Project

Grundlagen des Software Engineering
Fundamentals of Software Engineering

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

SS 2016
Topics

- Goal
- Project
- Applied Techniques
- Infrastructure
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.
Bürgerbus Weilerbach

![Bus und Gruppe von Personen]

Plan des Bürgerbus Weilerbach

Der Bürgerbus fährt stündlich um 9:00, 10:00, 11:00, 14:00 und 16:00 Uhr.

Startstation:
- Igny-Allée
- Am Sonnenstr.
- 09:00
- Schellenberger Str.
- 09:03
- Verbindung Wolfrich Koch Str.
- 09:05
- Verbindung Heinrich Koch Str.
- 09:06
- Bacharst. Blumer-Janke
- 09:08
- Mackenbachstr. Gebräunte Schick
- 09:09
- Möhrickstr. von Bremmen Str.
- 09:10
- Eichendorffstr. Übergang falttor
- 09:11
- Mackenbachstr. Kreuzung Obergasse
- 09:12
- Rummelstr. / Parkplatz Bongasse
- 09:13
- Häuptengarten / Seniorenheim
- 09:14
- Beethoven / Mozartstr. / In der Lehmenkaut
- 09:15
- Häuptengarten / Weilerbach Reisebüro
- 09:16
- Bussenbüffel / Metzgerm. Schröder
- 09:17
- Rosale Werkstatt Janke
- 09:18
- Bussenbüffel / Kreuzung Lindenustr.
- 09:19
- Am Hochrain / Zum Gießerei
- 09:20
- Ringstr. / Kreuzung Talstr. (oben)
- 09:21
- Ringstr. / Kreuzung Talstr. (unten)
- 09:22
- Spitzknecht / Am Elpel
- 09:23
- Lindenstr. Hausnummer 13
- 09:24
- Hauptstr. / Parkplatz Barboska Räckerei
- 09:25
- Reisebüro Lowak, Fahrscule Schneider
- 09:26
- Hauptstr. / Apotheke / Tee- und Basteletube Ratz
- 09:27
- Hans-Reiner-Str. / Omkei Tomis Mitte
- 09:28
- (Fuchs Lubritech, Aral)

zurück zum Kreisel...
Applied Techniques

Project Organization
1
2
n
Problem / Rqmts

Project Database

- Products
- Data
- […]

Experience Factory

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

Experience Database

Storage

Test

CO

AD

RE / ID

Project Plan

Project Planning

Project Management

Reuse (Models)

Reuse

Storage (Products, Measures)

Experience Factory

Project Database

- Products
- Data
- […]

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

Experience Factory

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

Experience Database

- Process-models
- Product-models
- Quality-models

Project Database

- Products
- Data
- [..]

Process Modeling (MVP-L) Req-Mgmt

Stepwise Abstraction

mConcAppt

Project Planning

Problem / Rqmts

Project Plan

Project Management

RE / ID

Arch

Co

Test

MIL

Testing

Inspections with PBR

Reuse (Models)

Storage

Reuse

(Products, Measures)

Version Mgmt

Github-Wiki

Git-Repo

DL: Experience Factory

Project Organization 1

Project Organization 2

[..]

SW-System/Product

Inspections with PBR

Reuse (Models)

Storage

(Products, Measures)

Version Mgmt

Github-Wiki

Git-Repo

Slide 10

RE: Requirements Engineering
ID: Interaction Design
AD: Architecture Design
CO: Coding
<table>
<thead>
<tr>
<th>Steffen Hess</th>
<th>Christian Wolschke</th>
<th>Anne Hess</th>
<th>Sebastian Müller</th>
<th>Malte Brunnlieb</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>
<td>Entries in Wiki for test reports</td>
<td>Architecture</td>
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<td>Issue Tracker</td>
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<td>Test cases</td>
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Infrastructure

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

Thomas Schneider
tschneid@cs.uni-kl.de
32-418
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

document related artifacts + changes

Interview Customer
Workflow (2)

Issue

- Architecture
- Unit Designing
- Unit interface + specification
- Coding
- Code
- Create Unit Test Cases
- Unit TC
- 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
Architecture

- Open Application Standard Platform
- Trace system functions to components (see MIL)
Coding

- Coding conventions
- Unit test frameworks
- Languages:
  - Java
  - Angular JS
- Git for source code management (SCM)
- Jenkins for automatic builds
Testing

- Test by unit tests and system tests
- Report tests
- Rework if necessary
Your work

• You will work in teams

Please register until March 20, 2016 at Christian Wolschke

We will inform you, whether you can participate (as we have 15 places available)

• 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
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