

DESIGN THINKING FOR GLOBAL GRAND CHALLENGES

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Define

Prof. James A. Landay & Julie Stanford  
Computer Science Department  
Stanford University  
Spring 2017  
2017/04/17

Slides adapted from dLeadership Define + Ideate slides ([https://d.school.stanford.edu/group/dleadership/wiki/9908/define\\_2013.html](https://d.school.stanford.edu/group/dleadership/wiki/9908/define_2013.html))  
Additional resources from bootcamp bootleg (<http://bootcamp.stanford.edu/wp-content/uploads/2011/10/BootcampBootleg2012-2013.pdf>)


## Outline

- Ethical considerations in needfinding
- Inferring insights
- Point of views

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## Ethical Considerations in Needfinding

Testing/fieldwork can be coercive if there is a power imbalance (e.g., in under resourced communities)




People may feel no option but to speak to you or give you their time even though they may not get anything of value in return.

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## Ethical Considerations in Needfinding

Testing/fieldwork can be coercive if there is a power imbalance (e.g., in under resourced communities)



"the 'at-risk' label is highly problematic and often implicitly racist and classist... [it] locates problems in individuals, families, and communities, rather than in institutional structures that create and maintain inequality."

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## Ethical Considerations in Needfinding

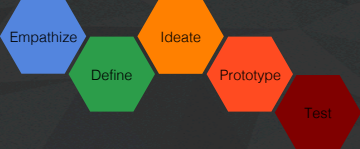
Testing/fieldwork can be coercive if there is a power imbalance (e.g., in under resourced communities)



"When the interviewer is a foreign researcher requiring a translator, the bias towards the interviewer's artifact increases to 5x."

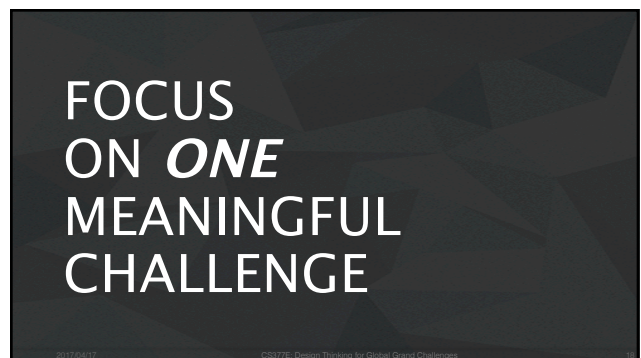
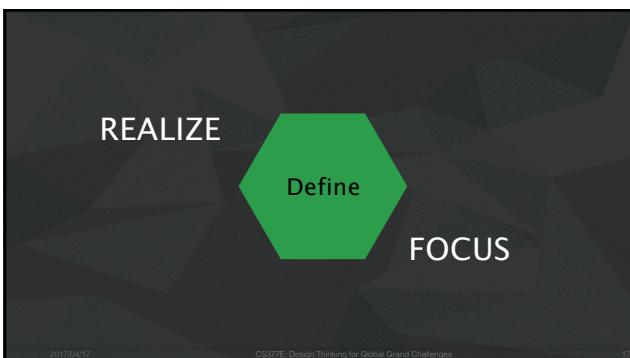
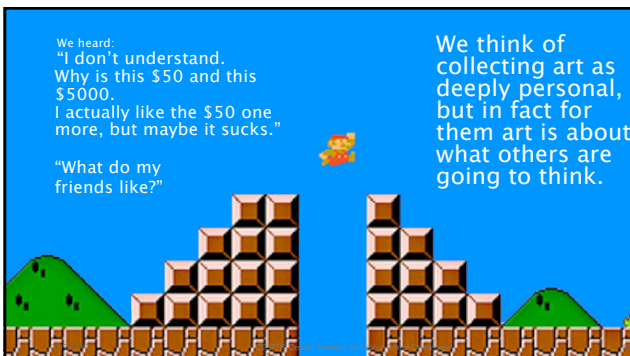
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## Design Thinking



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## Focus by Writing a "Point of View"

A **unique, concise reframing** of the problem that is **grounded in user needs & insights**.

