

3D Interaction in Mixed Realities
Computer Science Department - IME/USP

Design Thinking: Prototype

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2019 S2

Recommended readings

Stage 4 in the Design Thinking Process: Prototype

BY RIKKE DAM AND TEO SIANG

<https://www.interaction-design.org/literature/article/stage-4-in-the-design-thinking-process-prototype>

Determine what to prototype

<http://www.designkit.org/methods/34>

Storyboard

<http://www.designkit.org/methods/35>

Chapter 12: Design, Prototyping, and Construction

Interaction Design by Preece et al.

The Perils of Prototyping

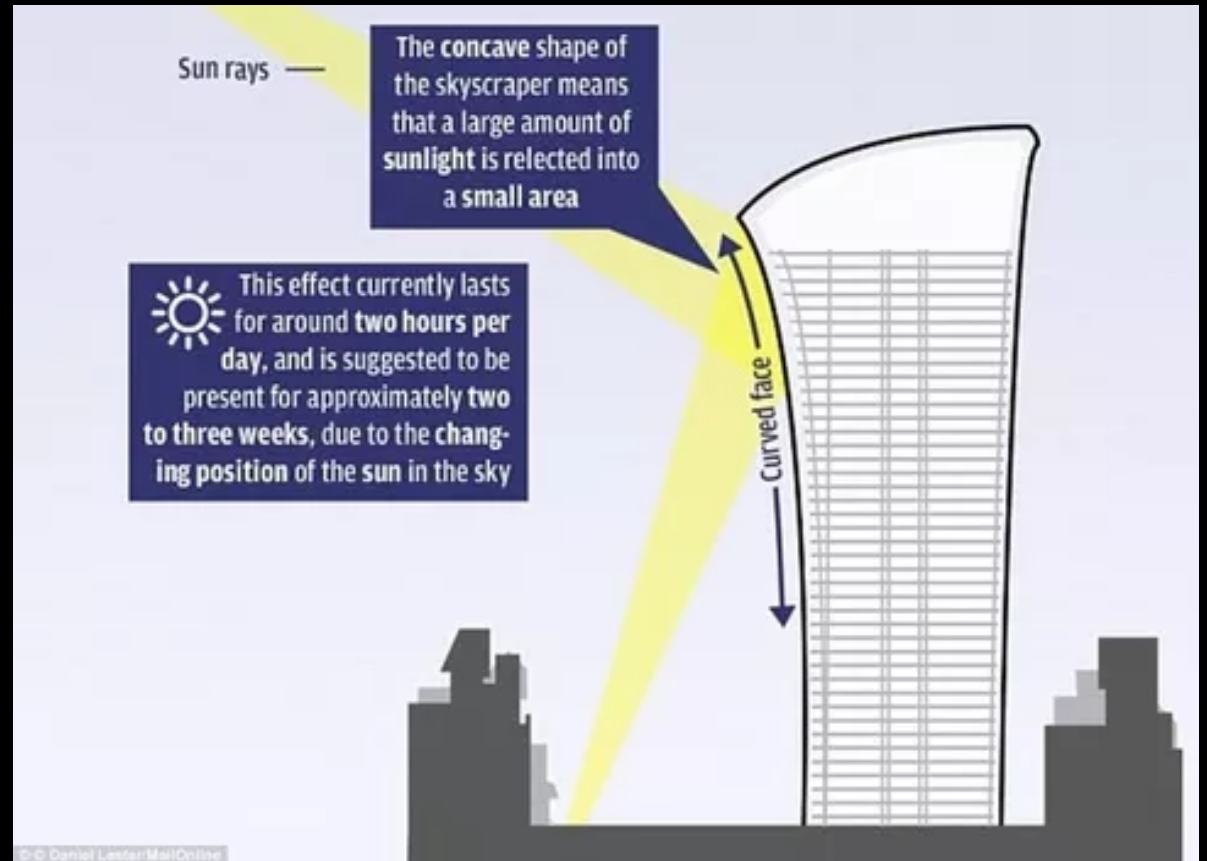
BY ALAN COOPER

https://www.cooper.com/journal/2008/05/the_perils_of_prototyping/

Prototyping

MOTIVATION

Walkie-Talkie Wonderland, London



Palm Pilot Prototype

- Founder Jeff Hawkins carved a piece of wood and carried it until ...



