Prototyping UX
From Sketch to Prototype to Product

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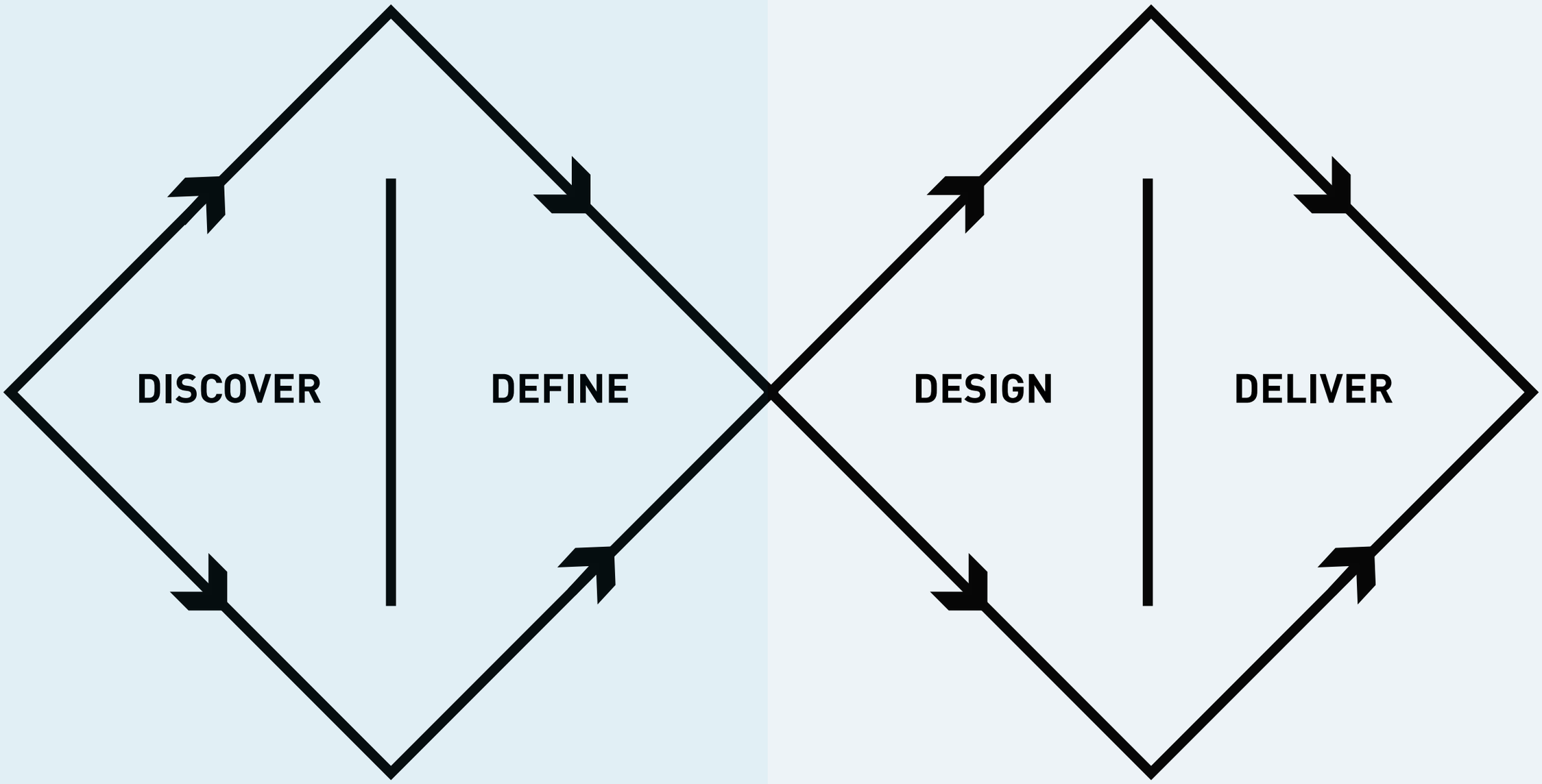
Human-Computer Interaction Group

Double Diamond



Why? and How?

source: [8]

An original type, form, or instance that serves as a model on which later stages are based and judged.

American Heritage Dictionary

source: [1]

Three main goals

1.) Exploring a context

2.) Examining design problems

3.) Evaluating solutions

source: [5]

Three main contexts

1.) Screen based interactions

2.) Interactive products

3.) Technology enabled services

source: [5]

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role

look´n´feel

implementation

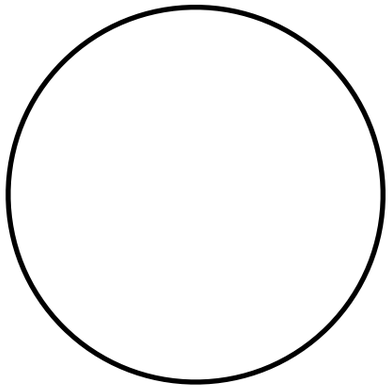
For the Designer:
Exploration
Visualisation
Feasibly
Inspiration
Collaboration

For the End User:
Effectiveness / Usefulness
A change of viewpoint
Usability
Desirability

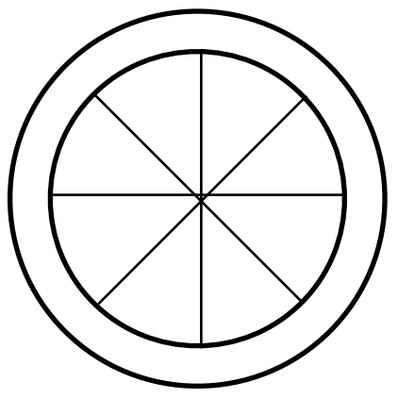
For the Producer:
Conviction
Specification
Benchmarking

source: [5]

Fidelity v. Resolution



low resolution
low fidelity



high resolution
low fidelity

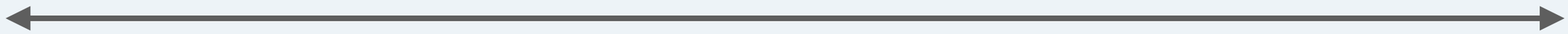
high resolution
high fidelity

resolution = amount of detail
fidelity = closeness to the eventual design (product/service)

source: [5,6]

Low Fidelity

High Fidelity

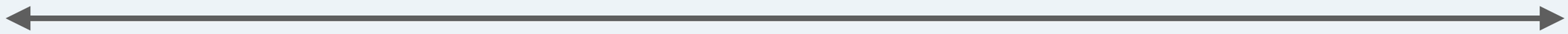


Open Discussion	Sharp Opinions
Prompting Required	Self Explanatory
Quick and Dirty	Deliberate and Refined
Early Validation	Concrete Ideas

source: [5,6]

Low Resolution

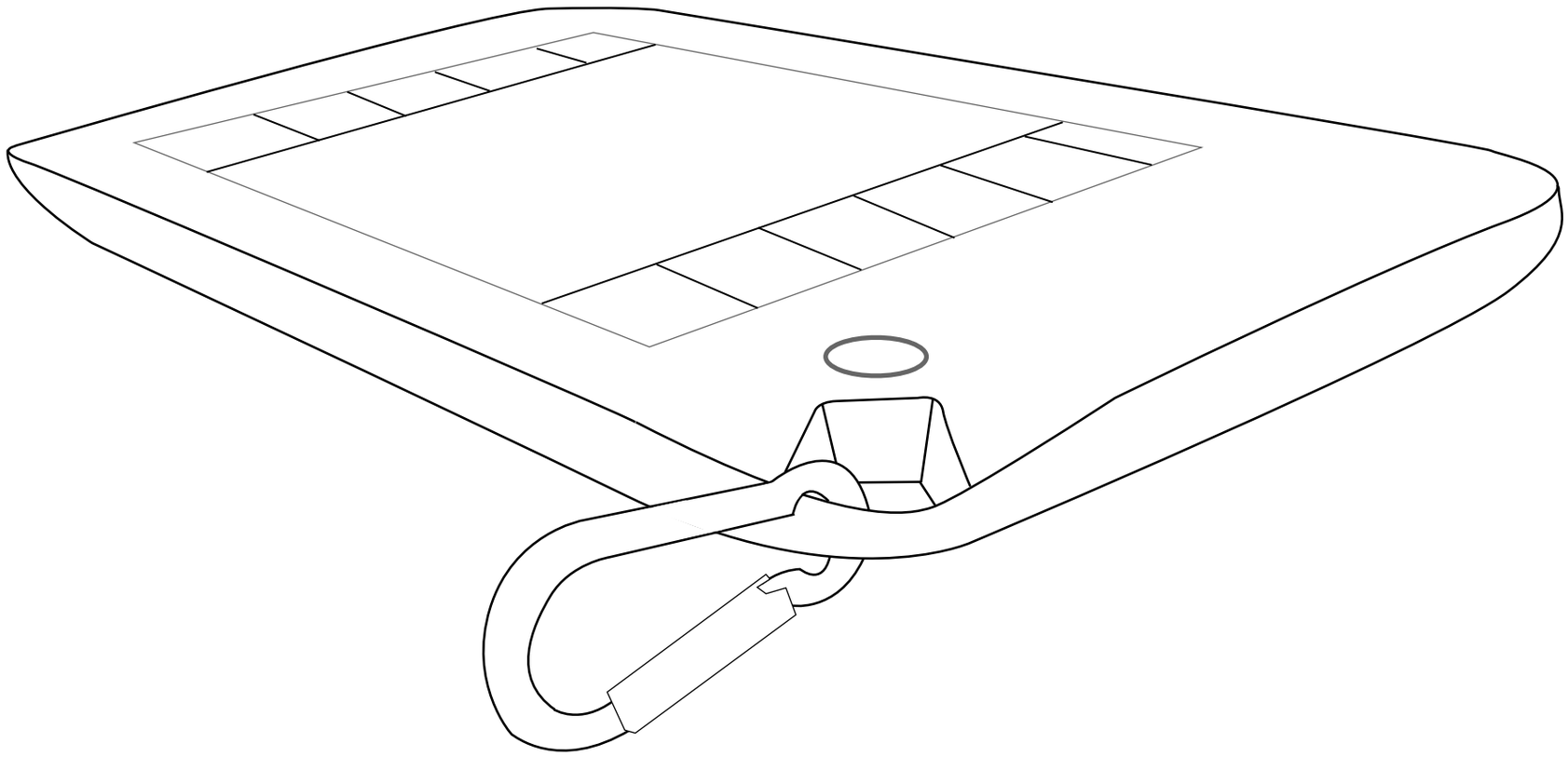
High Resolution



Less Details	More Details
Focus on core interactions	Focus on the whole
Quick and Dirty	Deliberate and Refined
Early Validation	Concrete Ideas

source: [5,6]

