Interaction Design

Chapter 6 (June 15, 2011, 9am-12pm):
Prototypes

Prototypes

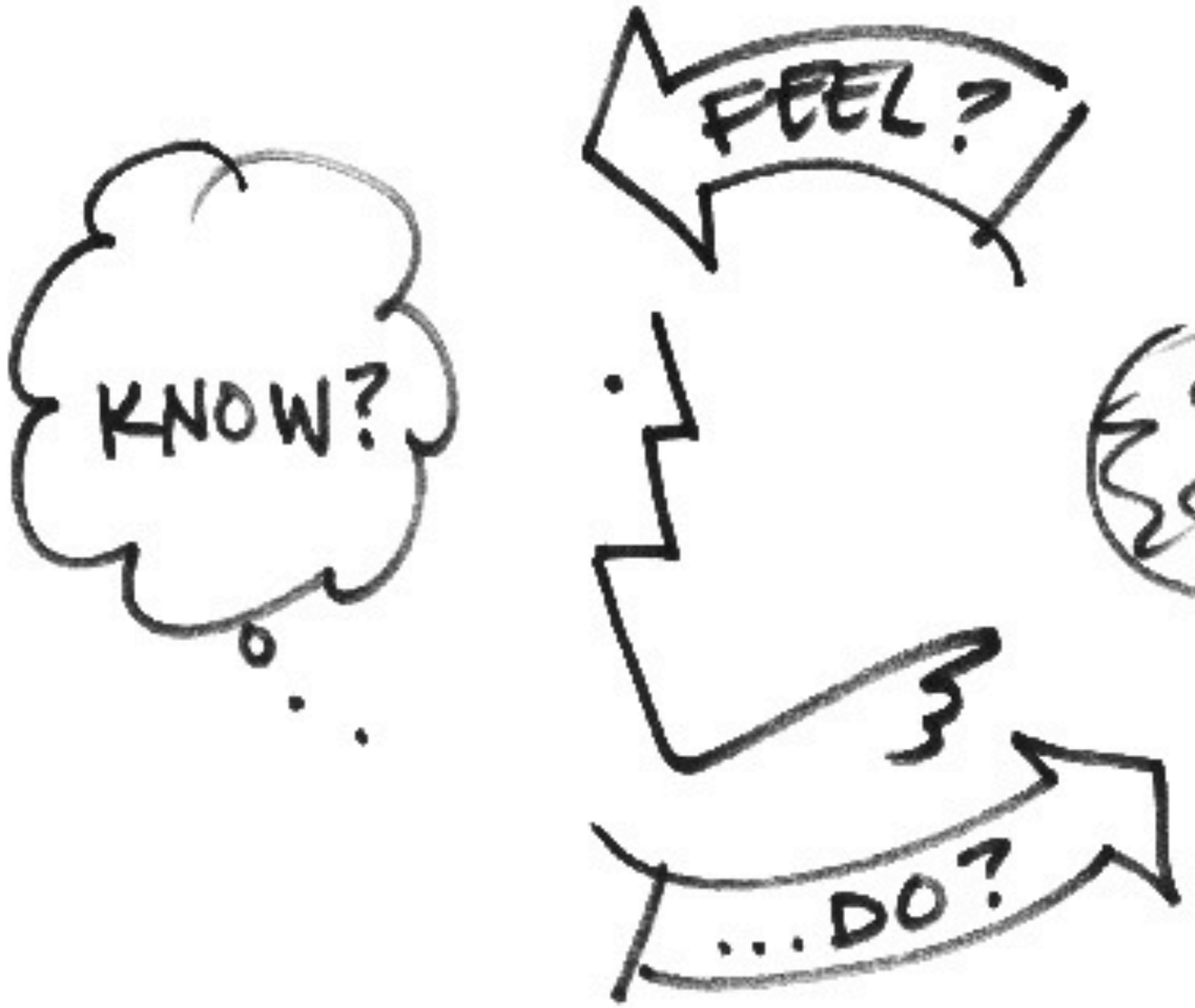
- Benefits of Prototypes
- Low vs. High Fidelity / Resolution
- Interacting with Paper
- Video Envisionment and the Wonderful Wizard of Oz
- Sketching in Hardware
- Different Prototypes in the Design Process

INTERACTION DESIGN

photo credits © bill verplank

INTERACTION DESIGN

Mental model (tutorial, signs)



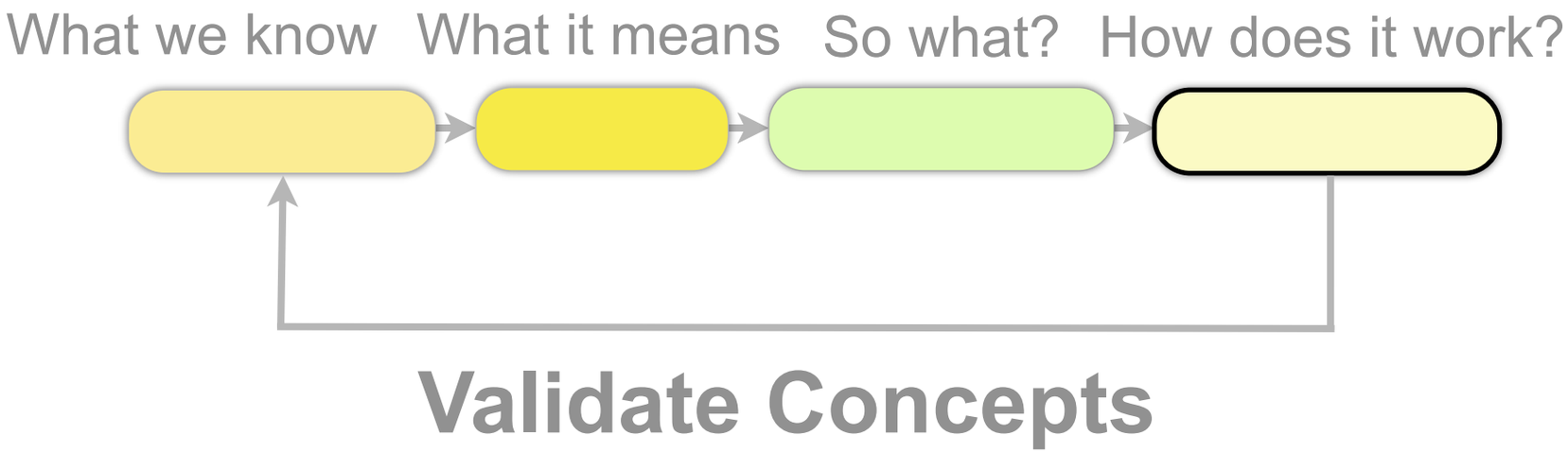
Transducers (output: hi/lo resolution)

Computer Microcontroller

Transducers (input: analog/digital)

photo credits © bill verplank

Why Prototype ?


