Prototyping

HCI - L.EIC - FEUP - 2022

Prototyping

Prototyping

- Users **don't know what they want**, but…
  - when faced with something **they can tell what they don't want**

- Prototype:
  - **Concrete**, yet **partial representation** of the system

- Goal:
  - **Try out ideas**
  - **Reduce time and cost** needed to test a design
  - **Dump bad ideas** early

- Can focus on:
  - **UI** -> e.g. hand-drawn screens, Mock-up video
  - **Device** -> e.g. Cardboard model
  - **Functionality** -> Partially-functioning software

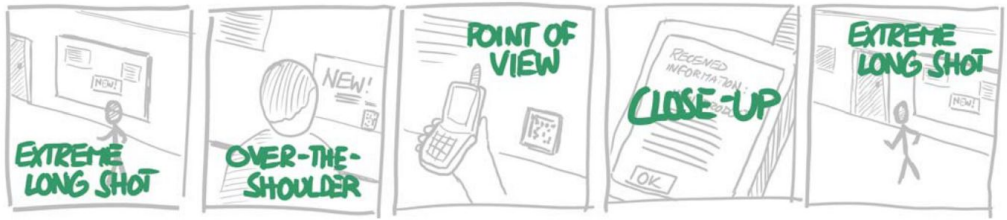
Common techniques

- Experiential
  - Storyboarding
  - Bodystorming
  - Wizard of Oz
- Low-Fidelity/Functionality prototypes
  - Paper
  - Mock-ups
- Mid/High-fidelity/Functionality prototypes
  - Interactive Mock-ups
  - Functional prototypes

Experiential Techniques

Storyboards / sketches

- A series of **drawings** that **tell a story**
- Depicts **settings**, **context** and **sequences** of **actions/events**
- A mix between comics and movie script

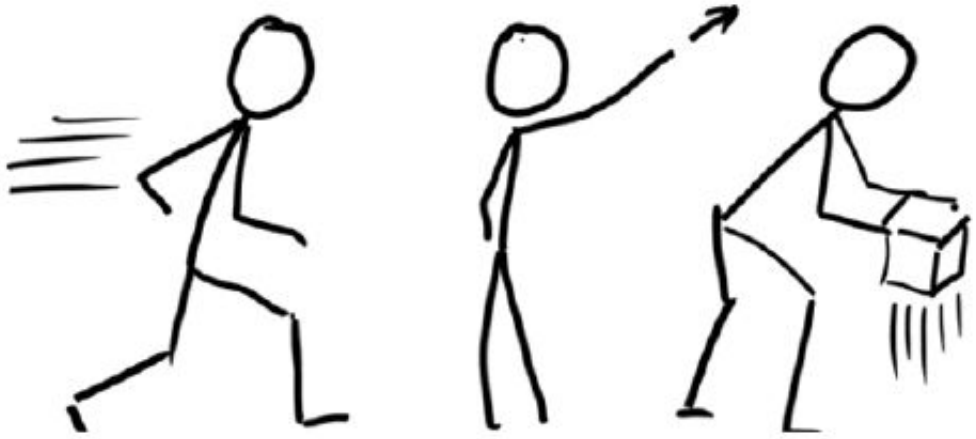


A storyboard communicates...

- Context
  - People,
  - environment,
  - tasks
- Sequence
  - Motivation for goal,
  - steps taken,
  - task details (no UI)
- Goal
  - Motivation for using the system,
  - what is achieved,
  - what needs are fulfilled

Storyboard: It's not about the drawings

- Drawing skills are not very important
- It is about **communicating the concept**