1st Iteration
low-res/low-fi



source: [5,6]

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4th Iteration
high-res/high-fi

source: [5,6]

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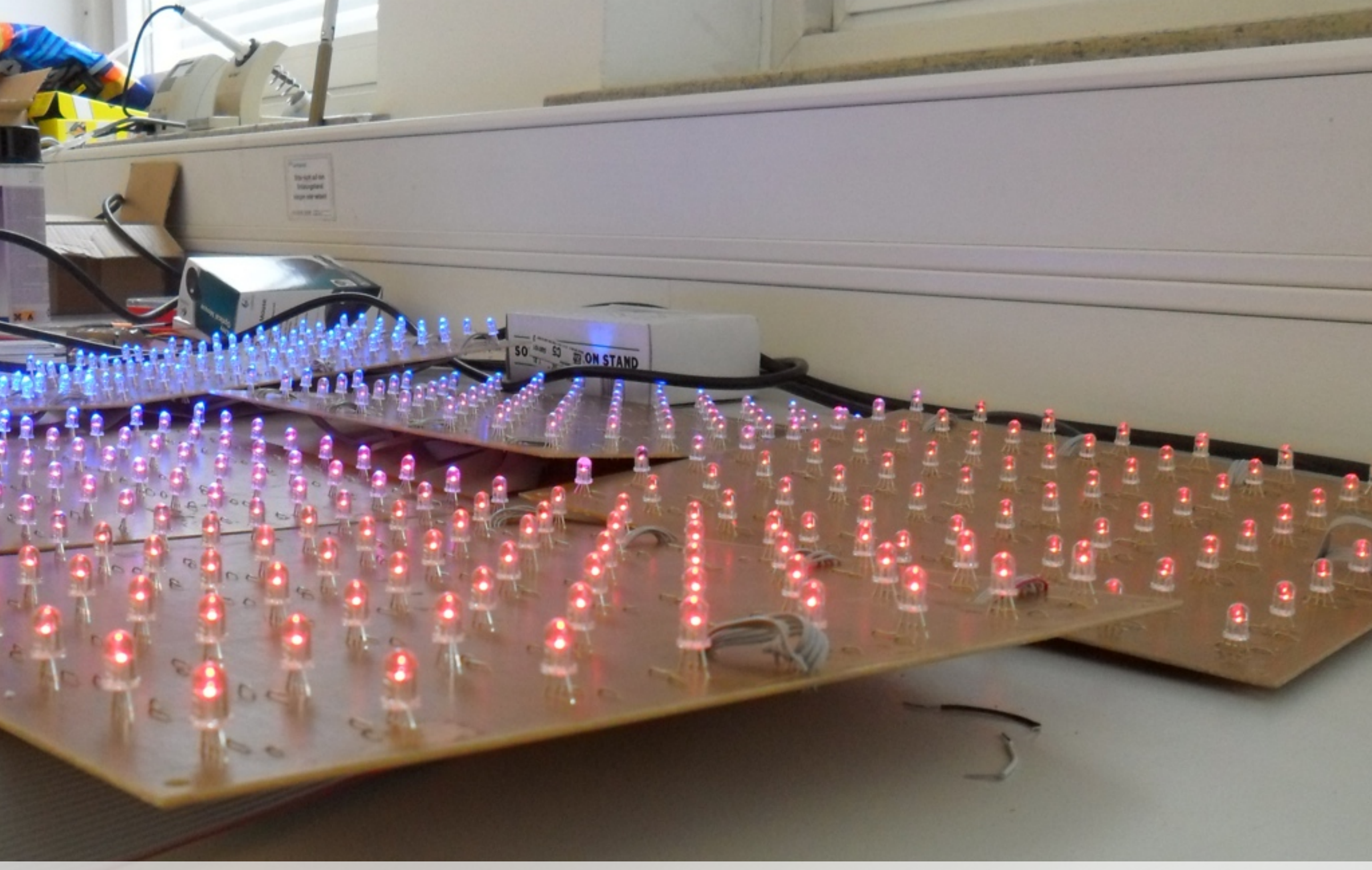
Some Examples from Design Workshops

@ LMU Mediainformatics
+ TUM Industrial Design
+ TUM Architecture Informatics
+ LMU Art & Multimedia

Design Workshop II

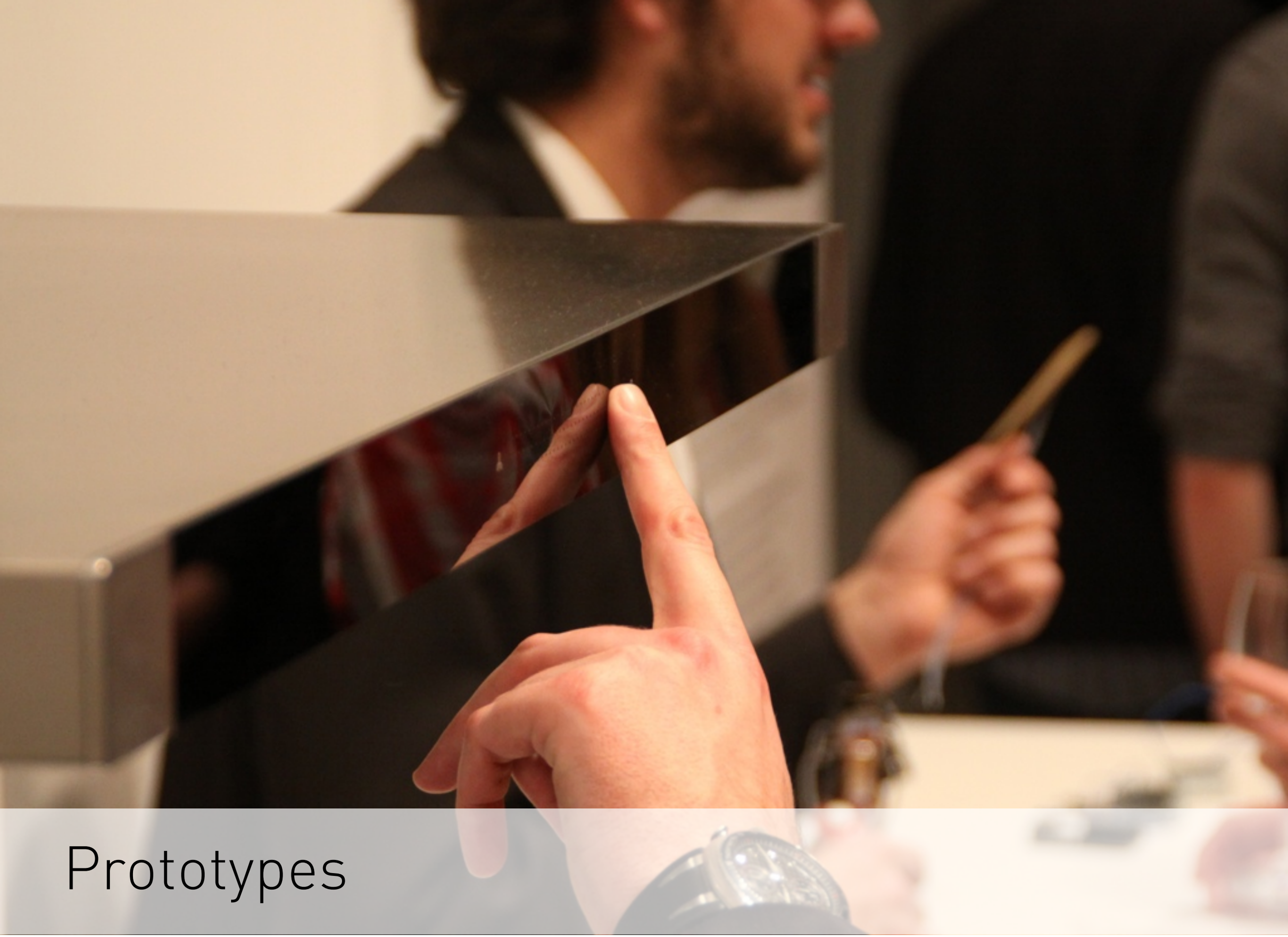


Design Workshop II

Design Workshop II
In conjunction with B/S/H (Neff) Home Appliances

- 12 MA Media Informatics Students
- Duration: One semester
- Topic: Tactile Feedback

