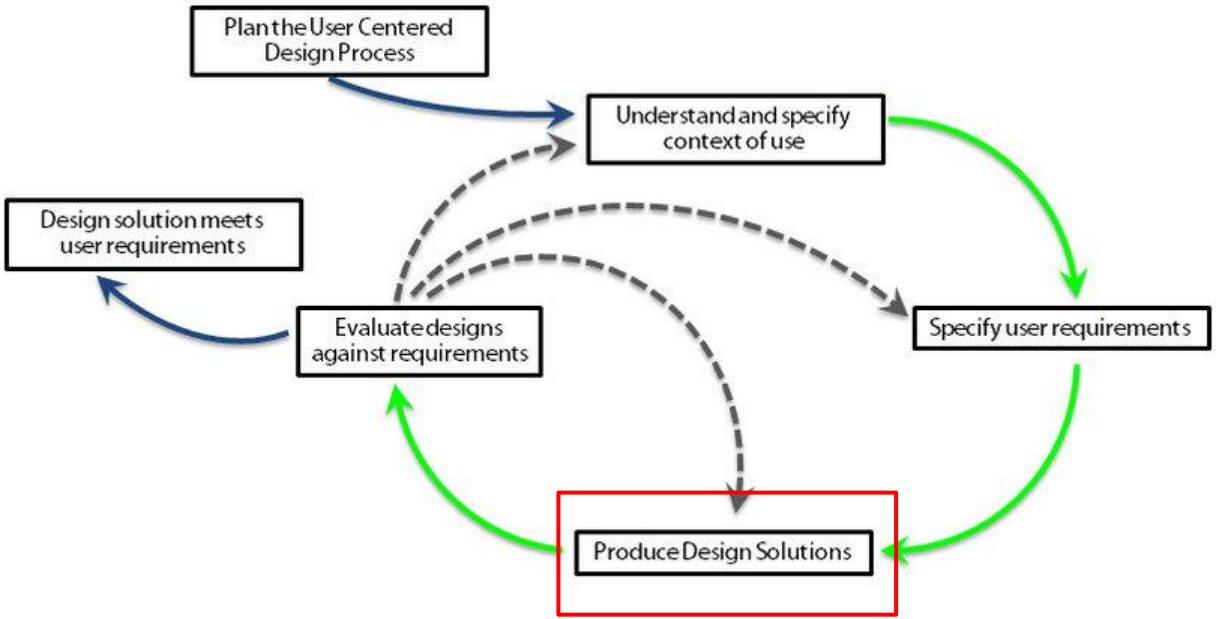
SENG 310
Lecture 9 - June 5th, 2023

Slide credits: Prof. Sowmya Somanath and Prof. Charles Perin

RECAP - IDEATION

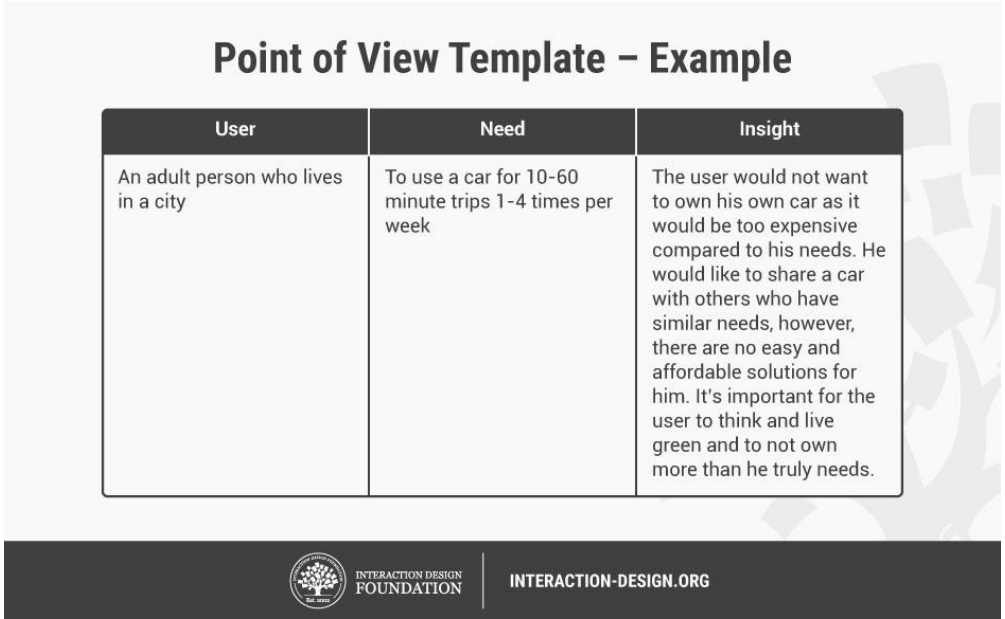
HUMAN-CENTERED DESIGN PROCESS



https://www.researchgate.net/publication/283963125/figure/fig1/AS:671513787248651@1537112771357/The-User-Centered-Design-Process-according-to-DIN-EN-ISO-9241-210-8.jpg

POINT OF VIEW STATEMENTS

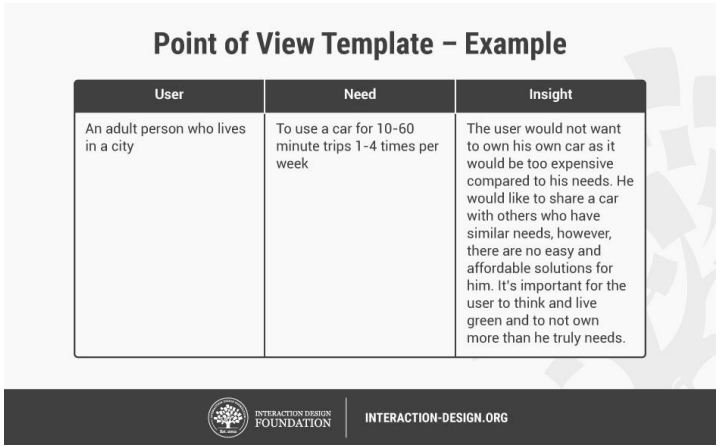
Point Of View statements help you frame the design challenge and help you transition from research, analysis, and synthesis to prototyping.



