

Prototyping UX From Sketch to Product

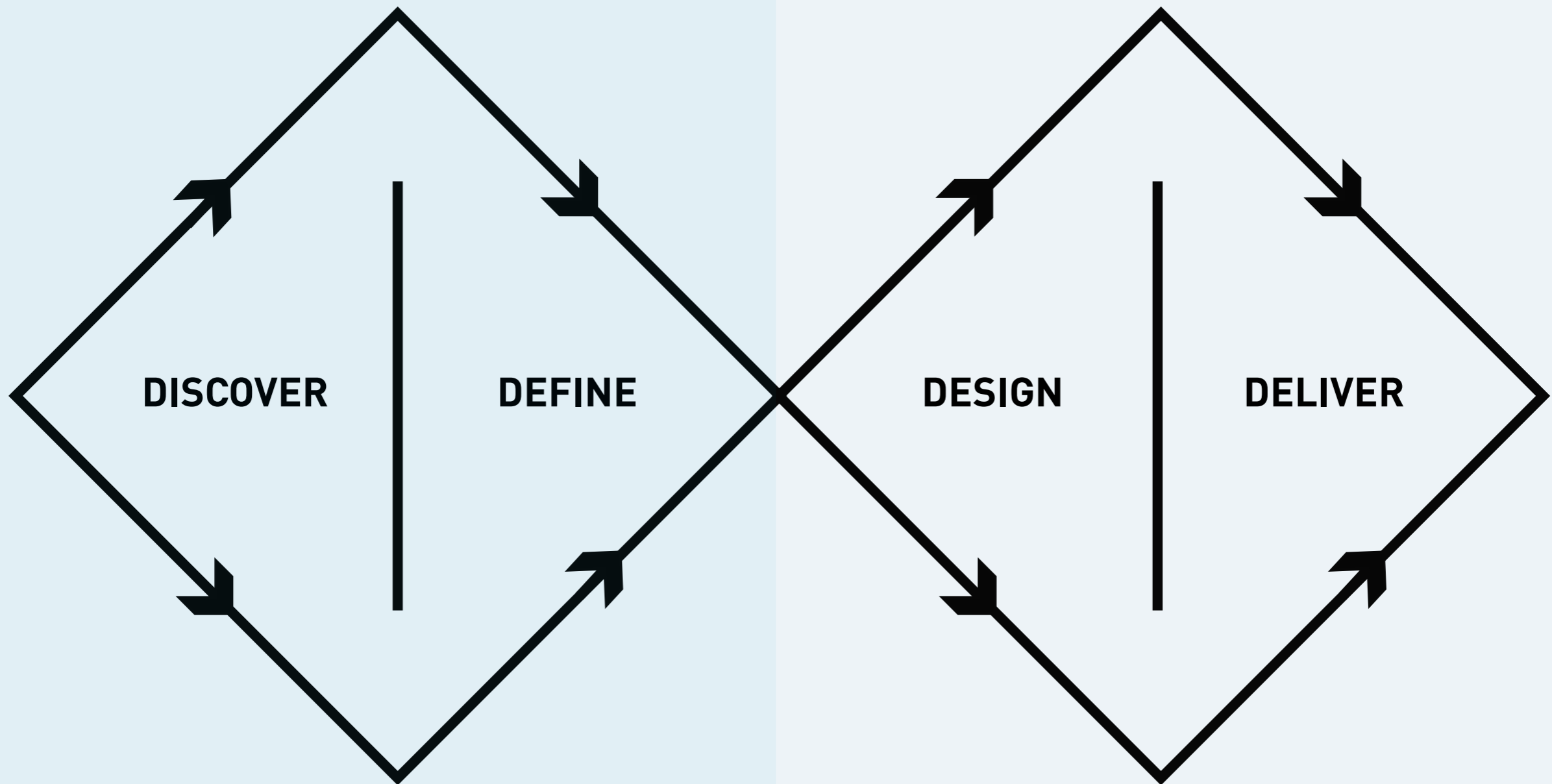
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Media Informatics Lab (MI)

Human-Computer Interaction (HCI) 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]

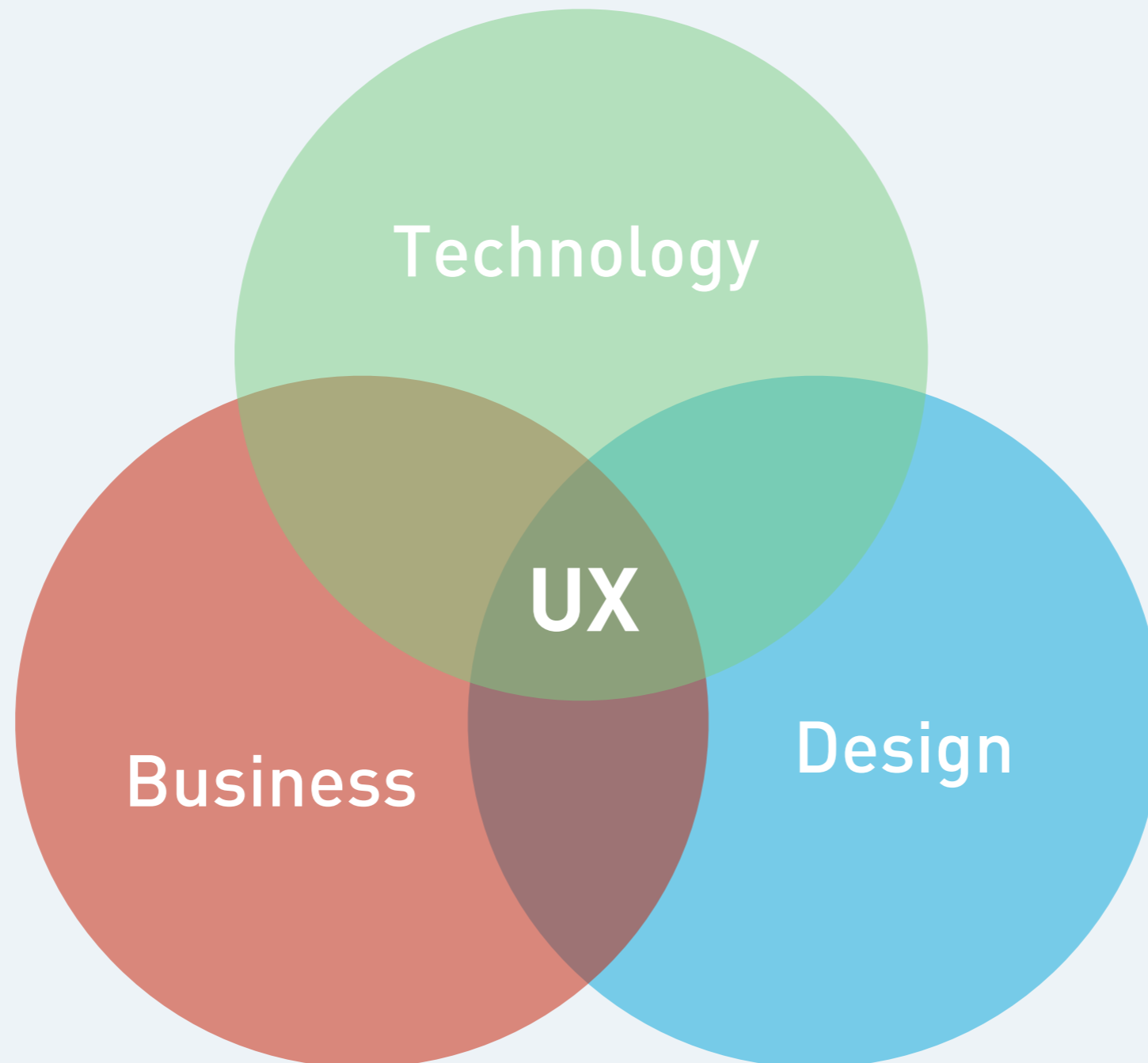
Three main goals

- 1.) Exploring a context
- 2.) Examining design problems
- 3.) Evaluating solutions

Three main contexts

- 1.) Screen based interactions
- 2.) Interactive products
- 3.) Technology enabled services

User Experience Design



role

For the Designer:

Exploration
Visualisation
Feasibly
Inspiration
Collaboration

look 'n' feel

For the End User:

Effectiveness / Usefulness
A change of viewpoint
Usability
Desirability

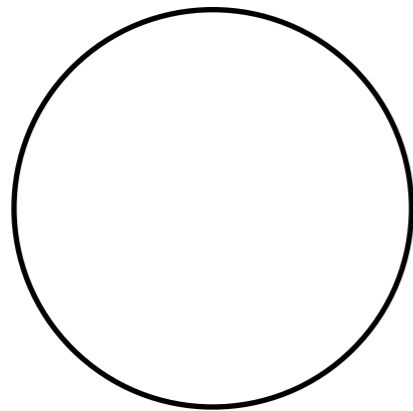
implementation

For the Producer:

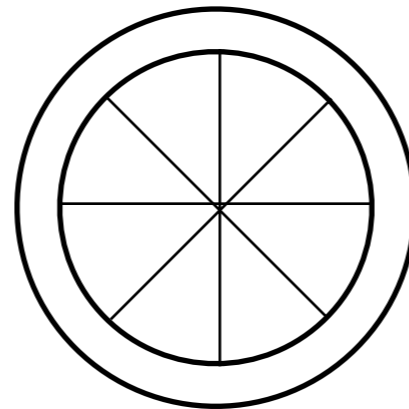
Conviction
Specification
Benchmarking

source: [5]

Fidelity v. Resolution



low resolution
low fidelity



high resolution
low fidelity

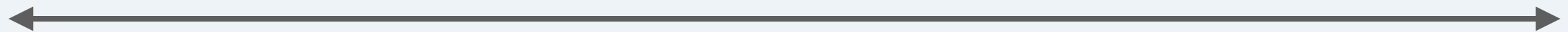


high resolution
high fidelity

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

Low Fidelity

High Fidelity



Open Discussion

Sharp Opinions

Prompting Required

Self Explanatory

Quick and Dirty

Deliberate and Refined

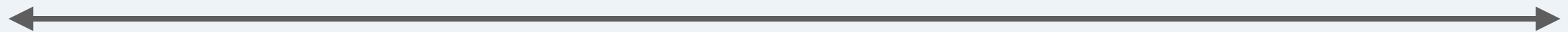
Early Validation

Concrete Ideas

source: [5,6]