Prototypes



Prototypes

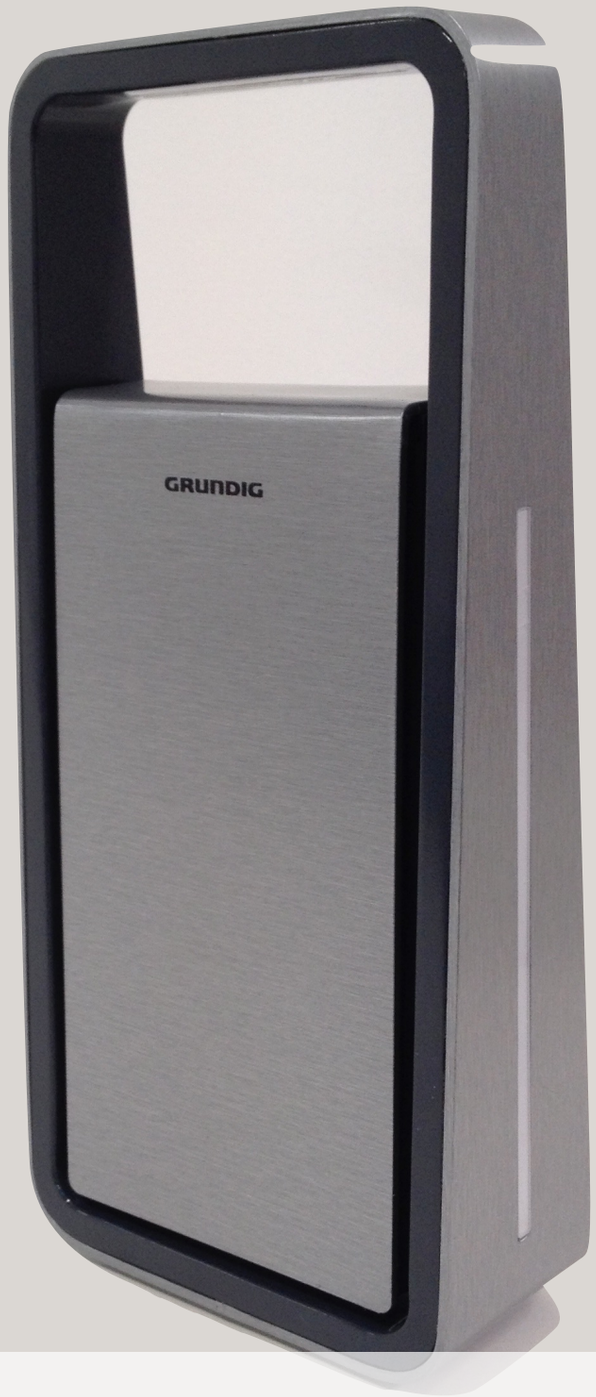
Prototypes

Design Workshop II
In conjunction with Acelik Home Appliances

- 16 MA Industrial Design Students
- 14 MA Human-Computer Interaction Students
- Duration: One semester

Reminding Water Dispenser

LMU München – Medieninformatik – Alexander Wiethoff – UX1



Pure Air

Dirt Buster

LMU München – Medieninformatik – Alexander Wiethoff – UX1

Recipe Printer

LMU München – Medieninformatik – Alexander Wiethoff – UX1

HoverMeasure

Design Workshop II
in conjunction with Gewofag Munich

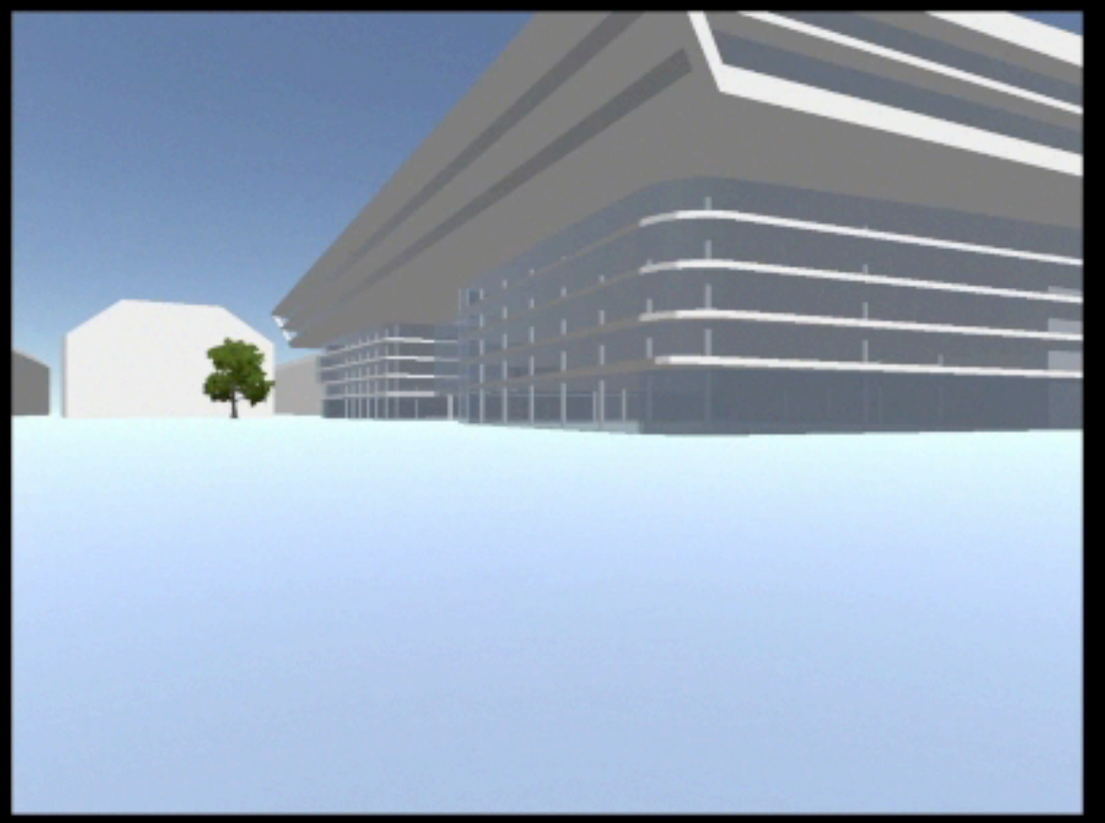
- 4 MA Architecture (TUM)
- 12 MA Human-Computer Interaction Students (LMU)
- Duration: One semester

The Mapped Show

LMU München – Medieninformatik – Alexander Wiethoff – UX1

Smart City Table

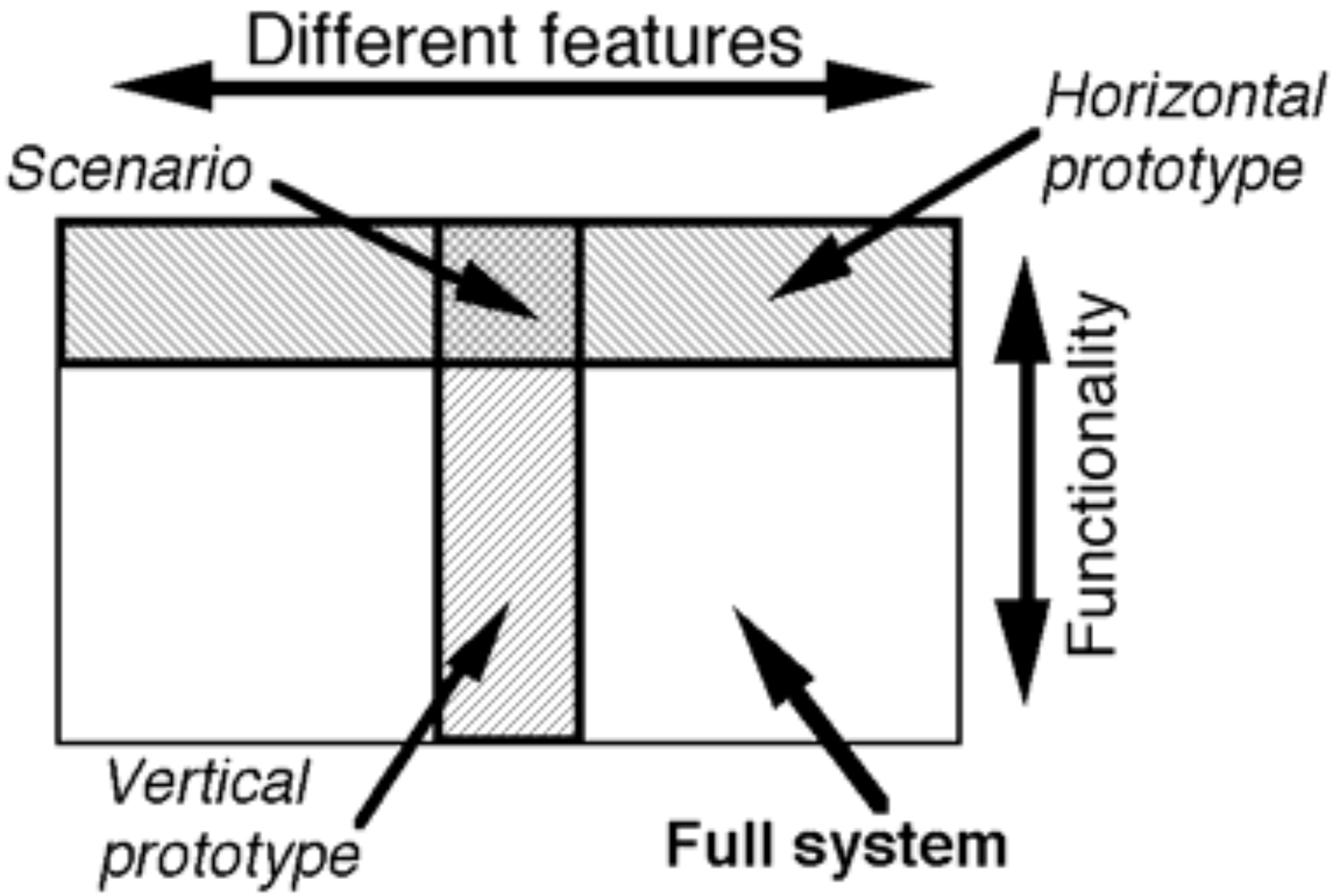
StreetView Game



StreetView Game

It’s really hard to design products by focus groups. A lot of times, people don’t know what they want until you show it to them.