What we know
What it means
So what?
How does it work?
Validate Concepts

Prototyping as a proof of concept

photo credits © alexander wiethoff

Prototyping as a design process

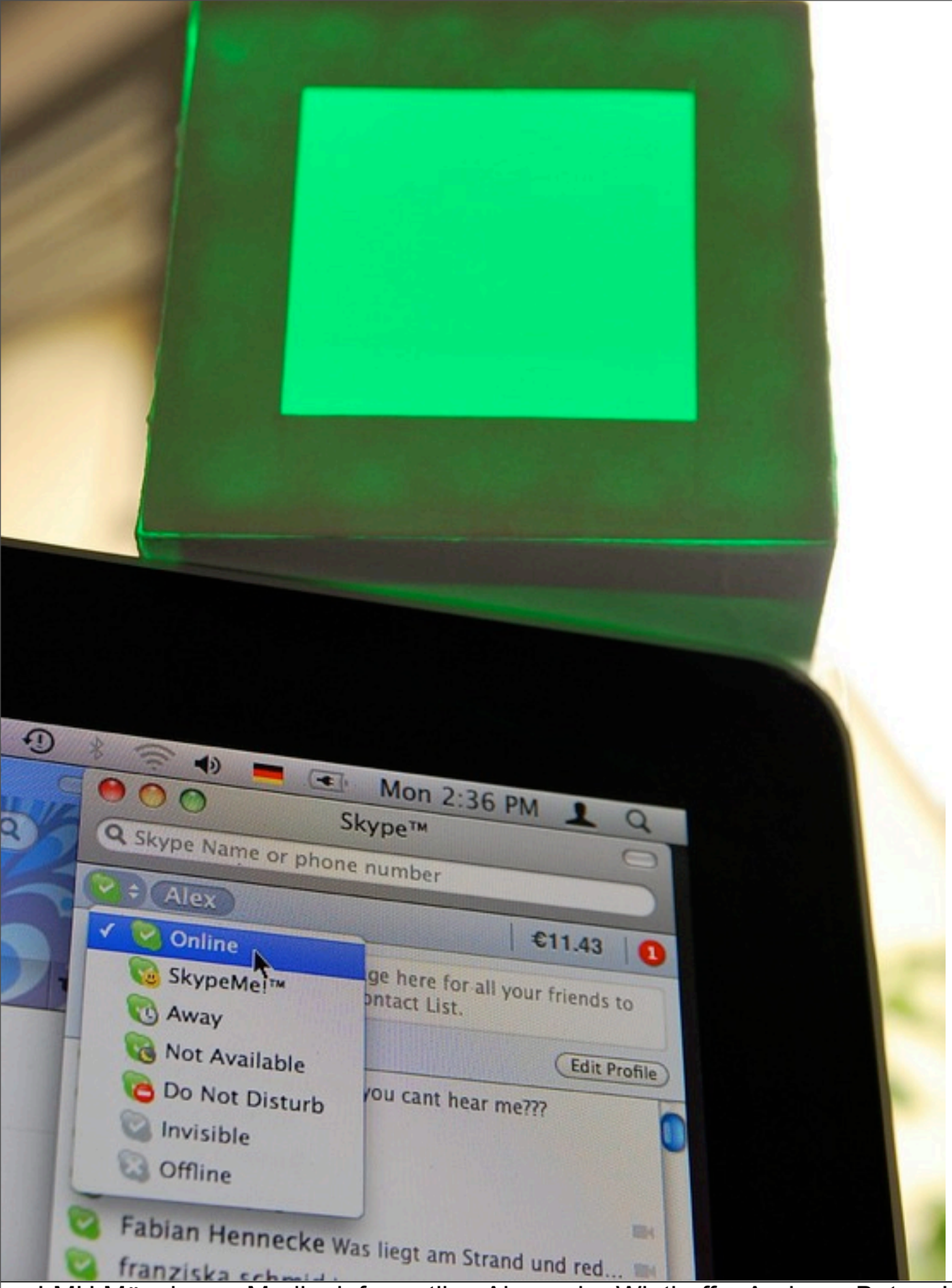


photo credits © alexander wiethoff

Prototyping as a communication tool

photo credits © alexander wiethoff

For the Designer:	Exploration Visualization Feasibly Inspiration Collaboration
For the End User:	Usefulness A change of viewpoint Usability Desirability
For the Producer:	Conviction Specification Benchmarking

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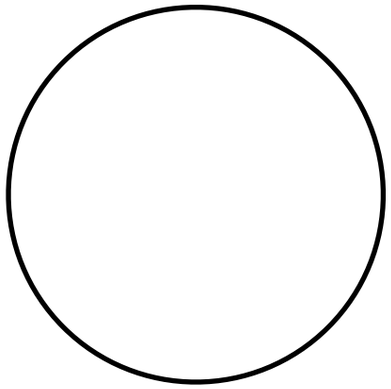
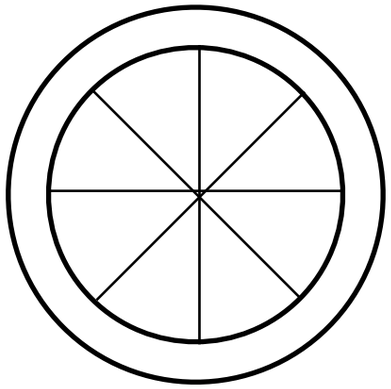
Fidelity v. Resolution



low resolution
low fidelity



low resolution
high fidelity

high resolution
high fidelity

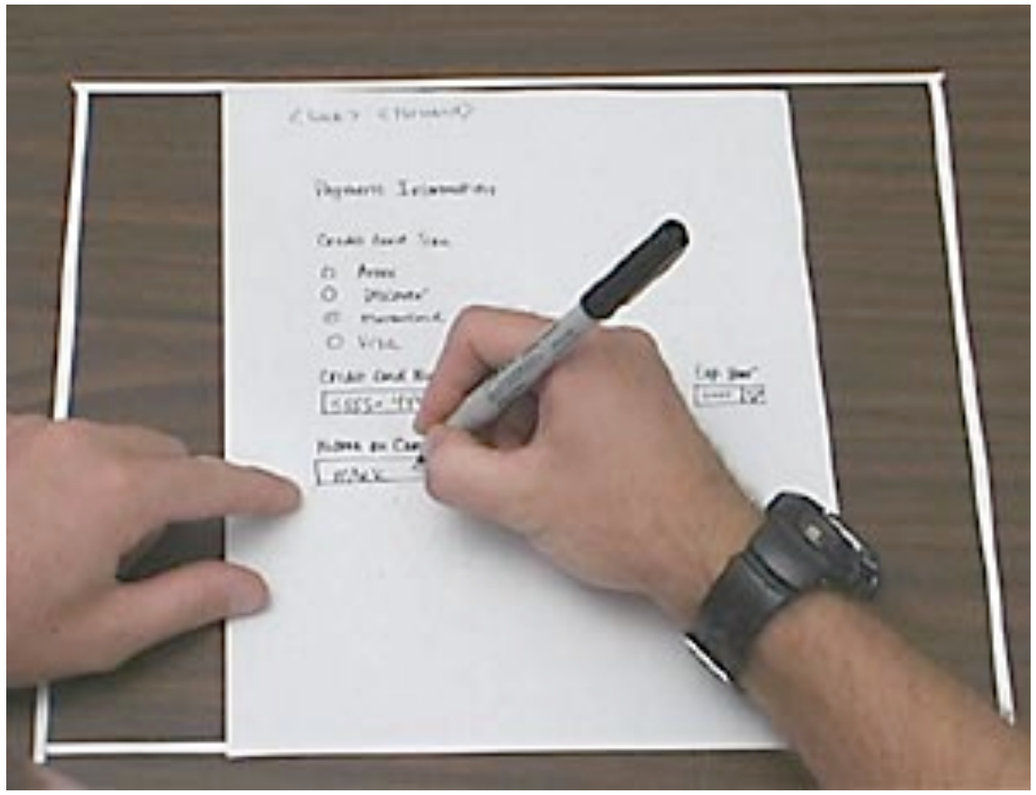
Low Fidelity — **High Fidelity**

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

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

looking back.....



User test of a low-fidelity paper prototype of a website

vs.