Low Resolution

High Resolution



Less Details

More Details

Focus on core interactions

Focus on the whole

Quick and Dirty

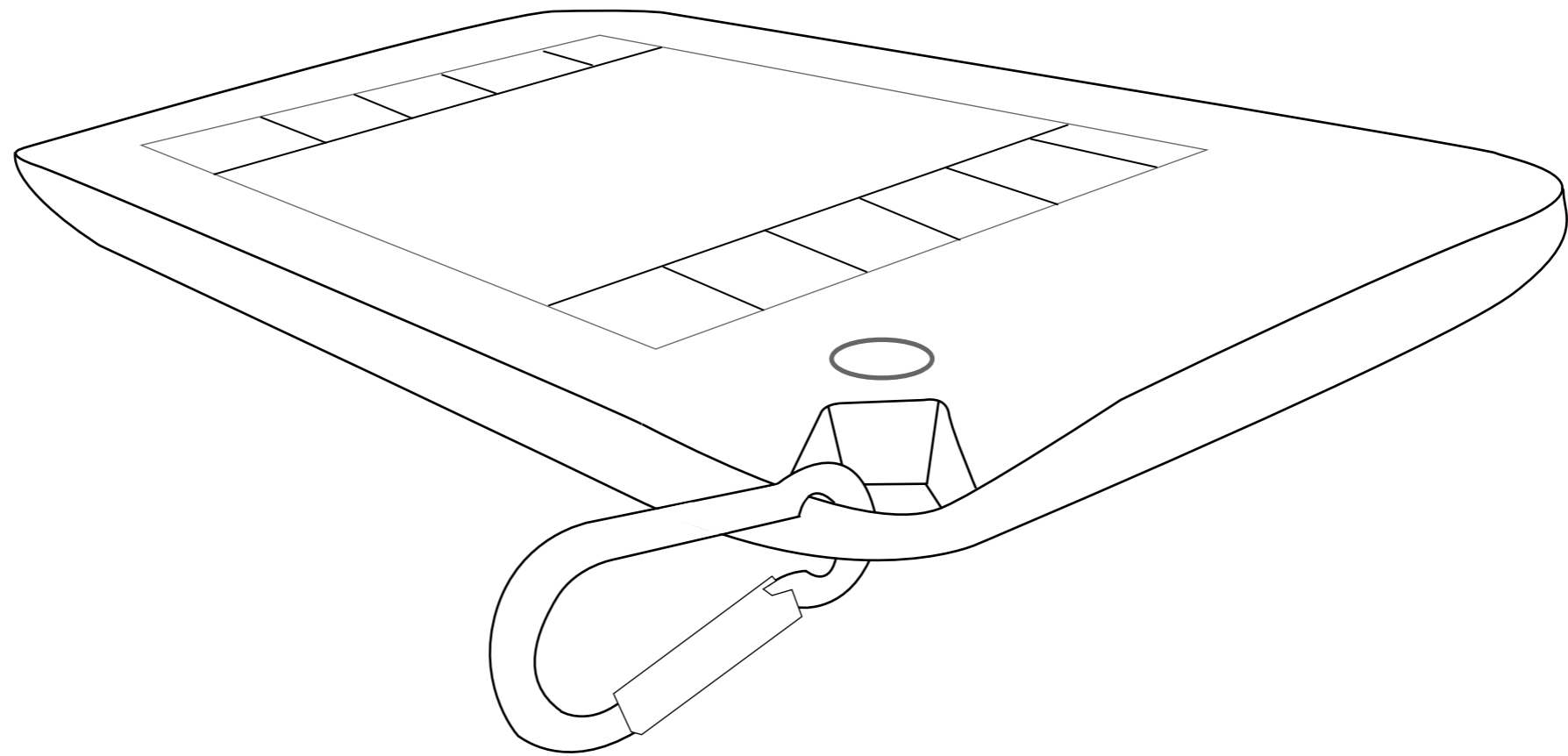
Deliberate and Refined

Early Validation

Concrete Ideas

source: [5,6]

1st Iteration
low-res/low-fi



source: [5,6]

4th Iteration
high-res/high-fi



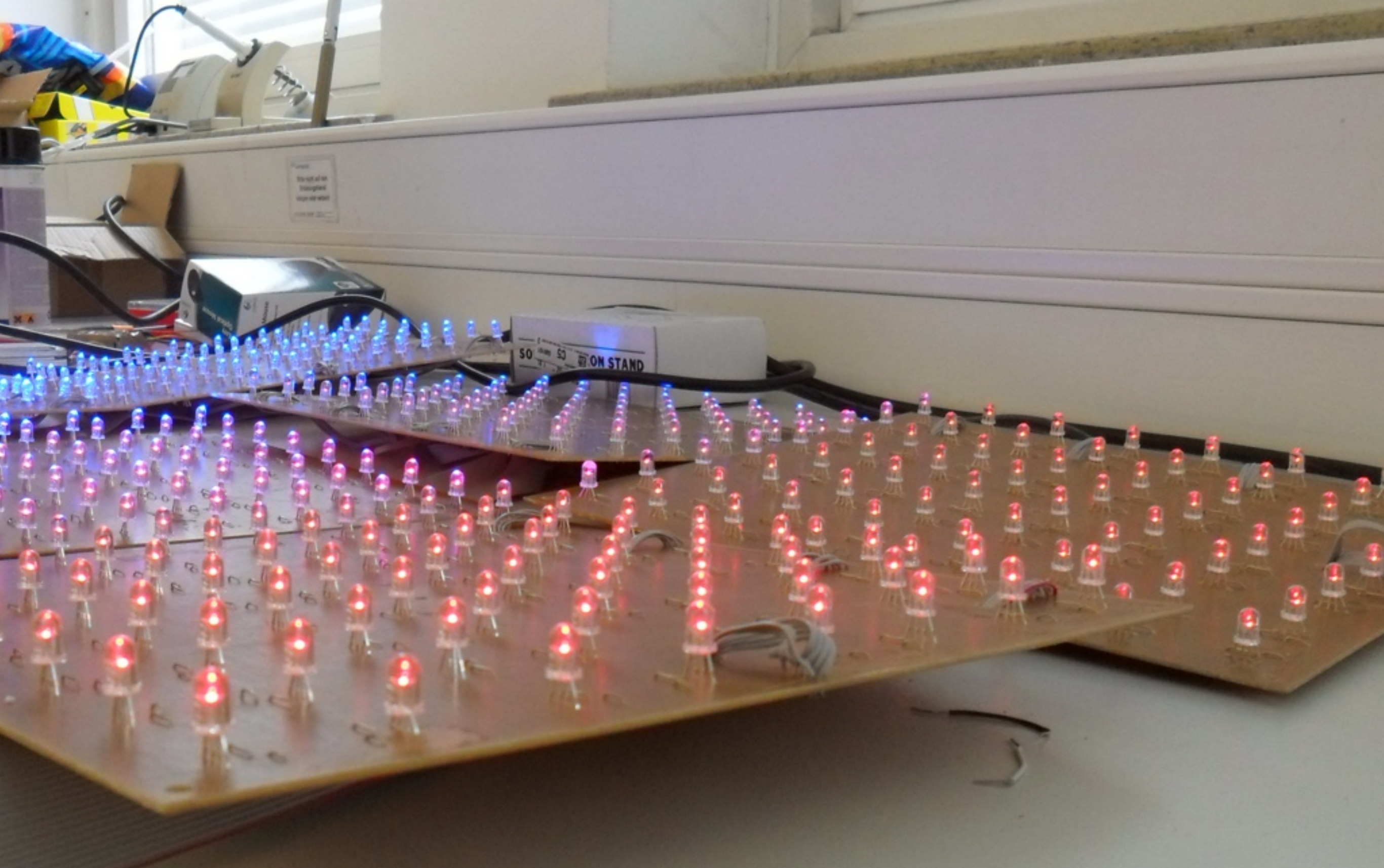
source: [5,6]

Some Examples from Design Workshops

@ LMU Medieninformatik
+ 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



Pure Air



Dirt Buster



Recipe Printer



HoverMeasure

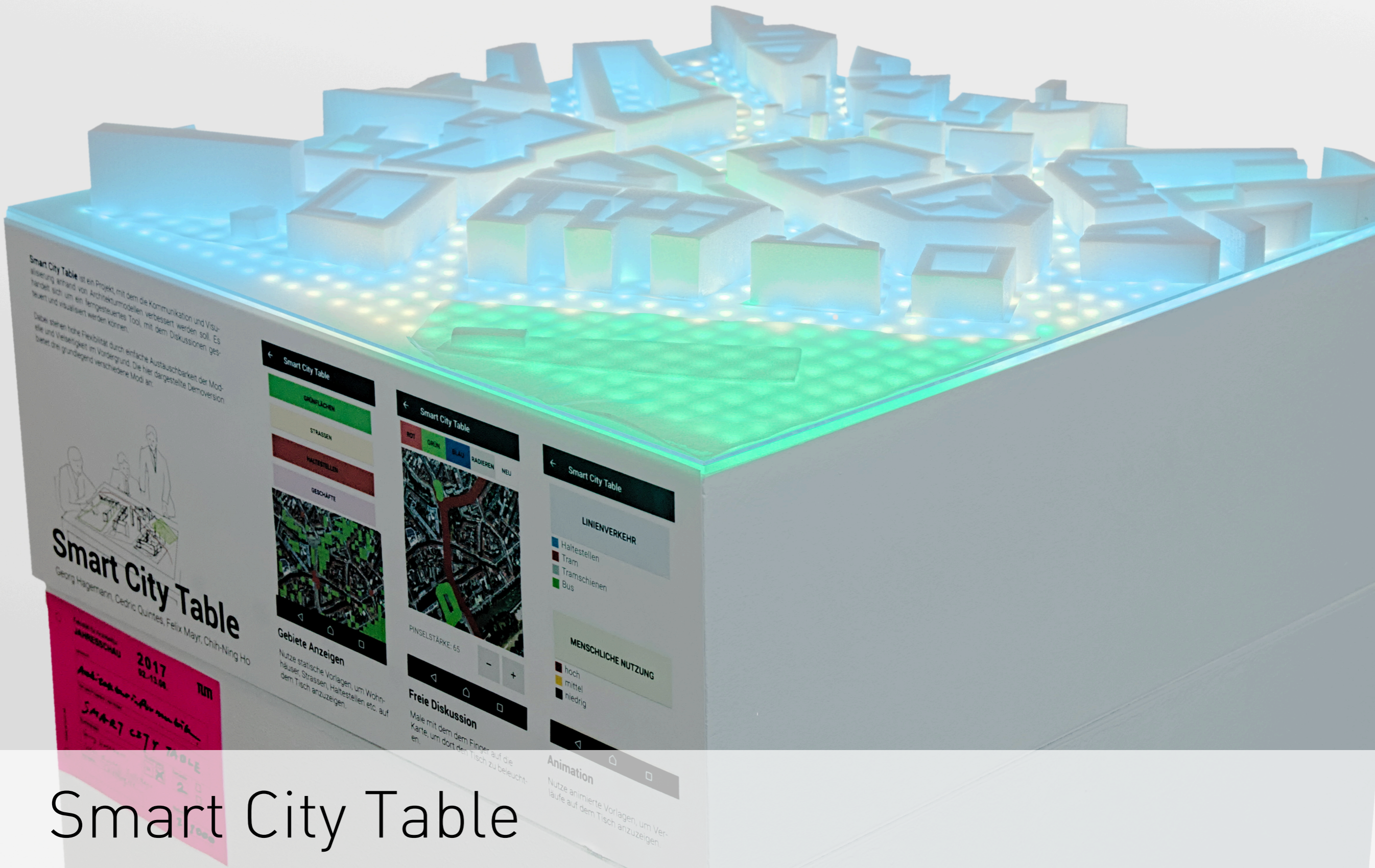
Design Workshop II

in conjunction with Gewofag Munich

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



The Mapped Show



Smart City Table ist ein Projekt, mit dem die Kommunikation und Visualisierung anhand von Architekturmodellen verbessert werden soll. Es handelt sich um ein ferngesteuertes Tool, mit dem Diskussionen gesteuert und visualisiert werden können. Dabei stehen hohe Flexibilität durch einfache Austauschbarkeit der Modelle und Vielseitigkeit im Vordergrund. Die hier dargestellte Demoversion bietet die grundlegenden verschiedenen Modi an.

Smart City Table
Georg Hagemann, Cedric Quintes, Felix Mayr, Chih-Ning Ho

Smart City Table

- GRÜNLÄCHEN
- STRASSEN
- HALTESTELLEN
- GESCHÄFTE

Gebiete Anzeigen

Nütze statische Vorlagen, um Wohnhäuser, Strassen, Haltestellen etc. auf dem Tisch anzuzeigen.

Smart City Table

ROT GRÜN BLAU RADIEREN NEU

PINSELSTÄRKE: 65

Freie Diskussion

Male mit dem Finger auf die Karte, um dort den Tisch zu beleuchten.

