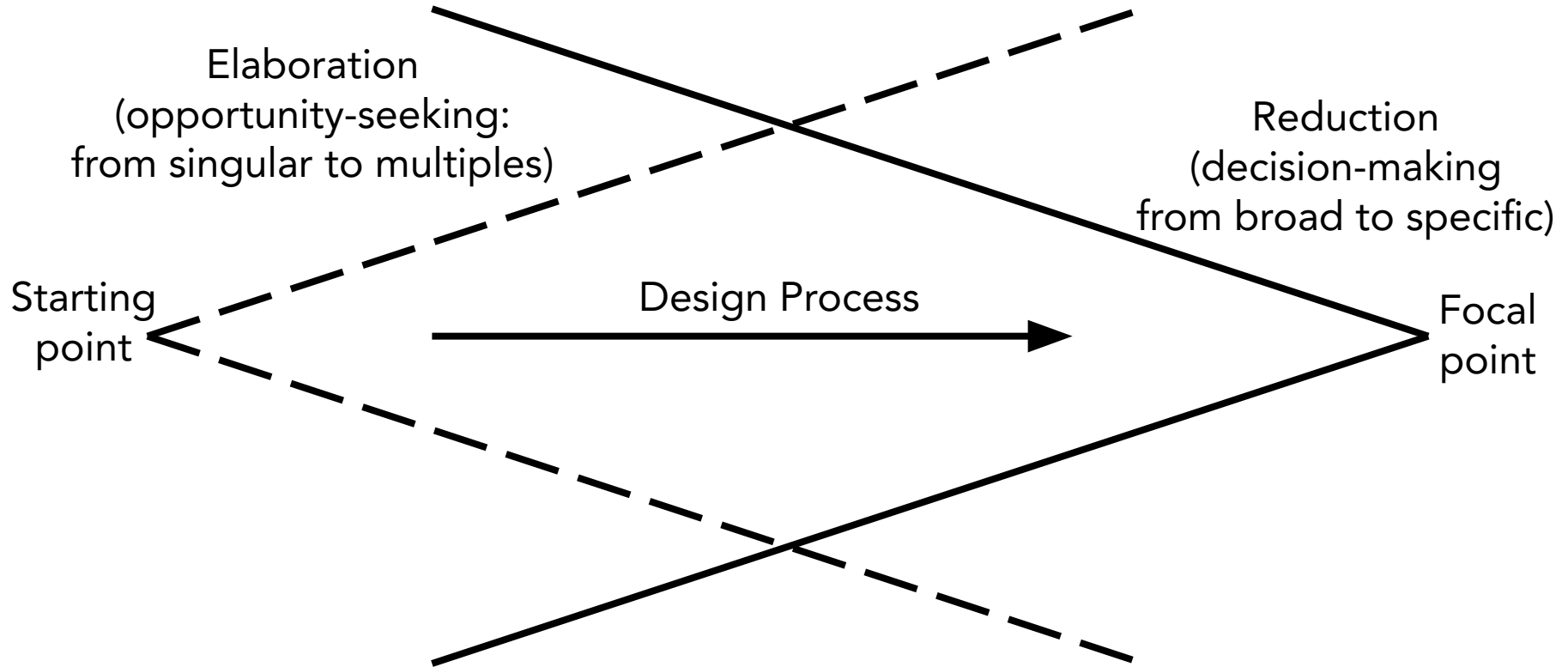
*“A representation of a design, made before the final solution exists.”*