User test of a high-fidelity paper prototype of a homepage.

photo credits © NN Group

3 Main Prototyping Pillars and Directions

Paper Prototyping **Video** Prototyping **Hardware** Prototyping

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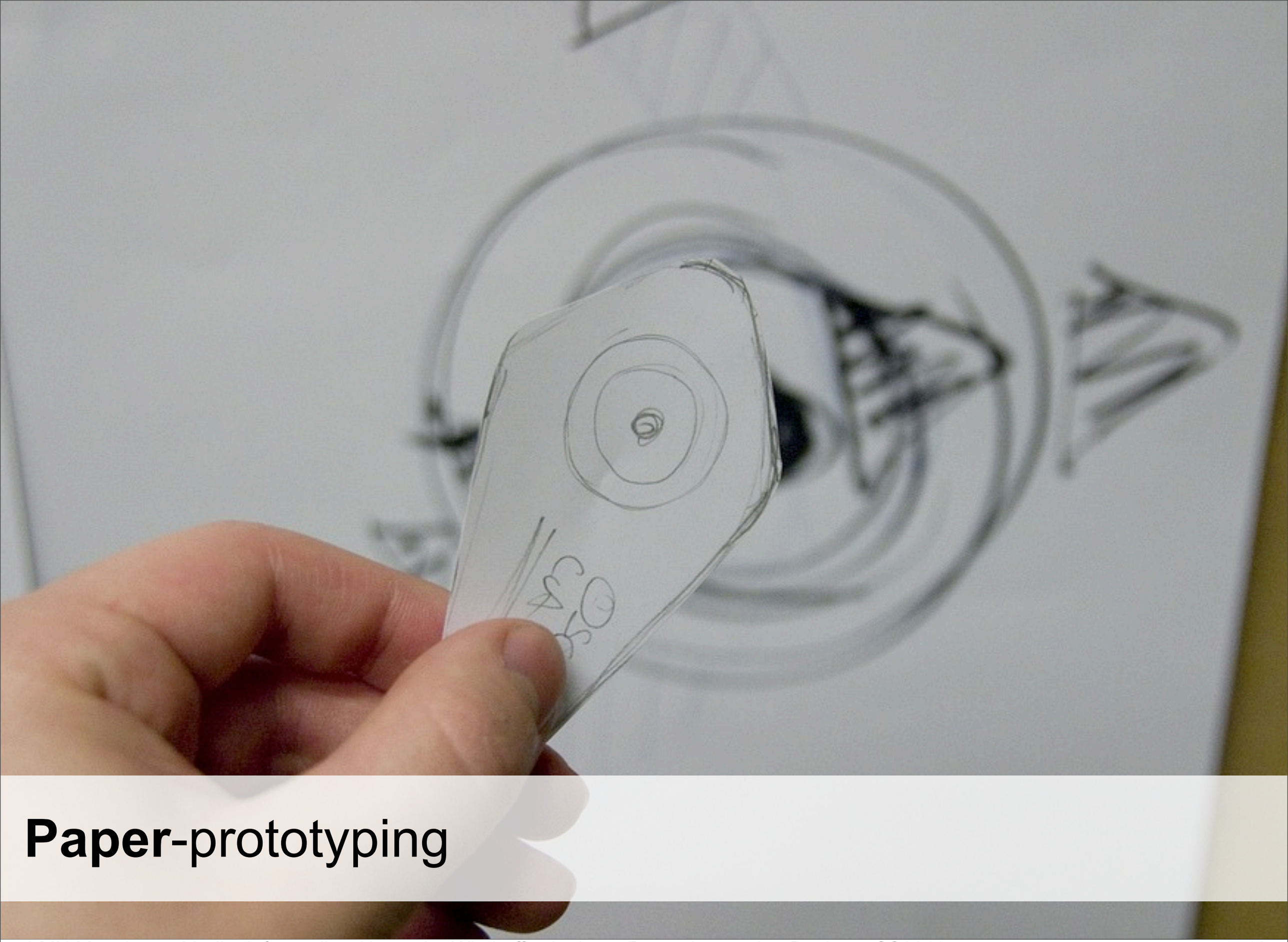


Paper-prototyping

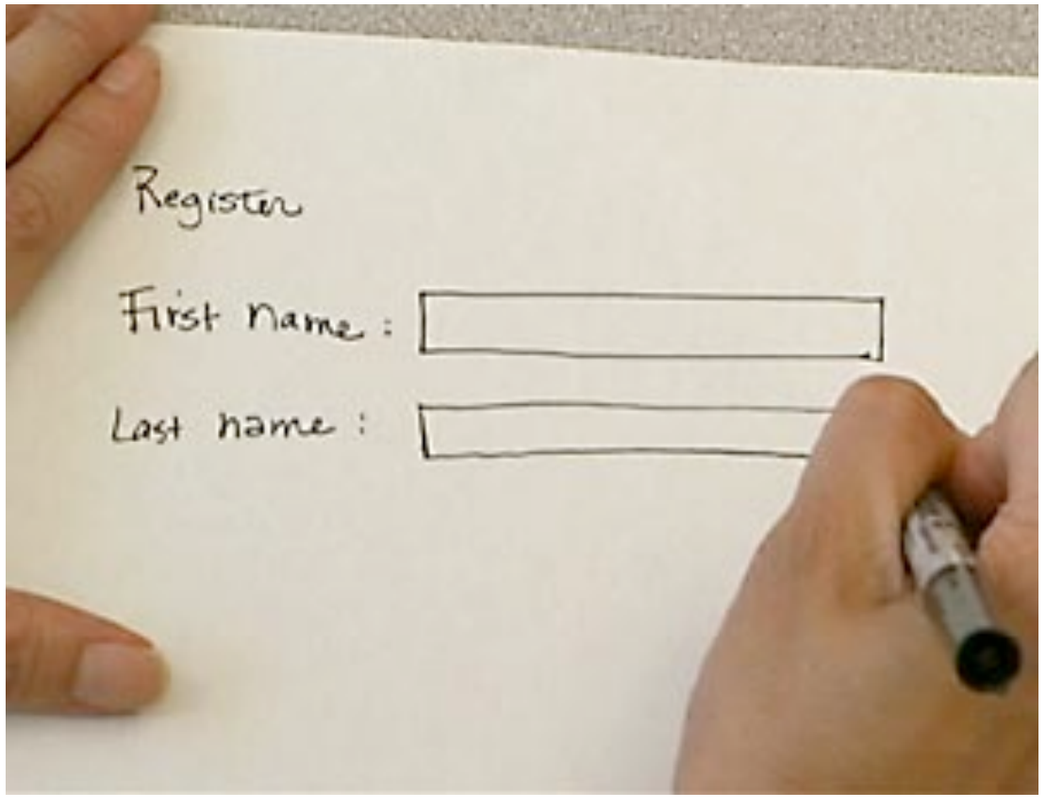
What is it?

-widely used **method** in the user-centered design process
-helps developers to create **screen based** applications that meets the user's expectations and needs.

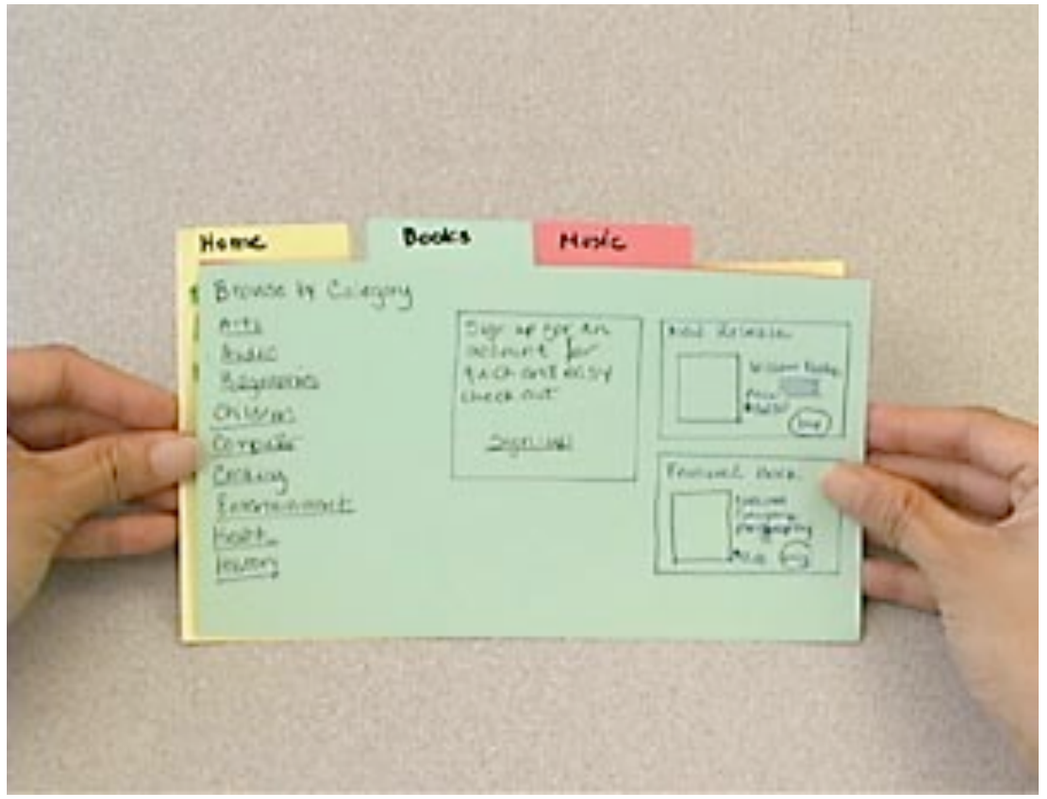
-**throwaway prototyping** and involves creating rough, even hand sketched, drawings of an interface to use as prototypes, or models, of a design.