Smart City Table

LINIENVERKEHR

- Haltestellen
- Tram
- Tramschienen
- Bus

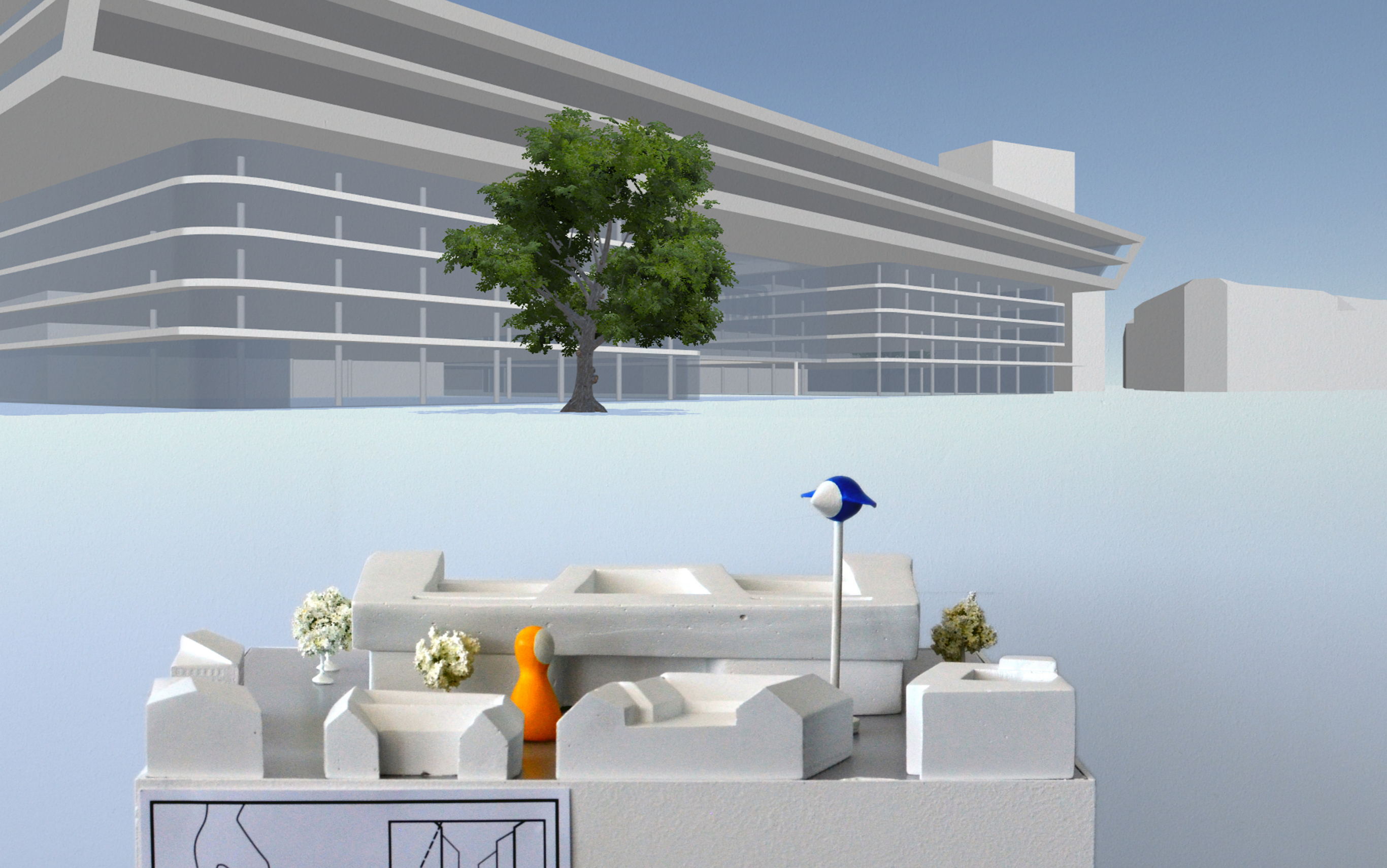
MENSCHLICHE NUTZUNG

- hoch
- mittel
- niedrig

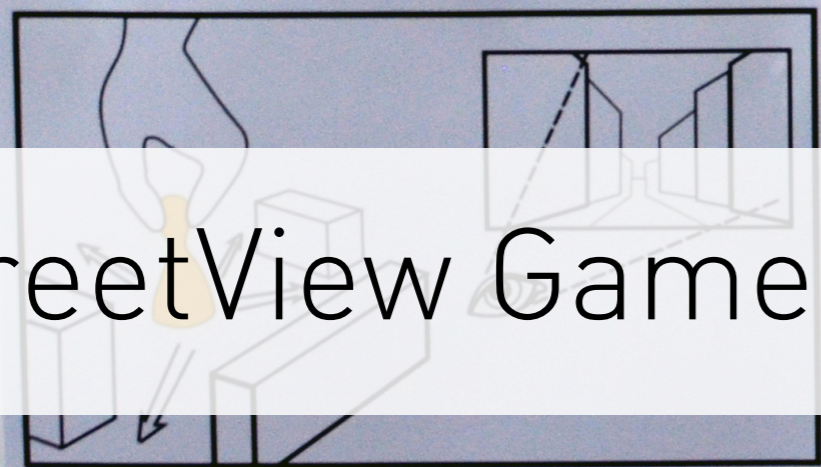
Animation

Nütze animierte Vorlagen, um Verläufe auf dem Tisch anzuzeigen.

Smart City Table



StreetView Game

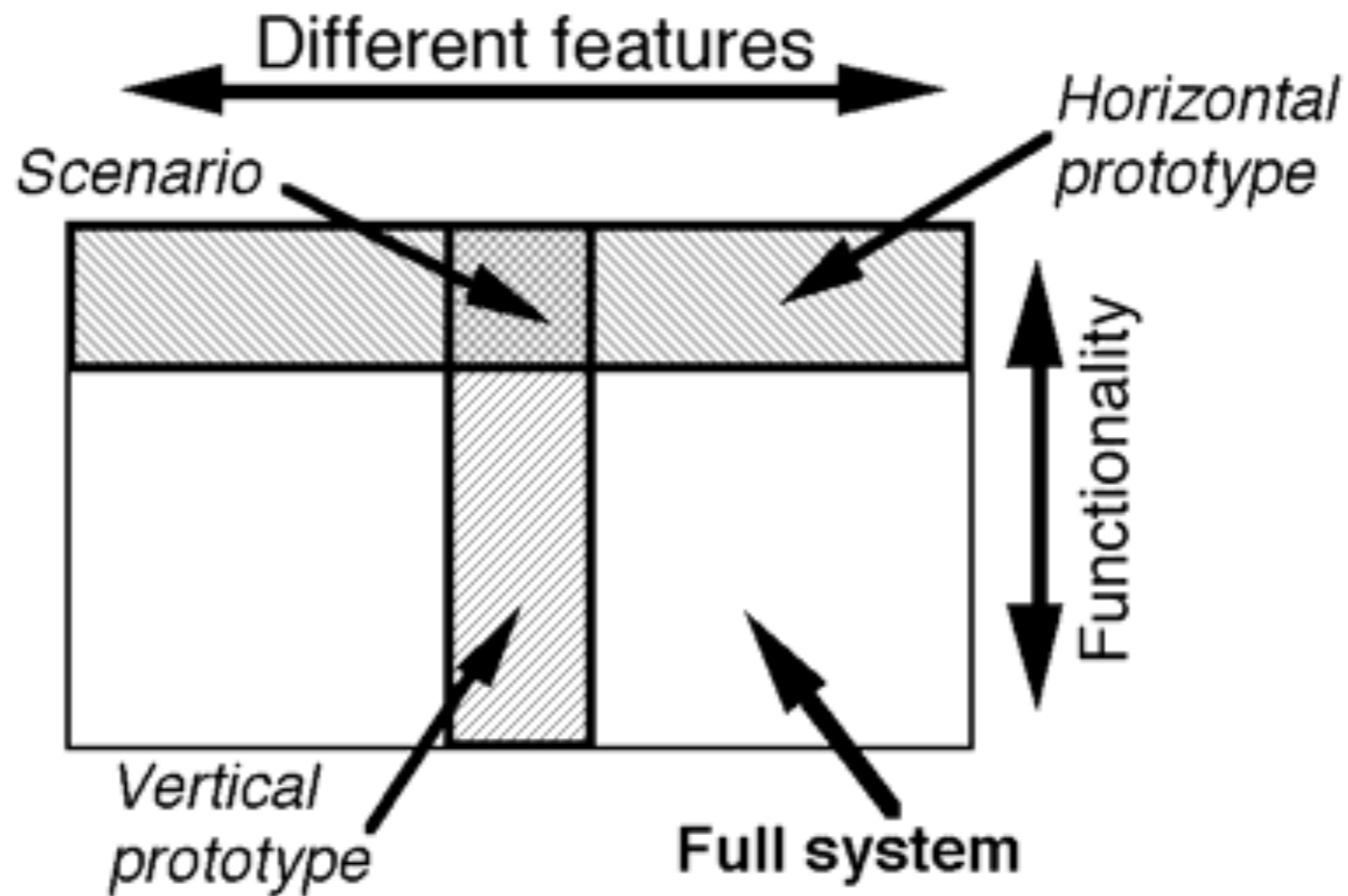




StreetView Game

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.