*Moggridge, Designing Interactions*

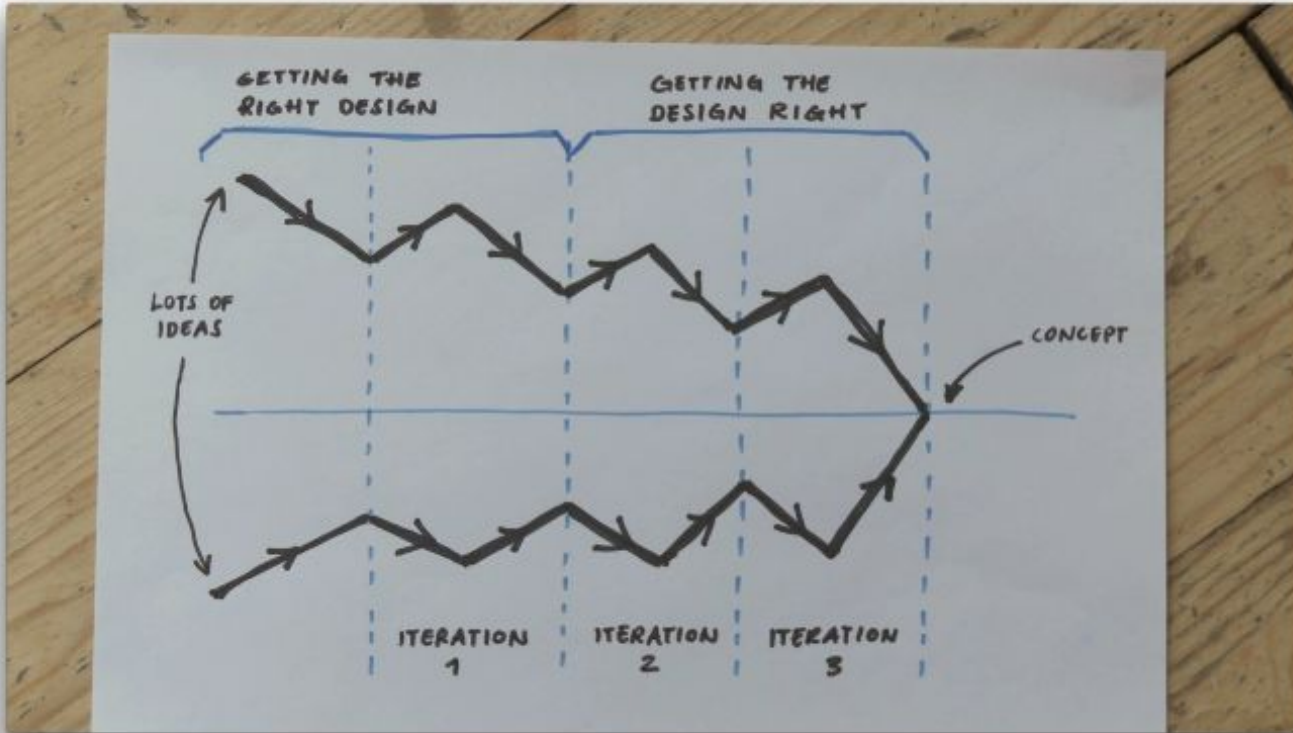
# KEY TERMS

- Low fidelity
  - Omits details
- High fidelity
  - More like finished products
- Breadth
  - % of features covered
- Depth
  - Degree of functionality

# OPTIONS NARROW AS FIDELITY INCREASES



# AND WE ITERATE THE PROCESS



# HOW DO WE DECIDE WHAT KIND OF PROTOTYPE TO MAKE?



강지훈  
6:02PM Yesterday

20190015 Jihoon Kang

After reading the material at this point, I am bit curious about the intrinsic purpose of this prototyping. Let's assume that the team made the paper mockup with lots of features. After the user experiences the prototype flow, let's assume that the user finds no interest and struggles with understanding the real purpose of the work done. How can we classify where the trouble happened between the design (over-featured prototype) of the prototype and the needfinding state which in this case means that the need itself was actually not there.

Think of prototyping as a strategy for risk management:

- Probe potential risks that might be involved in moving in a bold new direction OR
- Dig deeply into expected risks of a particular feature

# PAPER VS DIGITAL?

**T** TaeHyun Jang  
2:15 PM Today

Why don't we add small letters in the very first paper prototype?? By doing it, I think we could learn the small changes in the paper prototype. Is there any crucial reason that we should use the big things in the prototype?

**지훈** 강지훈  
6:34 PM Yesterday

20190015 Jihoon Kang  
Does this really happen in real world? I think this might work in easy cases, but if we wipe out or adjust the process during the user test, I think the user can be easily confused and lose where they are and how much they are progressed.