[User . . . (descriptive)] needs [Need . . . (verb)] because [Insight . . . (compelling)]

“HOW MIGHT WE?” QUESTIONS

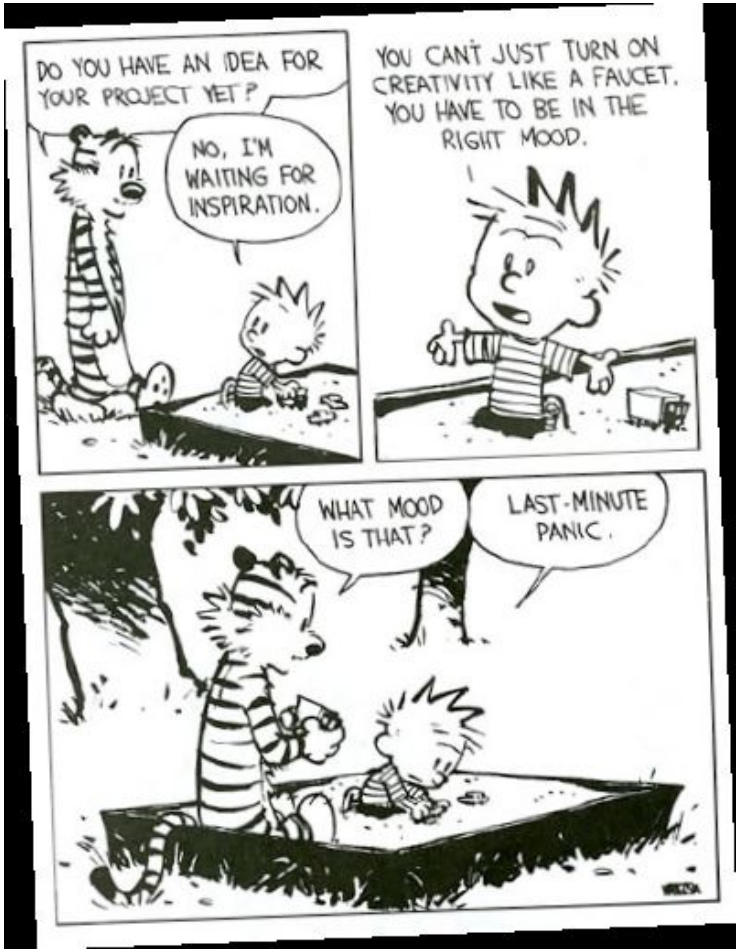
- Help frame the research done so far and set context for brainstorming solutions
- Iteratively developed



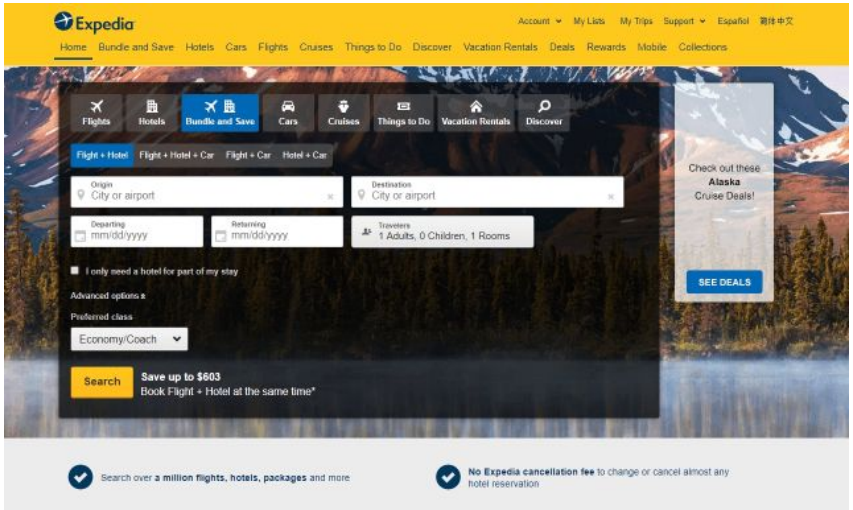
How might we design an interface that helps people to book a ride share so that they can travel within the city without needing to own a personal vehicle?

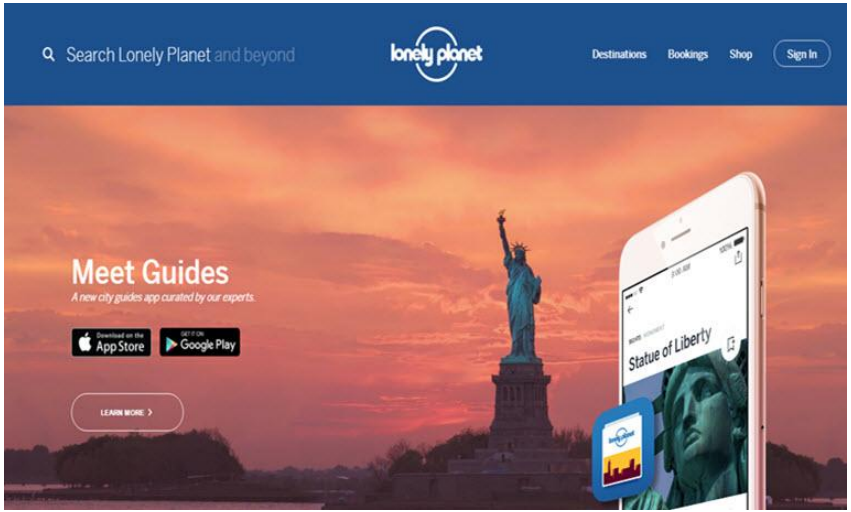
How might we design an interface that helps a group of car share riders to split the bill so that they can share the cost?

HOW DO WE GENERATE IDEAS?