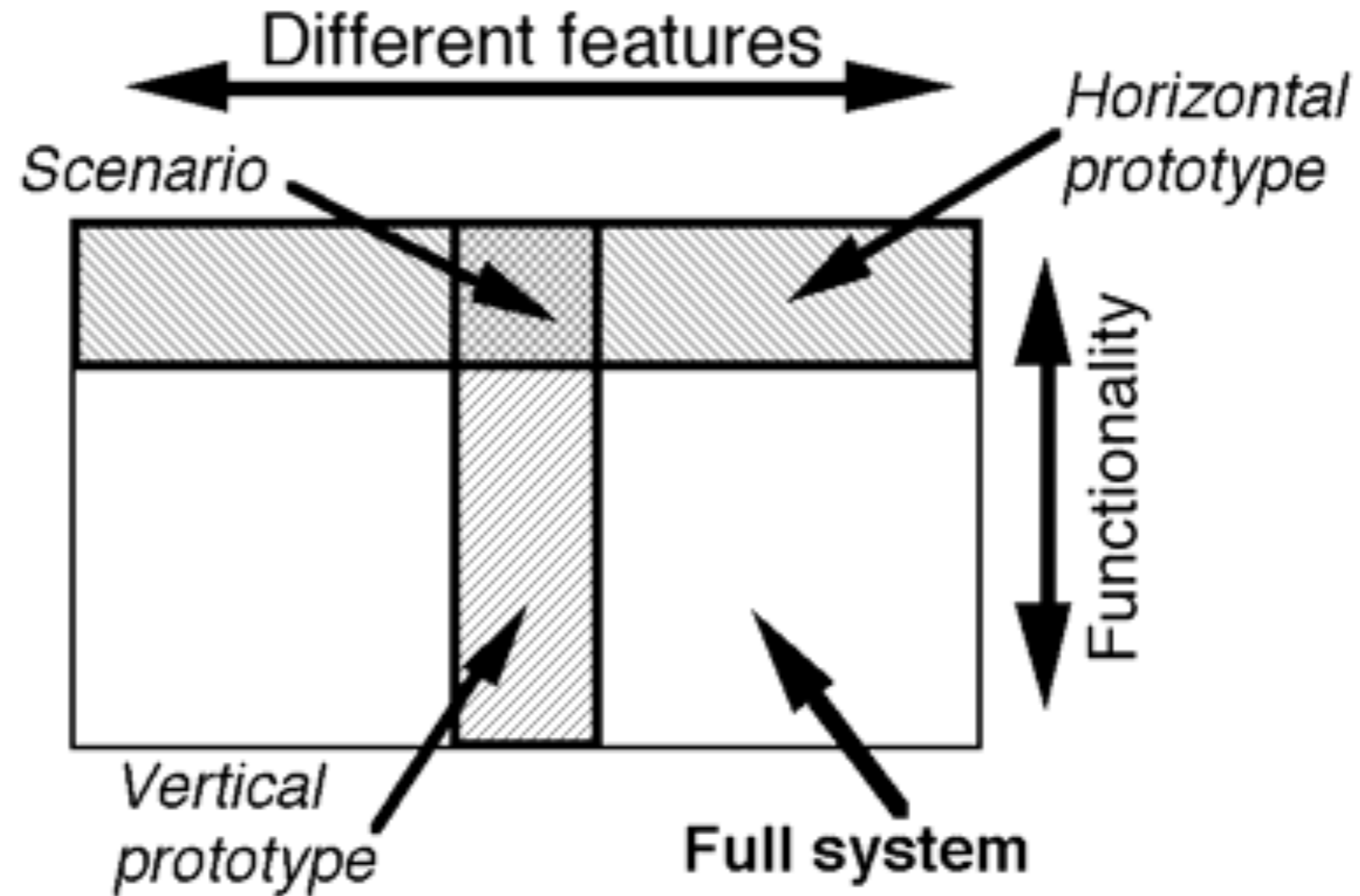
Steve Jobs



Horizontal vs. Vertical Prototype

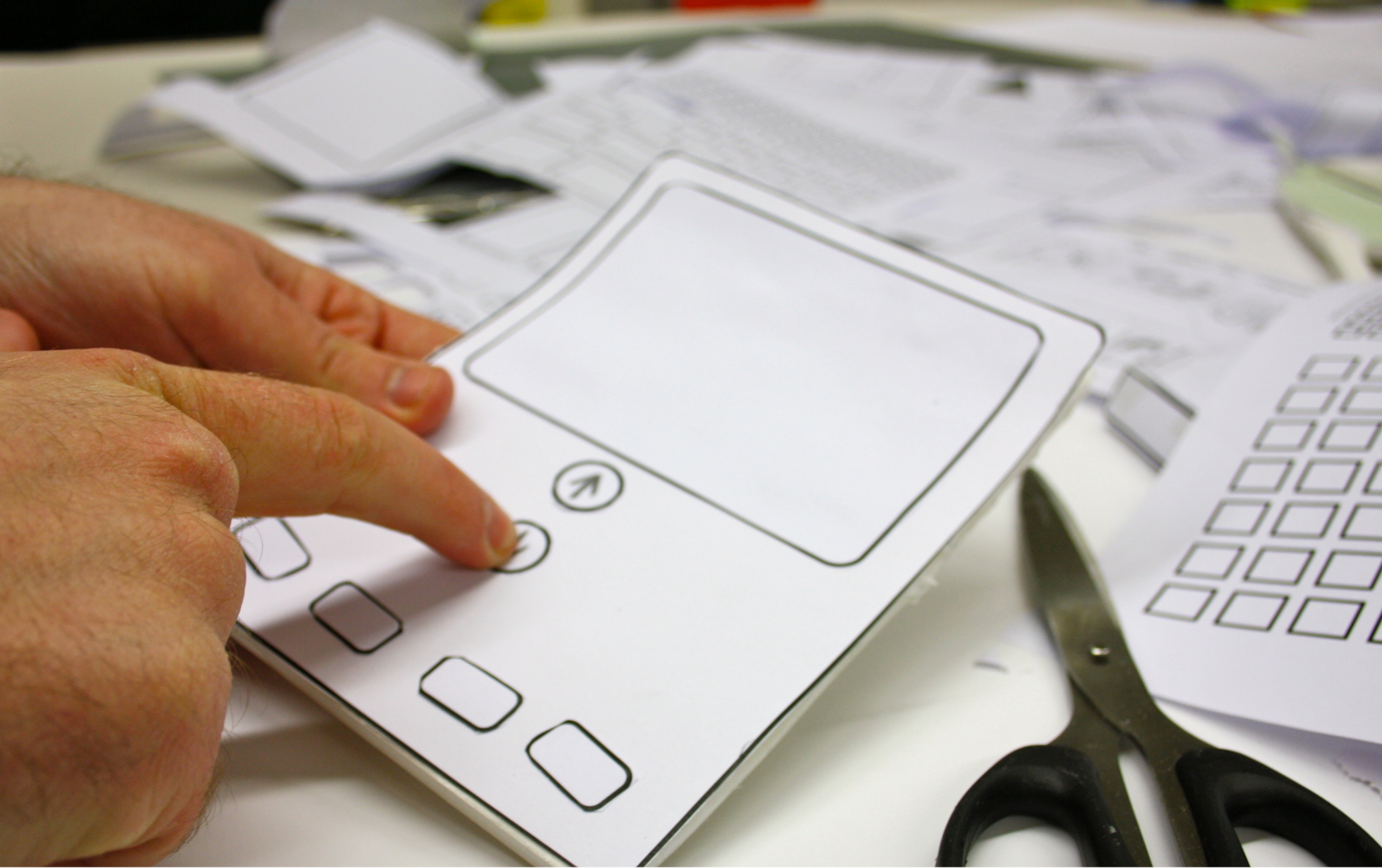


80/20 rule



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

Wireframes

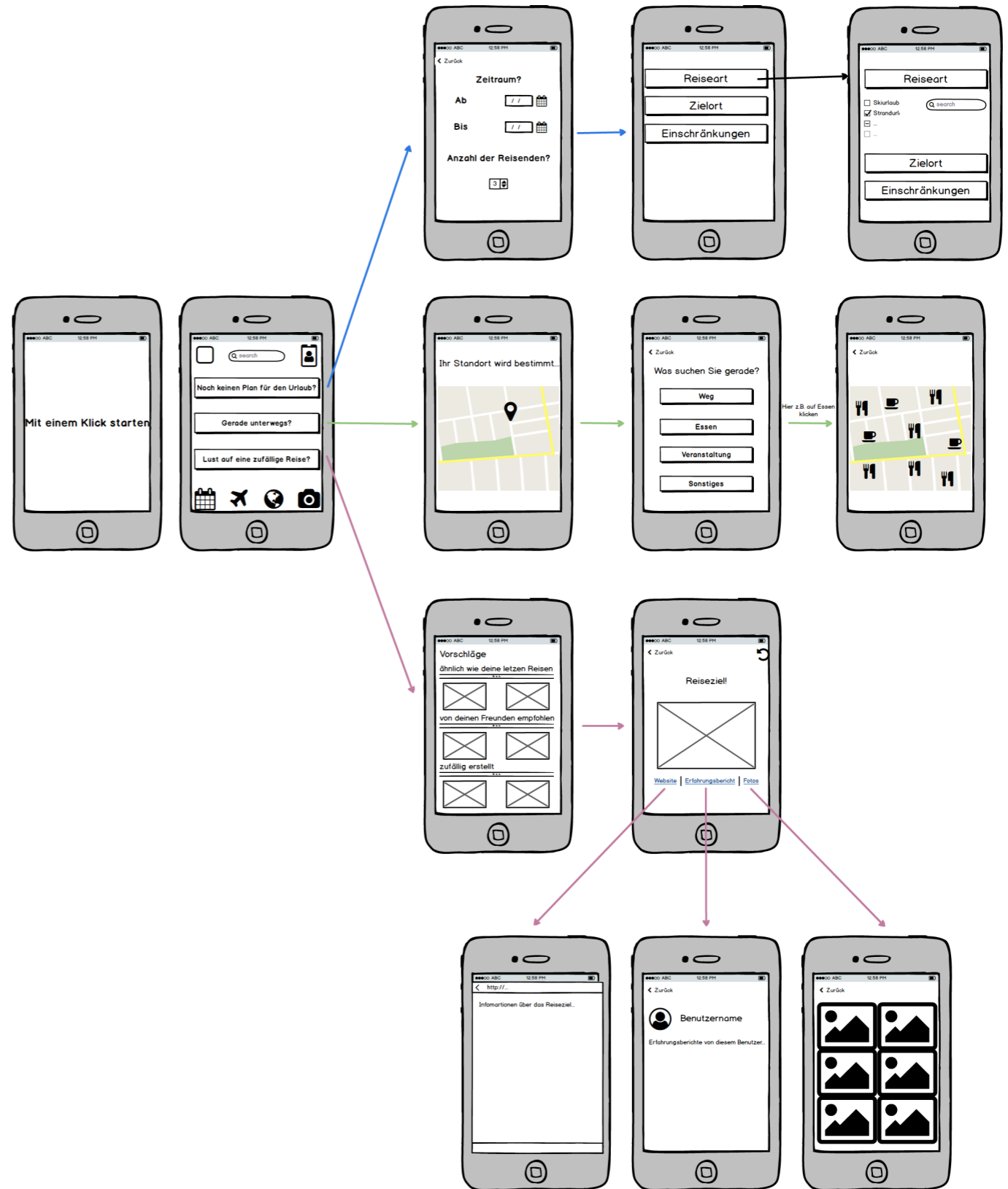
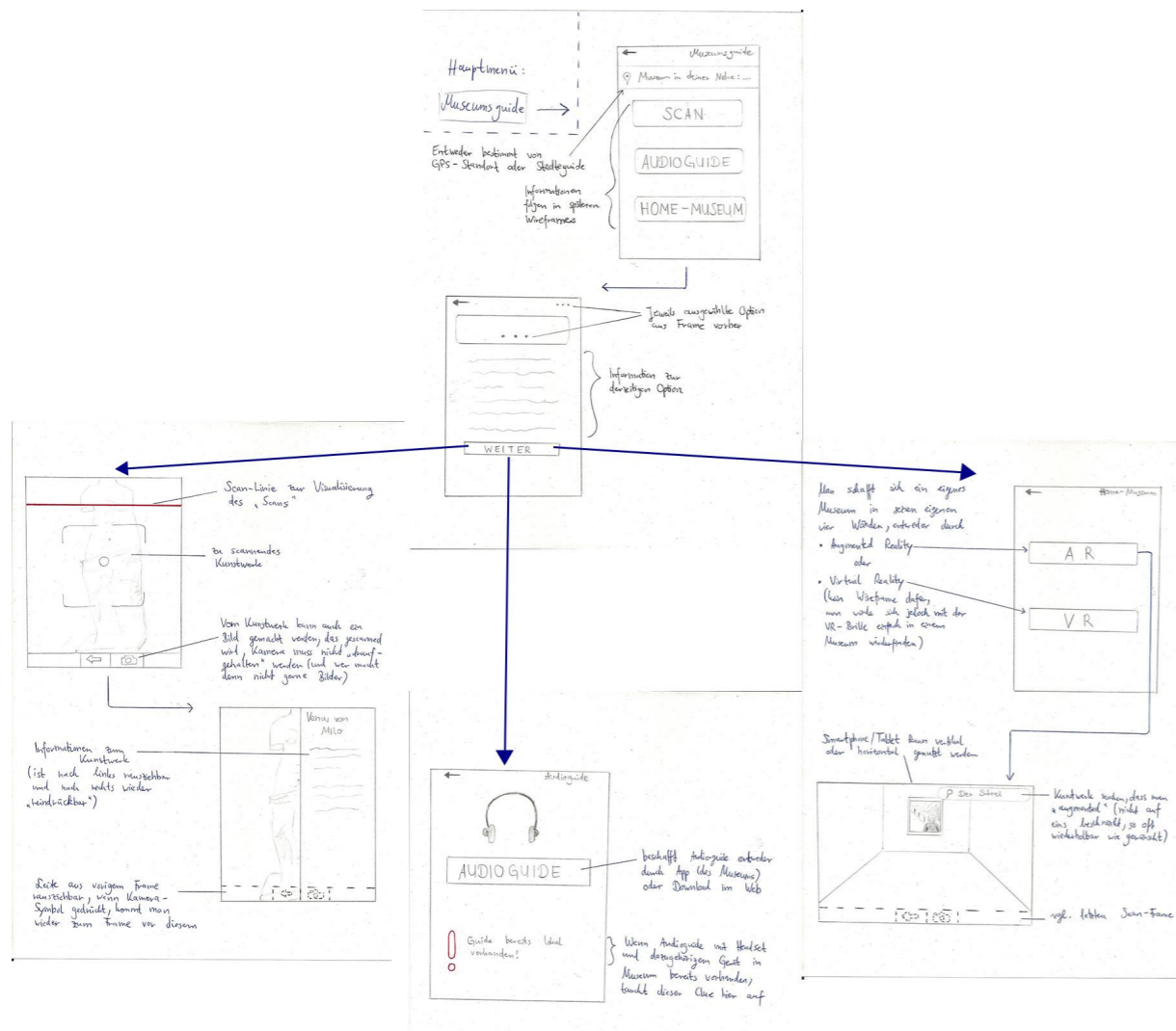
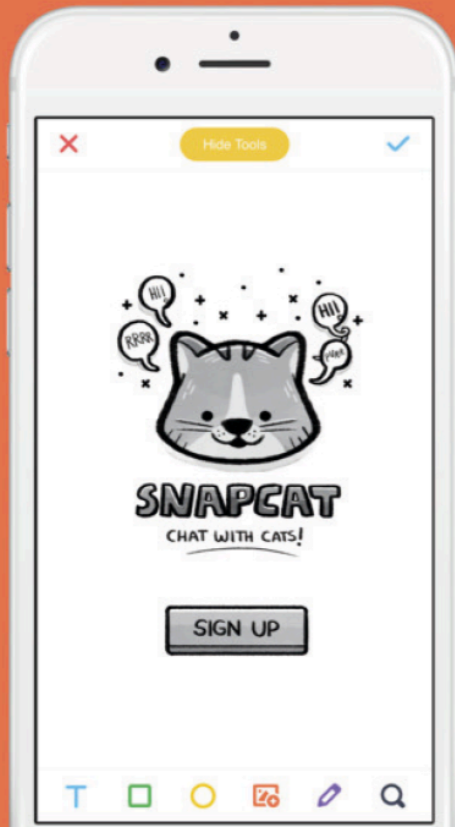


Diagram showing a table with columns for ID, Name, Address, and other details. The table contains several rows of data, including entries for 'Vishal' and 'Anshika'.

