



Wednesday, 2nd June 2001, 9:00 - 10:30 | Hermes + Apollon

The Semantic Product Memory: An Interactive Black Box for Smart Objects

A semantic product memory stores a diary of an individual physical object in a persistent way on an embedded sensor system that is networked by wireless communication to a smart environment. The product monitors itself and its environment. Semantic technologies based on OWL ontologies guarantee interoperability of the product memory across the complete supply chain and lifecycle of smart objects and enable end user access to the product's lifelog.

In this talk, we present the layered architecture together with the representation and inference formalisms used in our SemProM project, funded by the German Ministry of Education and Research (BMBF) with 16 Million Euro. SemProM goes well beyond traditional RFID technology and is the basis for intelligent automation in smart factories, event-driven logistics as well as smart retail and after-sales. Collecting information logs about objects in such smart environments and making it available - for example about an object's origin, location, movements, physical properties, environmental conditions, usage history, as well as warranty and maintenance data - can help enterprises to improve their business processes and create new ones. Existing business process models become more accurate since information taken directly from the point of action can be used to manage or adapt processes in real time for the emerging Internet of Things.

We show how such embedded "black box" event recorders can transform everyday objects like cars, circuit boards, pizzas and drug blister packs into smart products. We show how consumers of smart products can access the lifelogs of products by NFC-enabled smartphones using SemProM's browser and track the complete history of a product in multimodal dialogues. A role-based access control mechanism ensures privacy and security of the SemProM product memories. We will discuss fully operational pilot implementations of semantic product memories developed in the SemProM consortium together with major German companies like SAP, BMW, Siemens, DHL, Globus Retail and Kohl Pharma.

Wolfgang Wahlster is the Director and CEO of the [German Research Center for Artificial Intelligence](#) and a Professor of [Computer Science](#) at

Saarland University (Saarbrücken, Germany). In 2000, he was coopted as a Professor of [Computational Linguistics](#) at the same university. In addition, he is the Head of the [Intelligent User Interfaces Lab](#) at DFKI.

He received his diploma and doctoral degree (1981) in Computer Science from the University of Hamburg, Germany. Since 1975 he has been working in the field as a principal investigator in more than 60 projects on intelligent user interfaces.

He was the Scientific Director of the [VERBMOBIL](#) consortium on spontaneous speech translation (1993-2000), the [SmartKom](#) consortium on multimodal dialog systems (1999-2003) as well as the [SmartWeb](#) consortium on mobile multimodal access to semantic web services (2004-2008) and currently serves as the Scientific Director of the [SemProM](#) consortium on semantic product memories (2008-2011).

He has published more than 170 technical [papers](#) and 8 books on language technology and intelligent user interfaces. His current research includes multimodal and perceptive user interfaces, user modeling, ambient intelligence, embodied conversational agents, smart navigation systems, semantic web services, and resource-adaptive cognitive technologies. He is the editor of the books ["SmartKom: Foundations of Multimodal Dialogue Systems"](#)

and ["VerbMobil: Foundations of Speech-to-Speech Translation"](#) and the Co-Editor of the [Readings in Intelligent User Interfaces](#)

Dr. Wahlster is a principal investigator in the Cluster of Excellence ["Multimodal Computing and Interaction"](#) and the [International Post-Graduate College in Language Technology and Cognitive Systems](#) with the University of Edinburgh (School of Informatics), both funded by the [German Research Foundation](#)

Professor Wahlster is a member of the Supervisory and Advisory Board of various IT companies including [DACOS](#), [Celct](#), [Sensitec](#), and [TZS](#).

Prof. Wahlster was the Conference Chair for IJCAI-93 in Chambéry, the Chair of the Board of Trustees of [IJCAI](#) from 1991-1993, a Trustee of IJCAI from 1989-1999, the ECAI-96 Programme Chair and the Programme Co-Chair of ACL/EACL-97.

He has served as the Chair of [ECCAI](#), the European Coordinating Committee for Artificial Intelligence, from 1996-2000. In 2000, he was the President of the Association for Computational Linguistics ([ACL](#)).