Steve Jobs



Horizontal vs. Vertical Prototype

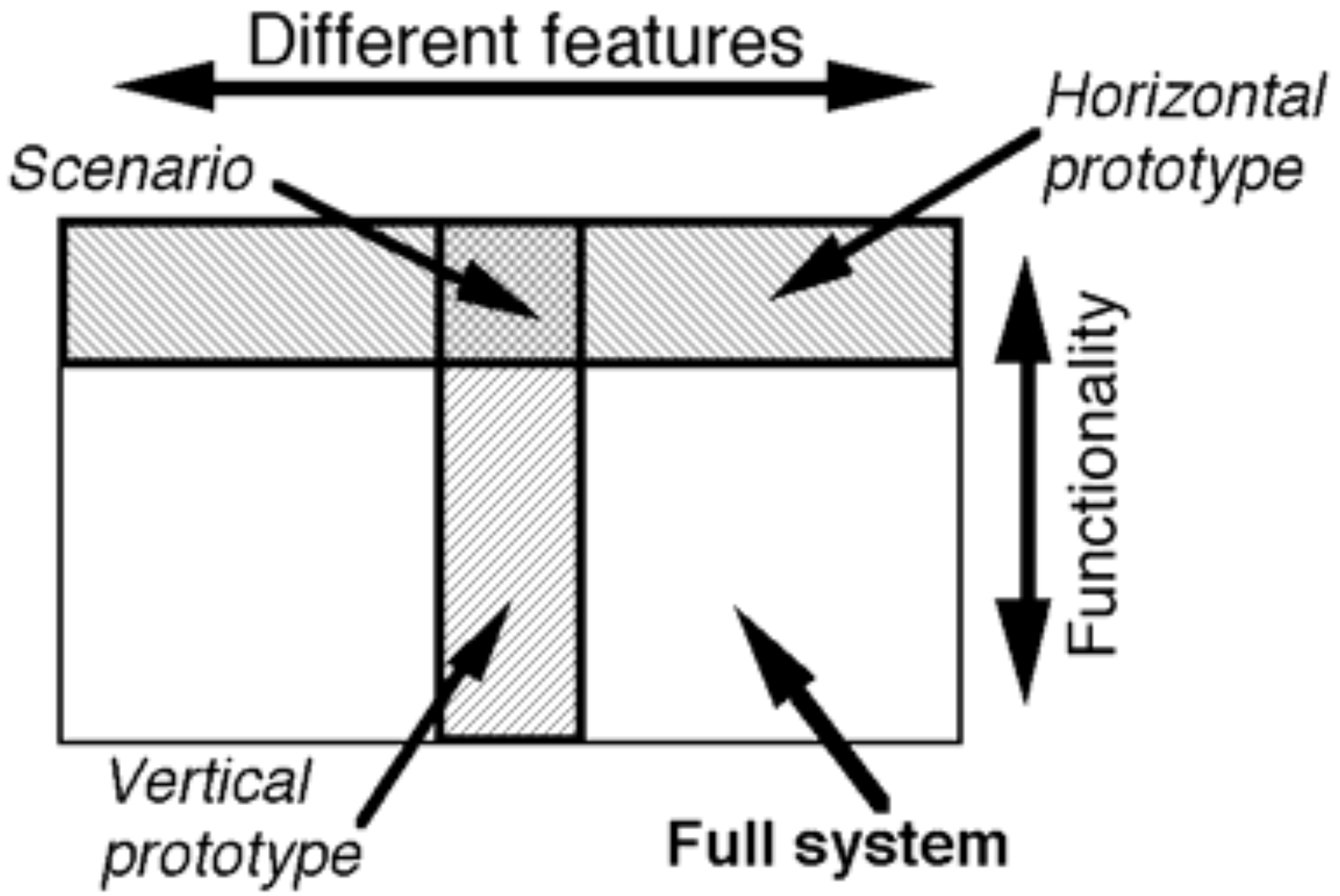
https://media.nngroup.com/media/editor/2012/12/10/guerrilla_scenario_fig.gif

source: [3,4]

80/20 rule

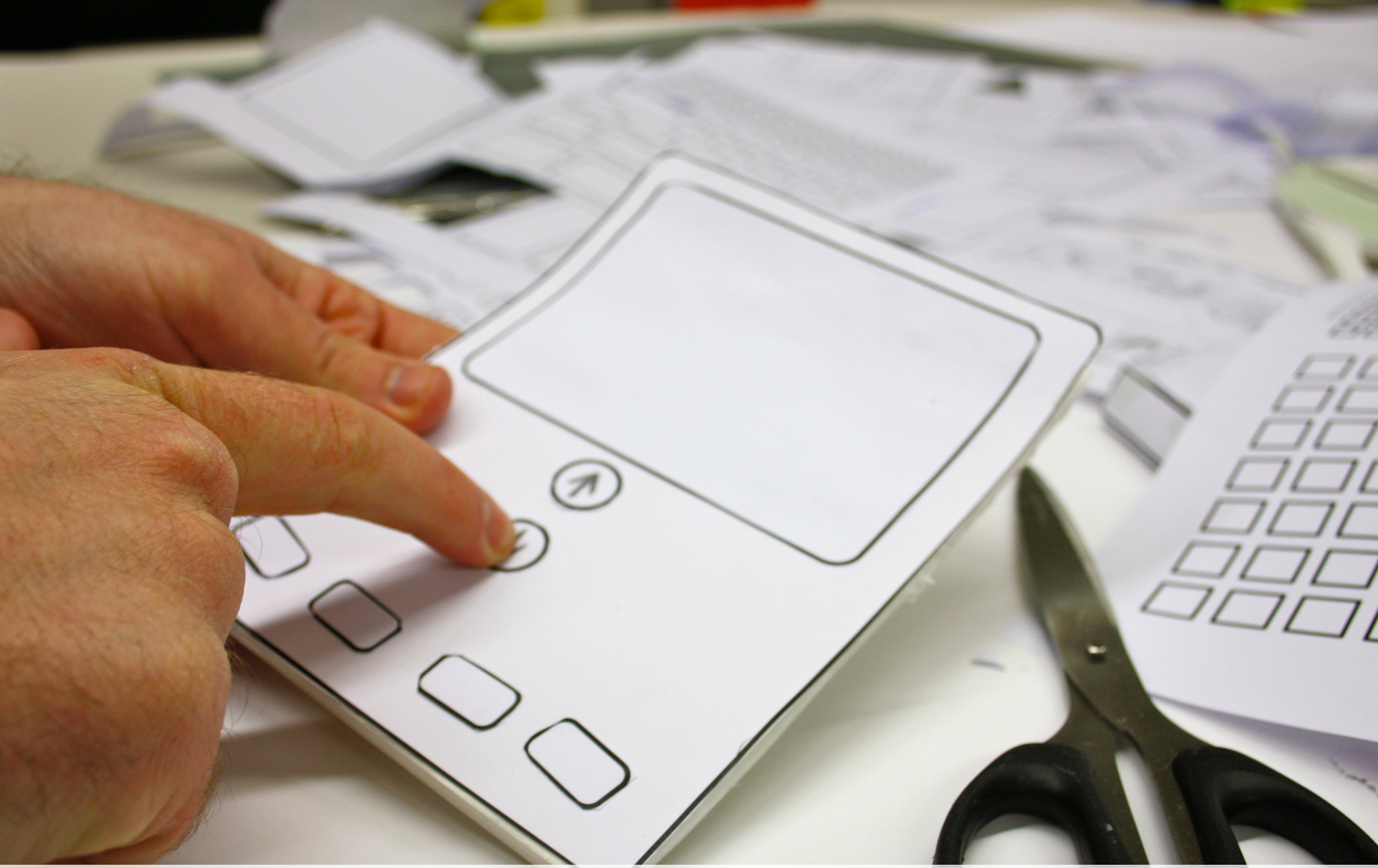
http://www.swissknifeshop.com/media/catalog/product/cache/1/image/5e06319eda06f020e43594a9c230972d/v/m/vm_53831--91_sol_front_ax1000.jpg

source: [7]



A principle for setting priorities: users will use 20% of the features of your product 80% of the time. Focus the majority of your design and development effort (80%) on the most important 20% of the product.

source: [7]