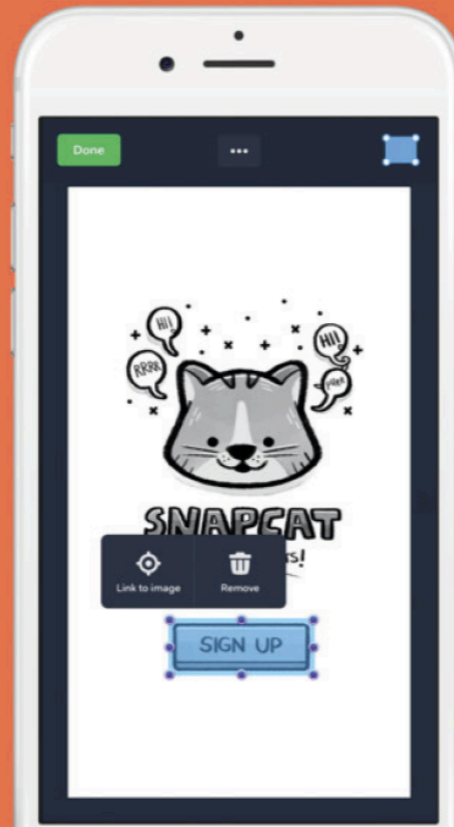
ID	Name	Address	Other Details
1	Vishal	123 Main St	City: New York
2	Anshika	456 Park Ave	City: New York
3			
4			
5			
6			
7			
8			
9			
10			

PAPER PROTOTYPING POP

Take photos of your sketches or design in the app



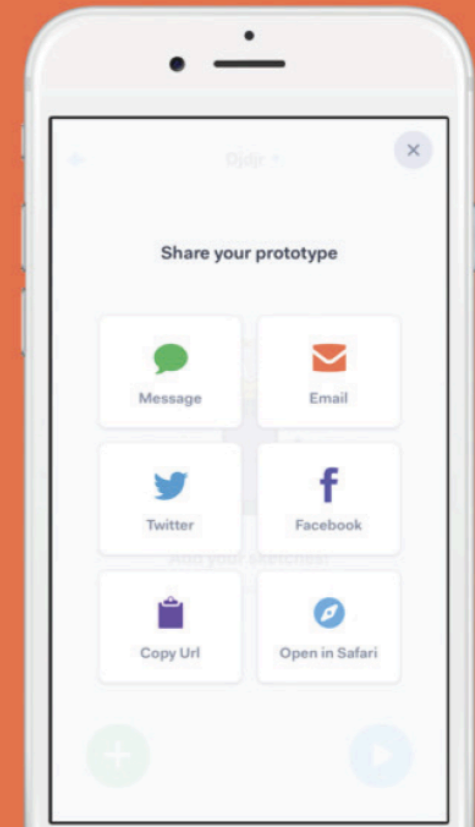
Link your screens together using hotspots



Play with your app idea or test it out on friends



Or share with others by using Facebook, Twitter, Email...

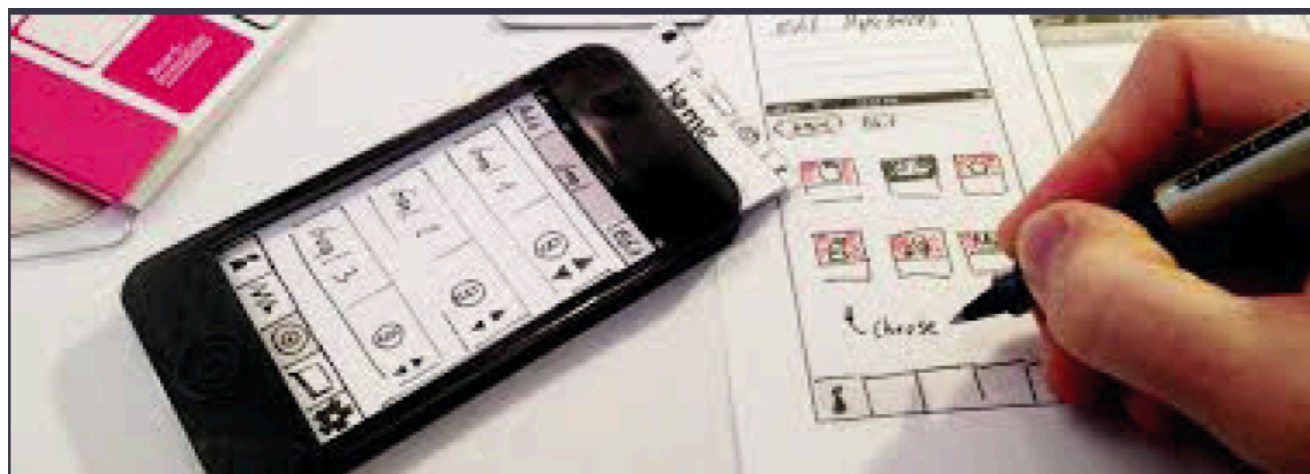


Video-demo

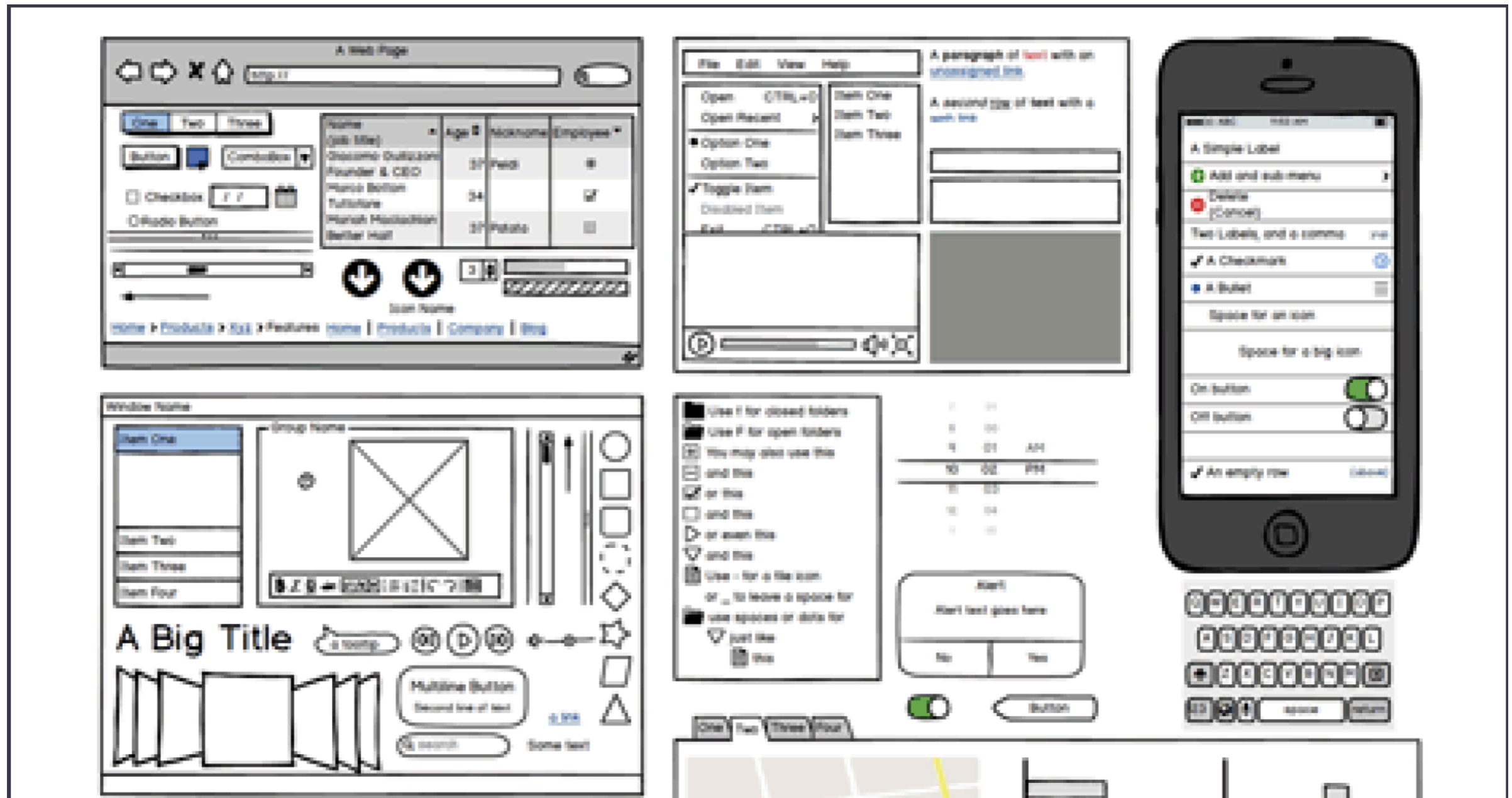
<https://www.youtube.com/watch?v=EGp20lVwUa8>

PAPER PROTOTYPING POP

- choose from a wide range of interface modules
- import your sketched wireframes
- turn sketches into clickable prototypes

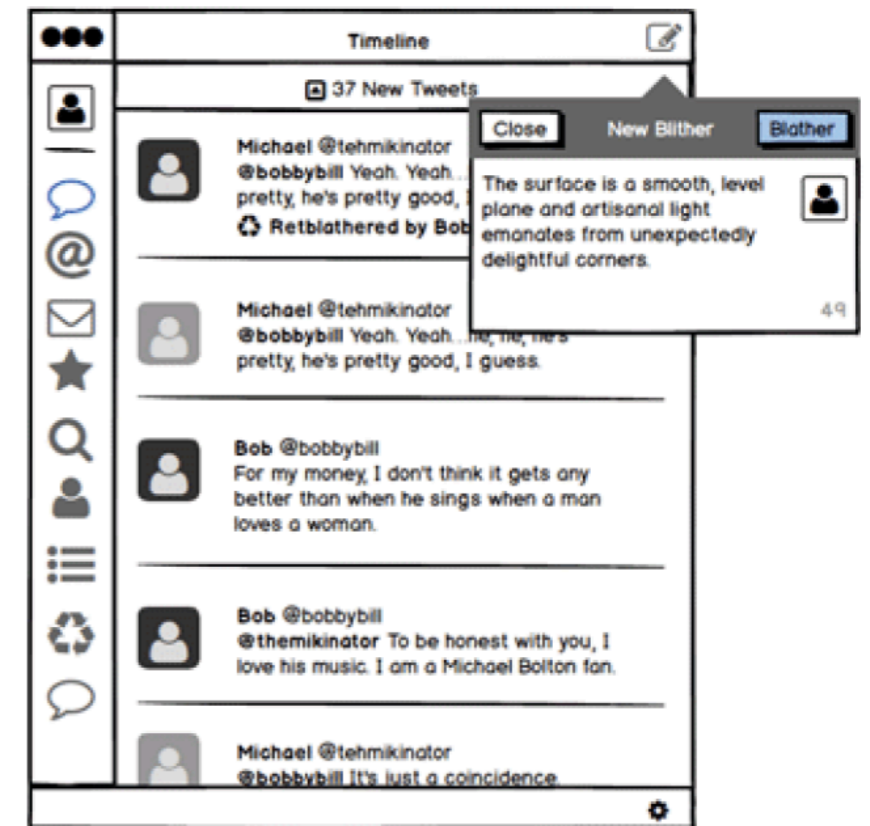
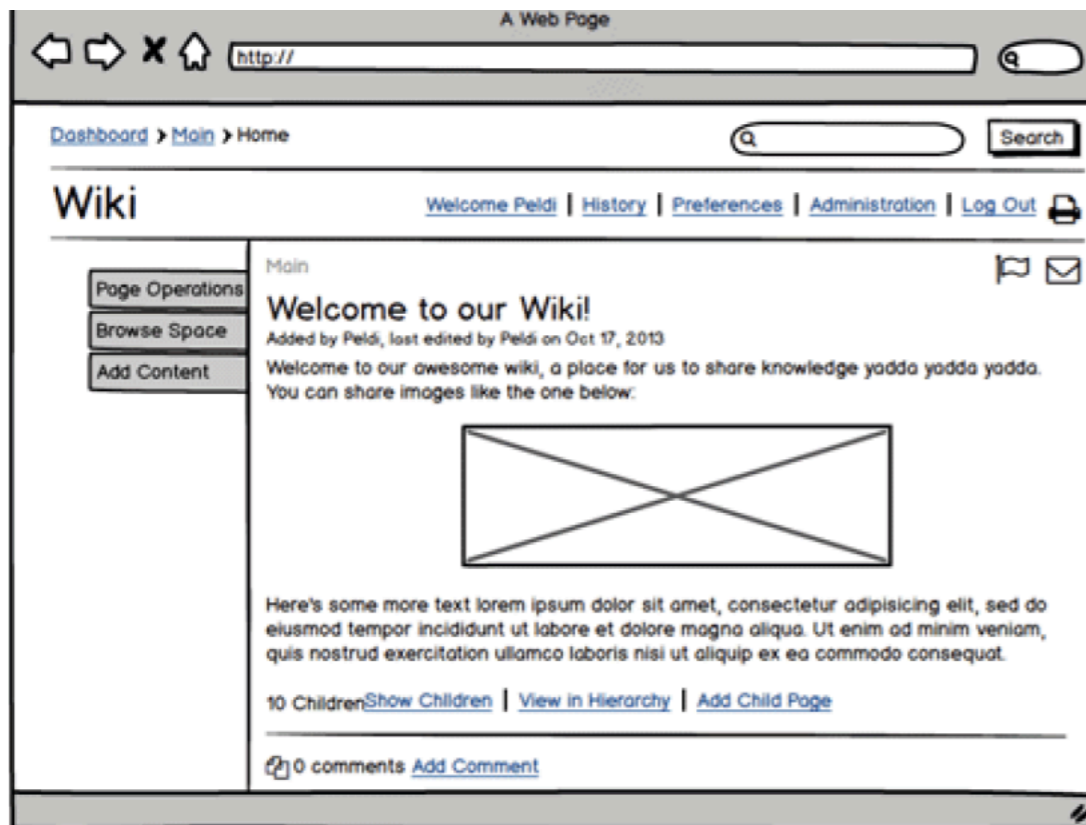


