

**Siemens AG, Technische Universität München,
Ludwig-Maximilians-Universität München,
German Research Center for Artificial Intelligence, and
Fraunhofer Institute for Applied and Integrated Security**

Munich, Germany
July 15, 2014

Research alliance for the digital revolution

- **Automation and Digitalization Campus to be established**
- **Collaborative research with the Technische Universität München, the Ludwig-Maximilians-Universität München, the German Research Center for Artificial Intelligence and the Fraunhofer Institute for Applied and Integrated Security**
- **New technology base for automation, Internet of Things, cloud solutions, IT security and smart data**
- **Siemens to invest a sum in the double-digit million-euro range over three years**

Partners from industry and science are joining forces in a novel collaborative research alliance to address the future-oriented fields of automation and digitalization. Siemens is the first company to forge a research alliance with universities and research institutes that will utilize a new, fully integrated approach in order to bundle outstanding expertise and make possible wide-ranging innovations in processes and systems.

The Automation and Digitalization research project has been launched in collaboration with the Technische Universität München (TUM), the Ludwig-Maximilians-Universität München (LMU), the German Research Center for Artificial Intelligence (DFKI) and the Fraunhofer Institute for Applied and Integrated Security

	 Technische Universität München	 LUDWIG-MAXIMILIANS-UNIVERSITÄT MÜNCHEN	 Deutsches Forschungszentrum für Künstliche Intelligenz GmbH	
Siemens AG Wittelsbacherplatz 2 80333 Munich Germany	Technische Universität München (TUM) Arcisstraße 21 80333 Munich Germany	Ludwig-Maximilians-Universität München Geschwister-Scholl-Platz 1 80539 Munich Germany	DFKI GmbH Trippstadter Straße 122 67663 Kaiserslautern Germany	Fraunhofer Institute AISEC Parking 4 85748 Garching Munich Germany

Joint press release
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(AISEC). Within the alliance, researchers will cooperate on software and technologies for industrial automation and digitalization as well as on topics such as the Internet of Things, cloud solutions, IT security and smart data – that is, the development of new applications based on the intelligent analysis of large amounts of data.

At the same time, as part of its new company-wide strategy, Siemens is realigning its research activities in the innovation fields of automation, digitalization and electrification with the aim of further strengthening its position as technology leader in these areas.

The activities of the Automation and Digitalization Campus will be located primarily in Munich, which in a recent study by the EU Commission was named Europe's leading IT Lighthouse. During the further course of the collaboration, research results will be brought to market readiness and incorporated into the Siemens portfolio. The research alliance engages in international public-sector projects which are open to partners worldwide, making it highly attractive for companies as well as universities and research institutes. Comprehensive doctoral and post-doctoral programs that will, for example, enable up to 100 doctoral candidates to pursue their studies while collaborating on research are planned as well. The campus will thus make a major contribution to strengthening Germany as a science and business location.

“Today's agreement will enable Siemens to strategically foster high-quality German research in fields that will be decisive for gaining a competitive edge in the future,” said Klaus Helmrich, Siemens' Chief Technology Officer and Chief Human

Siemens AG
Wittelsbacherplatz 2
80333 Munich
Germany

**Technische Universität
München (TUM)**
Arcisstraße 21
80333 Munich
Germany

**Ludwig-Maximilians-
Universität München**
Geschwister-Scholl-Platz 1
80539 Munich
Germany

DFKI GmbH
Trippstadter Straße 122
67663 Kaiserslautern
Germany

**Fraunhofer Institute
AISEC**
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85748 Garching
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Resources Officer. “Automation and digitalization offer enormous opportunities for a wide range of industries – from autonomous machines to the intelligent assessment of large amounts of data. Our goal is to seize these opportunities and transform them into competitive advantages for German industry.” Siemens intends to invest an amount in the double-digit million-euro range over the next three years.

“The digital revolution has begun fundamentally changing all aspects of economic activity and life. That’s where we’re called upon – with our comprehensive range of technology knowhow, which we’ve been systematically expanding for a long time. In the context of digitalization, engineers are becoming key players in society,” stated TUM President Prof. Dr. Wolfgang A. Herrmann.

“The research alliance for the digital revolution is enabling the upheavals and opportunities arising from automation and digitalization to be explored and actively shaped at the interface of industry and science. As part of this alliance, the LMU will leverage its expertise to help drive innovation and identify potential for groundbreaking future technologies,” noted LMU President Prof. Dr. Bernd Huber.

“Industry 4.0 will open up factories to the Internet of Things. The DFKI has helped lay the scientific basis for Industry 4.0. Our Smart Factory was the first to demonstrate the concept’s feasibility in the laboratory,” said Prof. Dr. Wolfgang Wahlster, CEO of the DFKI and one of the founding fathers of Industry 4.0. “Only by working together with leading industry partners like Siemens will it now be possible to create the prerequisites for Industry 4.0’s implementation in day-to-day factory processes and make Germany a leading provider of digitalization for manufacturing.”

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“German industry won’t open itself widely to digitalization unless it receives reliable and robust security solutions that enable it to protect innovation- and competition-critical data (production data, product data, maintenance data, customer data, etc.). It’s necessary to protect such data from tampering and unauthorized sharing. Requirements here include trustworthy sensors, tamper-resistant embedded components, secure data transport and secure platforms on which data can be securely exchanged. The Fraunhofer AISEC would like to contribute its IT security expertise to the Campus in order to develop secure solutions for industry,” said Prof. Dr. Claudia Eckert, Director of the Fraunhofer Institute for Applied and Integrated Security (AISEC).