Paperprototyping & Wireframes

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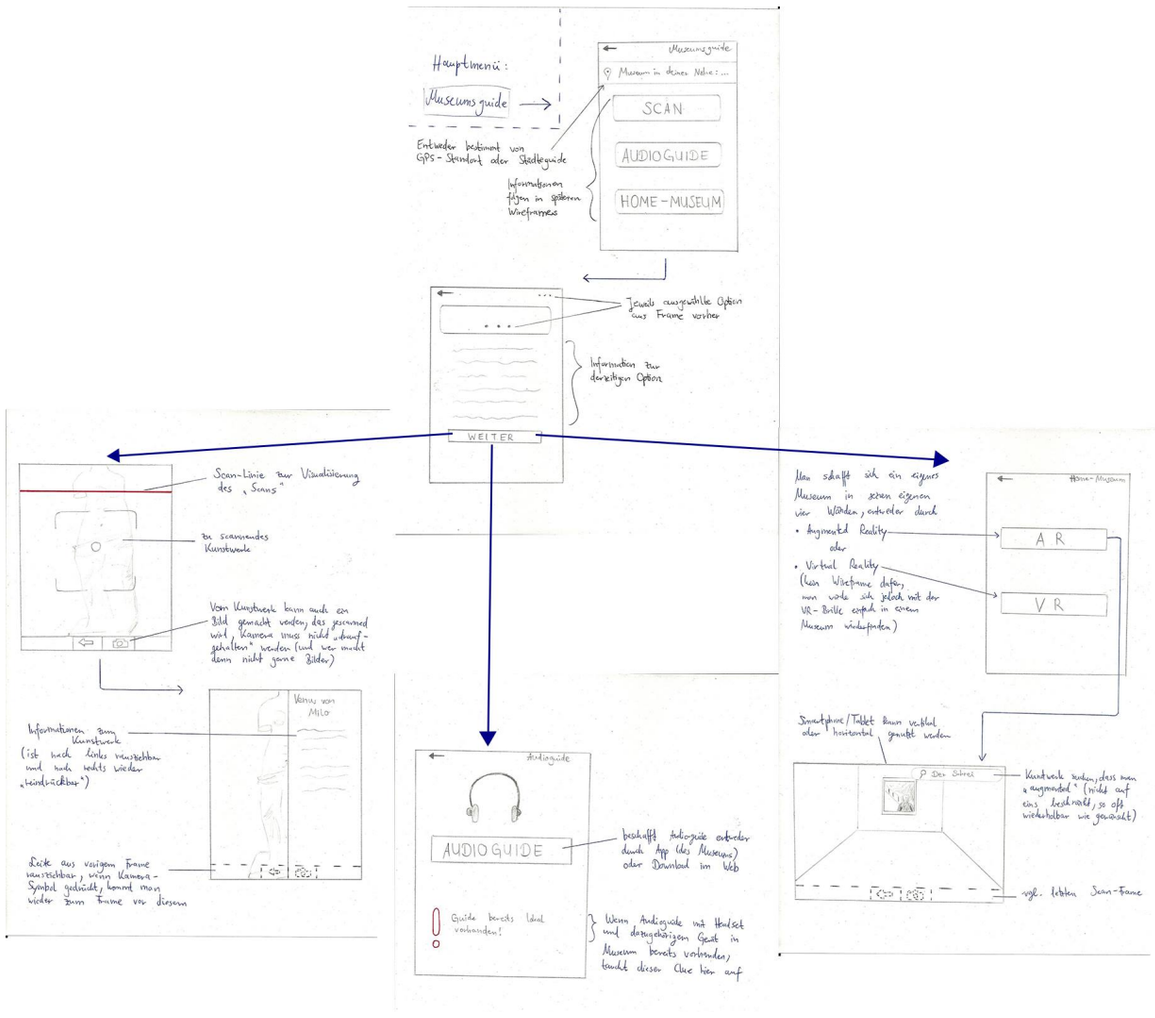
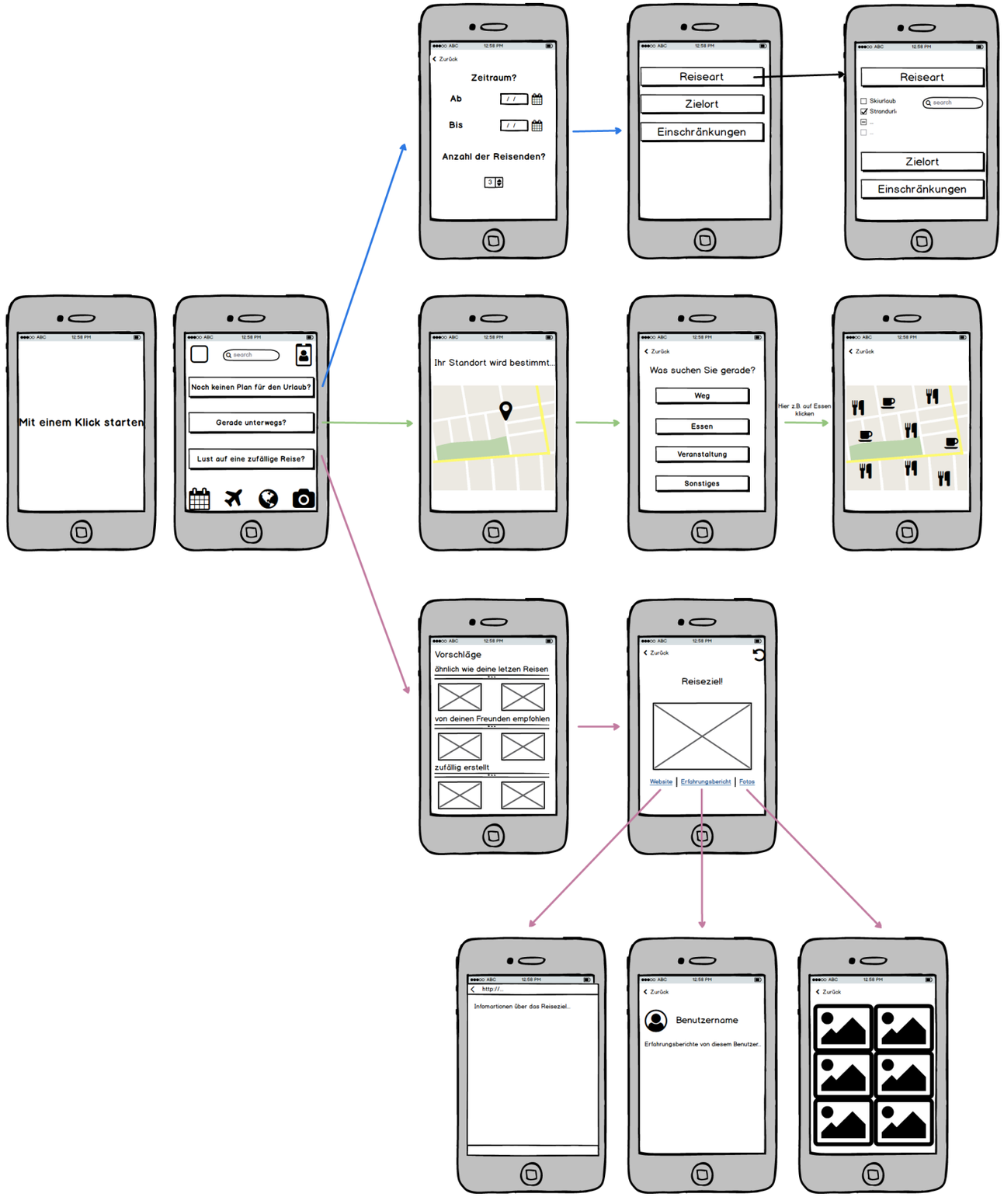
Wireframes