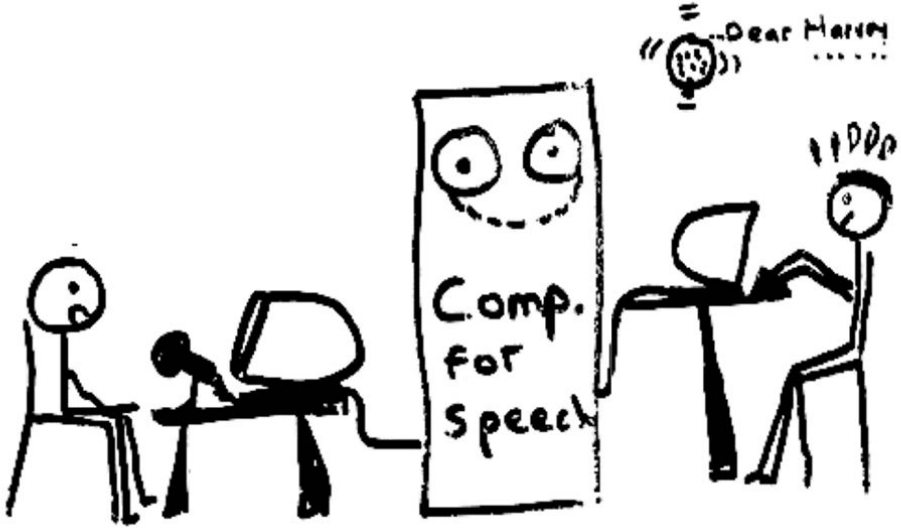


Bodystorming

- **Experience physically** a situation
- Imagine **systems in context**
- **Generate ideas** on tasks/functionalities
- Do **role play**
- Important steps
  - Choose the place
  - Prepare the space and materials
  - Recruit, test and observe
  - Debriefing with users and observers

Wizard of Oz

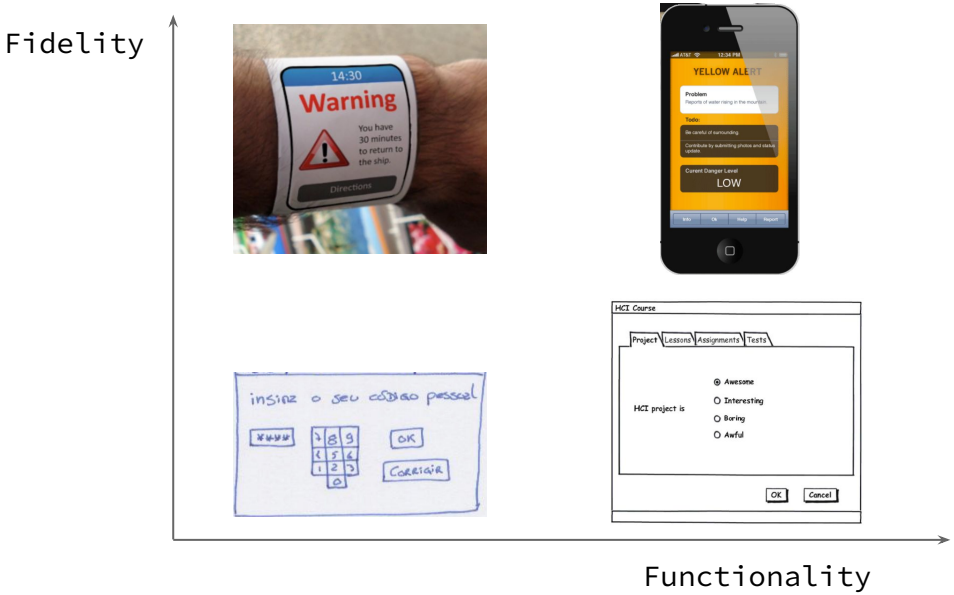
- Functionalities of the system are simulated by a human (hidden or not)
- Useful for early concept testing/simulation of complex or demanding systems (e.g. speech or gesture recognition, AI…)



