The Software Quality Edge

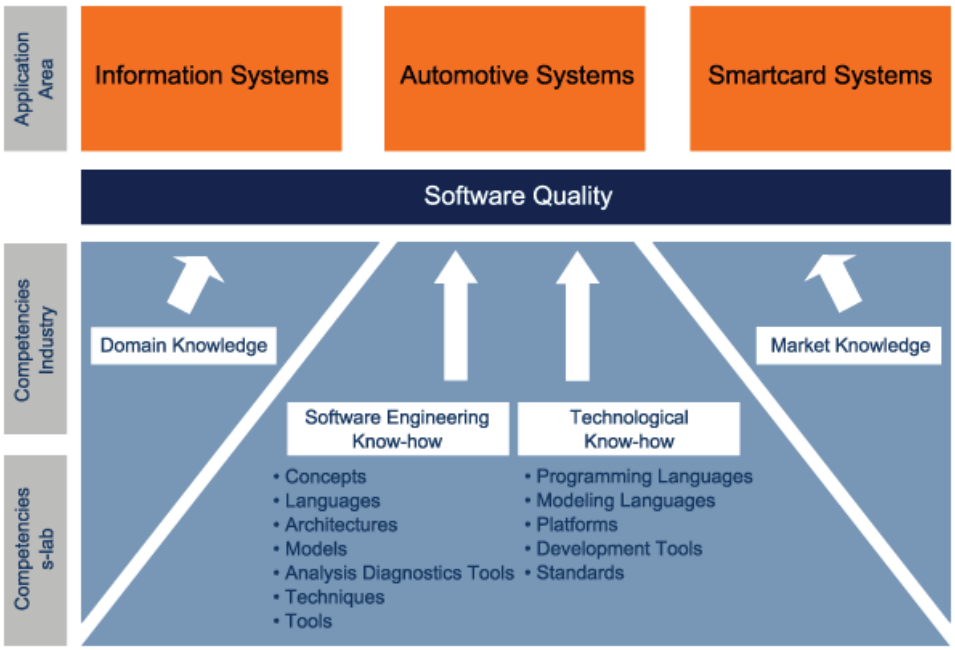
Whenever we do our banking business over the internet, use our mobile phones, travel by car, train or airplane, or if we get in touch with the latest medical technologies in the hospital: software is always of vital importance – with increasing growth!

Software takes care that products and procedures are operating immaculately. High quality of software is an indispensable condition for this. Software is only of high quality if it fulfils a multitude of different requirements. It has to be correct, reliable, understandable and user-friendly, for example, must execute stable and efficiently and has to be secure against unauthorized access. But also features that are of importance while building and further developing the software belong to this, like maintainability, reusability, adaptability or portability. To guarantee and measure this software quality is a big challenge.

The Software Quality Lab (s-lab) faces up to this problem. The overall goal is to support companies that develop high-quality software products. Target audience are small, medium-sized and large-scale enterprises, which develop ambitious software, for example for the automotive or financial sector.

About s-lab

Topics and Competencies of the Software Quality Lab



Activity Portfolio

The **business activities** of s-lab are of versatile manner: they range from planning and executing research and development projects, across technology studies to the point of cooperatively conducting Bachelor or Master Thesis. Along with that go further education measures (e.g. training courses, workshops, seminars, lectures) for the software industry, user advice, software optimization and quality assurance.

s-lab is a multi-private-public partnership institute for knowledge and technology transfer between academia and industry. The open structure of s-lab enables cooperation with many partners.

Through the permanent exchange between academia and industry, companies, university and students benefit likewise: Companies, especially small and medium-sized **companies**, procure competitive advantages trough the faster adoption of groundbreaking software solutions. The challenges of industrial practice deliver new research challenges to the university. The **students** get an exquisite practical education, which covers the needs of the job market perfectly. So they are well equipped and therefore attractive employees for the companies.

The offerings of s-lab are open for all enterprises. Already seven **associated partners** from various industries and additional project partners provide the s-lab with problems in step with actual practice.

Advantages

Which advantages arise for industrial partners from a cooperation with s-lab?

- Exploitation of synergies (joint research topics, cross-cutting topics) in the construction of new technologies
- Execution of close-to-research projects
- Continuous access to a variety of software engineering and domain expertise
- Competitive advantage through accelerated application of innovative technologies
- Improvement of own software development practice through knowledge transfer
- Assessment and familiarization of future employees

Associated Partners

dSPACE

HELLA Ideen für das Auto der Zukunft

sd&m A Company of Capgemini

S&N netBank solutions

Orga Systems.