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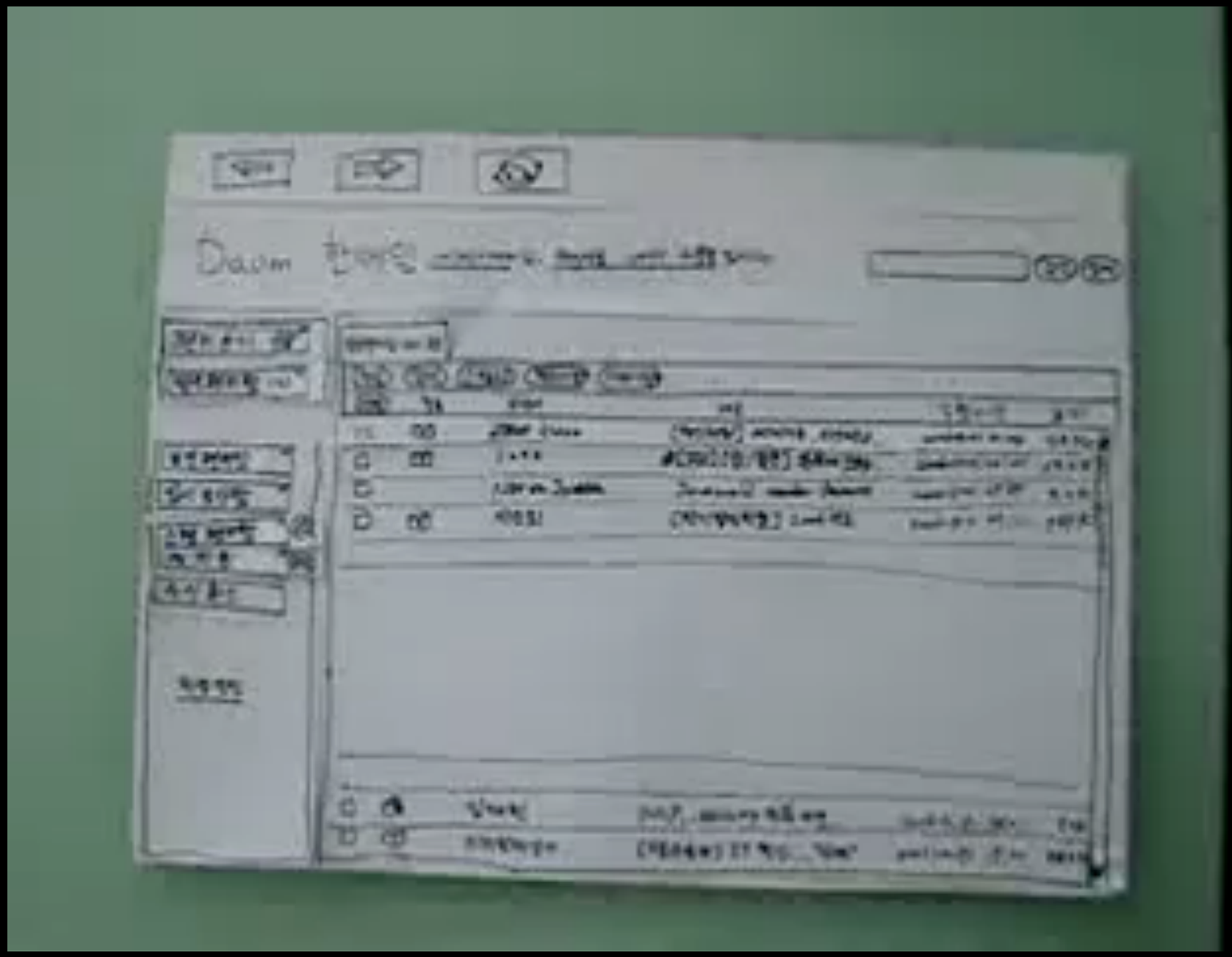
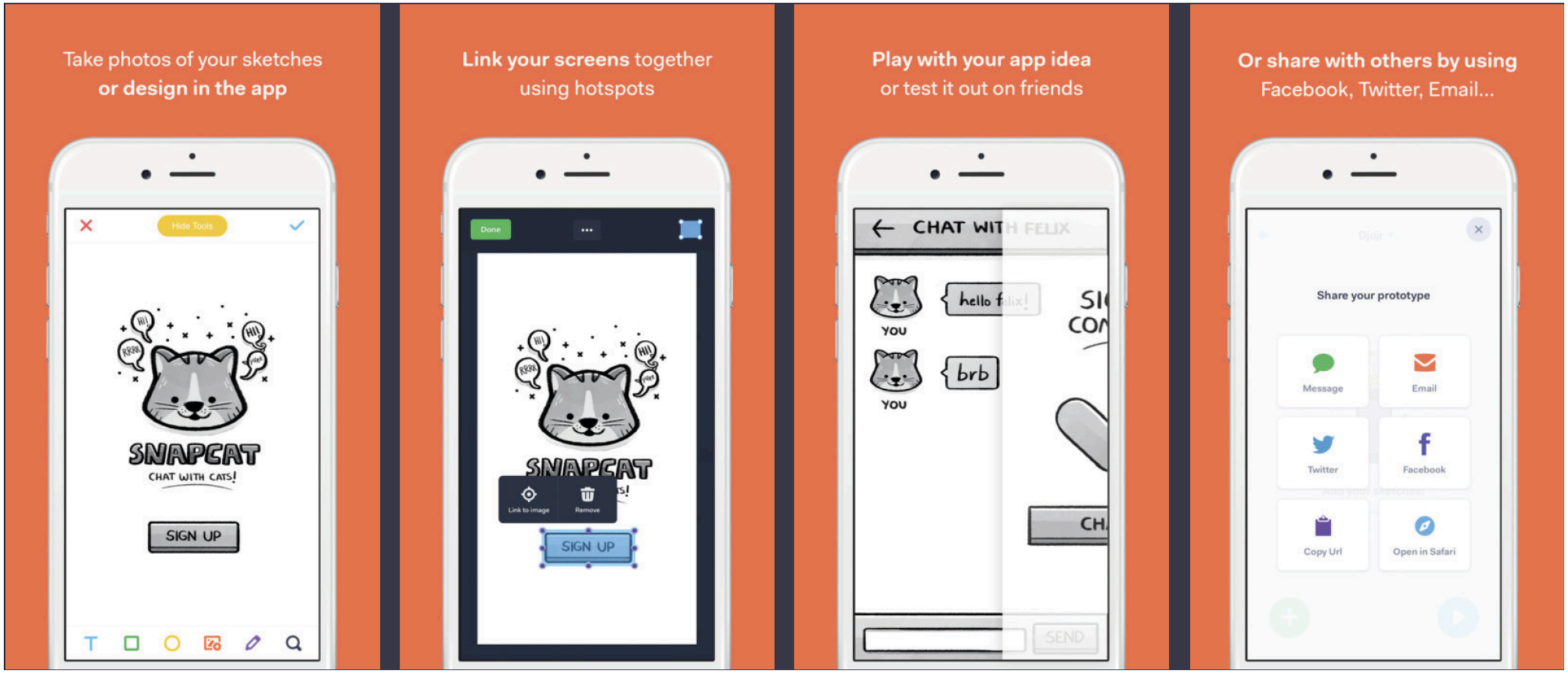


Source: YouTube

PAPER PROTOTYPING POP



© Marvel

Video-demo

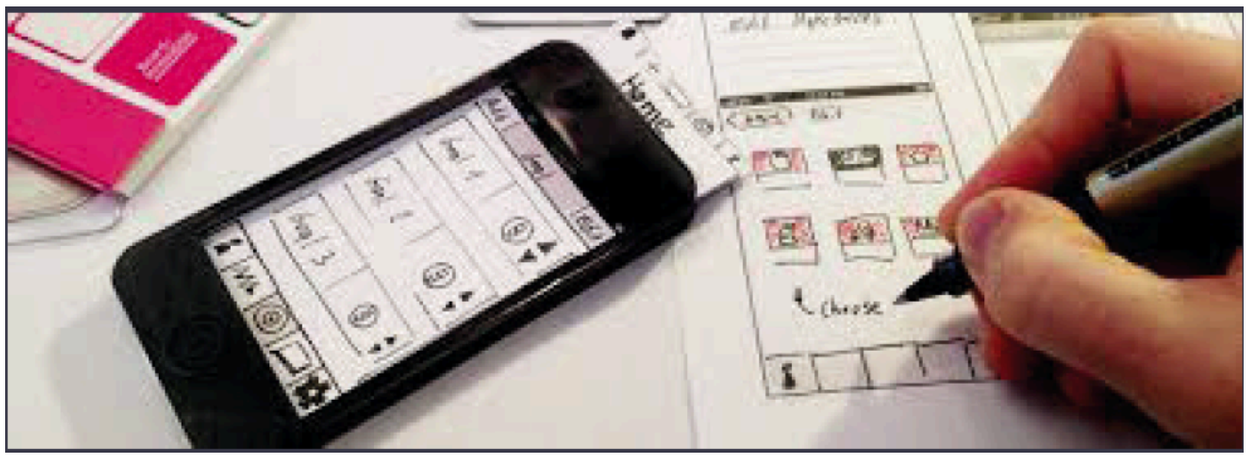
https://www.youtube.com/watch?v=EGp20lVwUa8