History of Paper Prototyping

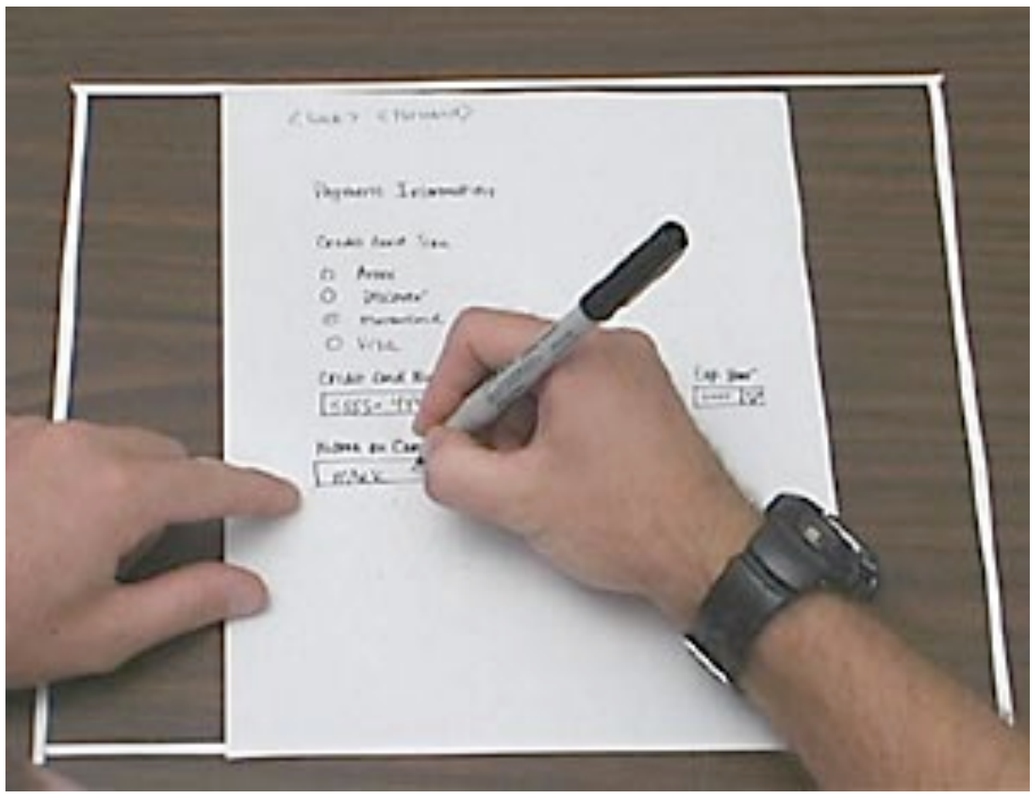
-started in the mid 1980s
-became popular in the mid 1990s when companies such as IBM, Honeywell, Microsoft, and others started using the technique in developing their products.



Typical form-filling screen



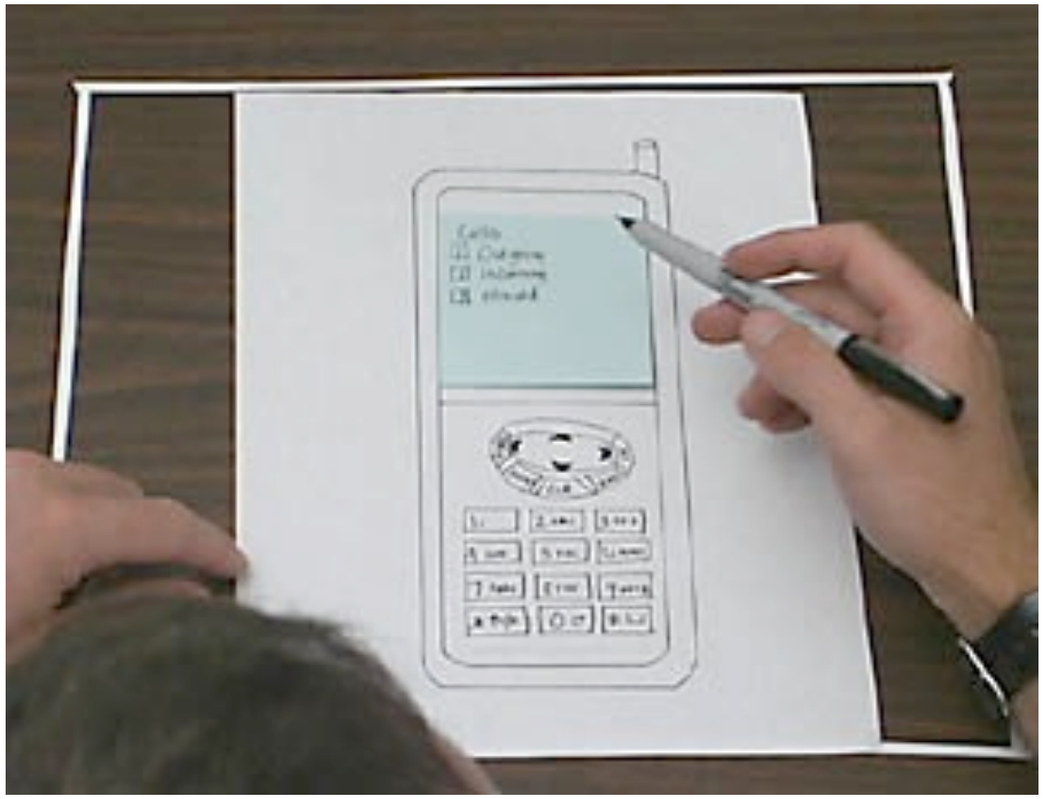
Tabs-based design



User test of a paper prototype

Typical set-up of a usability test

photo credits © NN Group



Device-based interaction

High-fidelity prototype of a homepage.

Mockup of a kiosk.

photo credits © NN Group

You can mockup real size products and environments which capture a degree of realism and while keeping it open for interpretation or further development.

