Designworkshop 2 / Designforschung
Industrial Design meets Human-Computer-Interaction

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Dipl. Des. Hannes Gumpp, TUM

SS 2017
München, 24. April 2017
Designworkshop 2 / Designforschung
Industrial Design meets Human-Computer-Interaction

Kick off.

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What are we doing here?

- User-experience design
- Industrial design
- Communication design
- Information architecture
- Interaction design
- User Interface engineering
- Human factors
- Usability engineering
- Human-computer interaction
What are we doing here?
Double Diamond
Double Diamond

Why? And How?
Double Diamond
Designing for a context

Different usage contexts, user types and usage frequency will require dedicated solutions.
Designing for a context

Different usage contexts, user types and usage frequency will require dedicated solutions.

| 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             |
Designing for user needs

http://www.designinginteractions.com/chapters/4
Prototyping

Fidelity vs. Resolution

- Low resolution, low fidelity
- High resolution, low fidelity
- High resolution, high fidelity
Prototyping

Fidelity vs. Resolution

Low Fidelity
- Open Discussion
- Prompting Required
- Quick and Dirty
- Early Validation

High Fidelity
- Sharp Opinions
- Self Explanatory
- Deliberate and Refined
- Concrete Ideas
Prototyping

Fidelity vs. Resolution

Low Fidelity

- Less Details
- Focus on core interactions
- Quick and Dirty
- Early Validation

High Fidelity

- More Details
- Focus on the whole
- Deliberate and Refined
- Concrete Ideas
An iterative design process

http://www.ixds.com/company/our_process.png
Overview: The Course
Approach

Tackling a real world interaction and industrial design challenge by:

• Applying an iterative design process in all phases from research to final prototype

• Working in cross disciplinary teams
Goal & Deliverables

A final presentation that includes

- milestone deliverables for each phase
- a self-explanatory and functioning prototype*
- a video showing your prototype in action
- 1-2 high resolution images of final prototype
- TUM ID project card: PDF + Folder of packaged InDesign file incl. Links

at the end of the semester.

*transportable, maximum size of a standard desk
Workshop Theme SS 2017

Soft Machines
Workshop Theme SS 2017
All machines and technical devices we encounter in our everyday life – be it the smartphone, a tablet, a car or the light at your bicycle – seem to consist of hard materials. Without exception and regardless of their environment and usage context. It’s the language of objects we learned.
And up to now it’s rarely questioned in terms of design. Nevertheless it has a decisive influence on our relation to those objects, how we interact with them and – how we perceive technology.
What happens, if we leave this normal state behind? If we re-think and re-design those machines and devices as something softer? What does this new formal and haptic quality mean for the concept of interaction? Will we use a product differently? Or will we turn up with totally new products?
Workshop Theme SS 2017
Unchallenged semantics of technology
New interactions modalities
Form changing interaction

http://www.epfl-ecal-lab.ch/work/lazy-bytes/
History: BMW Gina – car concept, 2008

https://en.wikipedia.org/wiki/BMW_GINA
Festo Bionic Handling Assistant

https://www.festo.com/group/de/cms/10241.htm
Reactive Clothing – Caress of Gaze

http://behnazfarahi.com/caress-of-the-gaze/
Family of the Heart – Remote Control
Ferrofluid Display
Dynamic Display: Smart Rope

http://www.tangramfactory.com
Membrane Interface
Google and Levis: Project Jaquard

http://www.youtube.com/watch?v=qObSFdfe7I
Daniel Rozin - Pom Pom Mirror

https://vimeo.com/128375543
Avakai – Smart Toy

1. Speaking in musical notes
2. Sharing feelings
3. Proximity sensing

Sensors
Feedback
Bluetooth
Open hardware and software

https://vaikai.com/
Universal Everything – Displays of the Future

http://universaleverything.com/
Team Lab – Floating Flower Garden

https://www.teamlab.art/w/ffgarden
Revolights: Eclipse

https://revolights.com/pages/revolights
Schedule of the semester

24.04.2017   Kick off

RESEARCH PHASE
08.05.2017   Review Research, Report Make Munich (6./7.May make-munich.de )
15.05.2017   Deliverable 1: Research, Problem Framing

CONCEPT PHASE
22.05.2017   Review Concept
29.05.2017   Deliverable 2: Presentation Concept, Plan Prototyping

LOW-FIDELITY PROTOTYPING
12.06.2017   First Draft Prototype, User Testing Plan
19.06.2017   Presentation Results User Testing & Concept Iteration
26.06.2017   Deliverable 3: Low-Fidelity Prototype based on User Testing

HIGH-FIDELITY PROTOTYPING
03.07.2017   Review High-Fidelity Prototype
10.07.2017   Review High-Fidelity Prototype
17.07.2017   Review High-Fidelity Prototype, Presentation Draft
24.07.2017   Deliverable 4: Final Presentation
Your grades: 1 individual + 4 per team

- **INDIVIDUAL GRADE:** Participation in meetings

- **PER TEAM:** 4 deliverables: in time, complete

- **PER TEAM:** Conceptual work (deliverables 1,2)
  - Quality of research
  - Is your concept solving the problem you framed?
  - How innovative is your concept?

- **PER TEAM:** Prototyping (deliverables 3,4)
  - Does it make the idea experienceable?
  - Does it work? Is it self-explanatory?
  - How well was user feedback carried out and incorporated?

- **PER TEAM:** Presentation
  - How crisp could you bring your work across?
  - Presentation skills, material
## Grading Scheme

<table>
<thead>
<tr>
<th>Score Range</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>95 – 100</td>
<td>1.0</td>
</tr>
<tr>
<td>90 – 94</td>
<td>1.3</td>
</tr>
<tr>
<td>87 – 89</td>
<td>1.7</td>
</tr>
<tr>
<td>84 – 86</td>
<td>2.0</td>
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<tr>
<td>80 – 83</td>
<td>2.3</td>
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<td>2.7</td>
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<td>64 – 66</td>
<td>4.0</td>
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<td>60 – 63</td>
<td>4.3</td>
</tr>
<tr>
<td>0 – 59</td>
<td>4.7</td>
</tr>
</tbody>
</table>
Attendance

Your attendance is mandatory:

• More than 1 time absence: writing a paper (4-5 pages, template provided), more than 2 times: failed

• A doctor’s attest for every absence
Working in teams

Working in interdisciplinary teams is part of the challenge and approach of this course - as this is how you are going to work later on in the real world!

You decide about the individual constellation of your team – according to your personal experience and training.
Next step:

http://make-munich.de
Webrecherche

Techblogs:
engadget.com
ted.com

Zugriff auf Zeitschriften:
http://docweb.lrz-muenchen.de/

Literaturrecherche

Zugriff auf diverse Literaturdatenbanken (ACM, IEEE) über LRZ-VPN und –Proxy:
http://www.lrz-muenchen.de/services/netzdienste/proxy/browser-config/
Zugriff auf das ACM Portal und IEEE über LRZ-Proxy:
https://docweb.lrz-muenchen.de/cgi-bin/doc/nph-webdoc.cgi/000110A/http/portal.acm.org/portal.cfm
Zugriff auf Zeitschriften:
http://docweb.lrz-muenchen.de/