PAPER PROTOTYPING BALSAMIQ



PAPER PROTOTYPING BALSAMIQ

- choose from a wide range of interface modules
- create fast low fidelity clickable prototypes



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

Overview Prototyping Tools

Low Fidelity

- POP
- Balsamiq

Mid Fidelity

- Sketch
- Proto.io
- Pixate
- axure
- Mockplus

High Fidelity

- InVision
- Marvel
- Justinmind
- Framer
- Adobe XD

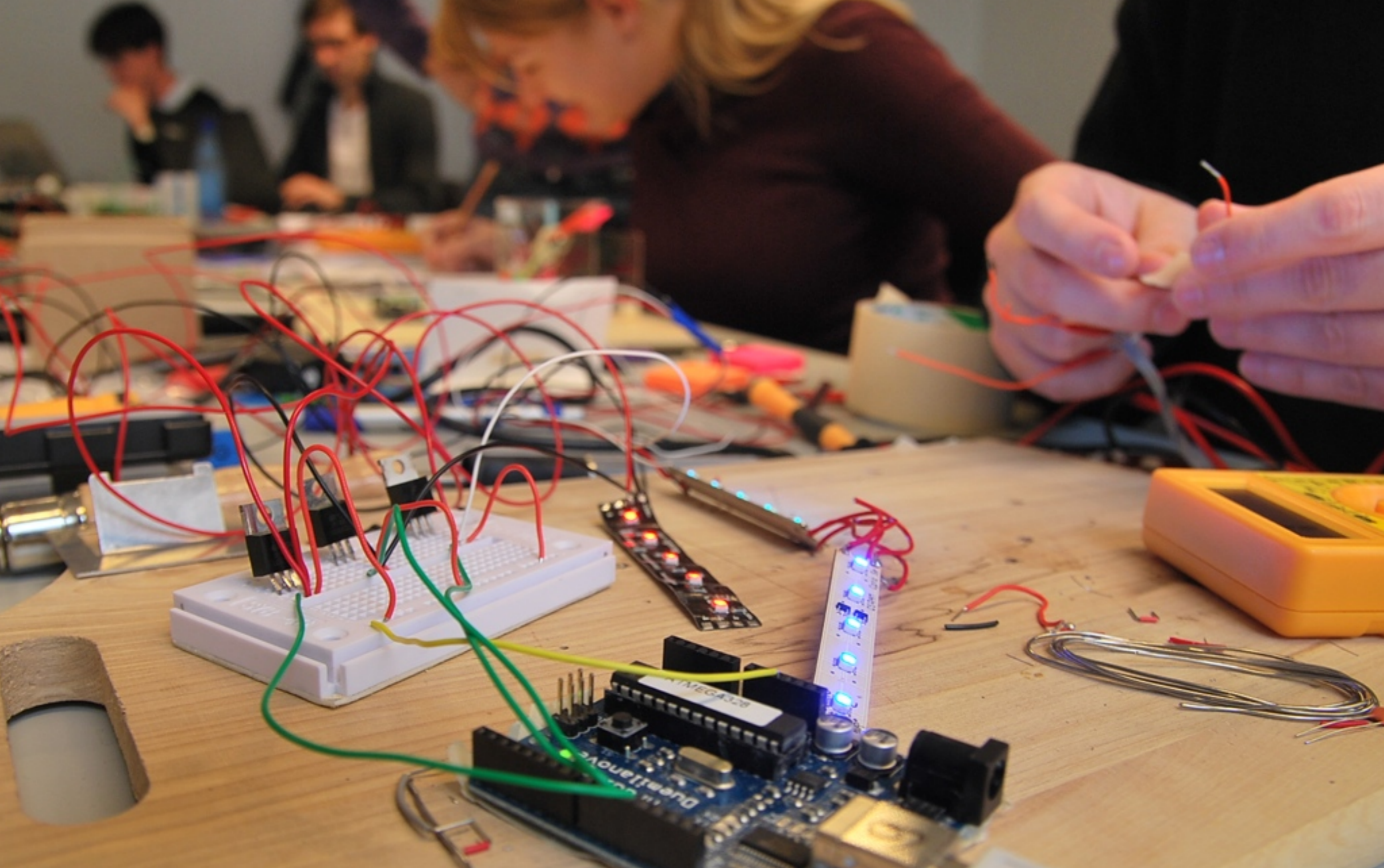
Overview UI Prototyping Tools

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

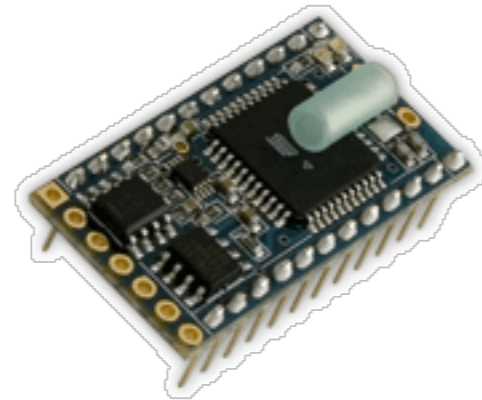
<https://www.youtube.com/watch?v=1H7Ql9hmbuM>