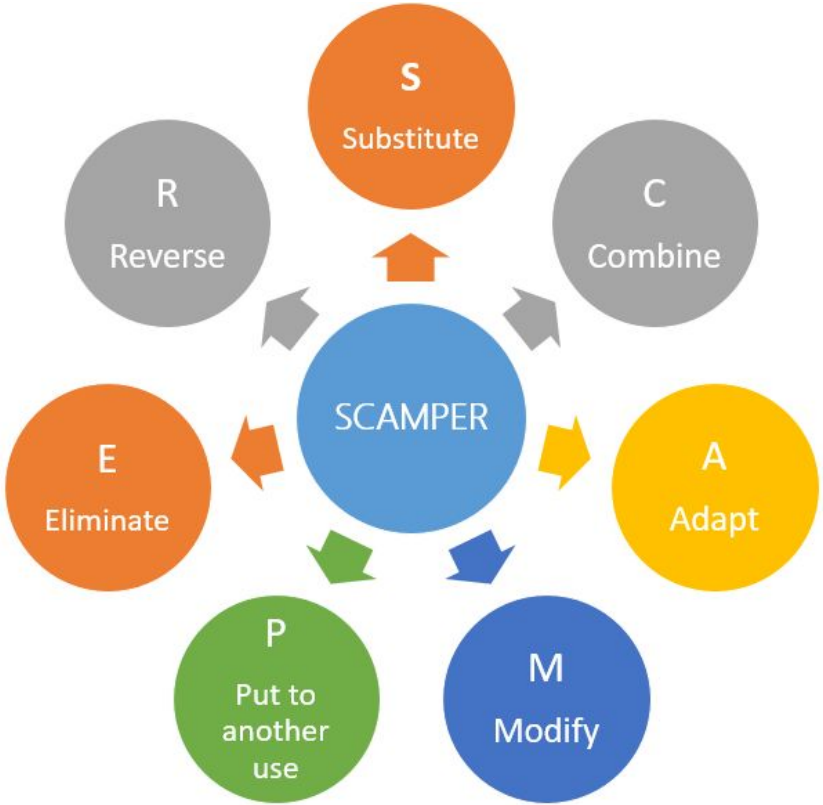
1. COLLECT EXISTING IDEAS





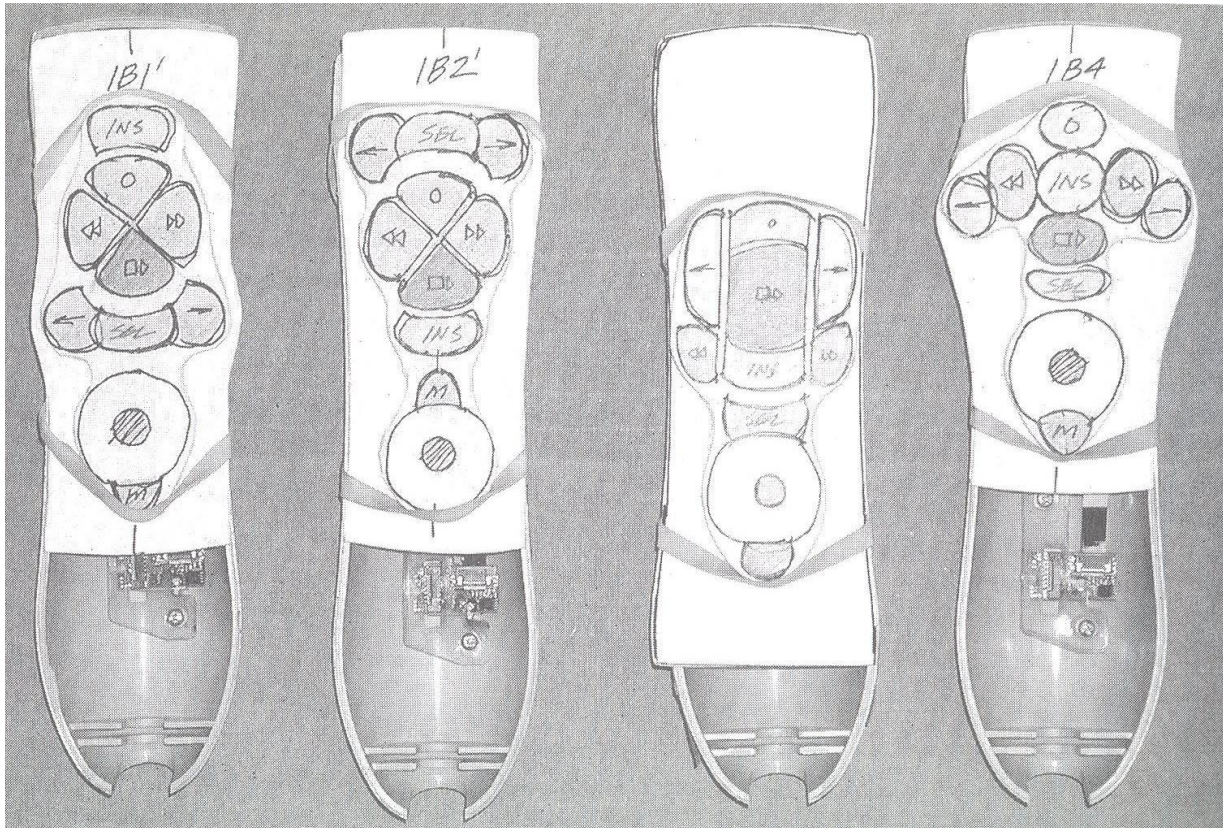
2. SCAMPER METHOD

SCAMPER method helps you generate ideas for new products and services by encouraging you to ask seven different types of questions



https://www.hcltech.com/sites/default/files/images/scamper.png

3. SKETCH CONSTANTLY



From Carloyn Snyder's Book:
Paper Prototyping (2003)
Morgan Kaufmann, p350

4. ASK PEOPLE

Example:

Design Charrette

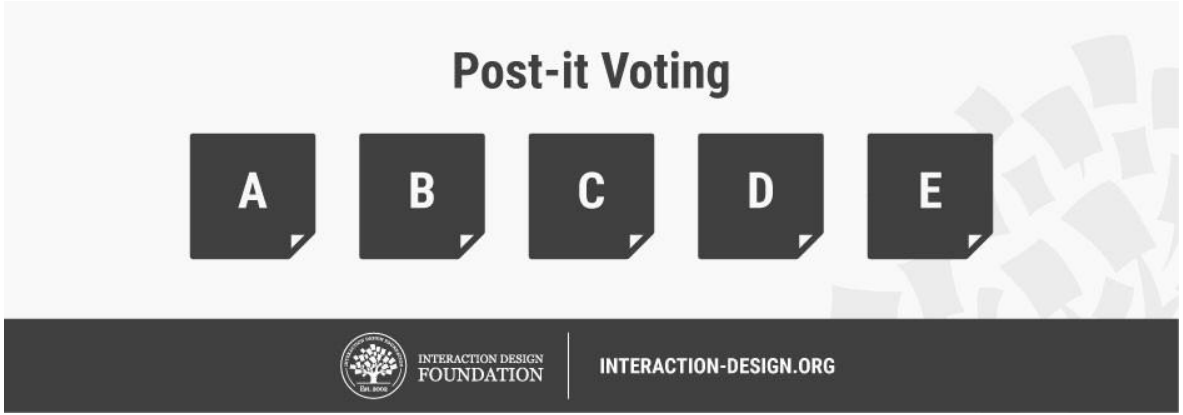
https://www.involve.org.uk/resources/methods/design-charrettes

HOW DO I GO FROM ELABORATION TO REDUCTION?

HOW TO CONVERGE?

Everyone gets an equal number of votes so everyone's voice is heard.