Prototypes

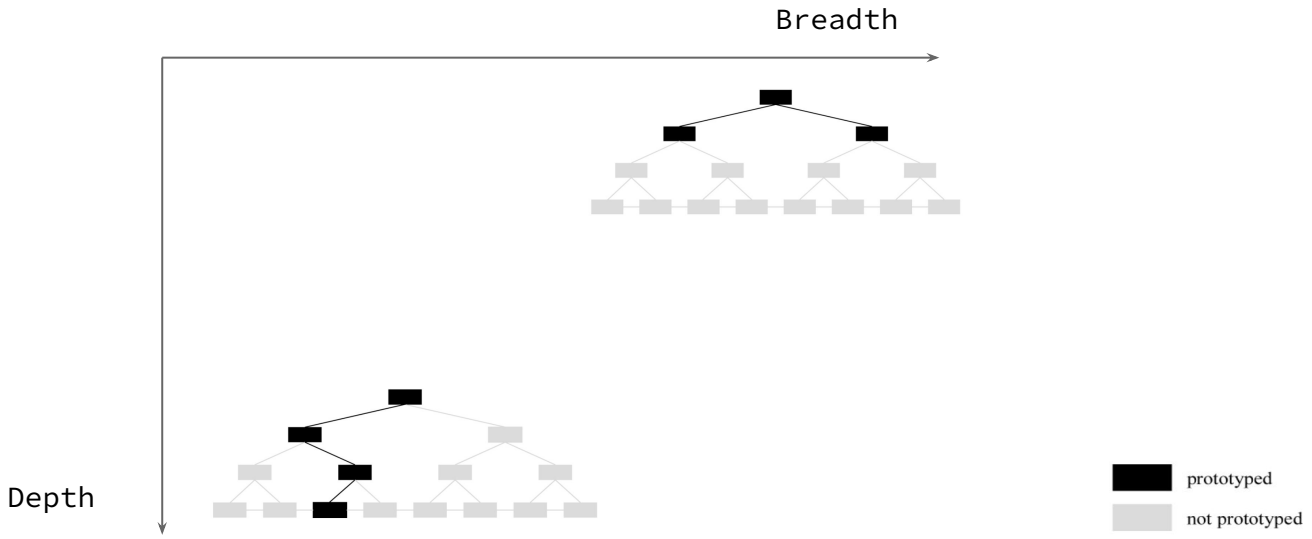
Fidelity vs Functionality

- **Fidelity** focuses on **appearance**
- **Functionality** focuses on system **response**



Horizontal vs Vertical

- **Horizontal** prototypes have a **broad but shallow** coverage of tasks
- **Vertical** prototypes **focus on specific parts in depth** (frontend down to backend)

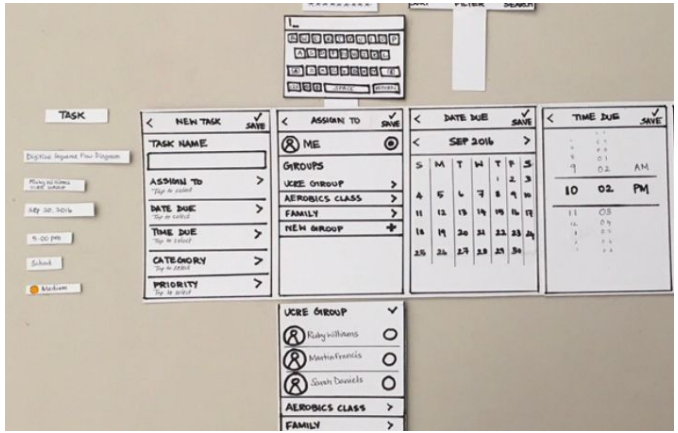


Low-Fidelity Prototypes

- **Easy and fast** to create
- **Low-cost** (hand-made or with simple tools, rough)
- Deliberately **focus on the idea**, not on the looks
- Quick user feedback, allows to **easily test ideas**
- **Disposable**: not feeling sorry for **throwing away a bad idea**
- **Cons:**
  - Very high-level
  - Not very scalable

Paper Prototypes

- Can be built with simple materials and tools
  - Paper, cardboard
  - Glue, tape
  - Markers, pencils
  - Scissors, Cutting knife
  - Molding paste



Mock-ups

- **Representations** of the interface in a more **detailed** way
- Usually created with **software**
- Can be **lo-fi** (e.g. **wireframe**) or **hi-fi** (e.g. actual **hi-res widgets**)
- Can be **printed out** to test as paper prototypes, or **used digitally** (desktop, mobile)
- Good for **UI consistency**, more **scalable** than sketching, and still **faster and cheaper than coding**
- **Cons:**
  - Can be slower than sketching for small/initial prototypes
  - Flow has to be induced by the tester
  - If hi-fi too early, can bias the user

Interactive Mock-ups

- Use tools to **add interactivity** to mock-ups
- Can be simple **“hyperlinking”** between screens through clickable/tappable areas
- Can have some **more complex interactions**, but not actually programmed

Functional Prototypes

- Prototypes that already **implement part of the logic** of the functionalities
- Can be in the final platform, or in some rapid prototyping platform
- Usually vertical, but can be horizontal
- **May be lo-fi or hi-fi** (although usually at this point there are already hi-fi mock-ups available)