[PalmPilot wooden model](#)



What is a prototype in interaction design?

In interaction design, a prototype can be (among other things):

- A series of screen sketches
- A storyboard, for example, a cartoon-like series of scenes
- A PowerPoint slide show
- A video simulating the use of a system
- A lump of wood (for instance, the PalmPilot)
- A cardboard mock-up
- A piece of software with limited functionality written in the target language or in another language

Low-fidelity prototyping

Uses a medium which is unlike the final medium,
for example, paper or cardboard

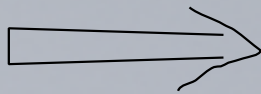
Is quick, cheap, and easily changed

Examples:

- Sketches of screens, task sequences, and so on
- 'Post-it' notes
- Storyboards
- 'Wizard-of-Oz'



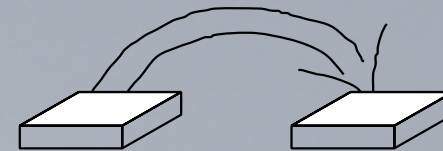
People



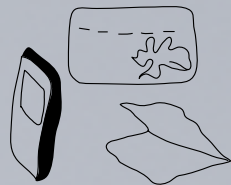
Give



Receive



Transfer



Digital devices



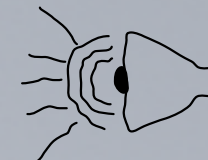
happy



Upset



Surprise



Sound

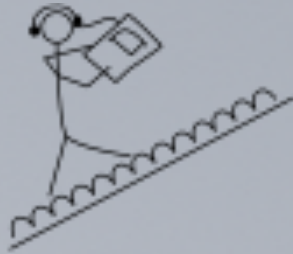


Light

Sketching

Low fidelity prototyping often relies on sketching

Dont be inhibited about drawing ability - practice simple symbols



Christina walks up hill; the product gives her information about the site



Christina adjusts the preferences to find information about the pottery trade in Ancient Greece



Christina scrambles to the highest point



Christina stores information about the pottery trader's way of life in Ancient Greece



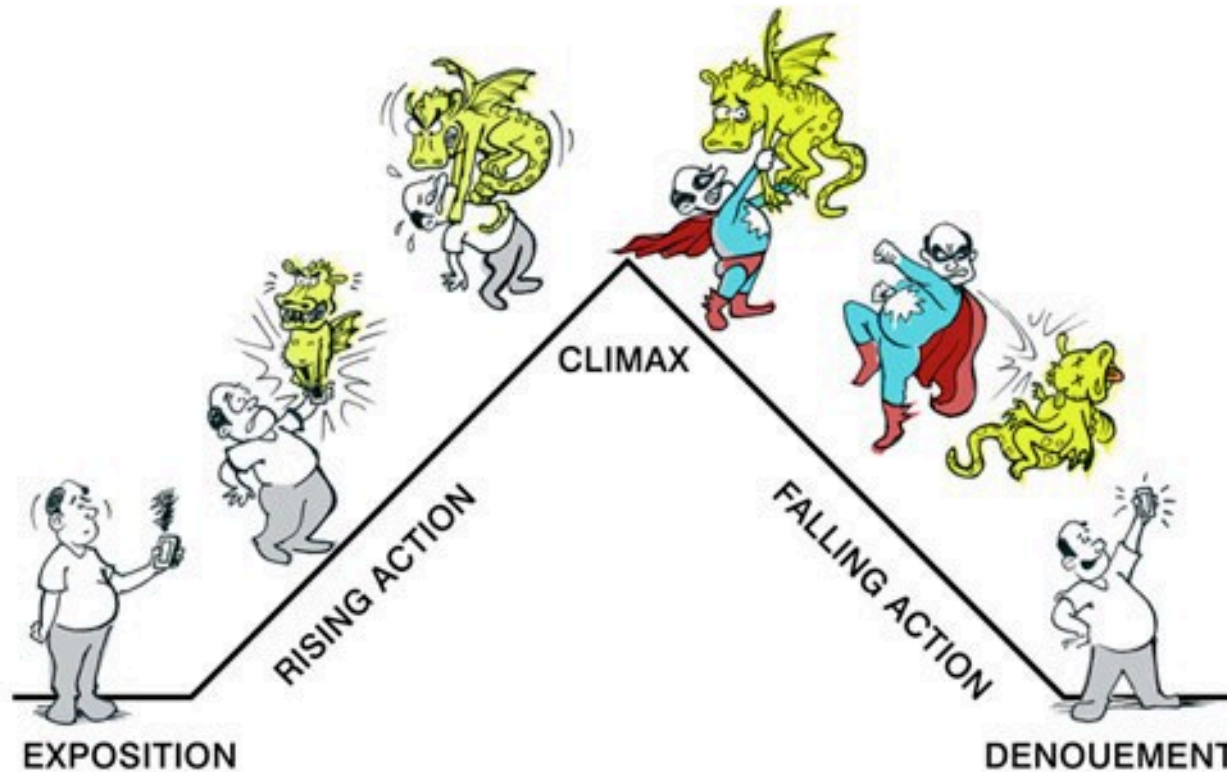
Christina takes a photograph of the location of the pottery market