Each post-it is one individual idea

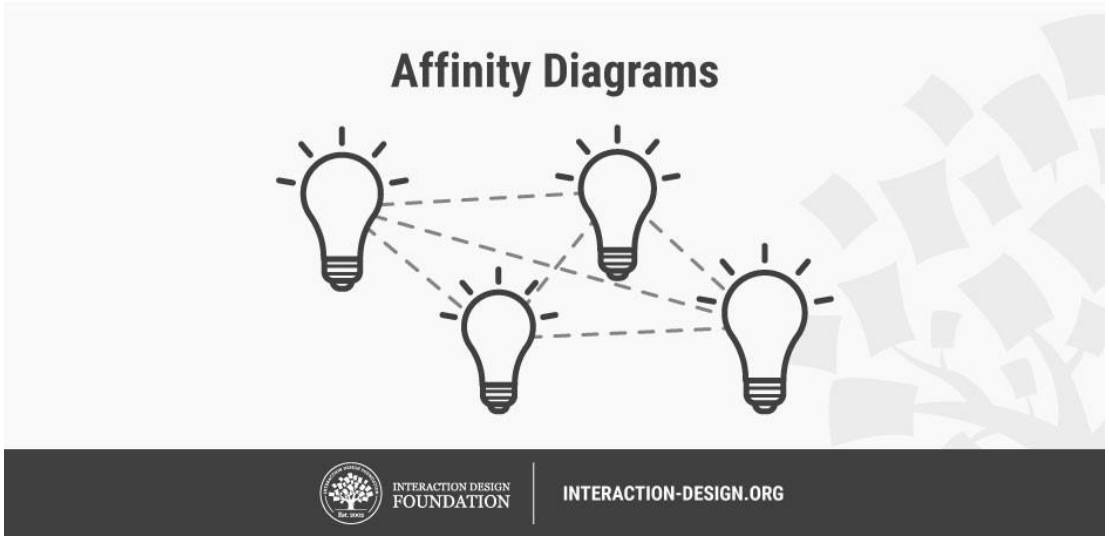


HOW TO CONVERGE?

Discuss every idea and place them on a spectrum of most rational/feasible/ understandable to something that is most likely not to get implemented for technology, social, or legal reasons

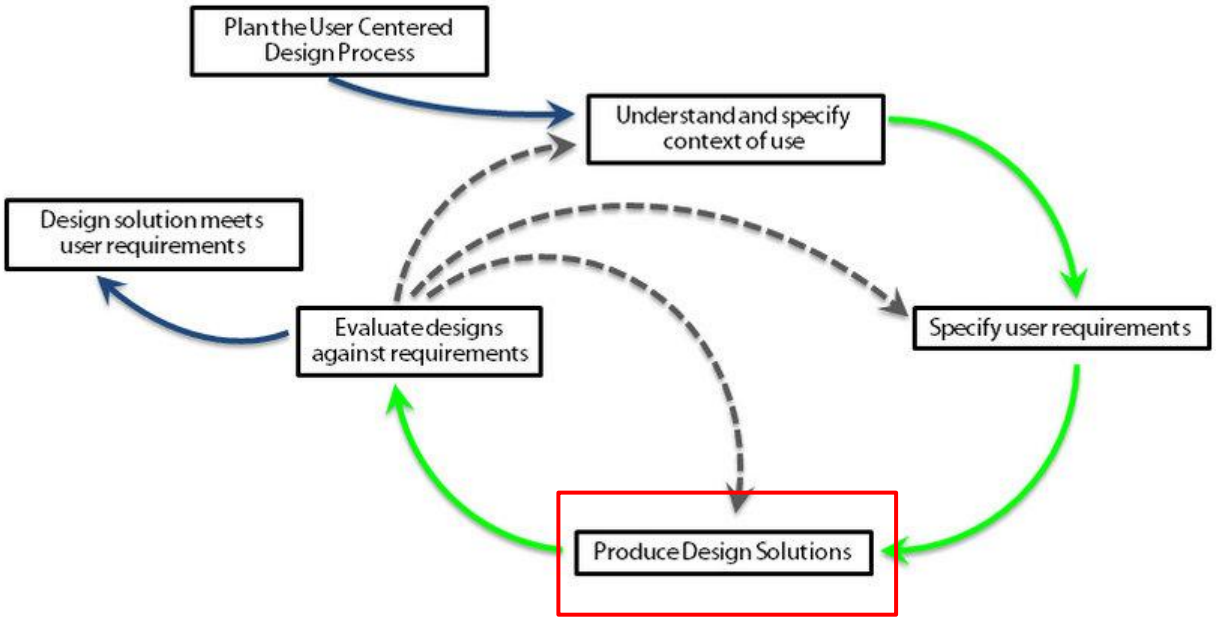
HOW TO CONVERGE?

Cluster the ideas and discuss the connections between them to uncover which idea might be worth pursuing.



PROTOTYPING

HUMAN-CENTERED DESIGN PROCESS



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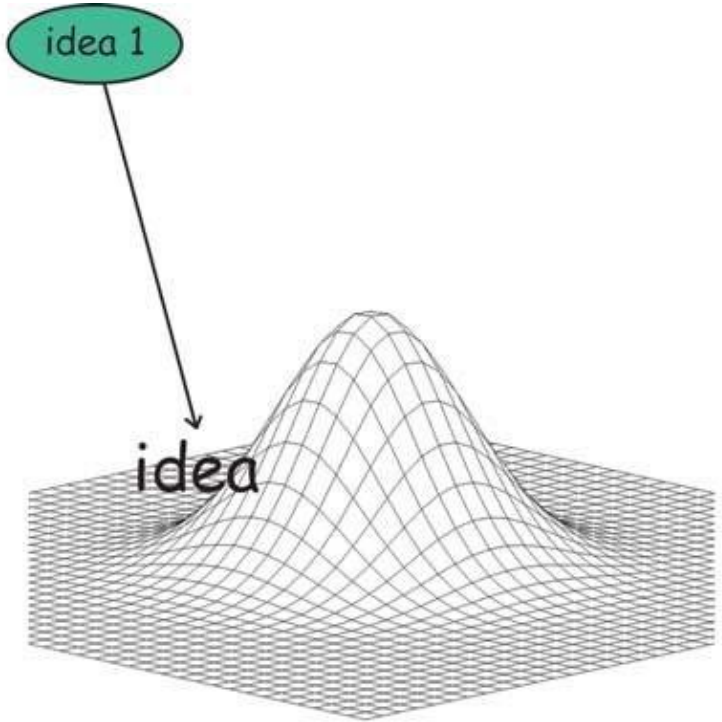
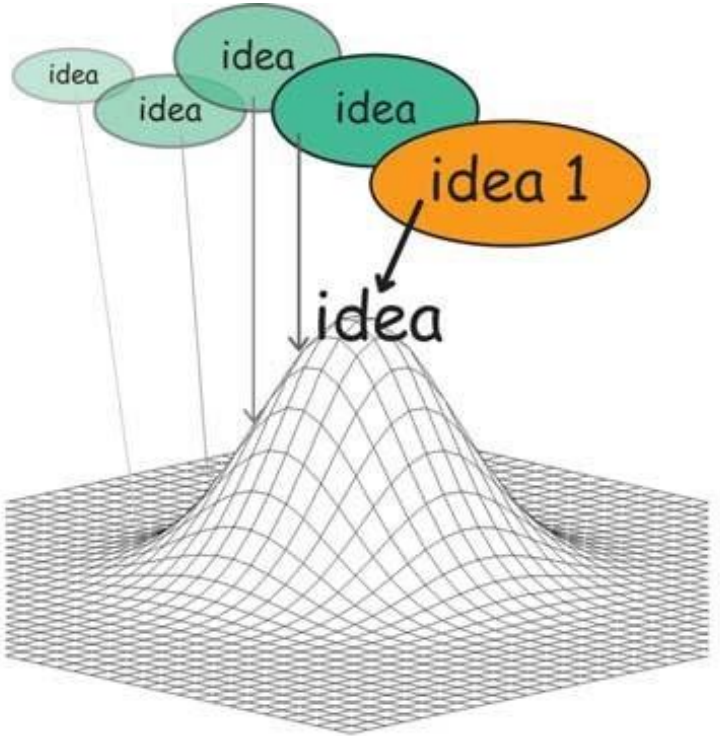
GETTING THE DESIGN RIGHT