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## Focus by Writing a "Point of View"

WE MET . . .  
(user you are inspired by)

WE WERE AMAZED TO REALIZE. . .  
(insight—verb reflecting user needs)

IT WOULD BE GAME-CHANGING TO. . .  
(Synthesized statement to leverage in designing solution.  
NOT just a reason for the need! )

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WE MET . . .  
a guy in his twenties with a good new job and a new apartment

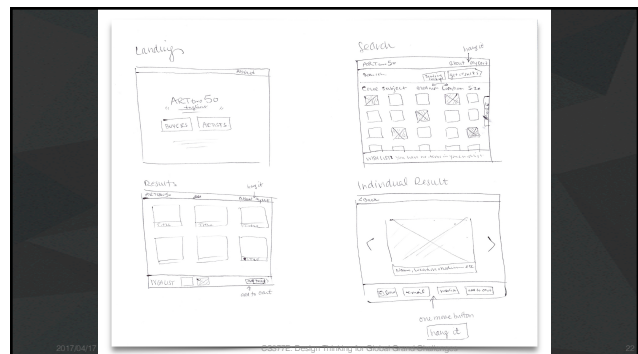
WE WERE AMAZED TO REALIZE . . .  
art is fashion on the wall: it's about what other people are going to think of you

IT WOULD BE GAME-CHANGING TO . . .  
help buyers cut through the paralysis of doubt

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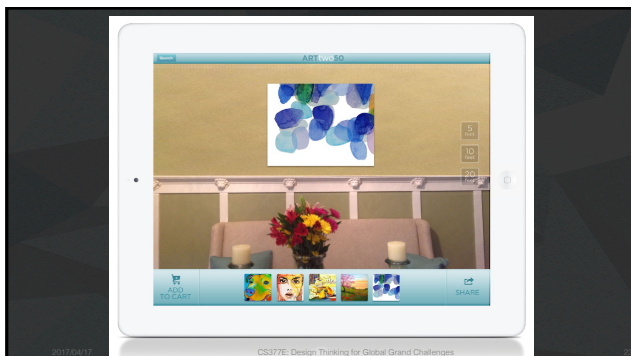
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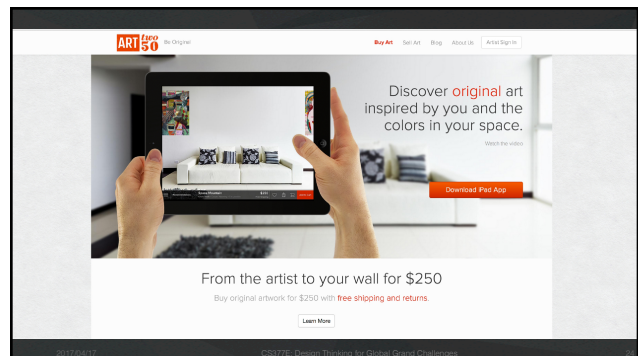
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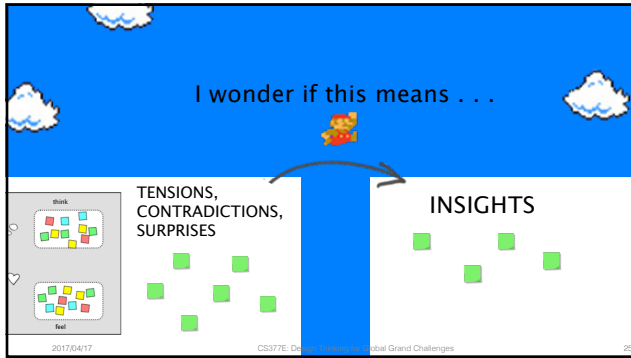


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### Characteristics of A Good Point of View

- Provides focus & frames the problem
- Inspires your team & people you meet
- Fuels brainstorm
- Gives a reference to evaluate competing ideas
- Saves you from the impossible task of creating concepts that are all things to all people
- *Revisit/reformulate as you learn by doing*

### Point of View

WE MET . . .  
(extreme user you are inspired by)

WE WERE AMAZED TO REALIZE . . .  
(what did you learn that's new? What is their need?)

IT WOULD BE GAME-CHANGING TO . . .  
(frame up an inspired challenge for yourself – the insight.)  
(don't dictate the solution.)

