Intro to the Human-Centered Design Process

Arvind Satyanarayan

Based on material from Scott Klemmer & James Landay
Observe users.
Conduct interviews.
Seek stories.

Empathize
Define
Ideate
Prototype
Evaluate

Based on the Stanford d.school's Design Thinking Bootleg
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Identify meaningful surprises & tensions.

What is your Point of View?
Based on the Stanford d.school's Design Thinking Bootleg

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**Prototype**

**Evaluate**

**Flare:** go wide to explore a large quantity & diversity of ideas.

**Focus:** winnow down, refine, and build on ideas.

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Mix fidelities to explore feasibility of ideas.

Prototype ideas in parallel to reduce fixation.

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**Ideate**

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**Evaluate**

Give & receive feedback.

**Refine** ideas, prototypes, point of view.
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Make something people want.

Poster by Alvy Brooks (@alvybrooks)

Photo from Larry Kim (@larrykim)
"You can observe a lot by just watching"
— Yogi Berra
u/whatthesamm, posted to r/DesirePath on Sept. 22, 2019.
“IF I HAD ASKED PEOPLE WHAT THEY WANTED, THEY WOULD HAVE SAID: FASTER HORSES...”

Henry Ford
"What do you need?"

"What problems do you have with [X]?"
Adapted from Michael Berry.
**Background:** "Tell me about what you do here."

**Sequence:** "Walk me through your day... what do you do next?"

**Participation:** "Can you show me how you prepare..."

Adapted from Michael Berry.
Interviews

Naïve Outsider: "I'm not from here, how does the housing market work?"

Changes Over Time: "How are things different than they were last year?"

Reflecting Back: "So, what I hear you saying is... Is that right?"

Language: "Why do you call your office 'the command post'?"

Adapted from Michael Berry.
Interviews

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Interviews

**Clarification:** "...and when you say [X], what do you mean exactly?"

**Success & Failure:** "Could you describe your most successful sales call? And now tell me about one that was a disaster?"

**Be flexible:** adjust questions to their previous answers; use their language; pick up on/ask for examples.

Adapted from Michael Berry.
Interviews

Unpack Contradictions.

Point to their reactions: "Why do you roll your eyes when you say that?"
Interviews

- Intro
- Background
- Build Rapport
- Evoke Stories
- Explore Emotions
- Reflection
- Wrap Up

Adapted from Michael Berry.
(a little bit of)

Silence is golden
Common Pitfalls

**Suggesting Answers**: trust the question, ask it and stop talking.

**Hypothetical Situations**: we want real stories, not something generic they made up.

**Binary or Absolute Scales**: prevent follow-ups.

"Tell me a story about yourself"

How to Ask "Why"?

"Tell me more about"

"Tell me what you mean when you say [X]"

"[Last phrase the person said]?

Gems

💎 You've uncovered **a surprise** or found what is **missing**.

💎 You can explain **why** people do **unusual things**.

💎 You want to **tell others** about what you have learned.
Ethical Considerations

**Choosing Participants**: representative of target users (current or future). Usually not MIT students!

Interview people on both sides of an interaction (e.g., Lyft/Uber).

Typically interview 6-12 people individually for 30-90 minutes.
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[“Yours is better!” Participant Response Bias in HCI. Nicola Dell et al. CHI 2012]
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Activity!

In 1 minute, sketch as many ways to visualize these two numbers as possible:

75  37
Most Likely Results

Pie Charts

Bar Charts

Scatterplot

Arabic Numbers
Design Fixation

"A blind adherence to a set of ideas or concepts limiting the output of conceptual design"

To overcome fixation:

**sketch:** quick, inexpensive, disposable ways of generating, evaluating, and sharing ideas

**consult examples:** early and repeated exposure to examples improves creativity
TV VO
[Handwritten text not legible]
Examples from Jon Schwabish.
3, 5, 7

3, 7, 5

small, big
Examples from Jon Schwabish.
Examples from Jon Schwabish.
Examples from Jon Schwabish.
Examples from Jon Schwabish.
Examples from Jon Schwabish.

1937 Plymouth

1975 Plymouth
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**consult examples**: early and repeated exposure to examples improves creativity

**introduce a constraint**: impose new structures to the problem to spur creativity
Activity!

In **5 minutes**, sketch as many **new visualizations** as possible that are different from your previous ideas. If you're stuck, introduce a constraint -- e.g., one line, only black/white, only round objects, etc.

Take a photo of all your sketches and upload to [yellkey.com/lot](http://yellkey.com/lot)
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Why build prototypes?

Prototypes facilitate conversation.
Storyboards

https://www.aardman.com/events/story-boarding/
Storyboards are not about making pretty pictures.

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From Amal Dar Aziz, http://d.ucsd.edu/story/
Storyboards are *not* about UI design details.

From Amal Dar Aziz, http://d.ucsd.edu/story/
Storyboards = Setting + Sequence + Satisfaction

the main point of storyboarding is to understand how your product fits in with the world. You want to illustrate a scenario.

THE GIST
Setting

Who are the people involved?
What is the environment they're in?
What is the task they're trying to accomplish?

From Amal Dar Aziz, http://d.ucsd.edu/story/
Sequence

What leads someone to use the app?
What steps are involved?
What task is being illustrated?
Satisfaction

What’s the end result?
What does it enable people to do?
How does it tie back to people’s motivation/setting?
What need are you satisfying?

From Amal Dar Aziz, http://d.ucsd.edu/story/
Storyboards = Setting + Sequence + Satisfaction

The main point of storyboarding is to understand how your product fits in with the world. You want to illustrate a scenario.

<Amal>

THE GIST
Wizard of Oz Technique

Make an interactive application without (much) code:
    Front end interface (hard to fake this part).
    (Remote) wizard controls the user interface.
    Must take less time/money than building the real thing.

Get feedback from real people
    Hi-fidelity: users think it's real, their behavior matters.
    Low-fidelity: users have license to suggest changes.
Al’s dirty little secret: It's powered by people

By RYAN NAKASHIMA  March 5, 2018

SAN FRANCISCO (AP) — There’s a dirty little secret about artificial intelligence: It’s powered by hundreds of thousands of real people.

From makeup artists in Venezuela to women in conservative parts of India, people around the world are doing the digital equivalent of needlework — drawing boxes around cars in street photos, tagging images, and transcribing snippets of speech that computers can’t quite make out.

Such data feeds directly into “machine learning” algorithms that help self-driving cars wind through traffic and let Alexa figure out that you want the lights on. Many such technologies wouldn’t work without massive quantities of this human-labeled data.

These repetitive tasks pay pennies apiece. But in bulk, this work can offer a decent wage in many parts of the world — even in the U.S. This burgeoning but largely unseen cottage
Wizard of Oz Technique

Map out scenarios and application flow
  What should happen in response to user behavior?

Put together interface “skeletons”

Develop “hooks” for wizard input
  Where and how the wizard will provide input (e.g., selecting the next screen, entering text, entering a zone, recognizing speech, etc.)
  Must be possible to replace later with computer

Rehearse wizard role with a colleague.
Prototyping Tips

1. Make it **concrete**.
2. Make **small investments**.
3. Get desired **feedback**.
4. **Iterate**, iterate, iterate.
5. Share **multiple** prototypes.
Functional Fixation
'Parallel Prototyping Leads to Better Results'

[Dow et al. TOCHI2010]