Current Software Engineering Research Topics:
RE in Embedded Systems and Software Quality Assessment

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iPhone study project

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Tightening knowledge sharing in distributed software communities by applying semantic technologies

For a knowledge sharing environment with advanced capabilities...
Competence Centers Overview

**Architecture & Services**
Description techniques and development processes for large software systems.

**Embedded Systems**
Design, description, analysis, and simulation of control software for technical processes.

**Context Aware Systems**
Specification and development of context aware systems.

**Software Maintenance**
Maintenance and development of existing software.

**Model-Based Systems & Qualitative Reasoning**
Problem solving based on behavior models of physical or software systems.

**Model-based Development**
Formally founded and seamless model-based development.

**Process Models**
Development of Process Meta-Models, Project Management, Process Patterns, Open Source Processes, Maturity Models

**Requirements Engineering**
Creation process of documented representations of the requirement specifications.

**Specification & Verification Testing**
Specification, testing and verification of software systems.

**Software Quality**
Specification and analysis of the quality of software systems.

**Product Data Modelling**
Modeling of product data.

**Theorem Proving**
Foundations and Applications of Machine Supported Proofs.

**Correctness of Programming Languages**
Theory and Tools for the Verification of Programming Languages.

**Tool Support**
Tool development at the chair.
**Research Projects**

- Funded by government (BMBF)
- In collaboration with industry
  - To work on problems currently faced in practice
  - To evaluate and implement solutions in practice
- For example
  - Development of a requirements engineering guide
  - Development of methods for embedded systems
  - Development processes, e.g. Standard V-Modell XT
- Contracted by industry
  - To assist in company-specific challenges
  - To develop customized solutions
- For example
  - Code cloning detection
  - Requirements engineering methods
  - Software quality assessment

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Example: REMsES requirements engineering guide

Artefact: Use Case Model (System Layer)

Navigation

Content

Artefact name

Short description

Relations to tasks

Input Tasks (i.e., artefact is input for them)

Output Task (i.e., artefact is output of them)

Process classification of the artefact

Main artefact description (not shown)

Templates and examples

Additional information

Checklist

Documentation hints
Example: Continuous Quality Assessment Toolbox

- Software Quality Characteristics
- Aggregated Metrics in Dashboard
- Code clone detection in >10 languages
- Architecture Conformance Analysis

Integrated visualization of diverse quality characteristics for software systems

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