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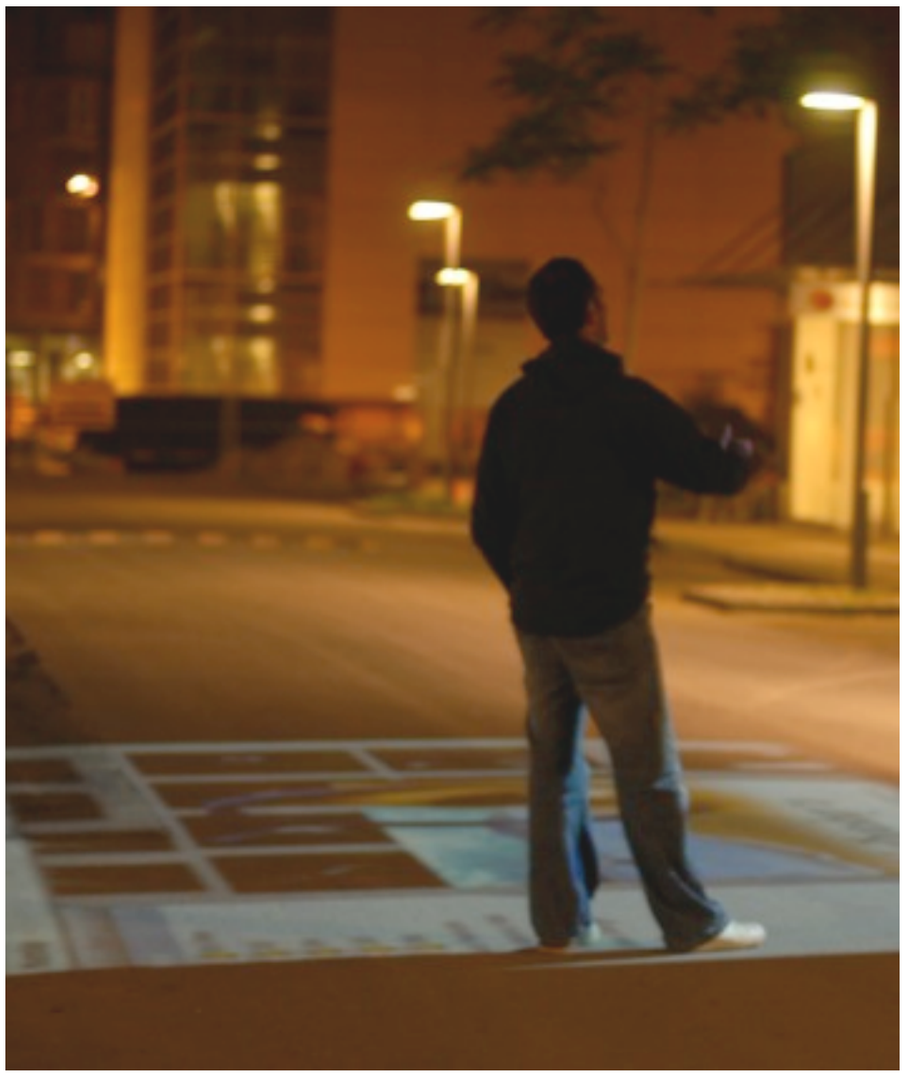
Video-prototyping

Image Source: CIID

The Smoke & Mirror Approach



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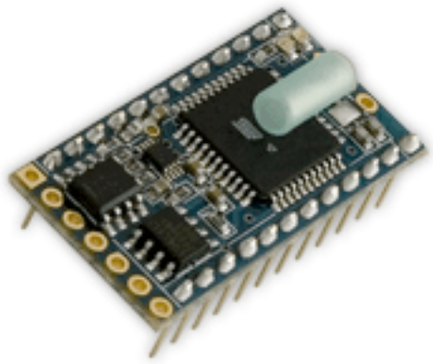
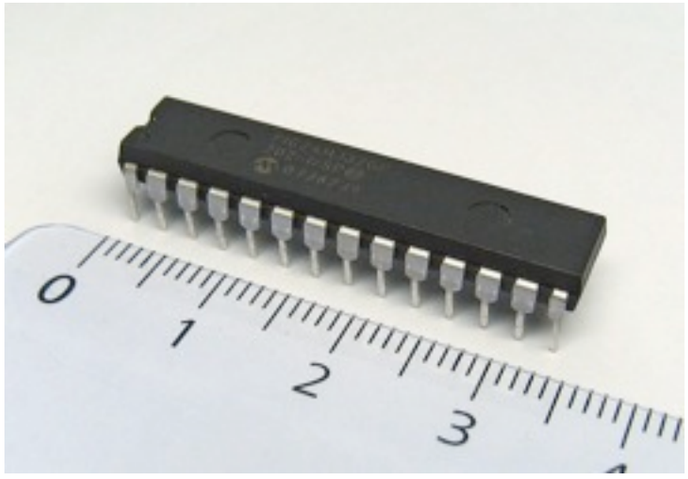
Sketching with Hardware