**the mechanic**

### DO IT NOW:

UNPACK: note the say, do, think, & feel  
INSIGHTS: infer from observations  
POINT OF VIEW: 1 written sentence

We met X  
We were amazed to realize...  
It would be game-changing to...

### DO IT NOW FOR YOUR PROJECT:

UNPACK: done already  
INSIGHTS: infer from observations  
POINT OF VIEW: 1 written sentence

We met X  
We were amazed to realize...  
It would be game-changing to...

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Ideate

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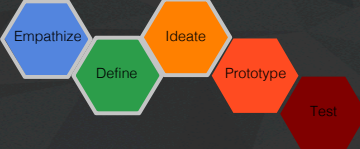
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### Outline

- Ideate
- Exercise
- How Might We...?
- Selecting good problems & solutions
- Brainstorming solutions

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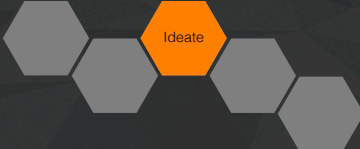
### Design Thinking



Empathize Define Ideate Prototype Test

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### Design Thinking



Ideate

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innovation potential



separate generation & evaluation

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### How do we start?



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## How do we start?



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“Might” lets you defer judgment  
helps people to create options freely  
opens up more possibilities

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POV: We met Janice, a harried mother of 3, rushing through the airport only to wait hours at the gate. We were surprised at the many games she makes up to entertain her children so they don't irritate frustrated fellow passengers. It would be game changing to bring the other passengers and the airport facilities into helping families have a better travel experience.



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POV: We met Janice, a harried mother of 3, rushing through the airport only to wait hours at the gate. We were surprised at the many games she makes up to entertain her children so they don't irritate frustrated fellow passengers. It would be game changing to bring the other passengers and the airport facilities into helping families have a better travel experience.

### **Break POV into pieces**

HMW entertain kids? HMW slow a mom down?

### **Amp up the good/Remove the bad**

HMW separate kids from fellow passengers?

### **Explore the opposite**

HMW make the wait the most exciting part of the trip?

### **Question an assumption**

HMW entirely remove the wait time at the airport?

<http://dschool.stanford.edu/wp-content/uploads/2012/05/HMW-METHODCARD.pdf>

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POV: We met Janice, a harried mother of 3, rushing through the airport only to wait hours at the gate. We were surprised at the many games she makes up to entertain her children so they don't irritate frustrated fellow passengers. It would be game changing to bring the other passengers and the airport facilities into helping families have a better travel experience.

### **Go after adjectives**

HMW we make the rush refreshing instead of harrying?

### **Identify unexpected resources**

HMW leverage free time of fellow passengers to share the load?

### **Create an analogy from need or context**

HMW make the airport like a spa?

### **Change a status quo**

HMW make playful, loud kids less annoying?

<http://dschool.stanford.edu/wp-content/uploads/2012/05/HMW-METHODCARD.pdf>


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## Anatomy of a Strong HMW Question

- Who
- What
- When
- Where
- Why
- Best to have at least 3 W's in a good HMW question



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**connection** 

**How might we...**


- offer long term connection in a sustainable way?
- keep former clients connected with each other?
- encourage clients to be resources for each other during and after their stay?
- connect people who have a history of interpersonal issues with a reliable support network?
- connect people without an established network to word of mouth resources?
- help people get connections in a new place where they've moved?
- help clients reconnect with their family?
- connect clients with an existing community such as...
  - faith based organization?
  - tech/affluent community?
  - retired community?


 

**clarity** 

**How might we...**


- make people feel confident that they understand all the relevant information?
- give people clarity about their current reality?
- insure that people understand how Connect works?




**new beginning** 

**How might we...**


- make people feel like LifeMoves is the start of something great not scary?
- help launch people into their new housing feeling confident that they won't fall in a hole?
- help clients remain capable as they face the same challenges?



**competence** 

**How might we...**

- make people feel confident that they will be able to engage with Connect?
- make people who are effective at solving small problems expand their abilities to long term competence?
- give people small wins that result in a feeling of confidence and hope in the face of large problems?

**long term plan** 

**How might we...**

- insure that we remain connected over the long term as phones and technologies change?
- help people create a long term plan?
- help people move from a low paid job to a career plan?
- help people assess the riskiness of their situation?
- balance long and short term thinking?