**J** Jieun Han  
10:51 PM Yesterday

20200794 Jieun Han  
As far as I understood, the modification happens between each user test so it would not confuse the user who brought up the problem.

 **Kanghyeon Kim**  
1:34 PM Mar 10

It's interesting how a less finished design can in fact encourage discussion among clients! This sounds counter-intuitive at first but makes sense if you take into account the psychological factors of the clients.



 **Khadija Rajabova**  
10:37 PM Yesterday

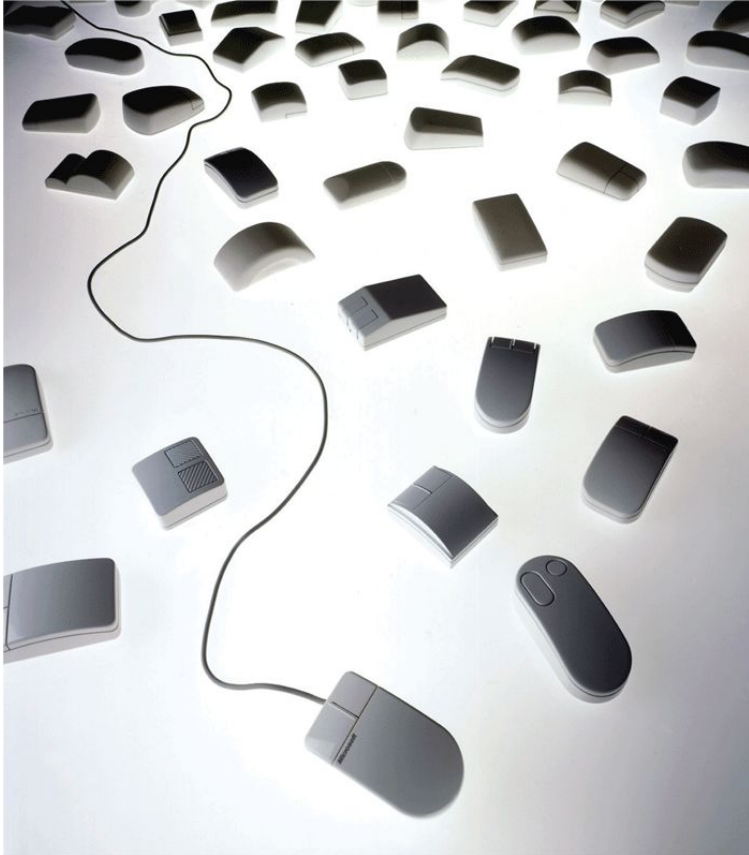
Yeah I didn't know this feature existed, but a really interesting concept indeed

*“In engineering, enlightened trial and error,  
not the planning of flawless intellects,  
has brought most advances;  
this is why engineers build prototypes.”*