basic stamp



bx 24

basic atom

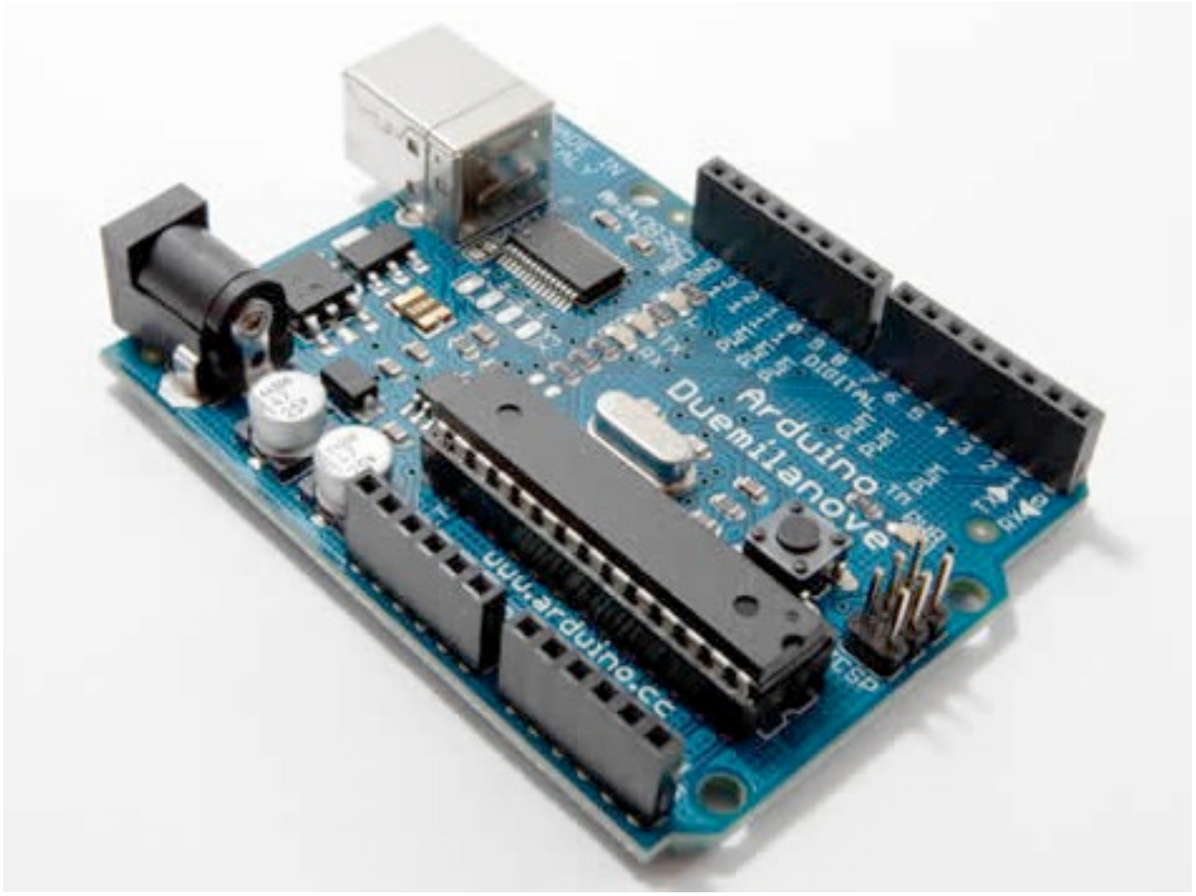


pic

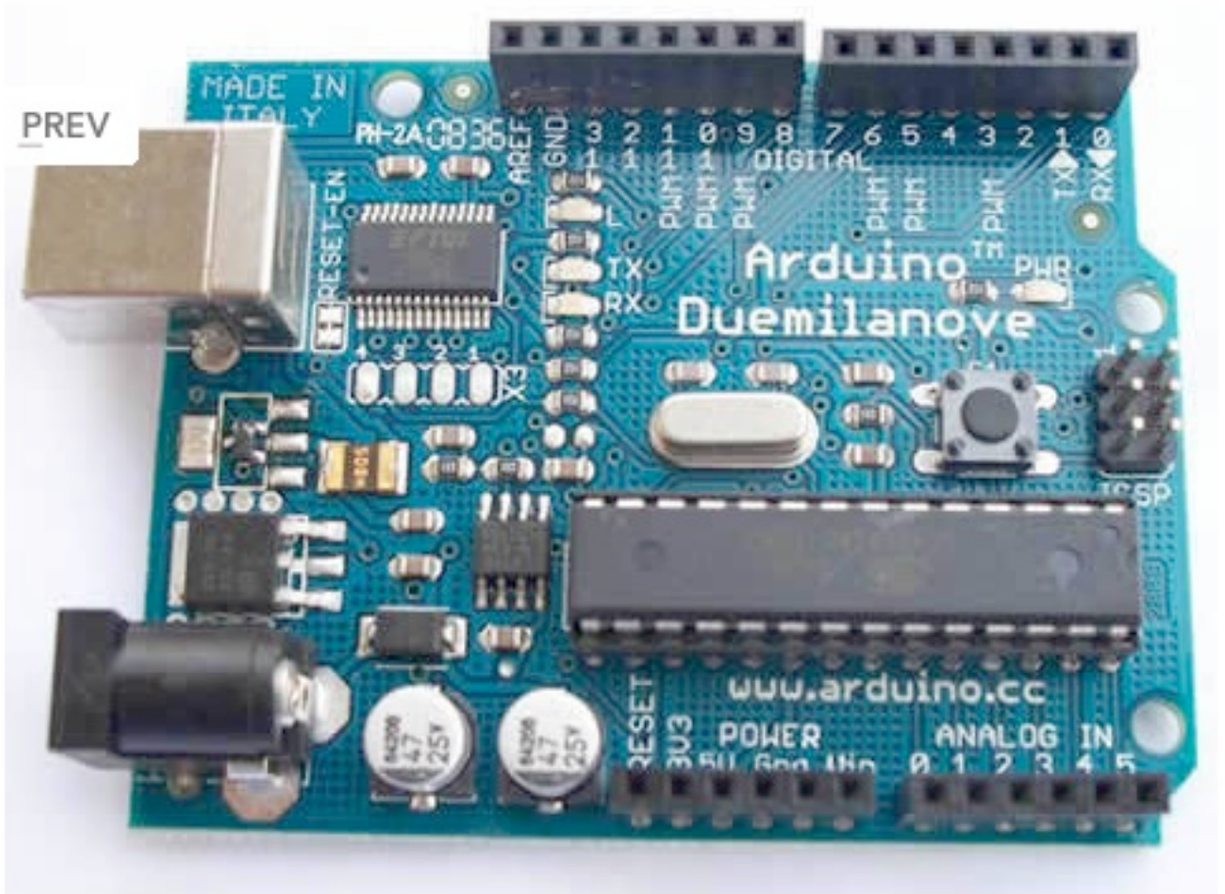
higher level ⟷ **lower level**

Assembly

photo credits © wikimedia



Atmel AT Mega 328



Atmel AT Mega 328

photo credits © arduino.cc

Thermistor

Bend Sensor

PIR Sensor

photo credits © wikimedia

Force Sensor

Potentiometer

Magnet Switch

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Distance IR Sensor

Touch QT Sensor

Ultrasound Sensor

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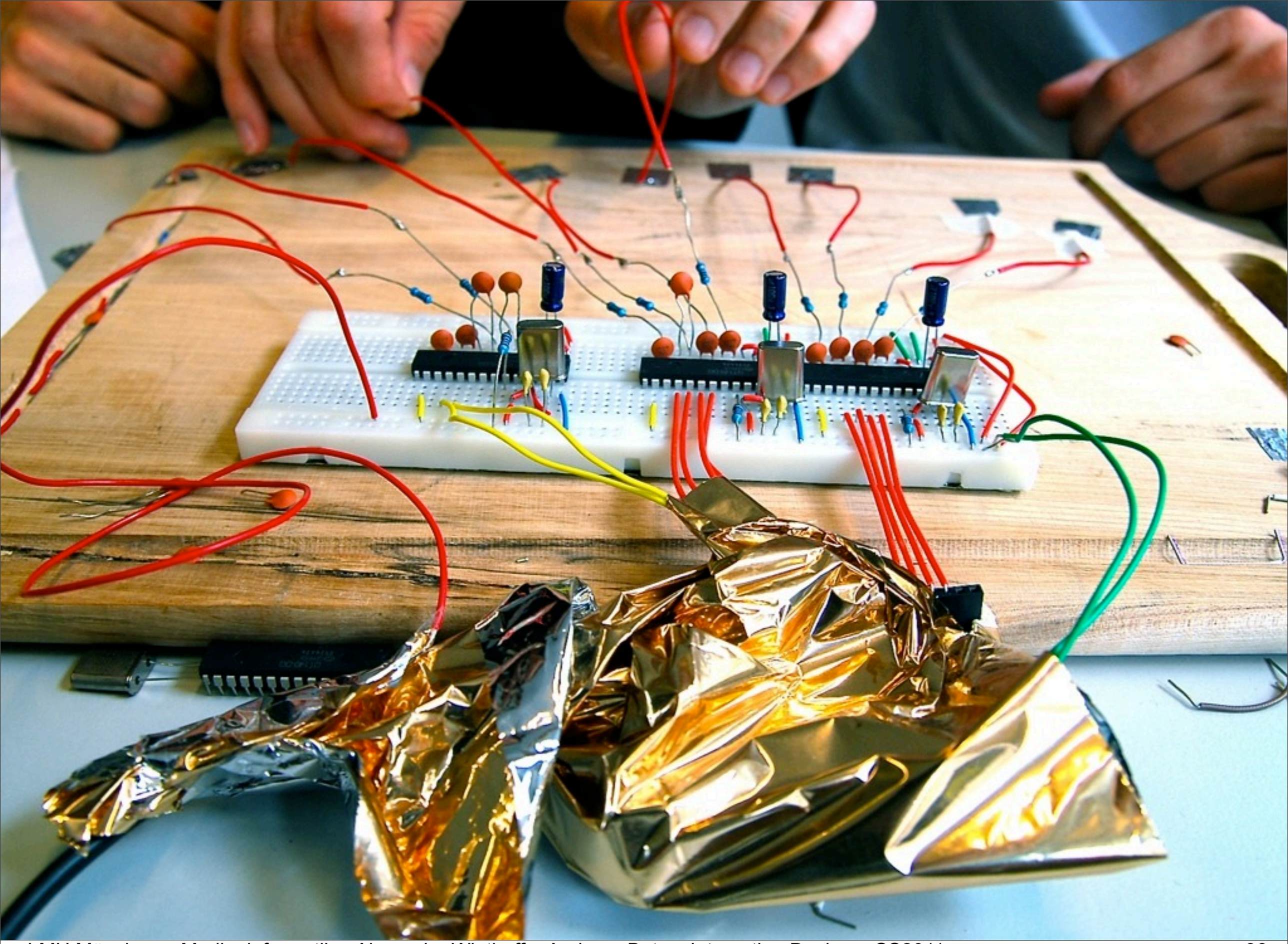

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Some Examples
from a school called
Copenhagen Institute of Interaction Design (CIID)

photo credits © alexander wiethoff

Some Examples from a school called **Copenhagen Institute of Interaction Design (CIID)**