Generate an



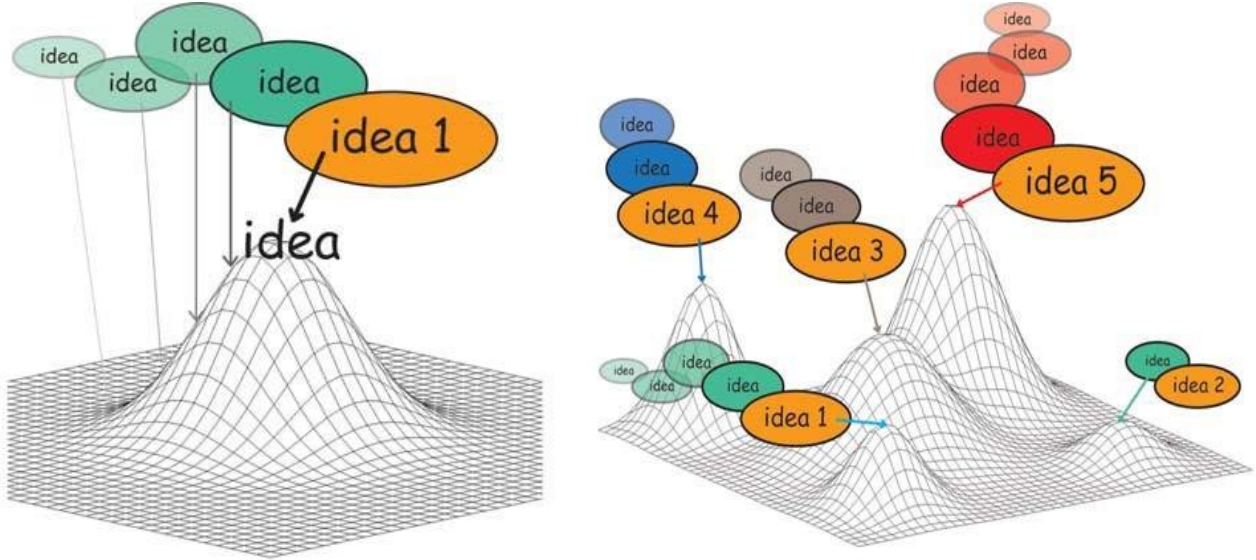
Iterate on the



GET THE RIGHT DESIGN FIRST!

Is it the best idea?

Issue: We often fixate on the first idea. Local maximum: hill climbing issue

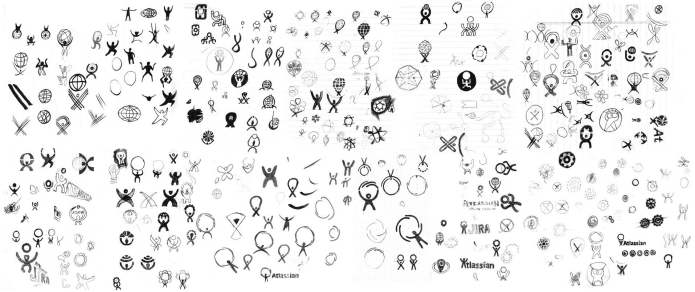


SKETCHING

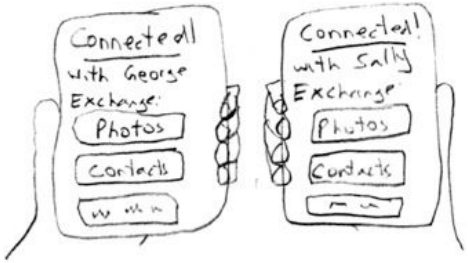
Bill Buxton says, *“While both sketches and prototypes are instantiations of a design concept, they serve different purposes, and therefore are concentrated at different stages of the design process.”*

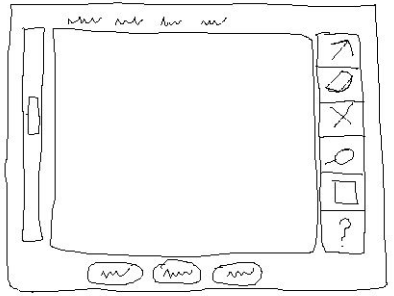
https://www.cs.cmu.edu/~bam/uicourse/Buxton-SketchesPrototypes.pdf

Plentiful

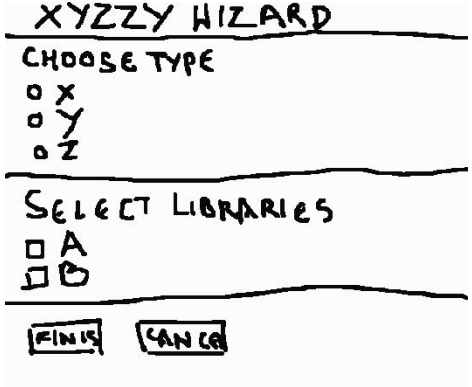


Ambiguous

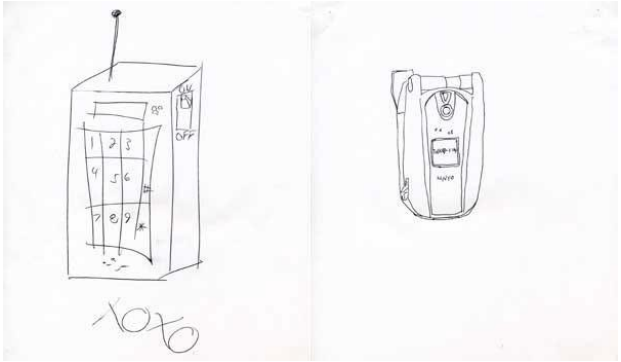


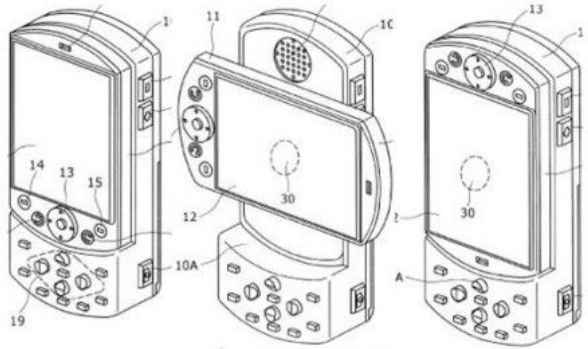


Quick, timely



Provocative, inviting changes





PROTOTYPE

A prototype is a manifestation of design **that people can interact with and explore suitability**