Sketching with Hardware



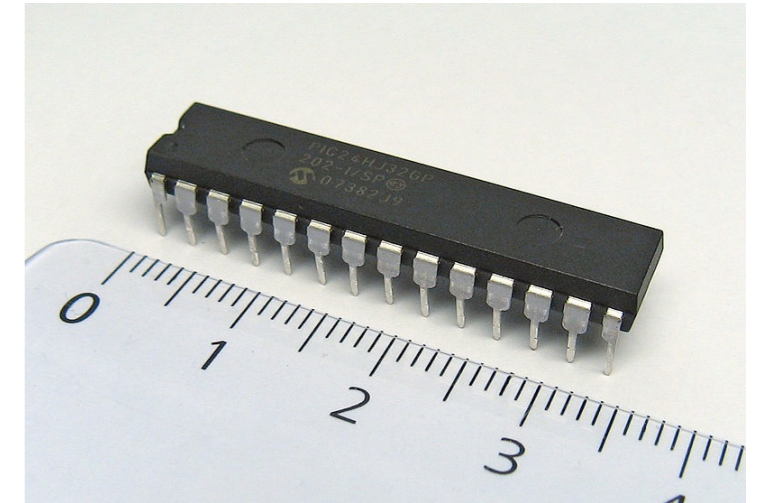
basic stamp



bx 24



basic atom



pic



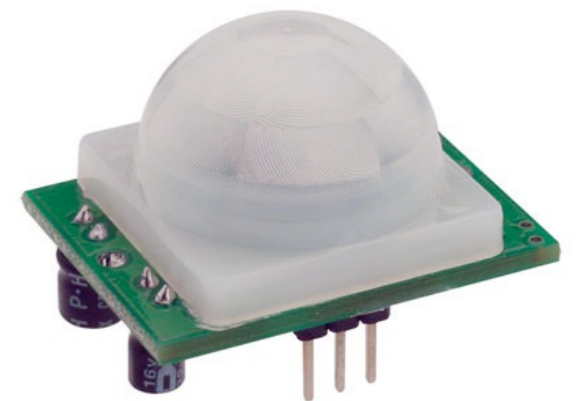
Assembly



Thermistor



Bend Sensor



PIR Sensor



Force Sensor



Potentiometer



Magnet Switch



Distance IR Sensor

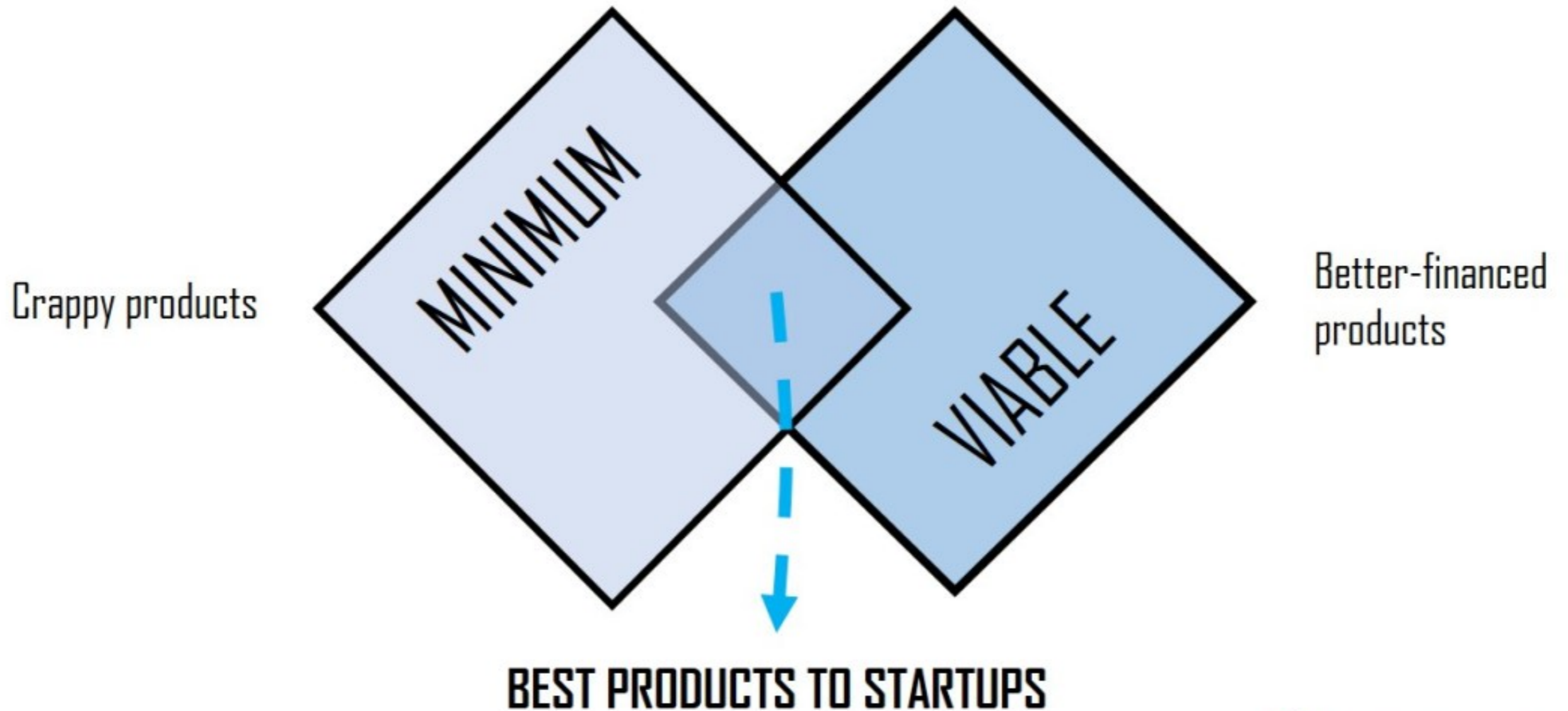


Touch QT Sensor

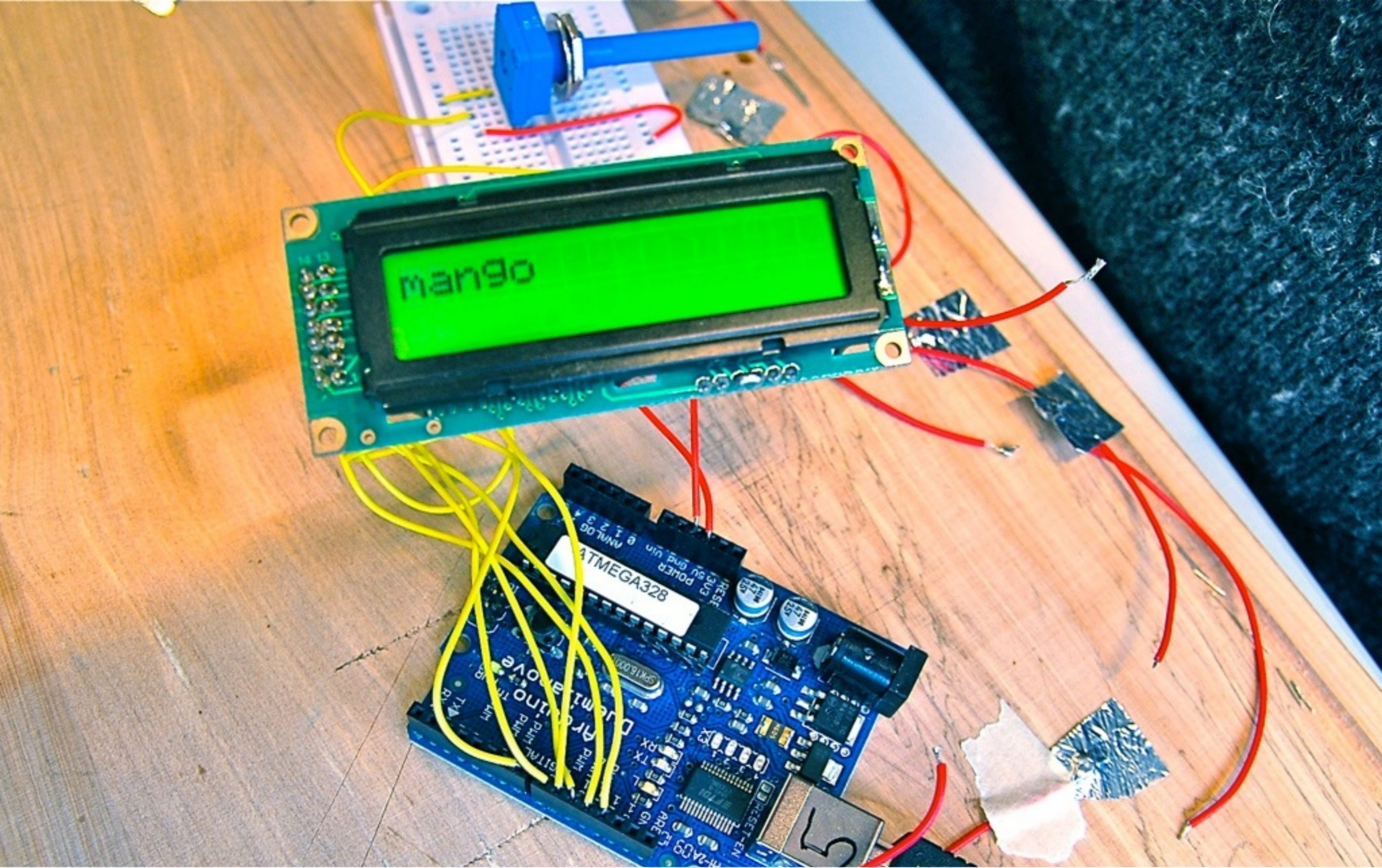


Ultrasound Sensor

MINIMUM VIABLE PRODUCT







Quick video overview

Video-Prototyping



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

Representing complex relationships, new behaviours and attitudes are an integral part of interaction design.

These can be represented through many means including sketching and making physical prototypes.

However, capturing a journey **over time** requires a linear medium like **video**.

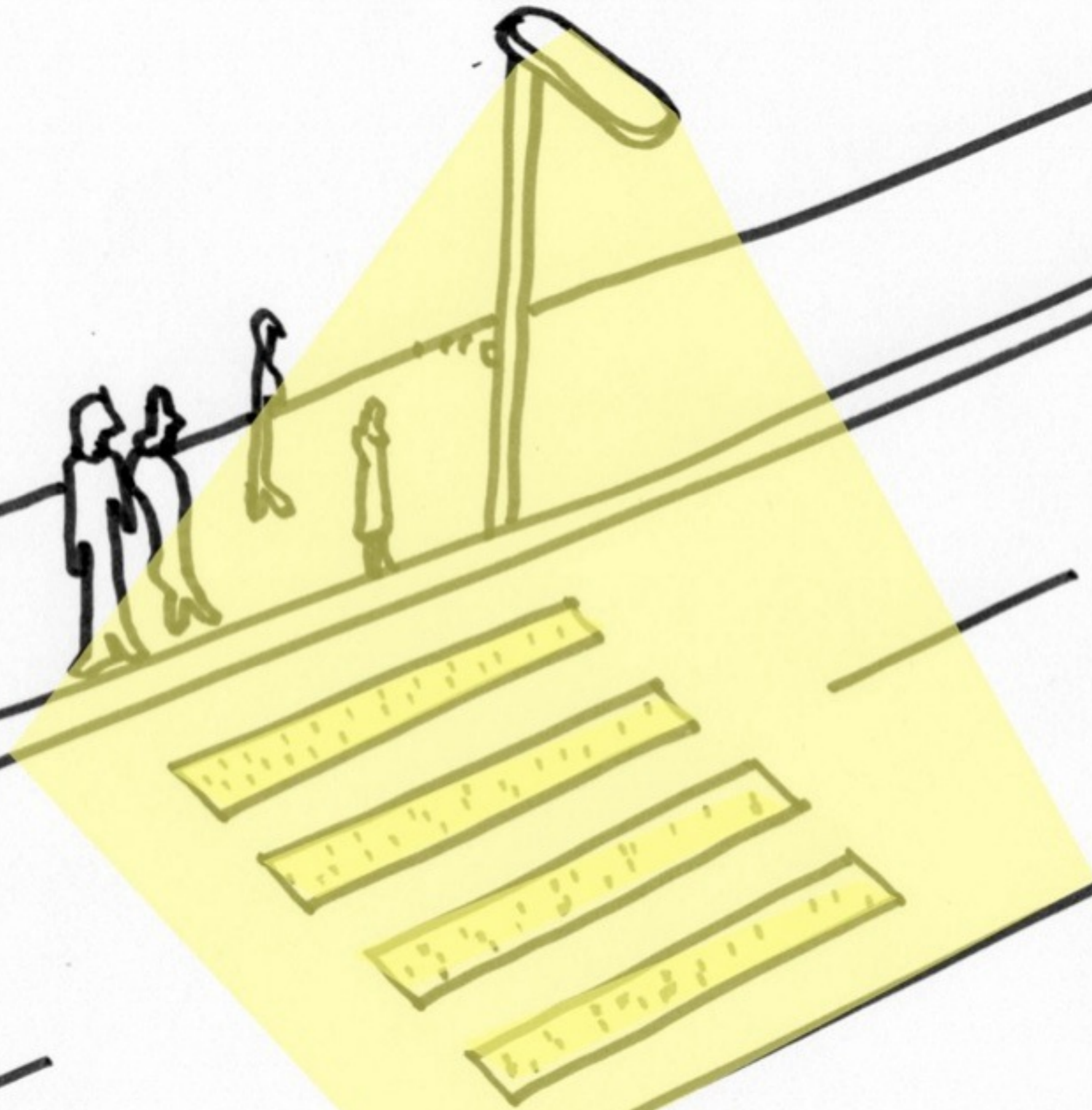
"Just Enough Prototyping"

Understand your audience and choose the right level of resolution and fidelity.

Judge the time and resources available.

Go for the easiest and simplest track, don't overdo you prototype for a given context.

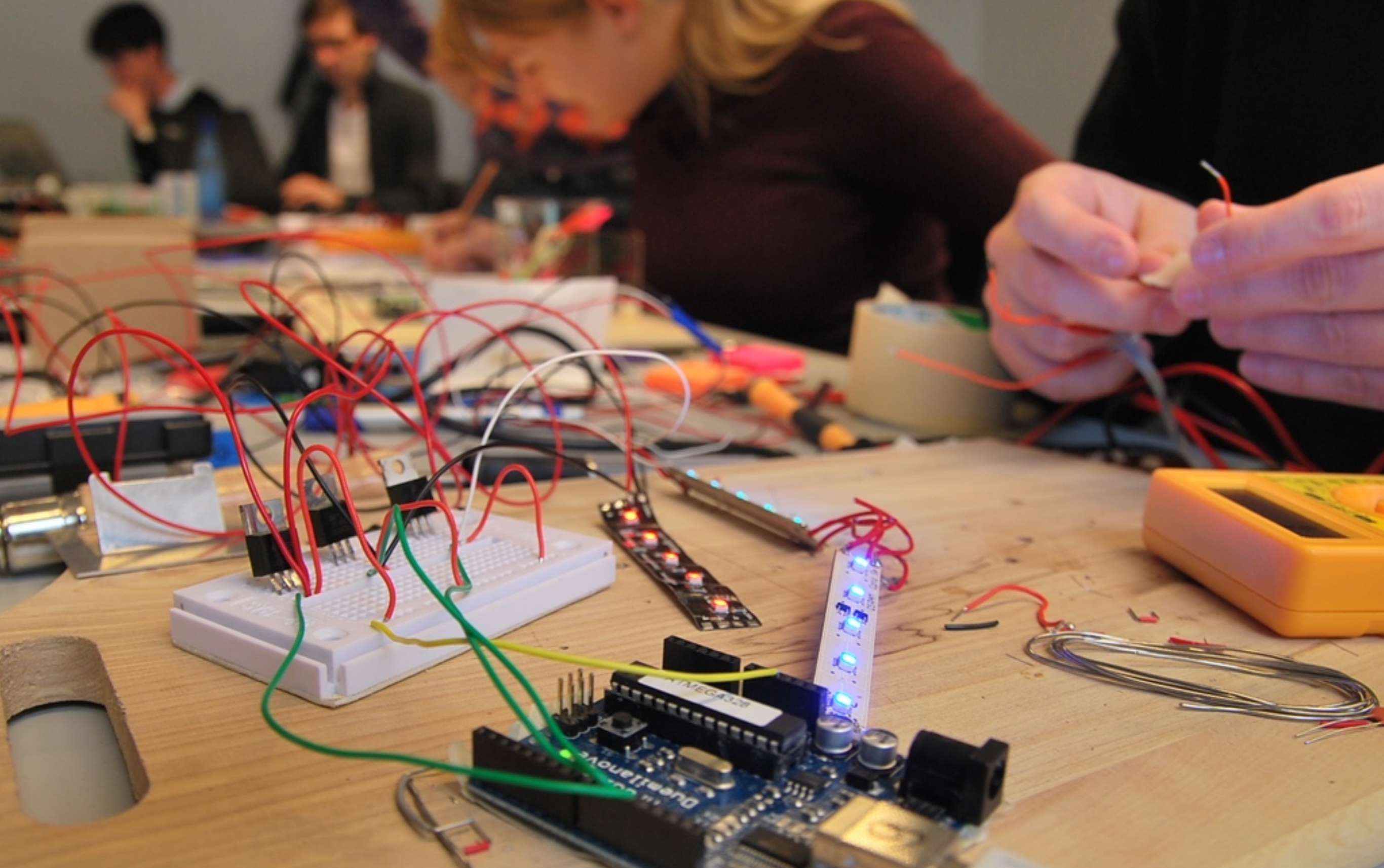
low resolution
high fidelity
(crossing on demand)