PAPER PROTOTYPING POP

- choose from a wide range of interface modules

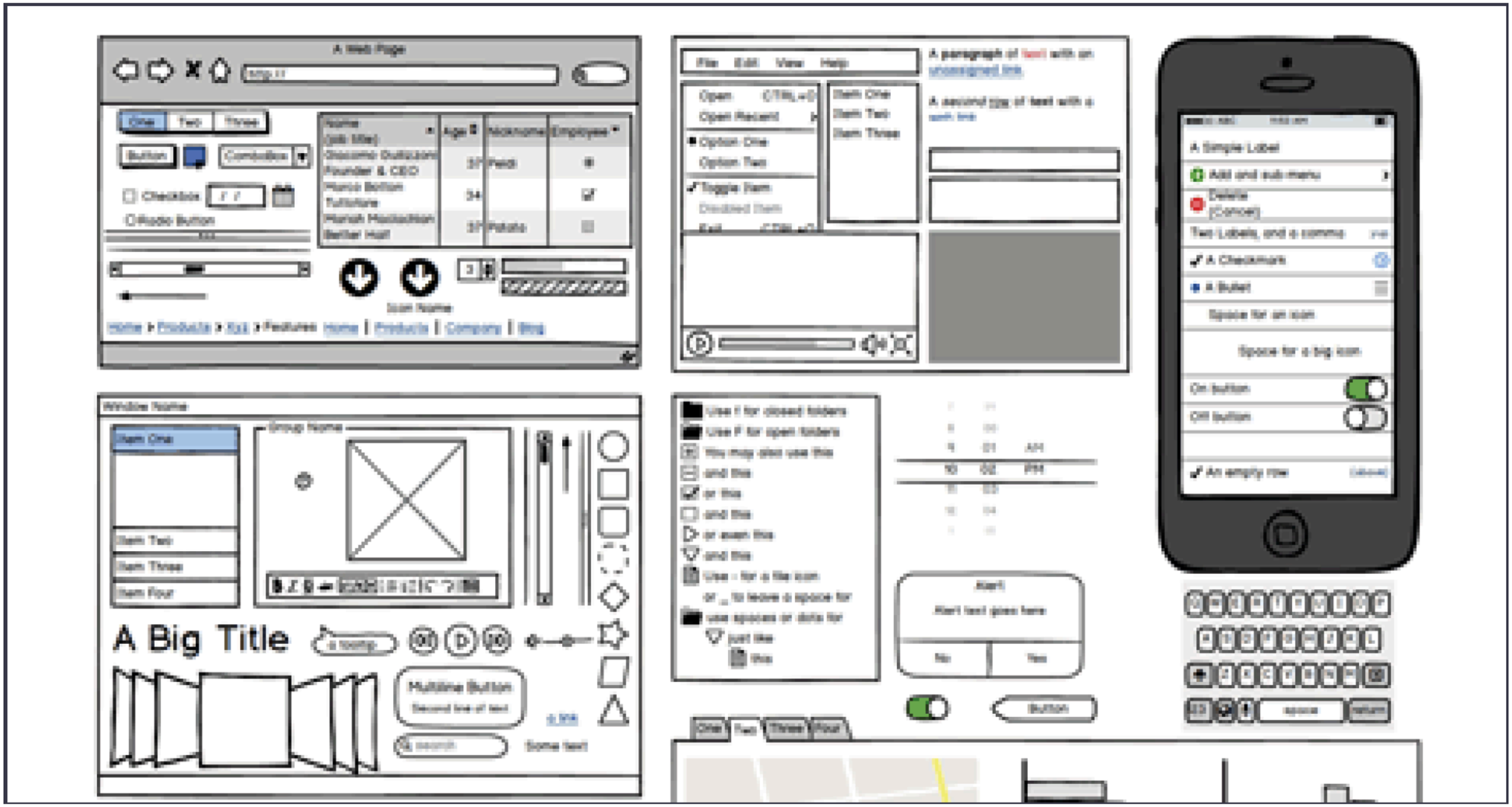
- import your sketched wireframes

- turn sketches into clickable prototypes



© Marvel

PAPER PROTOTYPING BALSAMIQ

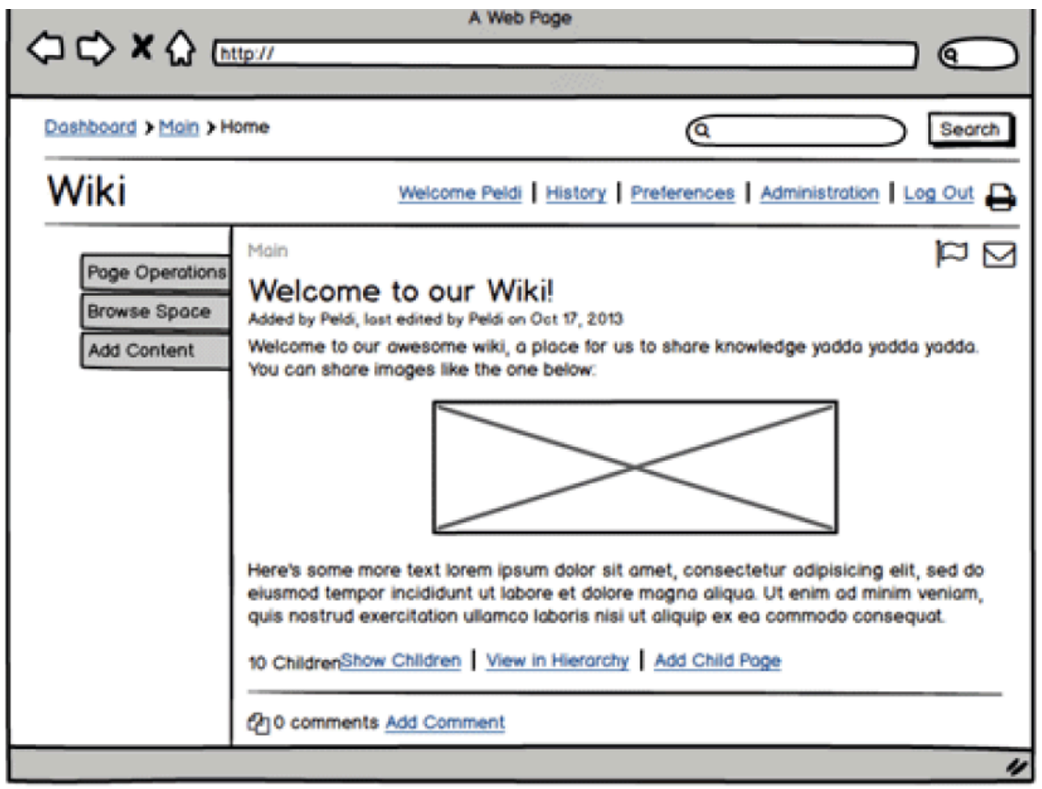


© Balsmiq

PAPER PROTOTYPING BALSAMIQ

- choose from a wide range of interface modules

- create fast low fidelity clickable prototypes



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POP VS. BALSAMIQ

POP

+ Use your own sketches

+ Fast and easy prototyping

– Limited UI elements

BALSAMIQ

+ Create new mockups directly from the
“Create New” menu

+ Simply click to edit wireframes

+ Sketch-based wireframes allow
designers to focus on functionality

+ 30 days free trial

– Limited functionality

© Alexander Wiethoff

Overview Prototyping Tools

Low Fidelity	Mid Fidelity	High Fidelity
– POP	– Sketch	– InVision
– Balsamiq	– Proto.io	– Marvel
	– Pixate	– Justinmind
	– axure	– Framer
	– Mockplus	– Adobe XD

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Overview UI Prototyping Tools

Prototyping Tools		Mockplus	Axure	Balsamiq	JustInmind	Sketch	Adobe XD (Preview	Invision
Productivity	Learning Curve	Very Easy	Complex	Very Easy	Complex	Average	Average	Easy
	Integrated Efficiency	Fast	Average	Fast	Slow	Average	Average	Fast
	Interaction Design	Fast	Average	-	Average	Plug-in Required	Fast	-
	Build Widgets	Fast	Slow	Fast	Average	Slow	Slow	-
	Device Testing	Fast	Slow	-	Average	Plug-in Required	Average	Fast
Fidelity	Visual Fidelity	Average	Average	Low	High	High	High	High
	Interactive Fidelity	Average	High	-	High	High	High	Average
Professional Skill Requirement	Product Experience	Required	Required	Required	Required	-	-	Required
	Visual Design	-	-	-	Required	Required	Required	Required
	Programming Knowledge	-	Basic Knowledge	-	-	Basic Knowledge	-	-
Sharing		Average	Great	Average	Great	-	-	Great