There is a bit more effort involved in producing prototypes and they are less disposable

Palm Pilot

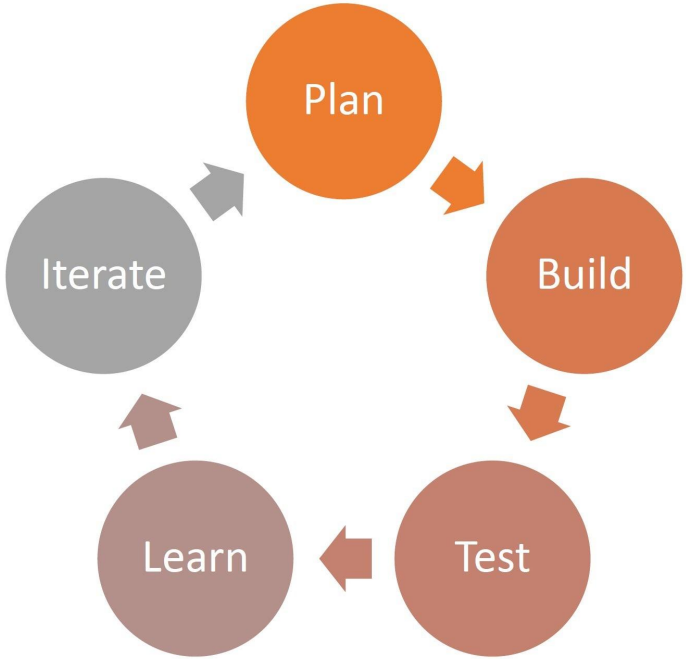
http://prototyping.club/

WHY PROTOTYPE?

Encourage reflection

Answer research questions e.g., test requirements, user testing, test design aesthetics

Support designers in choosing between alternatives



HOW DO WE BEGIN PROTOTYPING?

PERSONAS

Persona is a user archetype you can use to help guide decisions about product features, navigation, interactions, and visual design

Is a practical interaction tool and was proposed by Alan Cooper in 1998

NEED FOR NUANCED DETAILS

If we only distinguish people as power users or experts with computers and naïve users of computers, we may not capture information about their actual skills

Shannon is accountant. Doesn’t know about web, email, networks, filesystem, but is a whiz at Excel.

Roberto, telemarketing rep. Doesn’t know a thing about computers, but can follow complex instructions without difficulty. With a little bit of training, he can be a pro.

PERSONA CONSTRUCTION

In most cases, personas are synthesized from a series interviews or other primary research methods involving real people

Then captured in descriptions that include behavior patterns, goals, skills, attitudes, and environment, with a few fictional personal details to bring the persona to life.

For each UI you design you will usually have a small set of personas, and one of whom is the primary focus for the design.

Adlin, T., & Pruitt, J. (2010). *The essential persona lifecycle: Your guide to building and using personas*. Morgan Kaufmann.

PERSONA - EXAMPLE

G4K Company

- Produces children’s educational and game software
- Goal: make a website for kids’ education and entertainment content

THE ELASTIC USER

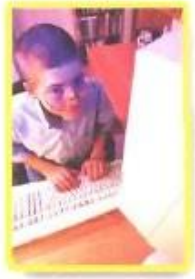
I'll gladly surf to your website
I will love using it
I will buy your stuff
I'll spend hours navigating your pages
I know how to download software
I have a credit card so I can pay
I am totally into action games
I like dolls
Parents? What parents?
…

Tanner is real...

real quotes from real kids

We interviewed 23 elementary school kids to help us better understand the needs and desires of Tanner—These quotes represent some of the interesting things we heard from them.

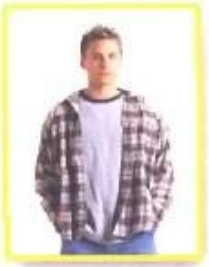
Holden (8yo) - "My dad put our PC in the family room so that he can keep an eye on me. So I use the PC right after school before he comes home from work."



Aidan (9yo) - "I sometimes have to hang out while my parents try to use the computer - just in case they get confused or something."

Jackson (10yo) - "I'm probably the smartest person in the house when it comes to the computer and stuff."

Spencer (9yo) - I'd rather be outside or playing video games than watching TV. That gets kinda boring."



Theo (11yo) - "I pretty much know what the next cool thing is going to be."

Aidan (9yo) - "How come I always have to do my homework first?

for more info on Tanner and the other G4K personas, visit http://G4K/portalproject/personas

G4K

Meet...

Tanner Thompson

Summary:

Tanner is an intense 9 year-old boy who loves computers, games and gadgets of all types. He's an entertainment enthusiast and active gamer. Generally speaking, he just loves to play.

Tanner is familiar with G4K game titles and is a likely frequent visitor to the G4K site - seeking out new ways to entertain himself. Tanner has significant influence over his parent's spending towards family fun.

Description:

Tanner is a 4th grade student at Montgomery Elementary School, a public school. He lives with his mother & father (Laura & Shane Thompson) in a suburb of Chicago, Illinois.

Even though Tanner loves to be physically active (riding his skateboard and bike, participating in organized sports), Tanner thinks computers are really really fun and prefers the PC to the TV.

Tanner has been using computers at school since kindergarten and has had a family computer at home for two years.

He uses the PC mostly to play games and surf the web for "stuff" but occasionally does research for school projects. His favorite computer game of the moment is The Sims 2. He also really likes Roller Coaster Tycoon 3.

for more info on Tanner, visit http://G4K/portal/project/personas

G4K

Tanner Thompson

Quote: “How come I always have to do my homework first?”

Type of User: Primary

Description: Tanner is a 4th grade student at the Montgomery School in Toronto. He lives with his mother and father and younger sister Anna. Even though tanner loves outdoor activities he also enjoys using the computer and often finds himself helping out his parents when they need something. Tanner has formally learned to use some basic PC programs such as MS paint in his school and uses such programs for his school project. Tanner is only allowed to use the PC after he has completed his homework and play games that his parents have installed. His current favorite is Mario Cart.

Tanner’s Goals in his own words:

- “I want to become proficient in playing Mario Cart”
- “Get good grades”
- “Go out to play with his friends”

PERSONA CHARACTERISTICS

- Composite archetype – each persona represents a group
- When you prioritize your groups using requirements analysis, persona can represent each of those groups

PERSONA FOR YOUR ASSIGNMENTS

Both Assignment 2 and Assignment 3 refer to created persona, so make sure you include a description of that persona in these assignment!

