

LFE Medieninformatik: Gregor Broll, Alexander De Luca

## Praktikum Entwicklung von Mediensystemen

Mobile Dienste für Studenten

User Studies and Evaluation 01/08/2010

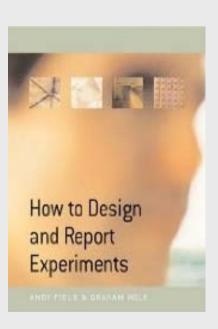




#### **General Information**



- Lightweight introduction to user studies
- More information from:
  - Andy Field, Graham Hole. How to Design and Report Experiments. Sage
  - MMI-script
- User studies for different stages of the development process
  - Ideas and concepts
  - Designs
  - Prototypes, implementations
  - Products in use





#### **Different Kinds of User Studies**



#### 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 of User Studies**



- 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 (7 10)
- Run the study
- Analyse measured data and questionnaires
- Summarize and present the results



#### **Goals of the User Study**



- 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



#### **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 assement 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 alound
- 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 ...?")



### **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



#### **Optional: Writing a Paper**



#### Many conferences offer different means for publication

- Full / short paper
- Work in progress, posters
- Demos
- ...

#### Suitable conferences for publication

- DIS 2010 (Designing Interactive Systems)
- Ubicomp 2010
- MobileHCI 2010
- NordiCHI 2010
- Please contact us, if you want to submit sth. and need help



#### **Next Meetings**



#### **22th January 2010**

- Prototype ready for user study
- Concept/outline for user study (refinement at the meeting)

#### **19th February 2010**

- Final presentation of prototype and evaluation
- Slide presentation about the whole project (design, implementation, evaluation)
- Demo of final prototype



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# Questions? Have fun!