Prototyping UX
From Sketch to Prototype to Product

Alexander Wiethoff
Ludwig-Maximilians University of Munich
Media Informatics Lab
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
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
<table>
<thead>
<tr>
<th>role</th>
<th>For the Designer:</th>
<th>For the End User:</th>
<th>For the Producer:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Exploration</td>
<td>Effectiveness / Usefulness</td>
<td>Conviction</td>
</tr>
<tr>
<td></td>
<td>Visualisation</td>
<td>A change of viewpoint</td>
<td>Specification</td>
</tr>
<tr>
<td></td>
<td>Feasibly</td>
<td>Usability</td>
<td>Benchmarking</td>
</tr>
<tr>
<td></td>
<td>Inspiration</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Collaboration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>look´n´feel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>implementation</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

source: [5]

LMU München – Medieninformatik – Alexander Wiethoff – UX1
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]
High Fidelity

Open Discussion
Prompting Required
Quick and Dirty
Early Validation

Low Fidelity

Sharp Opinions
Self Explanatory
Deliberate and Refined
Concrete Ideas

source: [5,6]
Low Resolution

Less Details
Focus on core interactions
Quick and Dirty
Early Validation

High Resolution

More Details
Focus on the whole
Deliberate and Refined
Concrete Ideas

source: [5,6]
1st Iteration
low-res/low-fi
4th Iteration
high-res/high-fi
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
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

LMU München – Medieninformatik – Alexander Wiethoff – UX1
Smart City Table

LMU München – Medieninformatik – Alexander Wiethoff – UX1
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
LMU München – Medieninformatik – Alexander Wiethoff – UX1
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
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
- choose from a wide range of interface modules
- create fast low fidelity clickable prototypes
POPOP 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

<table>
<thead>
<tr>
<th>Low Fidelity</th>
<th>Mid Fidelity</th>
<th>High Fidelity</th>
</tr>
</thead>
<tbody>
<tr>
<td>- POP</td>
<td>- Sketch</td>
<td>- InVision</td>
</tr>
<tr>
<td>- Balsamiq</td>
<td>- Proto.io</td>
<td>- Marvel</td>
</tr>
<tr>
<td></td>
<td>- Pixate</td>
<td>- Justinmind</td>
</tr>
<tr>
<td></td>
<td>- axure</td>
<td>- Framer</td>
</tr>
<tr>
<td></td>
<td>- Mockplus</td>
<td>- Adobe XD</td>
</tr>
</tbody>
</table>
# Overview UI Prototyping Tools

<table>
<thead>
<tr>
<th>Prototyping Tools</th>
<th>Mockplus</th>
<th>Axure</th>
<th>Balsamiq</th>
<th>Justinmind</th>
<th>Sketch</th>
<th>Adobe XD (Preview)</th>
<th>Invision</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Productivity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learning Curve</td>
<td>Very Easy</td>
<td>Complex</td>
<td>Very Easy</td>
<td>Complex</td>
<td>Average</td>
<td>Average</td>
<td>Easy</td>
</tr>
<tr>
<td>Integrated Efficiency</td>
<td>Fast</td>
<td>Average</td>
<td>Fast</td>
<td>Slow</td>
<td>Average</td>
<td>Average</td>
<td>Fast</td>
</tr>
<tr>
<td>Interaction Design</td>
<td>Fast</td>
<td>Average</td>
<td>-</td>
<td>Average</td>
<td>Plug-in Required</td>
<td>Fast</td>
<td></td>
</tr>
<tr>
<td>Build Widgets</td>
<td>Fast</td>
<td>Slow</td>
<td>Fast</td>
<td>Average</td>
<td>Slow</td>
<td>Slow</td>
<td></td>
</tr>
<tr>
<td>Device Testing</td>
<td>Fast</td>
<td>Slow</td>
<td>-</td>
<td>Average</td>
<td>Plug-in Required</td>
<td>Average</td>
<td>Fast</td>
</tr>
<tr>
<td><strong>Fidelity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visual Fidelity</td>
<td>Average</td>
<td>Average</td>
<td>Low</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Interactive Fidelity</td>
<td>Average</td>
<td>High</td>
<td>-</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>Average</td>
</tr>
<tr>
<td><strong>Professional Skill</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experience</td>
<td>Required</td>
<td>Required</td>
<td>Required</td>
<td>Required</td>
<td>-</td>
<td>-</td>
<td>Required</td>
</tr>
<tr>
<td>Visual Design</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Required</td>
<td>Required</td>
<td>Required</td>
<td>Required</td>
</tr>
<tr>
<td>Programming Knowledge</td>
<td>-</td>
<td>Basic Knowledge</td>
<td>-</td>
<td>-</td>
<td>Basic Knowledge</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Sharing</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>Great</td>
<td>Average</td>
<td>Great</td>
<td>-</td>
<td>-</td>
<td>Great</td>
</tr>
</tbody>
</table>

Video-demo

https://www.youtube.com/watch?v=1H7Ql9hmbuM
Video-Prototyping
low resolution
high fidelity
(crossing on demand)
Zebra Zone
The Smoke & Mirror Approach
Sketching with Hardware
Force Sensor

Potentiometer

Magnet Switch
Distance IR Sensor  Touch QT Sensor  Ultrasound Sensor
MINIMUM VIABLE PRODUCT

Crappy products

MINIMUM

BEST PRODUCTS TO STARTUPS

VIABLE

Better-financed products

StartupShelter.be
References (Papers + books)

[1] Moggridge B: Designing interactions
    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)
    ISBN-10: 0123740371
    Publisher: Basic Books (September 17, 2002)
    ISBN-10: 0465067107
    Publisher: Prentice Hall PTR (December 15, 1994)
    ISBN-10: 0133033899
    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.