*- Eric Drexler*

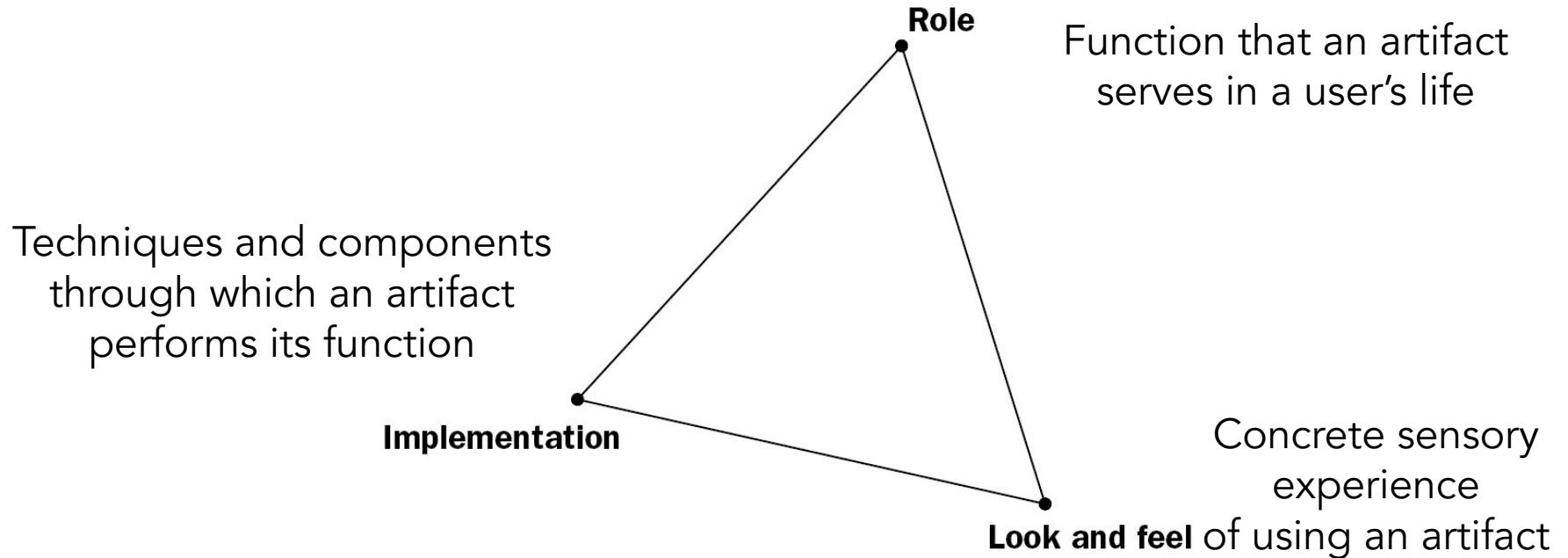


# PROTOTYPING A MOUSE



- Why prototype?
- Why multiple prototypes?
- Why rapidly?
- Why show unfinished work?

# WHAT DO PROTOTYPES PROTOTYPE?



# FUNCTION PROTOTYPE

- Looks like wireframes (no fonts, colors)
- Interactive functionality (spectrum up to working all the way)



Functional keyboard prototype



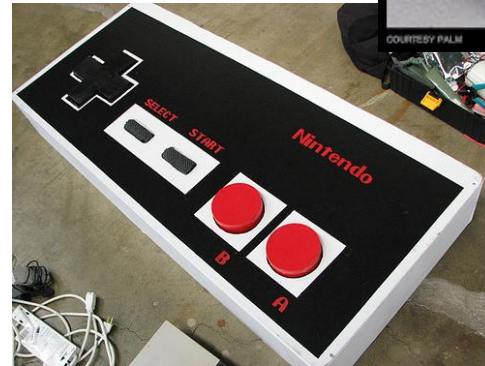
Functional water faucet

# FORM PROTOTYPE

- Looks good
- But doesn't really work



Project Inkwel "Spark"  
computing device concept



Nintendo control pad mockup



# EXPERIENCE PROTOTYPE

- Video prototyping
- Role playing



Figure 2: Experiencing a train journey.

*The team combined objective passenger research with subjective discovery as they played out roles they assigned each other.*



Figure 1: The patient's experience kit.

*When participants were paged this indicated that they had received a defibrillating shock; they recorded their surroundings with the camera, and noted their impressions.*

