Project

Grundlagen des Software Engineering  
Fundamentals of Software Engineering

Prof. Dr. Dr. h.c. Dieter Rombach

SS 2016
Organizer

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Topics

- Goal
- Project
- Applied Techniques
- Infrastructure
Goal

- Apply engineering methods and techniques for the systematic development of software-intensive systems

Requirements Engineering  Architectural design  Component Engineering  Testing
Goal

- Apply engineering methods and techniques for the systematic development of software-intensive systems
This year’s project will deal with the development of a mobile people’s bus system. The system consists of a mobile app that serves as the people’s bus host system and another mobile app for citizens to use the different people’s busses. It is intended, that the system will be used within the project Digitale Dörfer (for further information see www.digitale-doerfer.de). Real life evaluations with concrete existing people’s bus systems are also optionally possible.
Applied Techniques

Project Organization

Project Database
- Products
- Data
- […]

Experience Factory
- Process-models
- Product-models
- Quality-models
- T/M/T
- Products
- Project plans
- […]

Experience Database

Reuse (Models)

Storage (Products, Measures)

Reuse

Project Plan

Project Planning

Problem / Rqmts

Project Management

RE / ID
AD
CO
Test

Quality Assurance

SW-System/Product

Product Goal and Characteristics

Problem / Rqmts

RE: Requirements Engineering
ID: Interaction Design
AD: Architecture Design
CO: Coding
Applied Techniques

Process Modeling (MVP-L)
Req-Mgmt

Stepwise Abstraction

Project Planning

Project Plan

Problem / Rqmts

Project Organization 1

Project Organization 2

Process Database

Products

Data

[...]

Goal and Characteristics

Problem / Rqmts

mConcAppt

Project Management

RE / ID

AD

CO

Test

Testing

SW-System/Product

Storage (Products, Measures)

Reuse

Reuse (Models)

Inspectons with PBR

Experience Factory

Experience Database

Process-models

Quality-models

Product-models

- T/M/T
- Products
- Project plans
- [...]

- Products
- Data
- [...]

Storage

Version Mgmt

RE: Requirements Engineering
ID: Interaction Design
AD: Architecture Design
CO: Coding
Applied Techniques

- Problem / Rqmts
- Goal and Characteristics
- Project Planning
- Project Plan
- mConcAppt
- Process Modeling (MVP-L) Req-Mgmt
- Stepwise Abstraction
- RE / ID
- Arch
- Co
- Test
- MIL
- Testing
- Reuse (Models)
- Experience Factory
- Experience Database
- - T/M/T
- - Products
- - Project plans
- - [...]
## Supervision

<table>
<thead>
<tr>
<th>Steffen Hess</th>
<th>Christian Wolschke</th>
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<tbody>
<tr>
<td>New feature requests</td>
<td>Project Management</td>
<td>Requirements Engineering / Interaction Design with mConcAppt in Wiki</td>
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Infrastructure

- Project environment is provided
  - Technical support: Christian Wolschke, Thomas Schneider

Thomas Schneider
tschneid@cs.uni-kl.de
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Project Management

- **Kick-off Meeting**
- **4 Iterations**
  - Each iteration consists of
    - Requirements & Interaction Design
      - PBR: Test cases and customer interview
    - Architecture
      - Checklist-based review
    - Coding
      - Code reviews
    - Testing
      - Each iteration ends with testate
- **Final Presentation**
  - with Prof. Rombach
  - Date: t.b.d.
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Workflow (1)

Create New Idea
Assign for next step
Prioritize (-> milestone)
Track changes

Issue

Requirements Engineering

Stakeholders
Goals
Use Cases
System Functions

System Designing

Architecture

Checklist based review

System TC

Create System Test Cases

Interview Customer
document related artifacts + changes
Workflow (2)

- Issue
  - Unit Designing
    - Unit interface + specification
    - Create Unit Test Cases
    - Unit TC
  - Coding
    - Code
    - Review
      - Automatic build + Unit Test
        - build artifacts

- document related artifacts + changes
Requirements Engineering & Interaction Design

Phase 1 Elicit Requirements
- Prepare & Conduct Workshop
- Document Results

Phase 2 Specify Interaction Design
- Identify key functionality
- Specify Interaction Cases
- Model flow of interaction cases
- Create Wireframes
- Model screen flows

Phase 3 Validate Interaction Design
- Specify usage scenarios
- Create clickable prototype
- Conduct user review

See “mConcAppt@GSE2016.docx“ for detailed guidance
### OASP

**OASP4J**
- Currently not addressed
- JavaFx planned

**OASP4JS**
- AngularJS
- Best-Practices
- Modules
- Sample Application
- Application Template

**OASP4NET**
- Not planned

### Client
- JEE-Standards
- Best-Practices
- Modules
- Sample Application
- Application Template

### Server
- Not planned (node.js)

### In Progress
Code Architecture
Coding

- **Infrastructure**
  - Git for source code management (SCM)
  - Jenkins
  - At least one Mac & Win10 for mobile builds

- **Follow the guidelines of the OASP!**

- **Think in use cases. Trace use cases to components.**

- **Testing**
  - Try to perform your tasks test-driven (TDD) by unit tests
  - Implement consumer-based tests
Your work

• You will work as ONE Team
  • gseprojekt@cs.uni-kl.de

• Three groups exist
  • Group 1: Backend
    • gseprojekt1@cs.uni-kl.de
  • Group 2: Citizen App
    • gseprojekt2@cs.uni-kl.de
  • Group 3: Bus App
    • gseprojekt3@cs.uni-kl.de
  • "Group 4": Supervisors
    • gseprojekt4@cs.uni-kl.de

• You will only be able to finish your tasks if you continuously work on them
  • 8 ECTS Points -> 240 hours, 13 weeks -> ~ 18,5 hours/week
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Next steps

- Sign participation declaration
  - you agree your result to be public and reusable

- Get access to our lab
  - Physical keys

- Get access to
  - PCs in lab
  - Github project
  - Jenkins-Server

- Read guidelines for working

- Start to work
Workshop

- For requirements elicitation
- On Friday, April 22, in 32-439 at 13:15 h
- Preparation is necessary