MMI 2
Tutorials
Winter Term 2017/18

Prof. Andreas Butz
Renate Häuslschmid
Christina Schneegaß

LMU München - LFE Medieninformatik
## Project 1: Phases & Dates

<table>
<thead>
<tr>
<th>Phase</th>
<th>Presentation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Phase 1:</strong> 7.11 - 28.11</td>
<td>05.12.2017</td>
</tr>
<tr>
<td>→ Identify common problem</td>
<td></td>
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<tr>
<td>→ Find a solution</td>
<td></td>
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<tr>
<td>→ Sketch idea &amp; test with persona</td>
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<tr>
<td><strong>Phase 2:</strong> 05.12 - 12.12</td>
<td>12.12.2017</td>
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<tr>
<td>→ Advance and specify idea</td>
<td></td>
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<tr>
<td>→ Low-fidelity prototyp (only SW) &amp; mini user study</td>
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<tr>
<td><strong>Phase 3:</strong> 12.12 - 9.1</td>
<td>09.01.2018</td>
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<tr>
<td>→ Refine concept</td>
<td></td>
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<tr>
<td>→ Clickable prototyp (only SW) &amp; mini user study</td>
<td></td>
</tr>
<tr>
<td><strong>Phase 4:</strong> 9.1 - 16.1</td>
<td>16.01.2018</td>
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<tr>
<td>→ Refine concept</td>
<td></td>
</tr>
<tr>
<td>→ Adjust prototype</td>
<td></td>
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<tr>
<td>→ Report lessons learned</td>
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Phase 2: Tasks & Presentation

Tasks & Output:
• Develop a low-fidelity prototype
• Perform a qualitative usability test
• Analyze and report data
• Update and advance design

Presentation:
• Functionality of your prototype + pictures
• Procedure of the user study + pictures
• Present quotes, observed situations
• Present your major findings and the updated design
• Present the lessons learned
• Ask the audience for specific feedback
• Needs to be submitted as PDF until Dezember 12th at 10 am, 2017 (Uniworx)
Design Process

understand problem → explore solutions → decide & sketch → develop prototype → evaluate prototype → Product

refine iteratively*

Phase 2

*If you identify bigger problems you need to go back more steps!
Prototyping

You should now have a good understanding of the problem space and an idea to solve the problem. This part of the exercise aims at developing an interactive version of your idea.

“A user interface prototype is a hypothesis — a candidate design solution that you consider for a specific design problem. The most straightforward way to test this hypothesis is to watch users work with it.”

(Kara Pernice, Nielsen Norman Group, 2016)

Prototyping helps you to …

... find and fix problems early (high-level concepts or particular execution).

... improve fast with low costs.

... iterate and thereby improve your solution and its design.

→ ... obtain a high-quality solution.
Prototyping – Characteristics

When you choose the type consider the goals, the design state, available tools and resources, etc.

<table>
<thead>
<tr>
<th>Low-fidelity</th>
<th>High-fidelity</th>
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</thead>
<tbody>
<tr>
<td>Early in the process to explore the basic concept</td>
<td>Prototype is close to the final product</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Throwaway</th>
<th>Evolutionary</th>
</tr>
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<tbody>
<tr>
<td>Build a new prototype, e.g., because of different type</td>
<td>Incremental adjustments and growth of the prototype</td>
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<table>
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<tr>
<th>Static</th>
<th>Interactive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interaction not possible or faked (wizard of oz)</td>
<td>Prototype is clickable and reacts itself</td>
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<table>
<thead>
<tr>
<th>Horizontal</th>
<th>Vertical</th>
</tr>
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<tr>
<td>Focus on the concept rather than the functions</td>
<td>Focus on the execution of single tasks/functions</td>
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Prototyping – Characteristics

**Phase 2**
- **low-fidelity**
  Early in the process to explore the basic concept
- **throwaway**
  Build a new prototype, e.g., because of different type
- **static**
  Interaction not possible or faked (wizard of oz)
- **horizontal**
  Focus on the concept rather than the functions

**Phase 3**
- **high-fidelity**
  Prototype is close to the final product
- **evolutionary**
  Incremental adjustments and growth of the prototype
- **interactive**
  Prototype is clickable and reacts itself
- **vertical**
  Focus on the execution of single tasks/functions
User Study

This part of the exercise aims at identifying the most important concept and usability issues by conducting a first cheap user study. Therefore, your prototype should be tested with five real humans. Things to consider:

“Elaborate usability tests are a waste of resources. The best results come from testing no more than 5 users and running as many small tests as you can afford”

(Jakob Nielsen, 2000)

The user study helps you to ...