# ACTIVITY: HOW TO LOW-FI PROTOTYPE THESE IDEAS?

1. New burger-serving pipeline at McDonald's



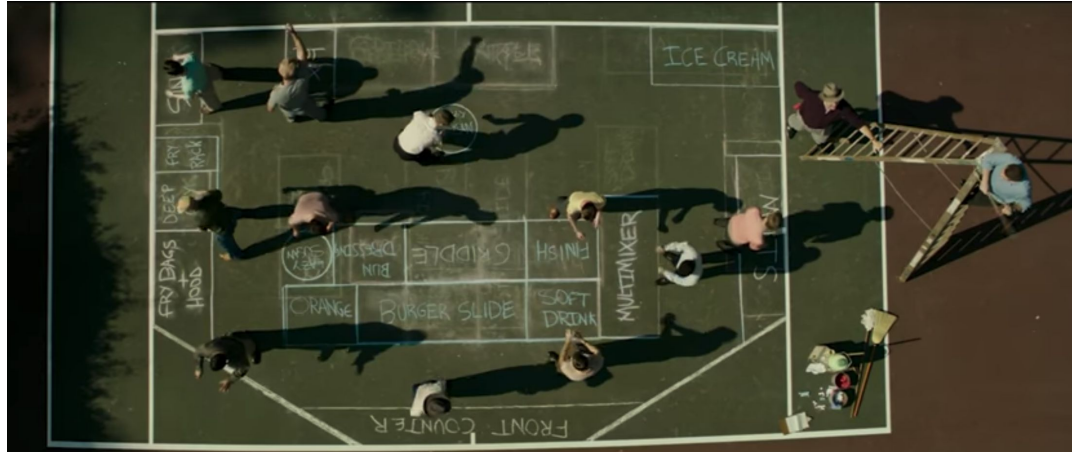
2. Google Glass



- Think yourself for 1 minute.

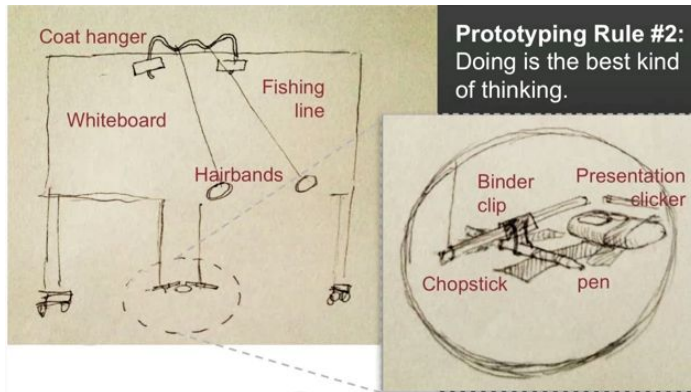
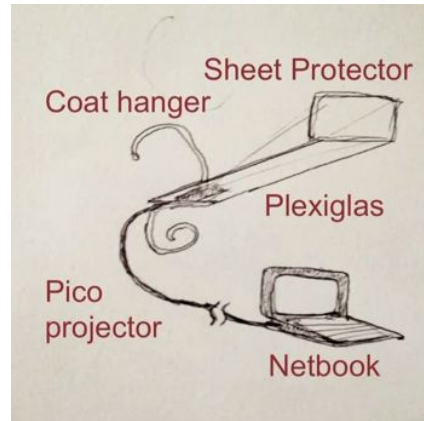
# PROTOTYPING BURGER-SERVING PIPELINE

- HMW: serve burgers in 30 seconds not 30 minutes?
- Solution: optimize the serving pipeline
- Prototyping: tennis court & chinks



From movie "The Founder"

# PROTOTYPING GOOGLE GLASS



**Prototyping Rule #2:**  
Doing is the best kind  
of thinking.





# PROTOTYPE TECHNIQUES

- Paper Prototype
- Computer Prototype
  - Storyboard
  - Form Builder
  - Wizard of Oz
- Video Prototype

# Paper Prototyping

# KEY PROPERTIES OF PAPER PROTOTYPING

- Natural interaction
- Human computer
- Low fidelity in look & feel
- High fidelity in depth
- Pros and cons?

Who's Coming?

show all ▾

0 selected

- Jason
- Emily
- Rachel
- Steve
- Sally
- Ben
- Chris
- Christine

OK CANCEL

Checkbox

Show all.

- Within 1 mile
- Within 2 miles
- Within 5 miles
- Within 10 miles

Context Menu

ⓐ UPDATE EVENT

ⓧ CANCEL EVENT

Do you really want to  
cancel this event?  
Others will be notified.

Yes  No

Cancel message was sent.

Do you really want to  
decline this event?  
Sender will be notified.

Yes  No

Decline message was sent.