Sagem Orga SAFRAN Group

UNITY AG

Competencies and Research Emphasis

Five professors from the area of software engineering of the Department for Computer Science of the University of Paderborn participate in s-lab. Their research groups provide the necessary scientific and software engineering competencies.

Prof. Dr. Gregor Engels (chairman)
Database & Information Systems
model-driven software development (MDA, MDD); model-based and automated testing; quality of software models; visual modeling languages (e.g. UML); service-oriented architecture (SOA); Web technologies; domain-specific modeling languages and software depelopment techniques; open source software

Prof. Dr. Uwe Kastens (deputy chairman)
Programming Languages & Compilers
design, translation and application of programming languages and application-specific languages; tools for developing visual and textual languages; program analysis; optimizing code generation for particular hardware architectures; flexible generation and simulation of code

Prof. Dr. Hans Kleine Büning
Knowledge-based Systems
fundamentals, modeling and realization of knowledge-intensive applications: rule-based knowledge processing; data mining; automation of configuration tasks, intelligent analysis and diagnostic procedures of technical domains

Prof. Dr. Franz J. Rammig
Design of Parallel Systems
specification, modeling and formal verification of safety-critical and embedded real-time systems; component-based, distributed real-time operating systems; hardware/software co-design; software synthesis; reconfigurable hard- and software systems

Prof. Dr. Wilhelm Schäfer
Software Engineering
UML-based modeling and analysis of embedded systems; re-engineering and refactoring of software systems; design patterns; software configuration management; software development tools; automated code generation; software process modeling; software quality standards

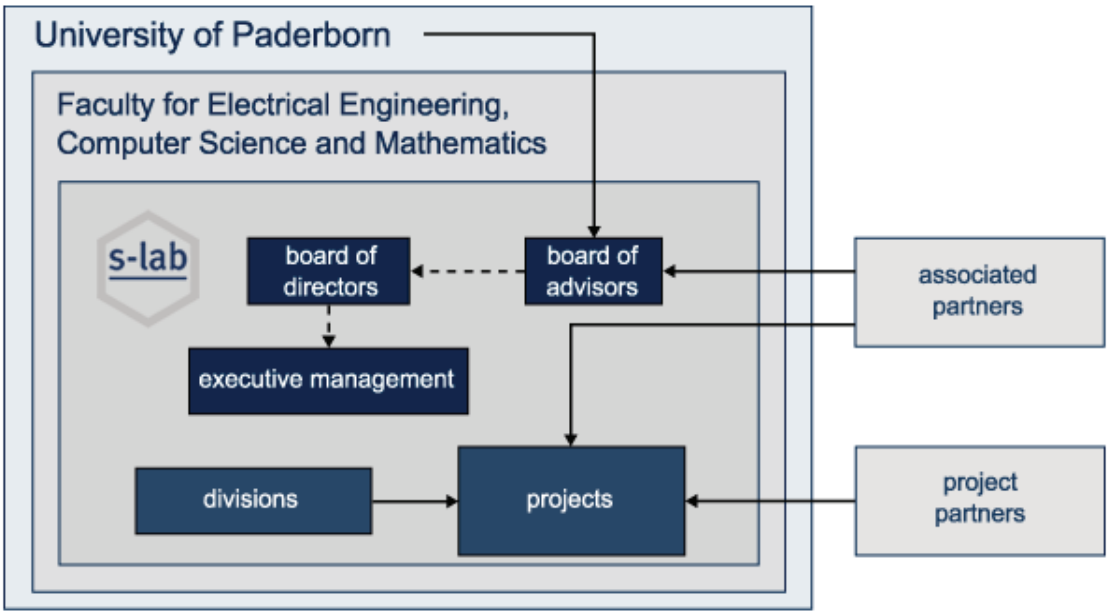
Form of Organisation

The Software Quality Lab (s-lab) was established as the first scientific institution of the Faculty for Computer Science, Electrical Engineering, and Mathematics. s-lab is directed by a board of directors, which is assisted by an executive management. The board of directors is consulted by a board of advisors which consists of members of the university and the associated partners.

Associated partners are privileged and file a cooperation contract with s-lab.

The associated partners delegate members to the board of advisors of s-lab.

The participation in projects of s-lab is also open to other project partners.



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