Praktikum Entwicklung von Mediensystemen mit Android

User Studies and Evaluation
General Information

• Lightweight introduction to user studies
• More information from:
  ➢ MMI-script
• User studies for different stages of the development process
  ➢ Ideas and concepts
  ➢ Designs
  ➢ Prototypes, implementations
  ➢ Products in use
What do we want to measure?

- **Quantitative user studies**
  - Measure performance
  - Generate statistical data
  - Verify hypotheses

- **Qualitative user studies**
  - Get “non”-measurable feedback
  - General insight
  - Find problem areas, conceptual errors, missing functionality
Procedure

- Determine the goal(s) of the user study
- Design the experiment(s)
  - Create scenarios and tasks
  - Decide about measurement of metrics
  - Prepare questionnaires
  - Recruit subjects (5 – 100000000000)
- Run the study
- Analyze measured data and questionnaires
- Summarize and present the results

- Or: Start again
Goals

• Purpose of the study
• Find out what you want to evaluate
  ➢ Testing different ideas and designs
  ➢ Usability of application features
  ➢ Evaluation of user acceptance
  ➢ Analysis of application performance

• (Definition of hypotheses)
• Goals greatly influence the further design of the user study

Do people understand it?

Is it secure?

Is it easy to use?
Designing the Experiment(s) I

• Outline the setup of the study
  ➢ Introduction
  ➢ Optional training
  ➢ Order of tasks (randomized?)
  ➢ Order of questionnaires

• Investigator can use the outline as guideline for the study

• Create scenarios and tasks
  ➢ Background for testing items of interest
  ➢ Fully / partially covering the features of an application
  ➢ Write down task descriptions for the subjects
Designing the Experiment(s) II

• Decide about measurement of metrics
  - Quantitative measurement of test-specific metrics
  - Examples: task completion time, number of errors …
  - Means: code, video (analysis), stop watch, etc.

• Prepare questionnaires
  - Qualitative assessment of features usability, user acceptance …
  - Background questionnaire about age, gender, education/job
  - Different questionnaires for different tasks and scenarios
  - Final questionnaire to compare items that were tested separately
  - Use predefined choices (e.g. Likert-scales) and open questions
Inspiring Examples

- IBM Post-Study System Usability Questionnaire (PSSUQ)
  - Standardized questionnaire for usability evaluation
  - 19 questions, Likert-scales
  - Measurement of user satisfaction with system usability
  - Customizable web questionnaire: http://hcibib.org/perlman/question.html

- SUS – System Usability Scale
  - Quick and dirty questionnaire for usability evaluation

- Nasa Task Load Index (TLX)
  - Assessment of workload score
Running the Study

• Run the study according to the outline/script
• Assign different people to different roles
  ➢ Investigator, documentation, ...
• Encourage thinking aloud
• Document comments, problems, etc.
• Support subjects in case they don't know what to do
  ➢ Give hints instead of solutions ("Why don't you try ...?")
Exemplary Study Setup

Participant/Victim

Collect Data

Logs

Prototypes
Analysis and Summary of the Results

• Quantitative data, e.g. time, number of errors
  ➢ Calculate mean values and standard deviations, e.g. with Excel
  ➢ Create diagrams for presentation

• Qualitative data, e.g. from questionnaires
  ➢ Mean values and standard deviations from scales; diagrams
  ➢ Summary of individual answers; report trends
  ➢ E.g. demographic data:
    “We recruited 24 volunteers to participate in the study. The average age was 28 years, the youngest participant being 15 and the oldest being 57. 18 of them were male, 6 female.”
Optional: Writing a Paper

• Many conferences offer different means for publication
  ➢ Full / short paper
  ➢ Work in progress, posters
  ➢ Demos
  ➢ ...

• Suitable conferences for publication
  ➢ Ubicomp 2010
  ➢ MobileHCI 2011
  ➢ NordiCHI 2010

• Please contact us, if you want to submit sth. and need help
### Timeline

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic/ Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>29.04.2010</td>
<td>Introduction and Overview of the Android Platform</td>
</tr>
<tr>
<td>06.05.2010</td>
<td>Implementing a User Interface</td>
</tr>
<tr>
<td>13.05.2010</td>
<td>Christi Himmelfahrt</td>
</tr>
<tr>
<td>20.05.2009</td>
<td>Storing, Retrieving and Exposing Data</td>
</tr>
<tr>
<td>27.05.2010</td>
<td>Brainstorming, Application Design</td>
</tr>
<tr>
<td>03.06.2010</td>
<td>Fronleichnam</td>
</tr>
<tr>
<td>10.06.2010</td>
<td>Project Presentation</td>
</tr>
<tr>
<td>29.07.2010</td>
<td>Final Presentation, End of Practical</td>
</tr>
</tbody>
</table>
Questions?
Have Fun!