**DO IT NOW:**

Generate some HMW statements for your project!

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POV: We met X. We were surprised to find Y. It would be game changing if Z.

**Break POV into pieces**  
**Amp up the good/Remove the bad**  
**Explore the opposite**  
**Question an assumption**  
**Go after adjectives**  
**ID unexpected resources**  
**Create an analogy from need or context**  
**Change a status quo**

<http://dschool.stanford.edu/wp-content/uploads/2012/05/HMW-METHODCARD.pdf>

Brainstorm "How Might We's" → Solutions

**BRAINSTORM RULES**

- one conversation at a time
- go for quantity
- headline!
- build on the ideas of others
- encourage wild ideas
- be visual
- stay on topic
- defer judgment

<http://dschool.stanford.edu/wp-content/themes/dschool/method-cards/facilitate-a-brainstorm.pdf>

Constraints Can Energize

- "How would you design it with the technology of 100 years ago?"
- "What if we had to spend at least a million dollars?"
- "Only ideas that would get you fired"
- "All ideas must use magic."

<http://dschool.stanford.edu/wp-content/themes/dschool/method-cards/facilitate-a-brainstorm.pdf>

Selecting a Good Problem or Solution Idea

3 Favorites!

OR

Rational, Delightful, Long shot

<http://dschool.stanford.edu/wp-content/uploads/2011/03/BootcampBootleg2010v2SLIM.pdf>

	Substantial?	Feasible?	Interested?
EMERGENCY EVALUATION	Y	?	Y
TRANSPORTATION PLANNING	Y	N	?
DAILY DECISIONMAKING	Y	Y	?
MAKING COMPUTING FUN	N	Y	N

Prioritizing Problems / Solution Ideas



## Selecting a Good Problem or Solution Idea

- Frequency
  - want something that occurs often
- Density
  - lots of people experience it
- Pain
  - more than a small annoyance
- Interested
  - your team is motivated to work on this problem



\* see Mary Kutter's blog post on this topic: <http://www.theswiss.com/blog/2015/02/10/why-problem-solving-uhhh/>

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## Research/Analysis

- How big a problem is it? (market)
- Whose problem is it? (stakeholders)
- What's already out there? (competition)
- How are things done currently? (status quo)
- How can they be improved? (innovation)



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## Dark Horse Idea



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## Dark Horse Idea

1. **Dark** explores a space that is risky, radical or orthogonal
2. Brainstormed after more traditional HMW/ideas
3. Possible to prototype & test (can't be infeasible)

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## Downselecting Ideas

- Celebrate the success of the brainstorm, take a break, vote!
- Option 1: Heat map voting
  - Everyone starts with an unlimited number of votes (small dots)
  - Then everyone gets 3 final votes on their absolute favorites (large dots) **and** 1 bonus dark horse vote
- Option 2: Category voting
  - Each person gets a specific number of votes (i.e., 5)
  - Specific categories (Most feasible idea, Craziest idea, Best long shot, my favorite but improbable, short term solution, etc.)

