Prototyping UX
From Sketch to Prototype

Alexander Wiethoff
Ludwig-Maximilians University of Munich (LMU)
An original type, form, or instance that serves as a model on which later stages are based and judged.

American Heritage Dictionary
INTERACTION DESIGN

KNOW?

FEEL?

...DO?
Three main goals

1. Understanding a design context
2. Exploring and evaluating ideas
3. Communicating ideas

source: [1]
Three main purposes

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

source: [1]
User Experience Design

Technology

UX

Business

Design
User Experience Design

- useful
- usable
- valuable
- findable
- desirable
- accessible
- credible

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http://semanticstudios.com
Getting the right Design and the Design right...

Bill Buxton - Sketching User Experiences
UserQStudyQDesign

• The Purpose of User Studies
• Research on SSIM, Reliability, and Validity and Generalizability
• Research Methods and Experimental Designs
• Ethical Considerations
• Helpful related and practical information for your own studies
• Interpretation of Data and Presentation of Results
User Interface

Visible

Behind the Scenes

Capturing

Transferring

Connecting

Coordinating

Combining

Storing

Combining

Contextualizing
Double Diamond

Why? and How?

source: [8]
Double Diamond

DISCOVER | DEFINE

DESIGN | DELIVER

What?

source: [8]
We focus on

DISCOVER

DEFINE

source: [8]
Overview

Research  Innovate  Prototype

DISCOVER  DEFINE

source: [8]
Overview

Tell a story
Make it tangible

Prototype
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]
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
Fidelity v. Resolution

- low resolution
  - low fidelity

- high resolution
  - low fidelity

- high resolution
  - high fidelity

source: [5]
Low Resolution  High Resolution

Less Details  More Details

Focus on core interactions

Quick and Dirty

Early Validation

Focus on the whole

Deliberate and Refined

Concrete Ideas

source: [5]
1st Iteration
low-res/low-fi
4th Iteration
high-res/high-fi
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]
Horizontal vs. Vertical Prototype

https://media.nngroup.com/media/editor/2012/12/10/guerrilla_scenario_fig.gif
Paper-prototyping
What is it?

Paper prototyping is a widely used method in the user-centered design process, a process that helps developers to create products/screen based applications that meets the user's expectations and needs.

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

Paper prototyping started in the mid 1980s and then became popular in the mid 1990s when companies such as IBM, Honeywell, Microsoft, and others started using the technique in developing their products.
Paper prototype of a typical form-filling screen

Paper prototype of a tabs-based design

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

Typical set-up of the usability laboratory for a test session with a paper prototype

photo credits © NN Group
User test of a device-based interaction

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

Testing hardware user interfaces: mockup of a kiosk.
NN Training-Video
Video-prototyping

http://2.bp.blogspot.com/-CBtuuif7rZ4/U0MBJkCUfgI/AAAAAAAAEi4/fYp1bJQcdVY/s1600/Canon+XF205+left+side+view.jpg
Acting out the Scenario
Quick Kiosk Mock-up
low resolution
high fidelity
(crossing on demand)
Zebra Zone
The Smoke & Mirror Approach
Sketching with Hardware
Atmel AT Mega 328

Raspberry Pi
Distance IR Sensor  Touch QT Sensor  Ultrasound Sensor
Some Examples from a school called Copenhagen Institute of Interaction Design (CIID)
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SOCIAL NETWORKING
SCREEN WALL
E-MAIL TO LETTER
SKYPE TV
FAMILY FRAME POLAROID
ELDERLY AS RESOURCE
GREEN HOUSE (PET HOUSE)
TIME MACHINE
STORITELLING DEVICE
MEMORY TRIVIA

ELDERLY ETP
NANNY

UI interface Unprotected for the elderly
TV channel easy to use
TV channels easy to use

[Drawings and notes on post-it notes]
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 things who kind of photos it is, and why the book is so enchanted. In it, there is a picture of a missing photo.

"Do you have personal photo in it? It wasnt, didnt I also see a photo from Berlin in here?" Albert asked.

"Yes, there is a picture to the unbreakable, but in a tape with her photo."

The photo is showing Helga's husband on a vacation in Norway '64. The photo covers the whole screen, so no other buttons can be pressed. She touches the photo again, and it shrinks to its original size.
On the 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.
Viseaften
Journalistforeningen
1968, Music
Thanks for your attention!
Tutorials

Physical Computing Intro
https://itp.nyu.edu/physcomp/

Arduino Tutorials

Physical Computing w. Raspberry PI

Adafruit Hacking Tutorials
https://learn.adafruit.com/

Keyboard Hacking Tutorials
References (books)

[1] Bill moggridge: designing interactions
   Publisher: The MIT Press; 1 edition (October 1, 2007)
   ISBN-10: 0262134748

[2] Bill buxton: sketching the user experience
   Publisher: Morgan Kaufmann (March 30, 2007)
   ISBN-10: 0123740371

[3] Don norman: the design of everyday things
   Publisher: Basic Books (September 17, 2002)
   ISBN-10: 0465067107

   Publisher: Prentice Hall PTR (December 15, 1994)
   ISBN-10: 0133033899

links: www.dkds.ciid.dk
www.medien.ifi.lmu.de
www.arduino.cc
http://www.useit.com/papers/guerrillahci.html