### My Events

Created

Lunch at In-N-Out

Accepted

HCI Group Lunch

Pending

Kibum's BBQ

Declined

Descort Party

SELECT

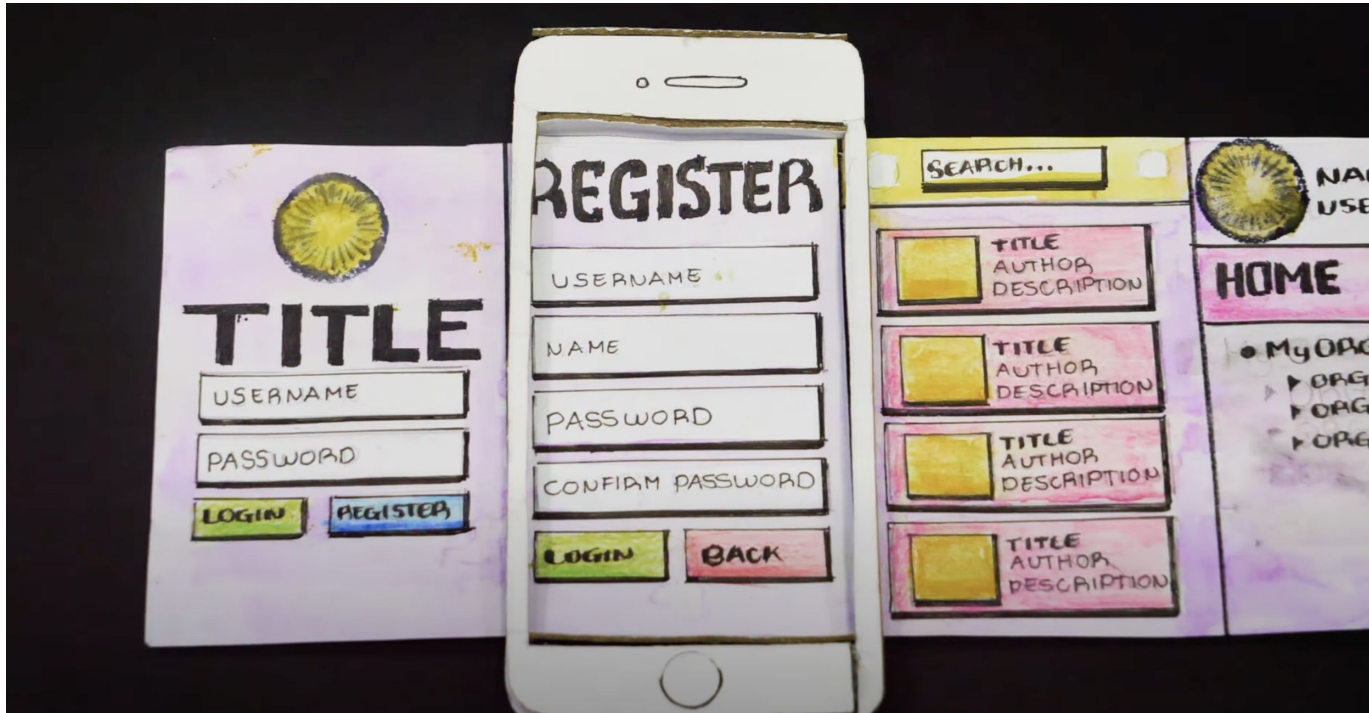
BACK

Dialog & Popup

Selection highlight