https://www.quora.com/What-prototype-tools-do-UX-designers-use

Video-demo

https://www.youtube.com/watch?v=1H7Ql9hmbuM

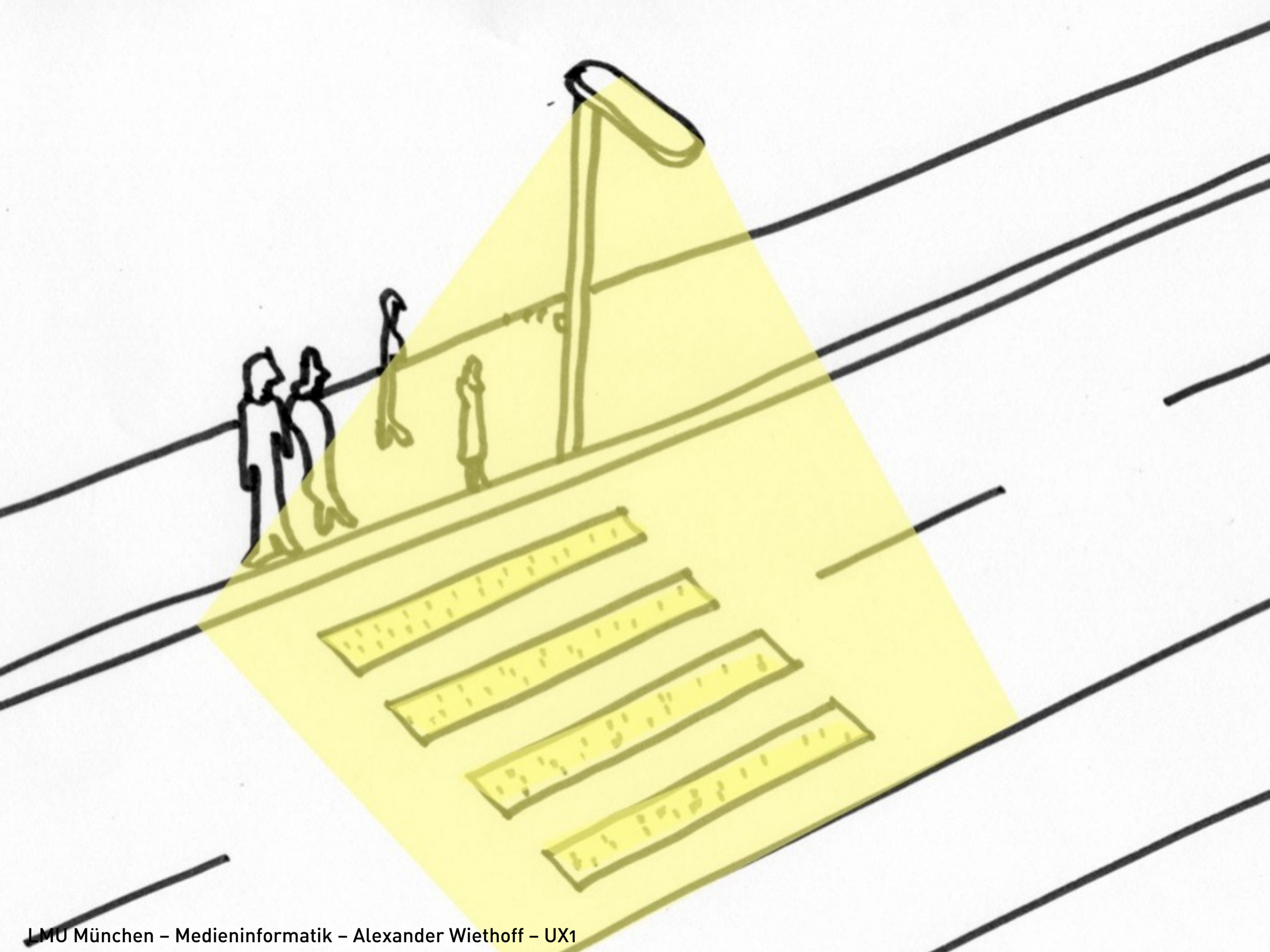
Video-Prototyping

https://icdn8.digitaltrends.com/image/gopro-karma-grip-review-2-2-1500x1000.jpg

low resolution

high fidelity

(crossing on demand)



Zebra Zone

video© CIID

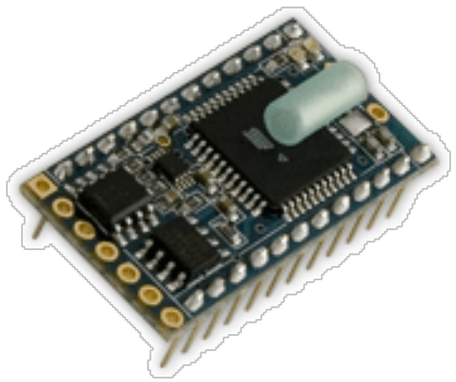
The Smoke & Mirror Approach

image© CIID

Sketching with Hardware

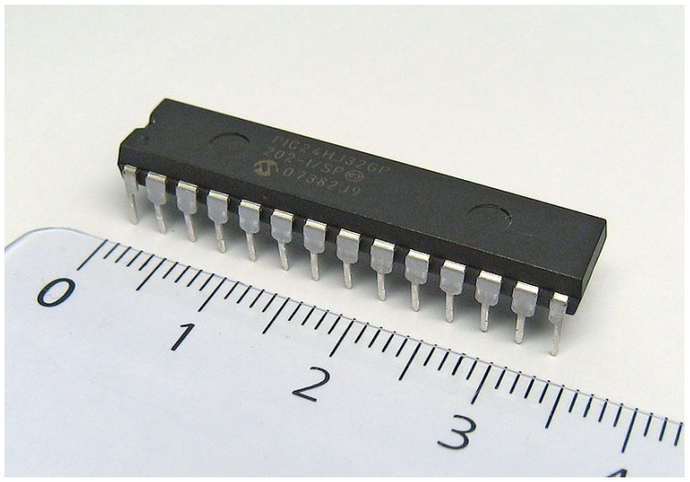
photo credits © alexander wiethoff

basic stamp



bx 24

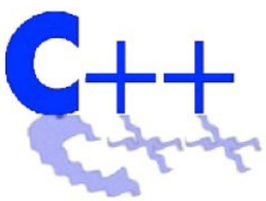
basic atom



pic

higher level

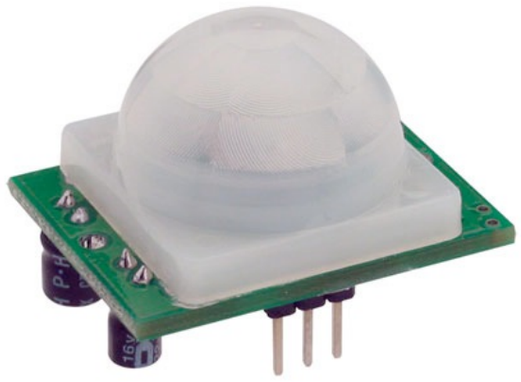
lower level



Assembly

Thermistor

Bend Sensor



PIR Sensor

photo credits © wikimedia

Force Sensor

Potentiometer

Magnet Switch

photo credits © wikimedia

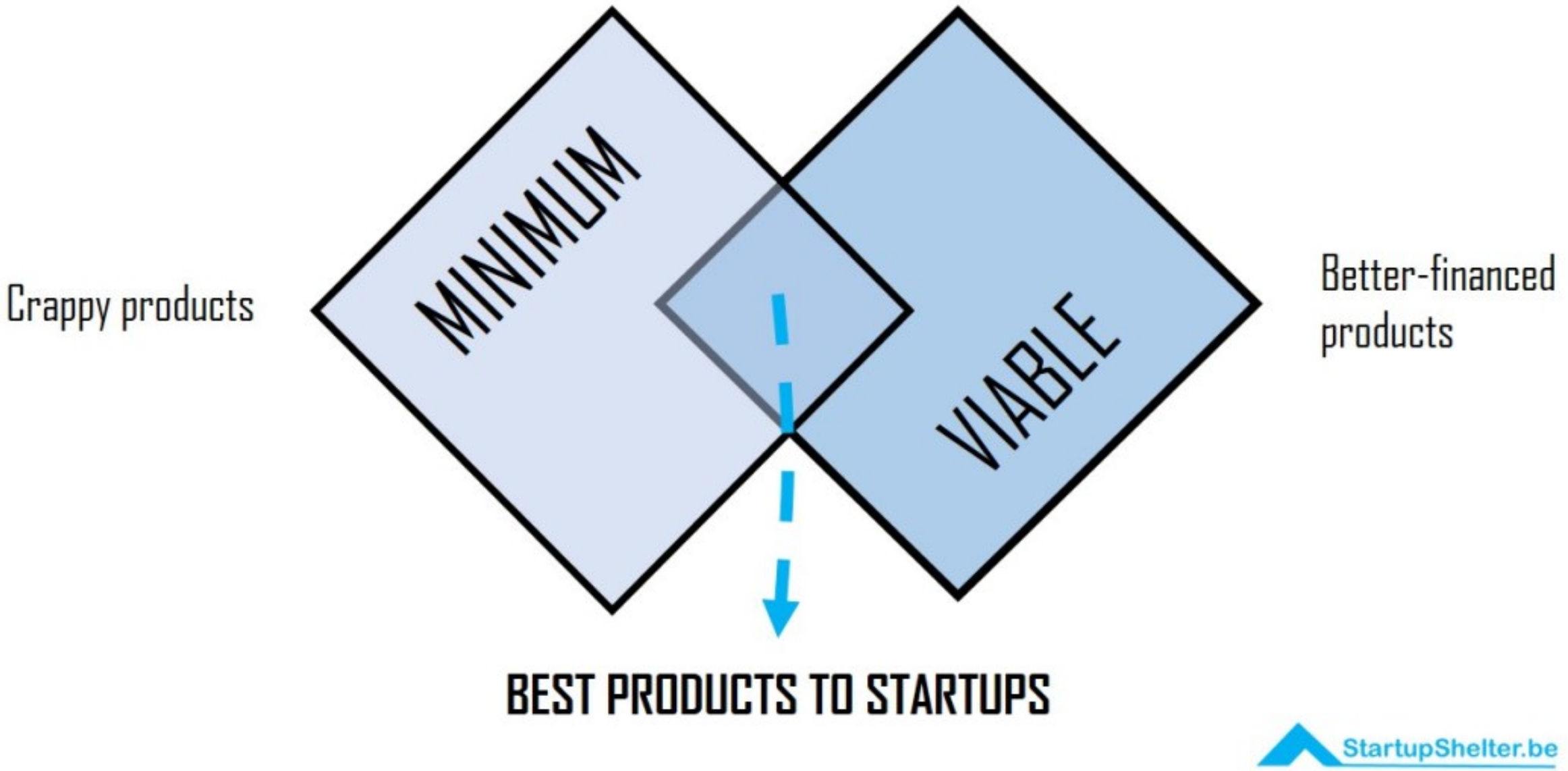
Distance IR Sensor

Touch QT Sensor

Ultrasound Sensor

photo credits © wikimedia

MINIMUM VIABLE PRODUCT



https://i2.wp.com/startupshelter.be/wp-content/uploads/2015/02/MVP-MINIMUM-VIABLE-PRODUCT.jpg?resize=1080%2C682&ssl=1

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Quick video overview

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References (Papers + books)

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[4] Mullet, K. Designing visual interfaces

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125 ways to enhance usability, influence perception, increase appeal, make better design decisions, and teach through design. Rockport Pub.

links:

www.medien.ifi.lmu.de

http://www.useit.com/papers/guerrilla_hci.html

Homework

Create your first low fidelity prototype

Each group has to create one functional low fidelity prototype with multiple use cases (one use case per student) to click through. Record a short video-clip demonstrating the "implemented" functionalities and interconnections of the single wireframes.