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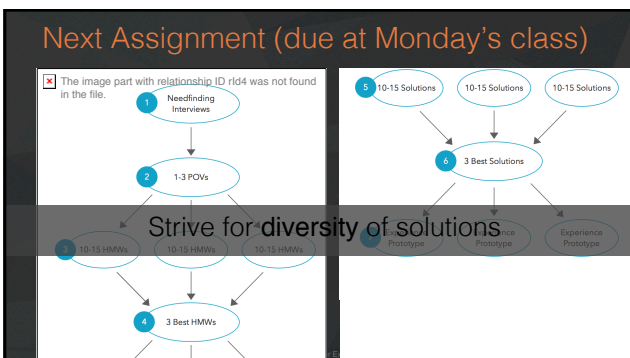
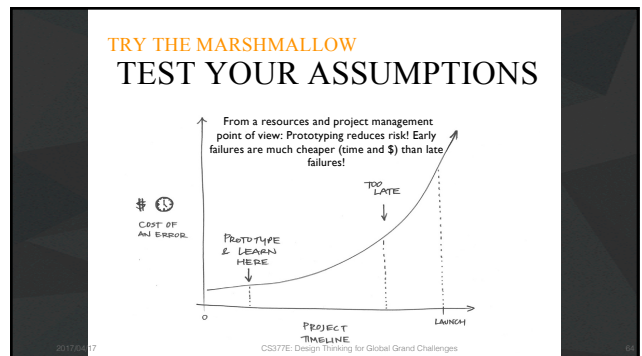
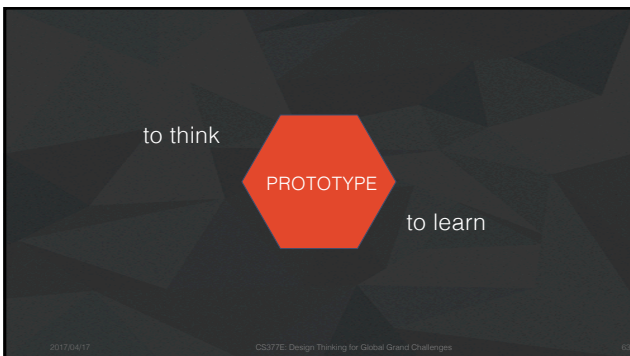
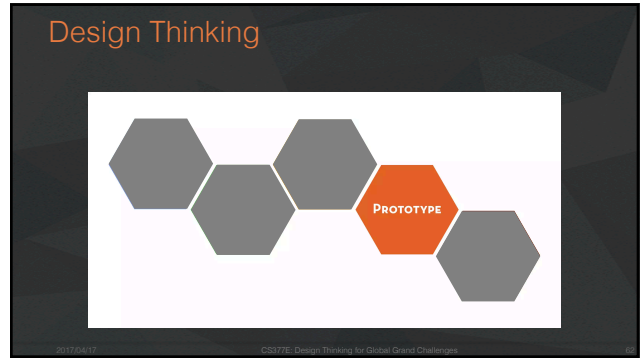
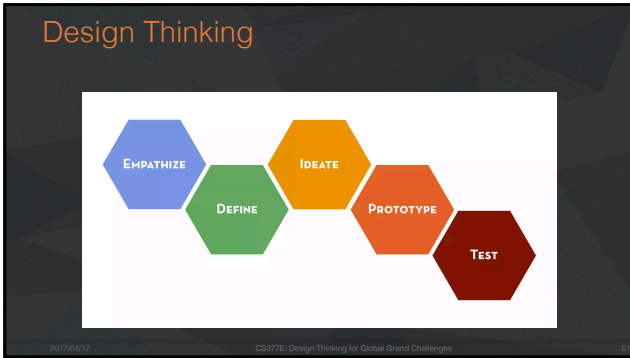
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## Experience Prototyping

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\* slides marked Buxton are courtesy of Bill Buxton, from his talk "Why I Love the iPod, iPhone, Wii and Google®", remix UK, 18-19 Sept. 2008, Brighton

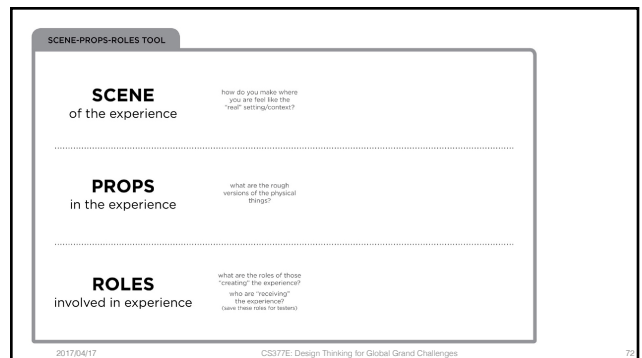
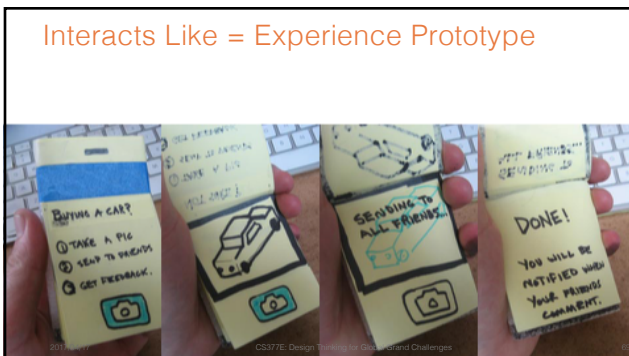
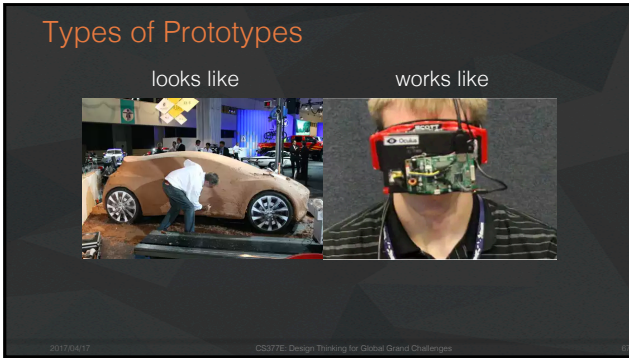