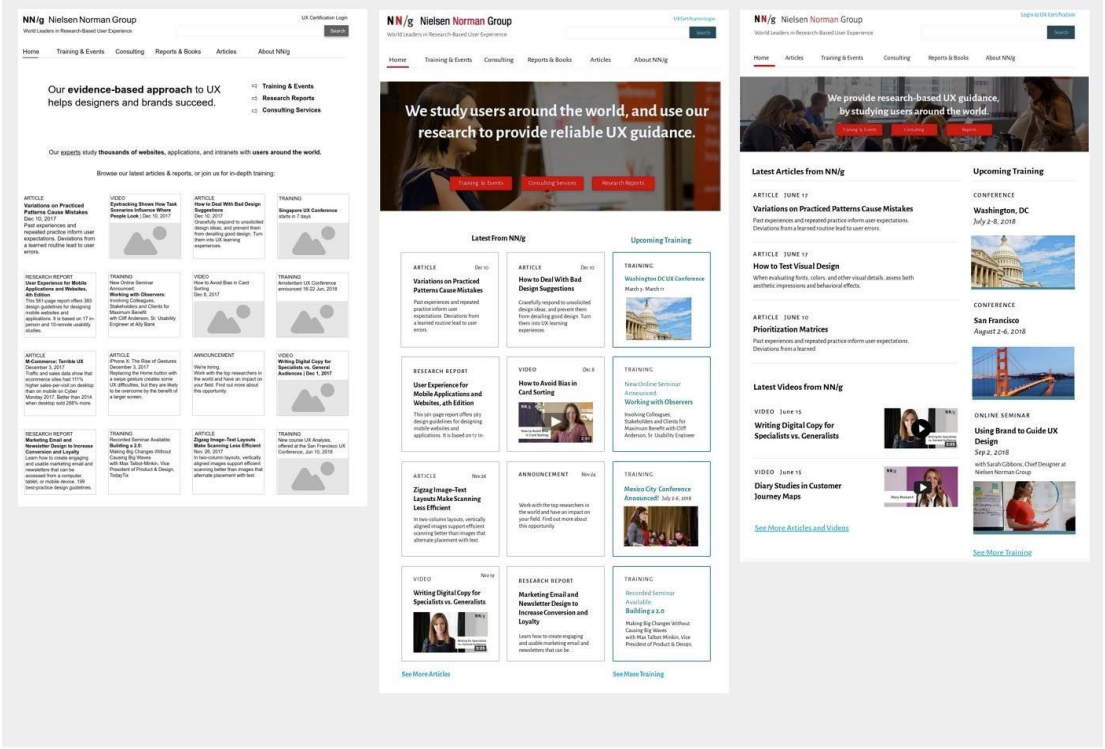
FIGURING OUT WHAT TO PROTOTYPE

PRODUCT PROTOTYPES

Product prototypes test how people interact with tangible and/or digital objects or products. These prototypes may focus on testing the form, function or in further evolved iterations, both.

DIGITAL PROTOTYPES

These prototypes may focus on testing layouts, visual appearances, organizing content, platform compatibility etc.



https://www.nngroup.com/articles/case-study-iterative-design-prototyping/

SERVICE PROTOTYPES

Service prototyping explores the underlying roles, processes, and tools/props. Some services involve more person-to-person interactions while others leverage more digital or even remote interactions.

ENVIRONMENT PROTOTYPES

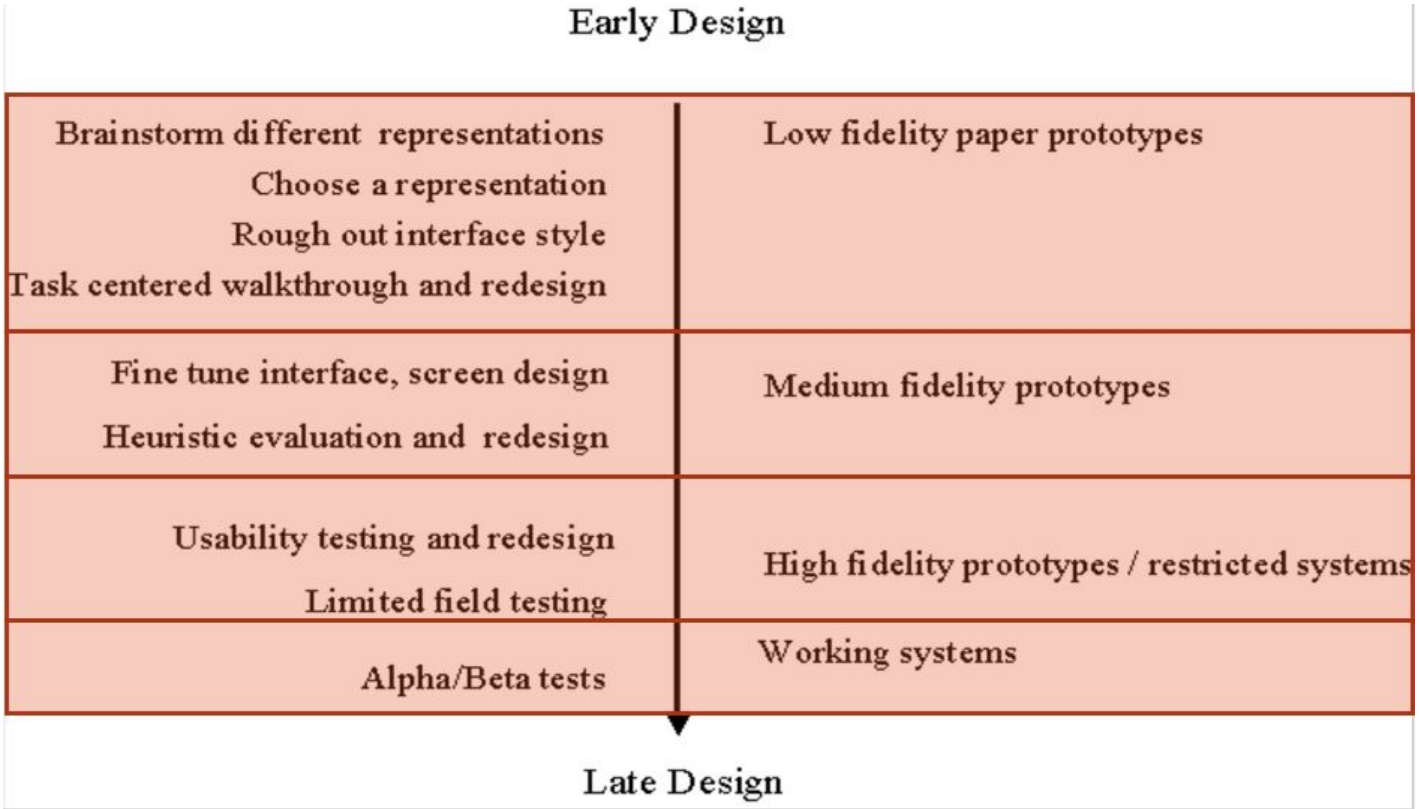
Prototyping a space simulates the experience of being in and interacting with a surrounding environment, like a building or outdoor space.