The first round of planned research topics will include autonomous robots that interact closely with human beings – for example, in the highly flexible factories of the future. Plans also call for modeling production processes and robots with the help of “digital twins” and developing a uniform language for inter-machine communication. In addition, algorithms for the smart analysis of large amounts of data will be investigated to determine how this data can be used, among other things, for smart grids, industrial automation, smart cities and future healthcare systems. Interest will also be focused on self-managed cloud services – that is, self-configuring, self-optimizing, self-healing and self-protecting cloud services – and, of course, on IT security.

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Contact for journalists:

Siemens AG
Harald Hassenmüller, Tel.: +49 89 636 32187
E-mail: harald.hassenmueller@siemens.com

TU München
Dr. Ulrich Marsch, Tel.: +49 89 289-22779
Spokesman for the President
E-mail: marsch@zv.tum.de

LMU München
Luise Dirscherl, Tel.: +49 89 2180-2706
Head of Communications and Press, Press Spokeswoman for the President
E-mail: dirscherl@lmu.de

German Research Center for Artificial Intelligence GmbH (DFKI)
Christian Heyer, Tel.: +49 631 20575-1710
Head of Corporate Communications DFKI Kaiserslautern
E-mail: Christian.Heyer@dfki.de

Fraunhofer AISEC
Viktor Deleski, Tel.: +49 89 3229986169
Head of PR and Marketing
E-mail: viktor.deleski@aisec.fraunhofer.de

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www.siemens.com/press/smart-data-day

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80333 Munich
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Siemens AG (Berlin and Munich) is a global powerhouse in electronics and electrical engineering, operating in the fields of industry, energy and healthcare as well as providing infrastructure solutions, primarily for cities and metropolitan areas. For over 165 years, Siemens has stood for technological excellence, innovation, quality, reliability and internationality. The company is one of the world's largest providers of environmental technologies. Around 43 percent of its total revenue stems from green products and solutions. In fiscal 2013, which ended on September 30, 2013, revenue from continuing operations totaled €75.9 billion and income from continuing operations €4.2 billion. At the end of September 2013, Siemens had around 362,000 employees worldwide on the basis of continuing operations. Further information is available on the Internet at: www.siemens.com.

Technische Universität München (TUM), founded in 1868, is one of Europe's leading international research universities, with around 500 professors, 10,000 academic and non-academic staff, and 36,000 students. Its focus areas are the engineering sciences, natural sciences, life sciences and medicine, reinforced by schools of management and education. TUM acts as an entrepreneurial university that promotes talents and creates value for society. In that it benefits from having strong partners in science and industry. It is represented worldwide with a campus in Singapore as well as offices in Beijing, Brussels, Cairo, Mumbai, and São Paulo. A large number of Nobel Prize winners and inventors such as Rudolf Mössbauer, Rudolf Diesel and Carl von Linde have done research at TUM. In 2006 and 2012 it won special recognition as a German "Excellence University." In international rankings, it regularly places at the top among the universities in Germany. www.tum.de

Ludwig-Maximilians-Universität München is one of the leading research universities in Europe. Since its founding in 1472, it has been committed to the highest international standards of excellence in research and teaching. LMU Munich now has approximately 700 faculty and some 3,900 academic staff members, who pursue research and provide tuition for the University's undergraduate and graduate students. The University's 18 faculties cover the whole range of contemporary scholarship, encompassing humanities and cultural studies, law, economics and social sciences, medicine and the natural sciences. 15 percent of LMU's 50,000 students come from abroad, originating from 130 countries worldwide. The know-how and creativity of LMU's academics form the foundation of the University's outstanding research record. www.en.lmu.de

The **German Research Center for Artificial Intelligence (DFKI)**, with sites in Kaiserslautern, Saarbrücken, Bremen (with an associated branch in Osnabrück) and a project office in Berlin, is the leading German research institute in the field of innovative software technology. In the international scientific community, DFKI ranks among the most recognized "Centers of Excellence" and currently is the biggest research center worldwide in the area of Artificial Intelligence and its application in terms of number of employees and the volume of external funds. The financial budget in 2013 was 38 million Euro. DFKI projects cover the whole spectrum from application-oriented basic research to market- and client-oriented design of product functions. Currently more than 420 employees from 60 countries are conducting research focusing on Knowledge Management, Cyber-Physical Systems, Robotics

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Innovation Center, Innovative Retail Laboratory, Institute for Information Systems, Embedded Intelligence, Agents and Simulated Reality, Augmented Vision, Language Technology, Intelligent User interfaces, Innovative Factory Systems. Impact: more than 60 professorships of former DFKI employees, and 60 spin-off companies with approximately 1,700 highly qualified jobs. For further information please visit www.dfki.de

The **Fraunhofer-Gesellschaft** is the leading organization for applied research in Europe. Its research activities are conducted by 67 Fraunhofer Institutes and independent research units at over 40 different locations throughout Germany. The Fraunhofer-Gesellschaft employs a staff of around 23,000, who work with an annual research budget totaling 2 billion euros. More than 70 percent of this sum is generated through contract research on behalf of industry and publicly funded research projects. Branches in the USA and Asia serve to promote international cooperation. www.aisec.fraunhofer.de.

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