Cloud Computing Solutions for Small Trade
IT at KIT: Computer Scientists and Economists Work on a Service Platform for Better IT Connection of Small and Medium-Sized Enterprises

Cloud computing has been known for a long time in industry. Small and medium-sized enterprises, however, hardly use these flexible IT services. Within the framework of the CLOUDwerker project launched under the “Trusted Cloud” technology program of the Federal Ministry of Economics and Technology (BMWi), three working groups of Karlsruhe Institute of Technology (KIT), together with partners from industry and research, develop a safe and open service platform to support business processes in small trade.

Cloud computing means that a part of the IT infrastructure is no longer located on a local computer, but made available to the user via a network as a service that is dynamically adapted to his needs. The scope of services extends from virtualized hardware, such as memory and computing capacity (infrastructure as a service, IaaS) to platforms and development environments (Platform as a Service, PaaS) to software packages and application programs (Software as a Service, SaaS). This results in new opportunities of cooperation...
and communication with partners and customers in business. Small and medium-sized craftshops, however, have hardly used this IT support so far. Hence, they cannot use the optimization potentials that already are common practice in other branches.

This is where the CLOUDwerker project of the BMWi starts. The companies, research institutions, and associations involved are working on the conception and implementation of a platform according to the SaaS model. Various software solutions and craft-specific applications are compiled in individual service packages. In this way, also smaller enterprises are to be enabled to use the advantages of electronic communication and collaboration. Service-based offers minimize the purchase and maintenance expenditure, problems are eliminated by an IT service provider.

The computer scientists and economists of KIT assume a leading role in the conception of the service platform. The research group “Economy and Technology of eOrganization” of Professor Stefan Tai at the Institute of Applied Informatics and Formal Description Methods studies how cooperation of small enterprises with each other and with the customer can be improved by appropriate software services. Moreover, it develops a cloud service concept for joint document setup, e.g. for offers or invoicing, which integrates and coordinates data and functions from various other services of the platform. This facilitates joint contract execution by small enterprises and strengthens their position in competition.

Another important aspect of the development of the platform is the safe and simple use of cloud services: Under the CLOUDwerker project, the Chair of IT Security of Professor Jörn Müller-Quade is working on security models and techniques adapted to the tasks and processes of small enterprises. The group also focuses on methods for the safe and confidential processing of sensitive data, such as customer and invoice information.

Professor Ralf Reussner and his Chair for Software Design and Quality focus on the conversion of existing individual software architectures into multi-tenant systems, i.e. systems for many users. Applications are offered centrally in the cloud and made available to the users in an individualized manner. It is also worked on connecting locally available software solutions, such as a customer relationship management system or an ERP system, an application to support resource planning of an enterprise.
Apart from BMWi and the Project Management Agency of the German Aerospace Center (PT-DLR), the following partners are involved in the CLOUDwerker project: CAS Software AG, 1&1 Internet AG, Haufe-Lexware GmbH & Co. KG, Fraunhofer IAO, Karlsruhe Institute of Technology (KIT), Forum Soziale Technikgestaltung, the Baden-Württembergischer Handwerkstag (BWHT).

**IT at KIT: This Year’s Highlights**

KIT will present current research from its focuses COMMputation as well as Anthropomatics and Robotics during its annual reception on March 22, to which numerous partners from industry and science have been invited. The first German department of informatics will celebrate its 40th anniversary at KIT in autumn. IT also was in the focus of KIT’s stand at CeBIT 2012.

Information technology at Karlsruhe Institute of Technology is bundled into two focuses. The KIT COMMputation Focus integrates communication and computation for development of devices with capabilities to interact, to perceive their environment, and to adapt to dynamically changing requirements. Researchers from the fields of informatics, electrical engineering, information technology, and economics cooperate to develop new concepts, architectures, methods, tools, and applications for the relevant complex systems.

The KIT Anthropomatics and Robotics Focus intends to improve the quality of life of humans. Using methods of informatics, mechanical engineering, electrical engineering, information technology, social sciences, and humanities, symbiotic systems are developed after the models of human anatomy, motor functions, perception, and behavior. The research topics range from machine intelligence, human-centered robotics, multimodal interaction and robot technology through to industrial robotics.

Karlsruhe Institute of Technology (KIT) is a public corporation according to the legislation of the state of Baden-Württemberg. It fulfills the mission of a university and the mission of a national research center of the Helmholtz Association. KIT focuses on a knowledge triangle that links the tasks of research, teaching, and innovation.
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