You can use an **eraser** on the drafting table or a **sledgehammer** on the construction site.

Frank Lloyd Wright


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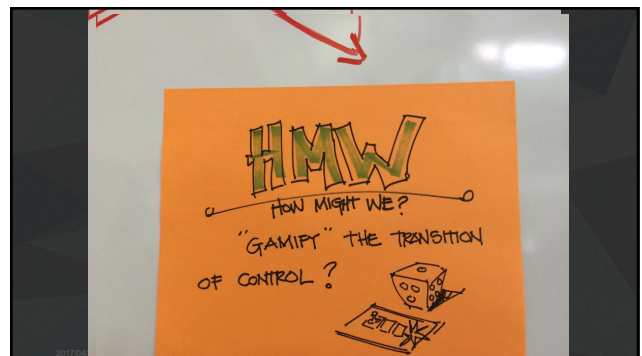
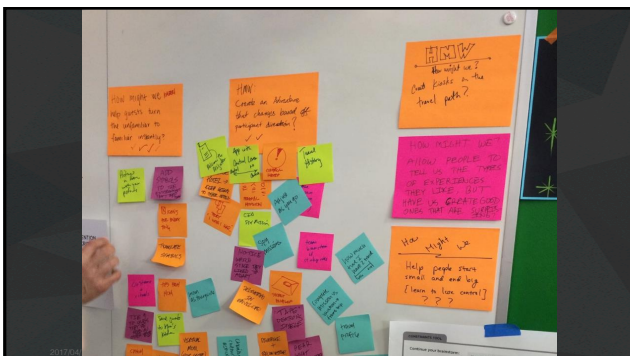
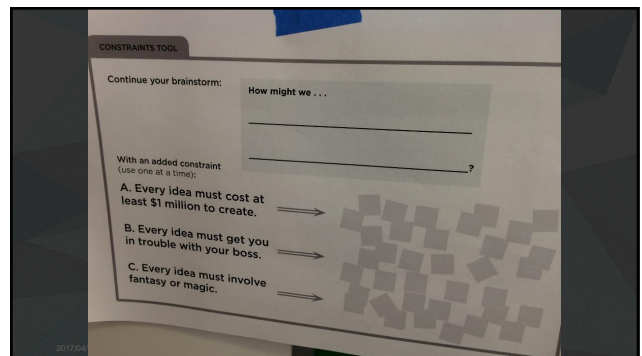
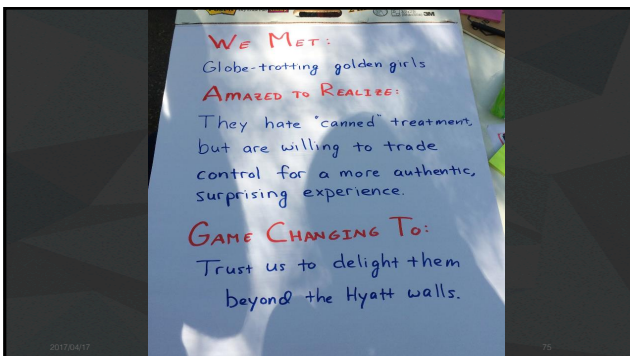
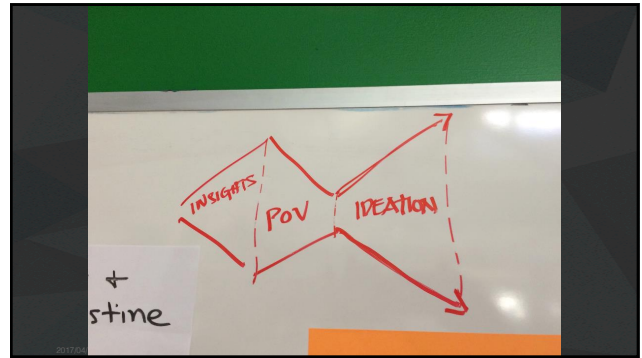
what new information do you have about the user's **need**?