Storyboards

It is a series of sketches showing how a user might progress through a task using the product

Often used with scenarios, bringing in more detail and a chance to role play

Freytag's Pyramid



Stories tend to follow a narrative structure that looks a lot like a pyramid. Freytag's Pyramid, showing the five parts, or acts: Exposition, Rising Action, Climax, Falling Action (or final suspense and resolution) and Denouement (Conclusion). Ben Crothers added a quick story into the pyramid about a guy and his phone that won't work.

how to film example

'How to Film' storyboard part 1



1. Wide shot of both Sarah and Callum illustrating where they are and what the film is about
Props: Megaphone, Camera board



2. Close-up of Sarah speaking directly to camera

Script: Sarah
'One thing you must remember...'



3. Low angle camera pointing up at Callum
Props: Mustache, Paintbrush
Script: Callum
'Oops! Sarah is right...'



4. Close up of Sarah holding photograph



5. Camera zooms out to a wide shot showing Sarah speaking about using photographs to plan your storyboard.



6. Over shoulder shot of Callum pointing to drawings of different shots that you could try filming.

Scenarios & Storyboards



'Wizard-of-Oz' prototyping

The user thinks they are interacting with a computer, but a human is responding to output rather than the system

Usually done early in design to understand users' expectations

What is 'wrong' with this approach?



High-fidelity prototyping

Uses materials that you would expect to be in the final product

Prototype looks more like the final system than a low-fidelity version

High-fidelity prototypes can be developed by integrating existing hardware and software components