Tools for Prototyping

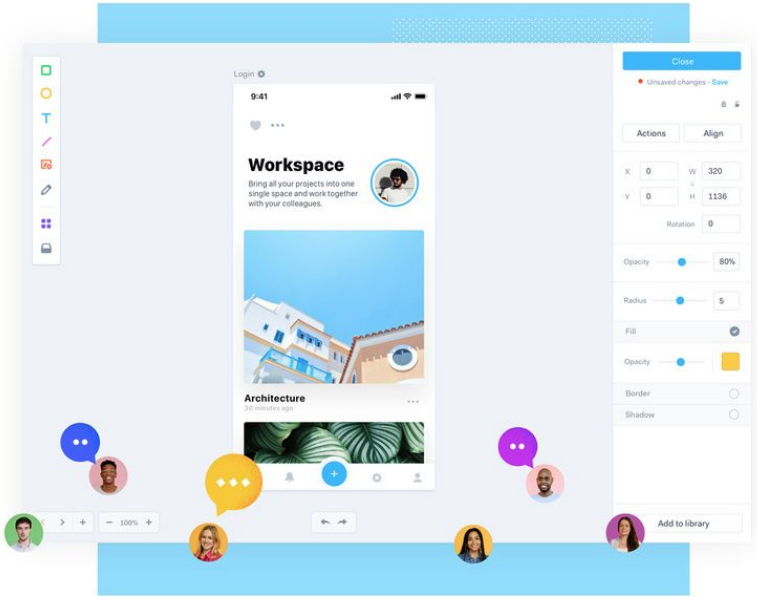
Tools for Prototyping

- Many exist nowadays
- Different use cases
- Some suggestions follow
- Extended list in Moodle

Simple Hyperlinking

- Marvel App
  - Simple prototypes
  - Create screens importing images (e.g. hand-drawn)
  - Define hotspots in images to create tappable areas that lead to other screens
  - Allows to test directly on mobile

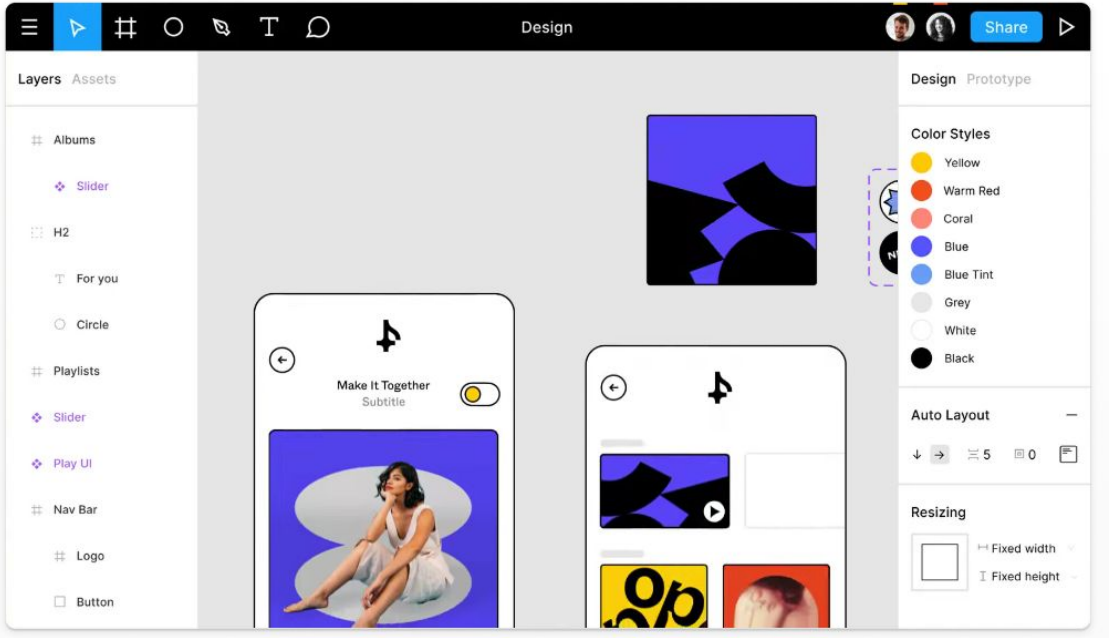
https://marvelapp.com



Figma

- Allows different interactive flows
- Allows real-time collaboration
- Free for students