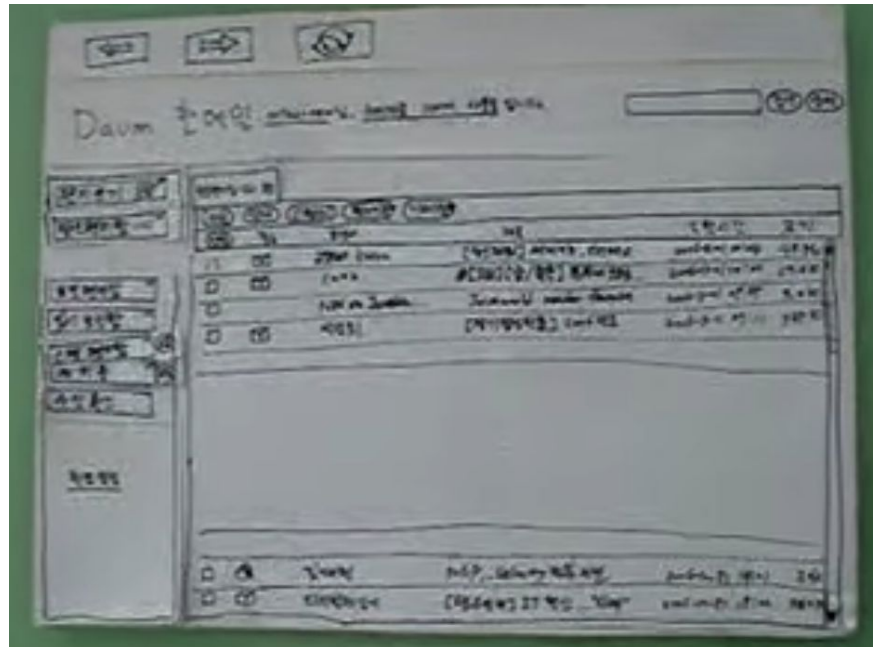
Form

# STUDENT EVENT PLANNING MOBILE APP

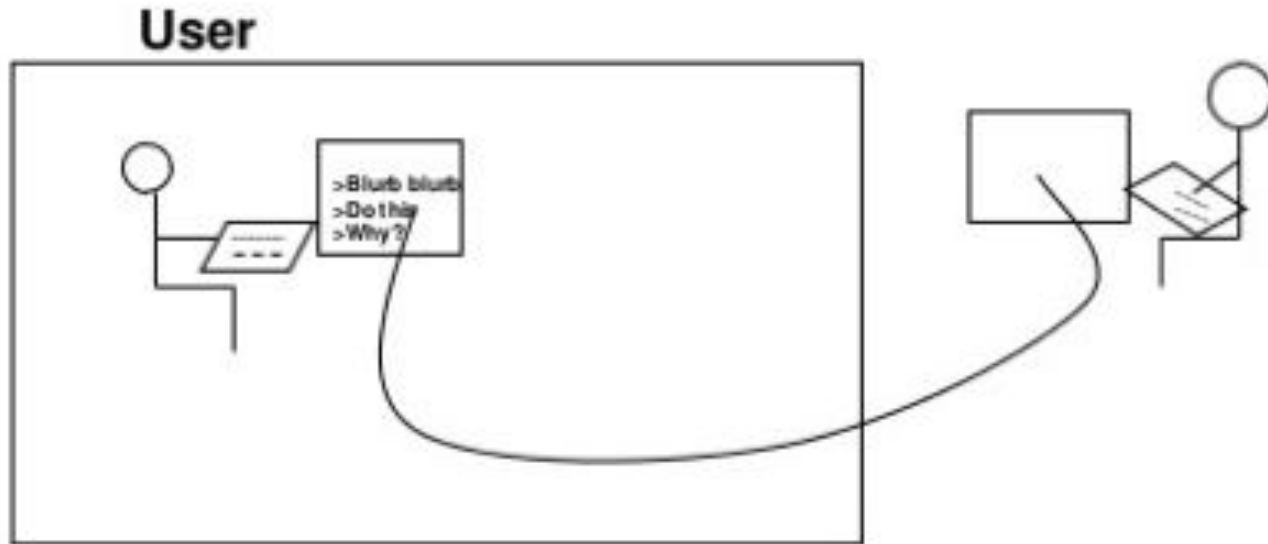


# HANMAIL PAPER PROTOTYPE

- What are some of the useful techniques?