**TEST**

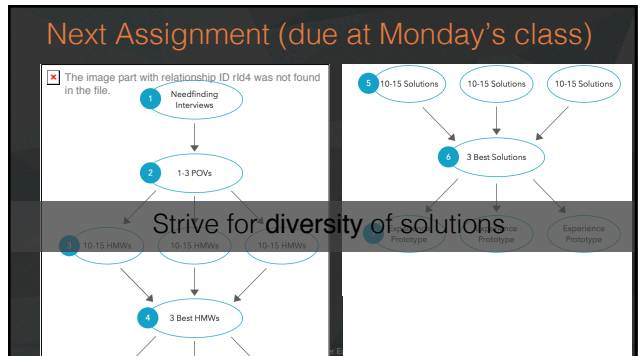
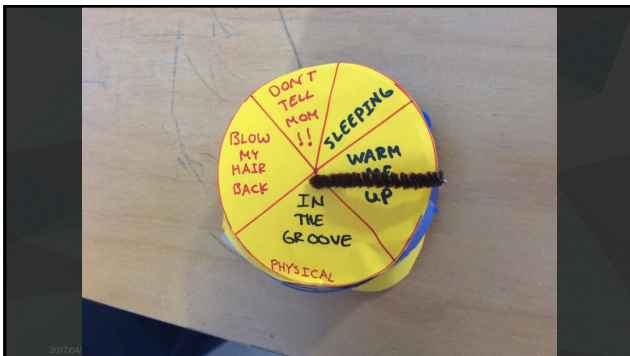
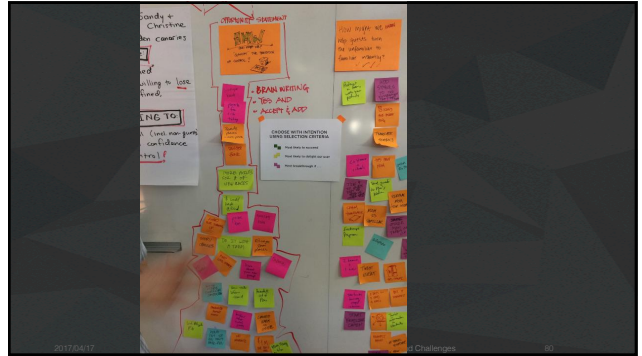
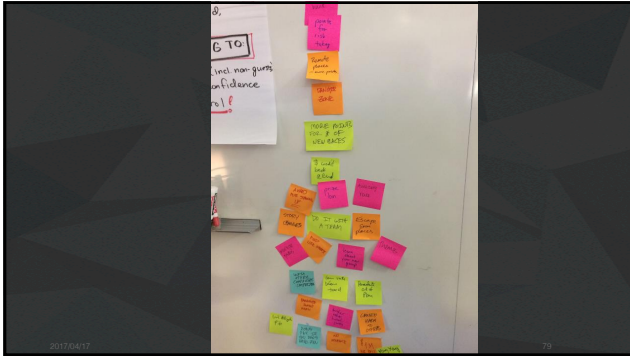
what new information do you have about how your **solution** addresses the need?



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## Parallel Experience Prototyping Goal

- Prototype to test an assumption
- Prototype can be a piece of idea rather than a complete solution
- Think of it as a needfinding technique

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## Summary

Experience prototyping allows us to try many ideas quickly & learn more about the problem & solution space (*prototype to learn*)

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## Next Time

- Lecture
  - Rapid Experimentation
- Project (due Monday at start of class)
  - Flesh out POVs
  - Create HMWs
  - Brainstorm solutions & select the best
  - Create/test experience prototypes for top 3 solutions
  - Test each prototype with at least 1 target users
  - In presentation, get across what you learned!
  - Class will be used to select the idea to move forward

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