He has been and is serving on a number of international advisory boards, including the Board

of Trustees and the Executive Committee of the International Computer Science Institute ([ICSI](#) Berkeley, USA), the [iCORE](#) Research Advisory Committee (IRAC, Calgary, Canada), the Alberta Ingenuity Centre for Machine Learning ([AICML](#), Edmonton, Canada), the Information Society Technologies Advisory Board ([ISTAG](#)) of the European Commission (Brussels, Belgium), the [French National Institute for Research in Computer Science and Control](#) ([INRIA](#), Paris, France), the Japanese Information Technology Research Institute ([ITRI](#), Tokyo, Japan), the Steering Committee of the German-Japanese Forum on Information Technology, the Scientific Advisory Committee of the Swedish Information Technology Institute (SITI, Stockholm, Sweden), the International Advisory Board of the Nijmegen Institute for Cognition and Information ([NICI](#), Nijmegen, the Netherlands), the Scientific Council of [IRST](#) (Trento, Italy), the THCU Advisory Board at the [Caesarea Rothschild Institute](#) (Haifa, Israel), the Advisory Board of the Fraunhofer Institute for Industrial Mathematics ([ITWM](#), Kaiserslautern, Germany), the Scientific Advisory Committee of the [OFFIS](#) Institute (Chair, Oldenburg, Germany), the International Research Forum of SAP (Darmstadt, Germany), the Advisory Board of [Deutsche Telekom Laboratories](#) (Berlin, Germany), the Management Board of the Deutsche Telekom Laboratories at Ben-Gurion University of the Negev ([T-Labs@BGU](#), Beer Sheva, Israel), the Advisory Board of the National Institute of Informatics ([NII](#), Tokyo, Japan), the Scientific Advisory Board of the Singapore Institute of Manufacturing Technology ([SIMTech](#), Singapore) and the Center for Advanced Security Research ([CASED](#), Darmstadt, Germany).

In 2007, he has been appointed Chairman of the [Steering Committee of the Deutsche Telekom Laboratories](#) in Berlin and since 2009 he is a member of the Executive Steering Board of the [EIT ICT Labs](#)

of the European Institute of Innovation and Technology (EIT) with its German Co-Location Centre in Berlin.

Since 2008 he serves as a member of the [University Council of the University of Hamburg](#) . Professor Wahlster has received numerous honors and awards for his research contributions.

He is an [AAAI Fellow](#) (elected in 1993), an [ECCAI Fellow](#) (since 1999), and a [GI Fellow](#)

(since 2004). In 1991, he received the Fritz Winter Award, and in 1995, an IST Prize (European Information Society Technologies Prize) for his research on cooperative user interfaces.

In 1998, he has been awarded the degree of [Doctor Honoris Causa](#) by the [Institute of Technology at Linköping University](#)

, Sweden. In 2001, he received a second [Honorary Doctorate](#)

from

[Darmstadt University of Technology](#)

in Germany.

In 2000, he was the first AI researcher to receive the [Beckurts Award](#) , one of Germany's most prestigious awards for scientific and technological innovations.

In 2001, the President of the Federal Republic of Germany, Dr. Johannes Rau, presented the [German Future Prize](#) to Professor Wahlster for his work on language technology and intelligent user interfaces. He was the first computer scientist to receive Germany's highest scientific prize that is awarded each year for outstanding innovations in technology, engineering, or the natural sciences.

He has been elected to five international academies and learned societies. In 2002, he was the second German computer scientist elected Full Member of the [German Academy of Sciences and Literature](#)

, Mainz. He was the first German computer scientist elected Foreign Member of the [Royal Swedish Academy of Sciences](#)

, Stockholm 2003. In 2004, he was elected Full Member of the [German National Academy of Sciences Leopoldina](#)

, that was founded in 1652, and of [acatech](#)

, the German Academy of Science and Engineering. In 2008, he was elected [Full Member](#)

of the

[Berlin-Brandenburg Academy of Sciences and Humanities](#)

, which was founded by Gottfried Wilhelm Leibniz in 1700.

Since 2001 he serves as the scientific spokesman of the [Feldafing Circle](#) , an association for promoting joint internet research by academic and industrial partners in Germany. In 2004 he

was elected to the

[Münchner Kreis](#)

, a supra-national association dedicated to communications research.

In 2004, he was appointed [Saarland Ambassador](#) and in 2005 he became the spokesman of the Saarland Ambassadors.

In 2005, he has been appointed Chairman of the prize committee for the [HERMES Award](#) , one of the

most valuable technology prizes worldwide.

In 2006, he has been awarded the Federal Cross of Merit, First Class, the Officer's Cross of the Order of Merit of the Federal Republic of Germany. He has also been appointed member of the Research Union "Business - Science" as chief advisor for Information and Communication Technologies by the German Federal Ministry of Education and Research (BMBF)

[back](#)