# WIZARD OF OZ PROTOTYPING





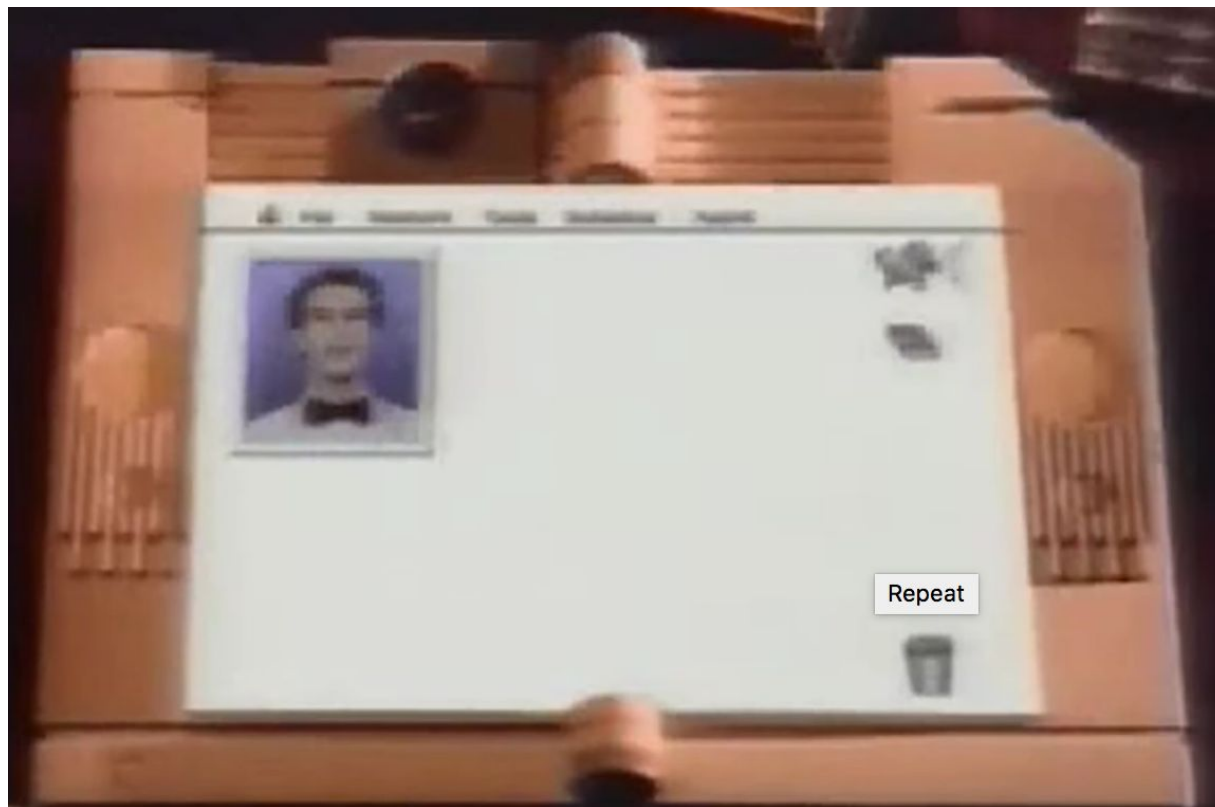
# WIZARD OF OZ PROTOTYPING

- Simulate machine behavior with human operators
- Make an interactive prototype without (much) code
- Rapidly test the prototype with people
  - Higher fidelity than paper
  - Lower cost than actual implementation
- Good for high-fidelity in depth
- Simulations might misrepresent, wizard training & fatigue

# VIDEO PROTOTYPING

- Capture rich & real context, illustrate context of use
- Great communication tool, portable
- Connects UI and task
- Full usage scenario needs to be thought out
- Good storyboards & paper prototypes can yield quick videos
- Not interactive
- Can be caught up in detail

# APPLE'S KNOWLEDGE NAVIGATOR



# ACTIVITY: MINI PROJECT PROTOTYPING

- Your team slides have detailed instructions for Stage 3.
- Acceptable Prototyping Tools:
  - Paper, pens, markers!
- Due: You have until 3/20 (Thu) to finish Stage 3 (prototyping) & Stage 4 (testing) with three target users!

Who's Coming?

show all

select

- Jason
- Emily
- Rachel
- Steve
- Sally
- Ben
- Chris
- Christine

OK CANCEL

Show all.  
Within 1 mile  
Within 2 miles  
Within 5 miles  
Within 10 miles

The image shows a hand-drawn prototype of a web form titled "Who's Coming?". At the top, there is a title "Who's Coming?". Below it is a search bar containing the text "show all". To the right of the search bar is a small square button with a magnifying glass icon and the text "select". Below the search bar is a list of names, each preceded by a checkbox: Jason, Emily, Rachel, Steve, Sally, Ben, Chris, and Christine. At the bottom of the form are two buttons: "OK" in green and "CANCEL" in red. To the right of the main form is a separate pink sticky note with a yellow border, containing the text "Show all." followed by four radio button options: "Within 1 mile", "Within 2 miles", "Within 5 miles", and "Within 10 miles".