Zebra Zone

The Smoke & Mirror Approach

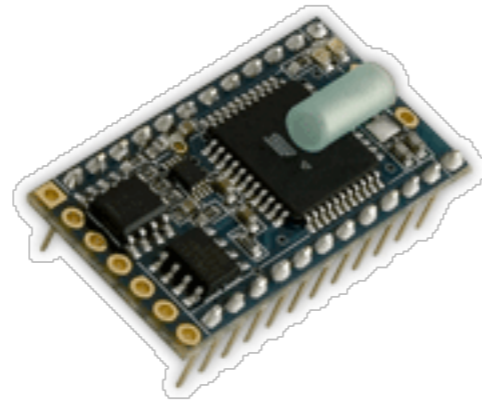




Sketching with Hardware



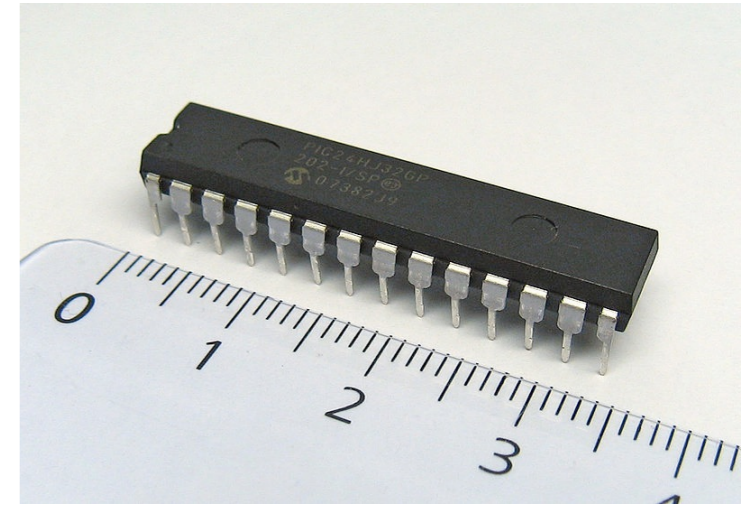
basic stamp



bx 24



basic atom



pic



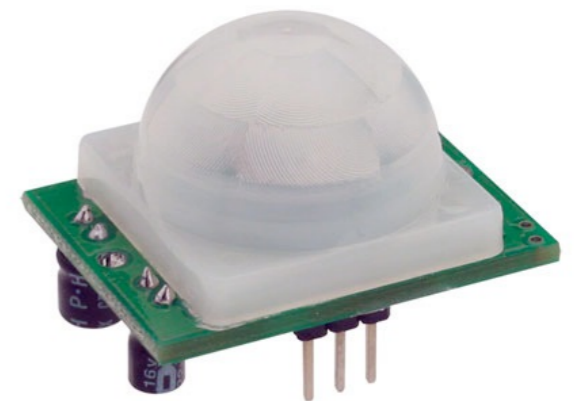
Assembly



Thermistor



Bend Sensor



PIR Sensor



Force Sensor



Potentiometer



Magnet Switch



Distance IR Sensor

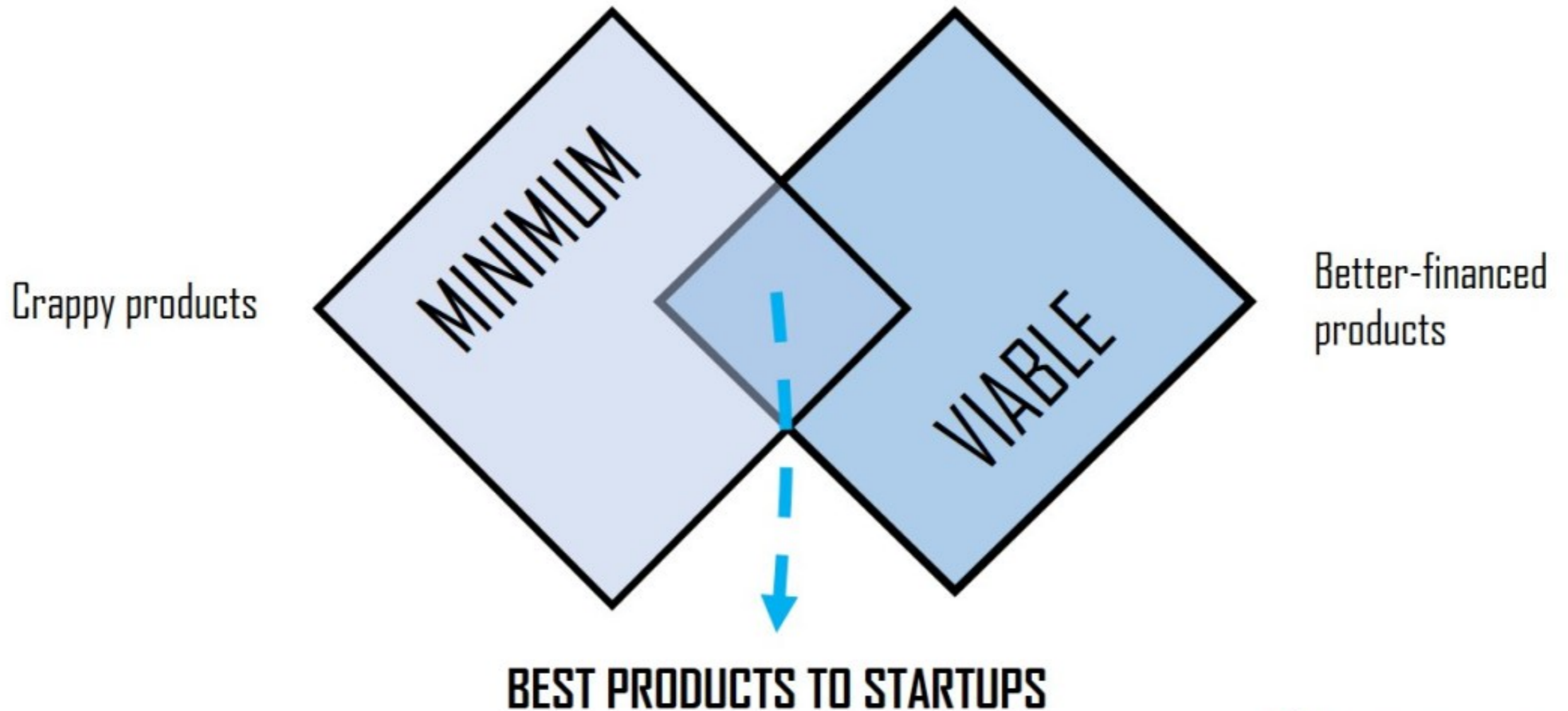


Touch QT Sensor

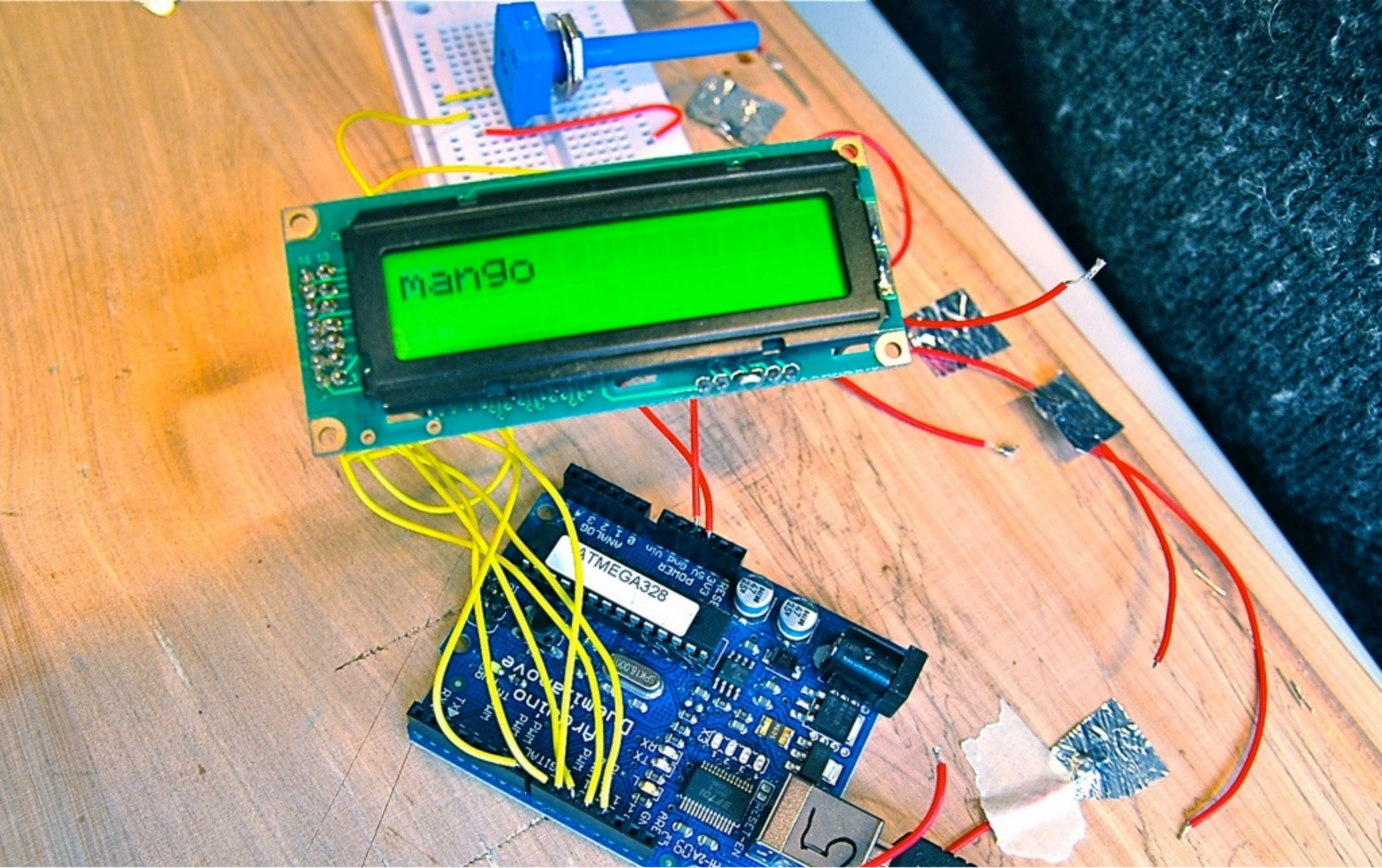


Ultrasound Sensor

MINIMUM VIABLE PRODUCT







Quick video overview

References (Papers + books)

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Publisher: The MIT Press; 1 edition (October 1, 2007)

ISBN-10: 0262134748

[2] Buxton, W.: Sketching the user experience

Publisher: Morgan Kaufmann (March 30, 2007)

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[3] Norman, D.: The design of everyday things

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[5] Houde, S., & Hill, C. (1997). What do prototypes prototype?

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[6] Lim, Y.-K., Stolterman, E., Tenenberg, J., 2008. The anatomy of prototypes

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[7] Lidwell, W., Holden, K., & Butler, J. (2010). Universal principles of design, revised and updated:

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