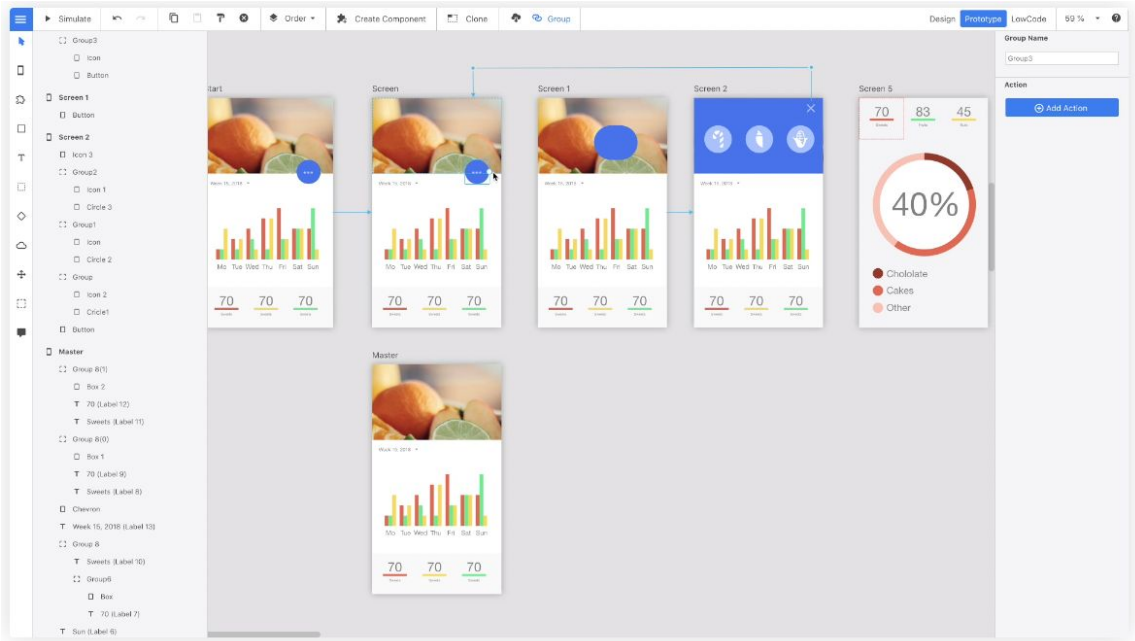
https://figma.com



Quant-UX

- Advanced set of widgets and functionalities
- Tools for testing
- Free and open Source

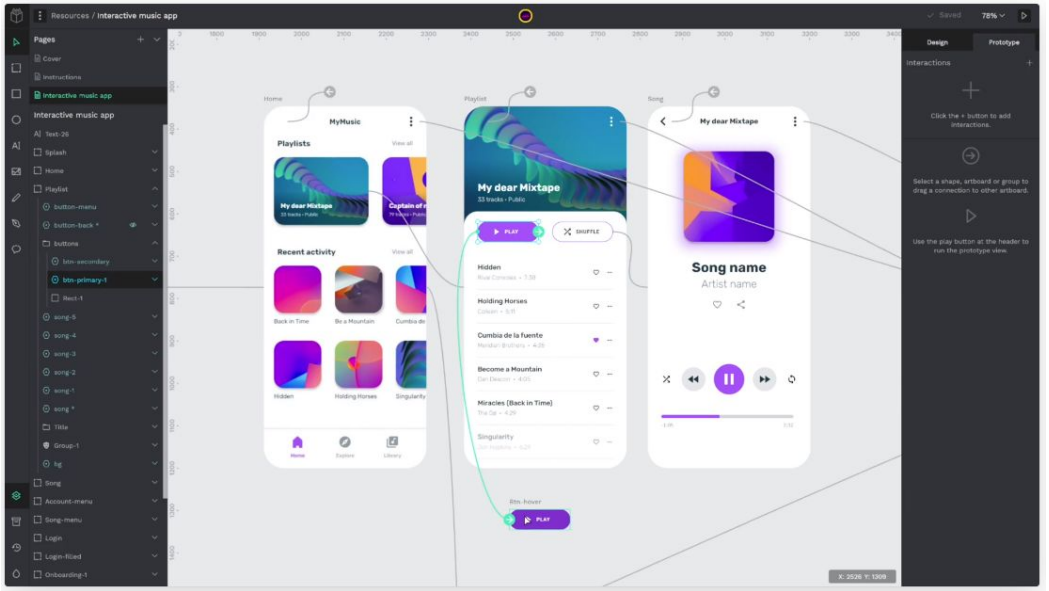
https://quant-ux.com/



Penpot

- Allows different interactive flows
- Allows real-time collaboration
- Recent, but promising
- Free, Open Source

https://penpot.app



Famous ones

- Commercial, with free versions sufficiently capable
  - **Webflow** https://webflow.com
  - **Just in Mind** https://www.justinmind.com/
  - **InVision** https://www.invisionapp.com
  - **Adobe XD** https://www.adobe.com/products/xd.html

- Extended list in Moodle

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Additional credits: Hugo Nicolau (IST), Teresa Galvão (FEUP)