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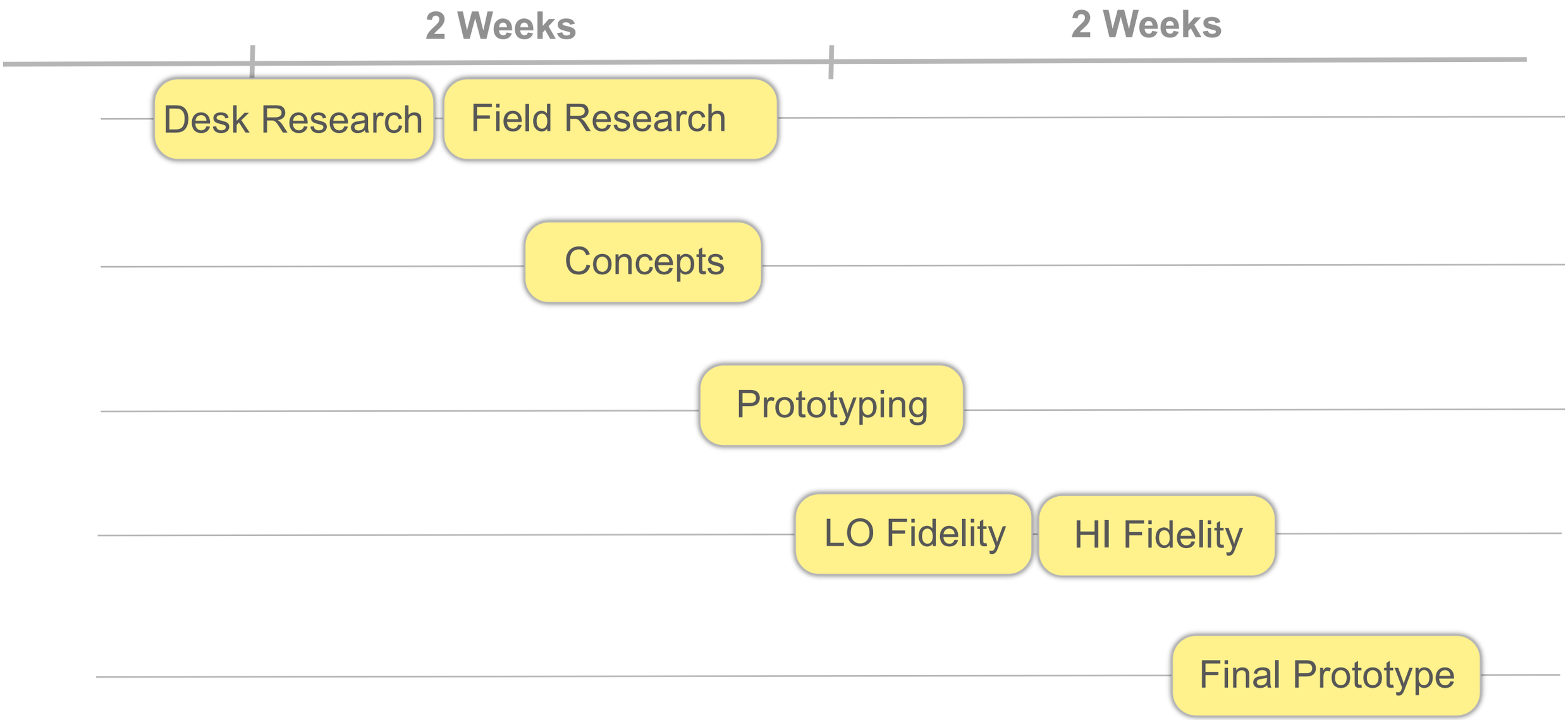
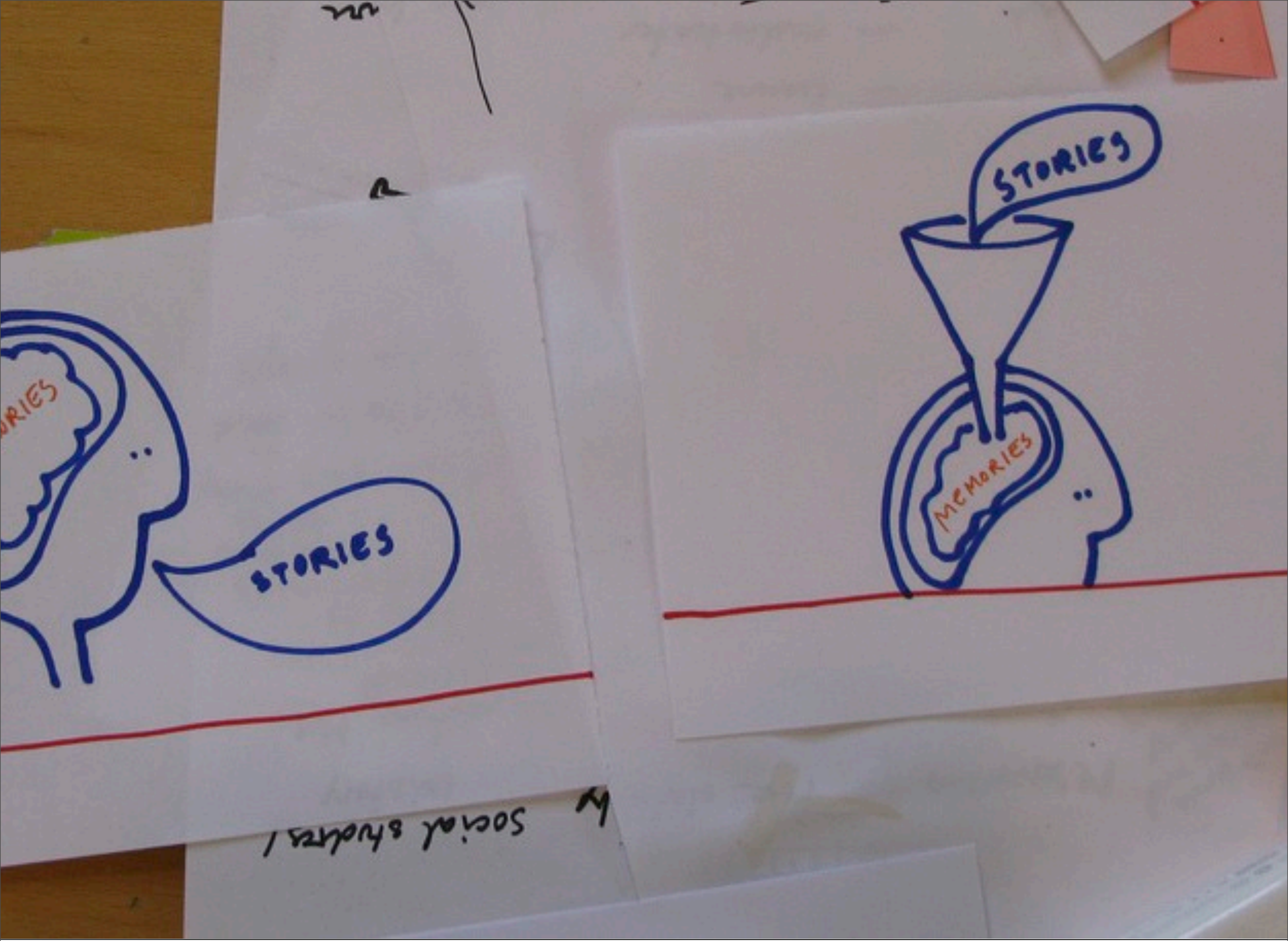

2 Weeks
2 Weeks
Desk Research
Field Research
Concepts
Prototyping
LO Fidelity
HI Fidelity
Final Prototype

SOCIAL NETWORKING
OTIUM™
SCREEN WALL
E-MAIL – TO – LETTER
SKYPE-TV
FAMILY FRAME + POLAROID
ELDERLY AS RESOURCE
GREEN HOUSE (PET HOUSE?)
TIME MACHINE
STORYTELLING DEVICE
MEMORY-TRIVIA
NANNY
EXCURSIONS
UI interface webportal for the elderly
TV channels elderly focus
OTIUM PROXY
RFID STORYTELLER
MEMORIES
SCREEN WALL
changing walls
SKYPE/TV
PICTURE FRAME