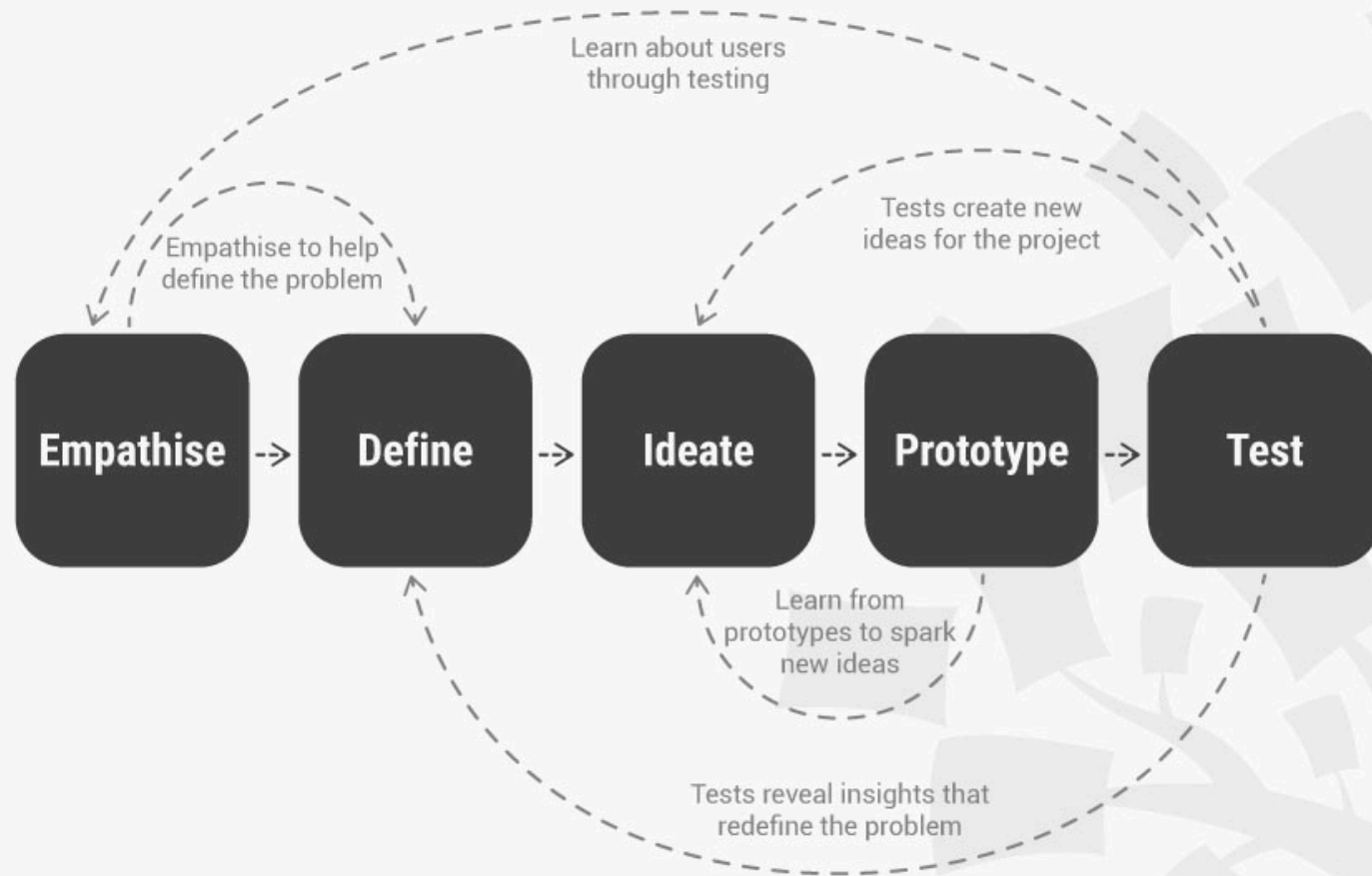
Danger that users think they have a complete system...see compromises

Compromises in prototyping

- Prototyping involve compromises
- For software-based prototyping, maybe there is a slow response? sketchy icons? limited functionality?
- “In the wild” prototypes operational but not necessarily robust
- Two common types of compromise:
 - **Horizontal:** Provides a wide range of functions, but with little detail
 - **Vertical:** Provides a lot of detail for only a few functions
- Compromises in prototypes must not be ignored. Product needs engineering

Prototype in Design Thinking

DESIGN THINKING: A NON-LINEAR PROCESS



What to prototype

- At this stage you should have a lot of questions about how your idea should work, with lots of testable components
 - be clear what you need to learn and
 - which components will give you the answers.
- Prototyping isn't about being precious.
 - Make simple, scrappy prototypes
 - focus testing on just the critical elements.

Steps

1. **write down** the key elements of your idea. Think practically about what needs to be tested and write down your primary questions for each component.
2. Pick a few questions to answer. Focus on the interaction, and try it with your team.
3. Think through what kind of prototype makes the most sense to answer these questions.
4. **REMEMBER:** this process is about learning, not getting it right the first time.

Better to test a miserable failure and learn from it, rather than take ages making a beautiful, highly refined prototype.

Summary

- Prototype for
 - exploration and learning
 - answer specific questions
 - focus on critical elements
- Compromise
 - horizontal x vertical
 - low fidelity x high fidelity
- You should know to use
 - Sketches
 - Storyboards
 - Scenarios
 - Wizard-of-Oz

Exercício



Storyboards

Cenário: oficina mecânica, pneu careca, precisa trocar ao menos 2.

Projeto paralelo centrado no usuário:

Individual: use os seus POVs e HMW para construir storyboards desses cenários.

Em grupo: apresente e discuta as ideias, refina, edite, construa novas ideias e novos storyboards.

Avaliação: avalie suas soluções usando a Sra. X como persona.

