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

Design Thinking: Prototype

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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

The concave shape of the skyscraper means that a large amount of sunlight is reflected into a small area.

This effect currently lasts for around two hours per day, and is suggested to be present for approximately two to three weeks, due to the changing position of the sun in the sky.
Palm Pilot Prototype

- Founder Jeff Hawkins carved a piece of wood and carried it until …
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’
Sketching

Low fidelity prototyping often relies on sketching
Dont be inhibited about drawing ability - practice simple symbols
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.

1. Christina walks up hill; the product gives her information about the site.
2. Christina adjusts the preferences to find information about the pottery trade in Ancient Greece.
3. Christina scrambles to the highest point.
4. Christina stores information about the pottery trader’s way of life in Ancient Greece.
5. Christina takes a photograph of the location of the pottery market.
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.

https://uxplanet.org/storyboarding-in-ux-design-b9d2e18e5fab
how to film example

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

2. Close-up of Sarah speaking directly to camera
   Script: Sarah
   One thing you must remember...

3. Low angle camera painting up at Callum
   Props: Moustache, 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

- **Project Title:** THE STORY OF MY LIFE
- **Scene #:**
- **Description:**
- **Sound:**
‘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

- Empathise
- Define
- Ideate
- Prototype
- Test

Learn about users through testing
Empathise to help define the problem
Tests create new ideas for the project
Learn from prototypes to spark new ideas
Tests reveal insights that redefine the problem

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INTERACTION-DESIGN.ORG
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.