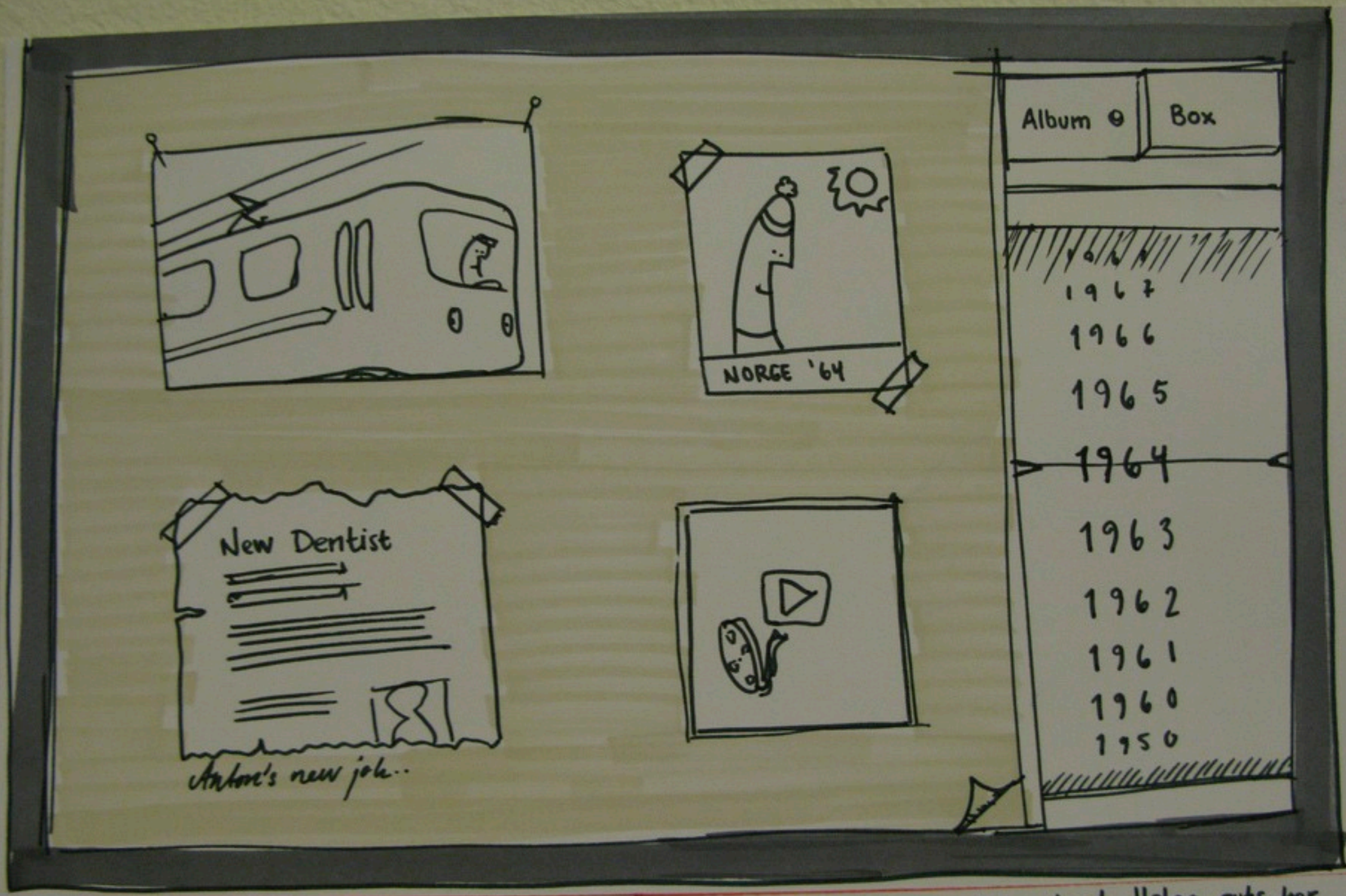

STORIES
STORIES
MEMORIES

THE ELDERLY (ONLY) EXPERIENCE LOE THROUGH
TIME MACHINE
THE KIDS CAN TRAVEL IN TIME
THE ELDERLY
SPIN FOR

KEY VALUE

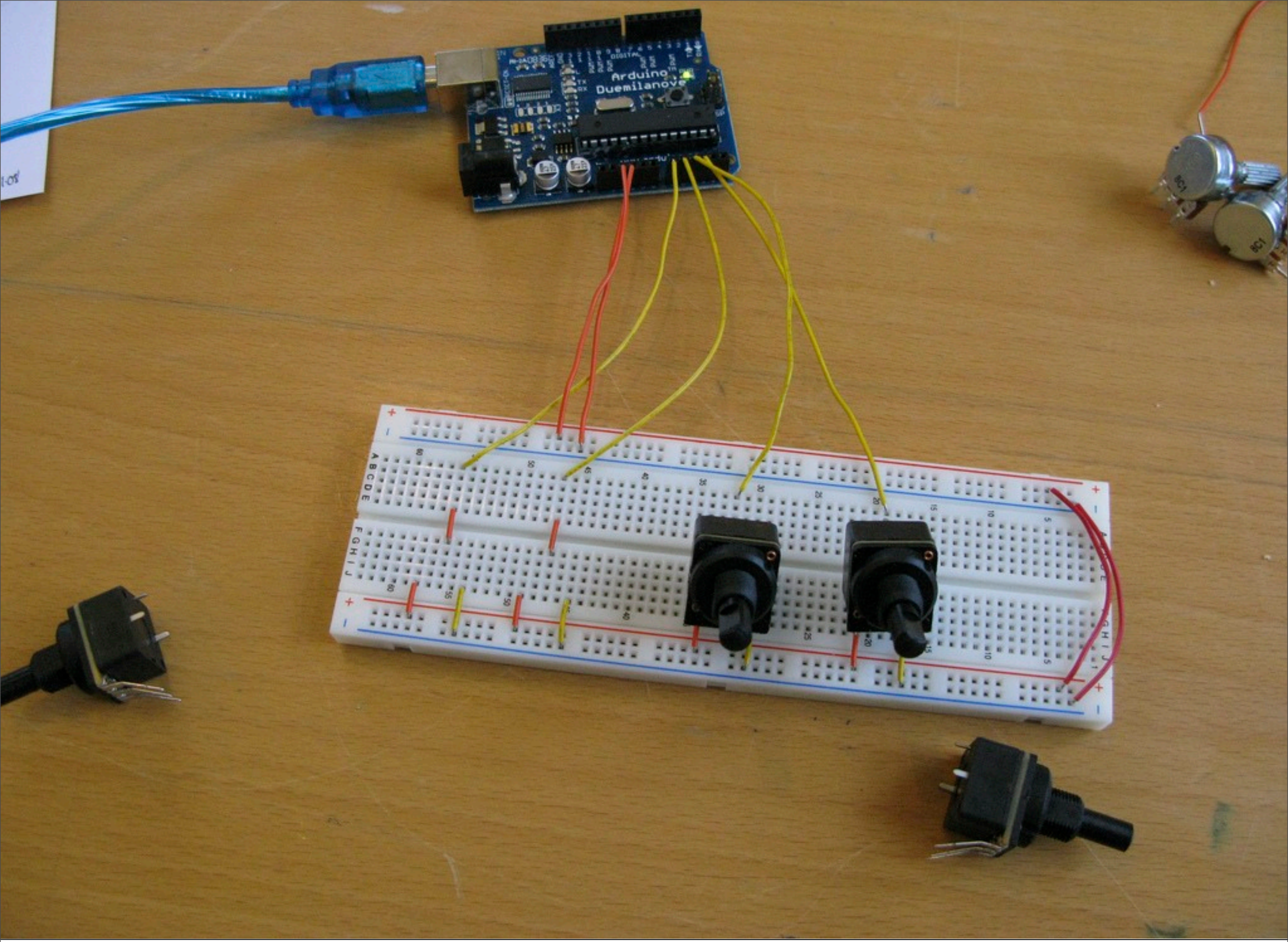
- Making old people reconnect with their past and their family.

He noticed that his neighbor Helga often get visits from her grandchildren. Apparently they look at old photos, but the album looks a bit strange.
One day he asks Helga what kind of photo-album it is, and why the kids are so interested in it.
The photo is showing Helga's husband on a vacation in Norway" 1964. The photo covers the whole screen, so no other buttons can be pressed. She touches the photo again, and it shrinks to it's original size.
Norge '64
"So you have personal photos in it? But wait, didn't I also see a photo from Pakistan in there?" Albert asked.



On the ~~left~~ right side of the screen is something that looks like a big wheel. Helga puts her hand on the screen, where the wheel is, and moves it up. The wheel starts rolling and numbers representing years start moving. When the year 1964 is centered, she removes her hand.

5


Arduino
Duemilanove

Viseaften
Journalistforeningen
1968. Music
1965
1970
Favorites

Viseaften

Journalistforeningen

1968, Music

19E

Favorites

What a lovely war
Glenn Gauer
1978, Radio Theater
1975
1980
Favorites

References (Books):

[1] Buxton, W. Sketching User Experiences, *Morgan Kaufmann 2007.*
[2] Norman, D. The Psychology of Everyday Things, *Basic Books 1988.*
[3] Moggridge, B. Designing Interactions, *MIT Press, 2006.*