... understand how users interact with the system and react to it.

... understand the users expectations and mental model of how the system (should) work.

→ ... obtain a high-quality solution that satisfies the users’ needs.
User Study – Characteristics

When you choose the type consider the state of your prototype, your particular questions and goals, etc.

<table>
<thead>
<tr>
<th>qualitaitve research</th>
<th>vs.</th>
<th>quantitative research</th>
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<tr>
<td>more useful to explore the user’s perception,</td>
<td></td>
<td>quantify problem and compare it to an available</td>
</tr>
<tr>
<td>experience and motivation</td>
<td></td>
<td>baseline, e.g., time needed for a specific task using a</td>
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<tr>
<td></td>
<td></td>
<td>smartphone vs. a smartwatch</td>
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<tr>
<th>natural</th>
<th>vs.</th>
<th>scripted</th>
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<tr>
<td>observe users in their natural environment</td>
<td></td>
<td>well suited to understand a specific set of interactions</td>
</tr>
<tr>
<td>(e.g. field studies)</td>
<td></td>
<td>(e.g. lab user study)</td>
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<th>open task</th>
<th>vs.</th>
<th>closed task</th>
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<td>based on scenarios and do not define a specific</td>
<td></td>
<td>very specific, utilized to generate comparable</td>
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<tr>
<td>interaction, better suited to collect qualitative insights</td>
<td></td>
<td>quantitative data</td>
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<th>qualitative data</th>
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<td>mostly manual data collection, e.g., videos, notes</td>
<td></td>
<td>automated logging, e.g., click counter, reaction time</td>
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User Study – Characteristics

**Phase 2**

**quantitative research**
more useful to explore the user’s perception, experience and motivation

natural
observe users in their natural environment (e.g. field studies)

open task
based on scenarios and do not define a specific interaction, better suited to collect qualitative insights

**qualitative data**
mostly manual data collection, e.g., videos, notes

**Phase 3**

**quantitative research**
quantify problem and compare it to an available baseline, e.g., time needed for a specific task using a smartphone vs. a smartwatch

**scripted**
well suited to understand a specific set of interactions (e.g. lab user study)

**closed task**
very specific, utilized to generate comparable quantitative data

**quantitative data**
automated logging, e.g., click counter, reaction time
User Study – Methods

Usability Testing

Survey

User Observations

Interviews

Lab Experiments

Focus Groups

A/B Test

Questionnaires

Think Aloud

Guessability

KLM
Prototype & Usability Test

**Paper Prototype:**

- Basic wireframe-like ‘interface’ on paper
- User ‘interacts’ with the paper prototype and touches the buttons etc.
- Experimenter changes the paper sheets to show the systems reactions
- More information:
  - Paper Prototyping – Getting User Data before you Code
  - Paper Prototyping – Mozilla Case Study

**Wizard-of-Oz Prototype:**

- Similar but more advanced than paper prototype
- More realistic interface (on the computer) but still static
- the wizard (experimenter) controls the system remotely (user thinks the system works)
- The user “interacts” with the system but the wizard executes the actions and decides what to show
- Might not be thrown away and serve as a basis for a high-fidelity prototype
Usability Testing – How to

**Goal:**
- Get insights into the users’ understanding, expectations, mental model etc.
- Identify features which are easy or hard to use
- Identify mismatches between design and user expectations

**How to:**
- Let the participants explore the system
- Ask participants to think aloud when ‘interacting’
- Observe the user and record or take notes
- Ask participants if you observe problems
- Discuss particular functions, layouts, expectations, problems and so on
- Use post-study interviews or questionnaires
- Analyze data, structure and prioritize findings
- Report your findings and update the design

More information about usability testing