CONSIDERATIONS

- Appearance – e.g., size, color scheme, shape, margins, form, weight, texture, transparency, gradation, sound, haptic
- Data – data size, data type, data use, privacy
- Functionality – system functions, system features
- Interactivity – input, output, feedback, information behavior, user flow
- Spatial structure – arrangement of information, relationship among interface elements, relationship among physical parts

Lim, Youn-Kyung, Erik Stolterman, and Josh Tenenberg. "The anatomy of prototypes: Prototypes as filters, prototypes as manifestations of design ideas." *ACM Transactions on Computer-Human Interaction (TOCHI)* 15.2 (2008): 1-27.

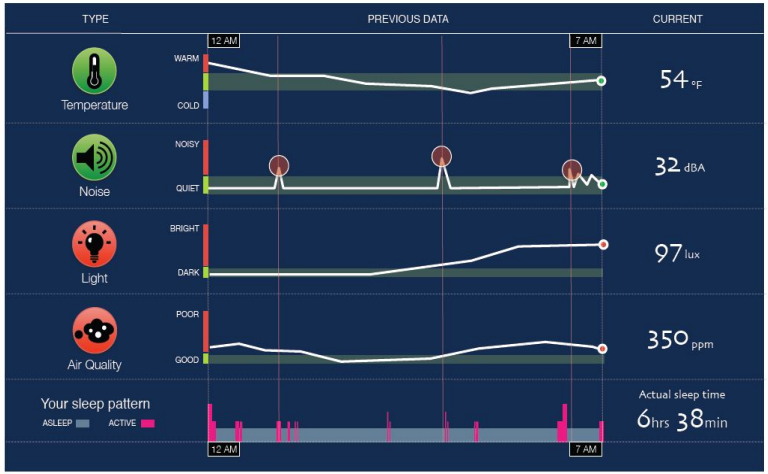
FIDELITY OF PROTOTYPES



http://grouplab.cpsc.ucalgary. ca/saul/681/1998/prototypin g/survey.html

LOW VERSUS HIGH

Distinction: is the choice of medium close or far from that of final design? (e.g., low = paper prototype, high = software)



LOW-FIDELITY

ADVANTAGES

- Quick revision possible
- Takes relatively less time to produce multiple design alternatives compared to programming all the features
- Useful as a proof-of-concept
- People are more willing to critique it since it looks unfinished

DISADVANTAGES

- Limited ability to error check
- Limited specification to begin implementation
- Facilitator driven

https://www.nngroup.com/articles/ux-prototype-hi-lo-fidelity

HIGH-FIDELITY

ADVANTAGES

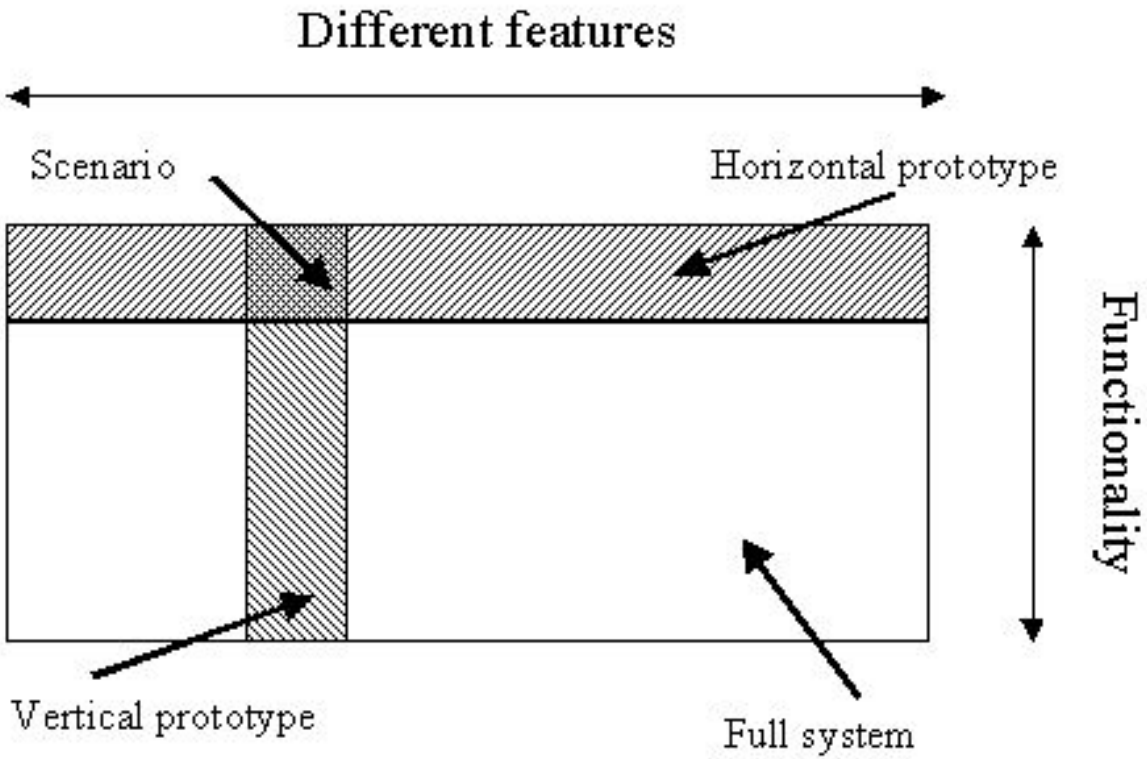
- User-driven testing
- Can demonstrate navigational scheme
- Serves as a evolving specification

DISADVANTAGES

- More resource-intensive to develop and modify
- Potential to be mistaken as the final product

https://www.nngroup.com/articles/ux-prototype-hi-lo-fidelity/

HORIZONTAL AND VERTICAL PROTOTYPES



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DESIGN IS ABOUT COMPROMISES

- The compromises made when developing low-fidelity prototypes are more evident compared to higher-fidelity prototypes. Under time pressure higher fidelity prototypes can end up implementing many features with bugs and go over budget.
- On the other hand, if the idea is novel and we need to publish results or put a product out there in the market, then a “good enough” higher fidelity prototype could be a good option
- Horizontal prototypes enable us to showcase a wide range of functions (breadth) whereas vertical help us show fewer detailed implementations (depth)