

# NEWSLETTER



GERMAN RESEARCH CENTER FOR ARTIFICIAL INTELLIGENCE

2/2006

## RESEARCH LABS

IMAGE UNDERSTANDING AND PATTERN RECOGNITION

KNOWLEDGE MANAGEMENT

INTELLIGENT VISUALIZATION AND SIMULATION

DEDUCTION AND MULTIAGENT SYSTEMS

LANGUAGE TECHNOLOGY

INTELLIGENT USER INTERFACES

ROBOTICS

SAFE AND SECURE COGNITIVE SYSTEMS

INFORMATION SYSTEMS



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Changing the World with Questions

Germany  
Land of Ideas



DFKI – Place of Ideas  
New DFKI Building in Kaiserslautern

50 Years of Artificial Intelligence

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## Announcing the European ICT Prize 2007 Valued at € 700,000



The European Information and Communication Technologies Prize (ICT Prize) formerly the IST Prize, is Europe's most important award for innovative products and services in the field of information sciences. This invitation for proposals is directed to companies, agencies, and research institutes that are working to bring new ideas to the markets in the form of innovative products and services.

The ICT Prize is organized by the European Council of Applied Sciences, Technologies and Engineering (EuroCASE), a non-profit organization composed of national academies representing 18 European countries, with sponsorship and support from the ICT Program of the European Commission. The competition is open to organizations from 33 countries.

Approximately 50-70 candidates are nominated from among the numerous applicants. It is from these nominees that the 20 prize winners are selected and given the chance to become one of the three „Grand Prize“ winners chosen each year by the ICT Executive Jury. Germany's representative on the panel is Prof. Andreas Dengel, from DFKI.

The recognition ceremony and award of prizes will be held in the spring of 2007 in Helsinki, Finland. The prestigious event is accompanied by extensive marketing and media activity, which focus on the nominees, winners, and Grand Prize winners. This not only affords them a great opportunity to increase name recognition, enhance corporate image, and strengthen future business outlooks, but also facilitates funding approval, partnerships, and access to the market.

The ICT Prize involves more than the search for the best European innovations and recognition of entrepreneurial spirit; it also supports companies and institutes in their efforts to market their ideas. This is what makes this prize so significant: while honoring past achievements, it is supporting future success.

It is also important to have many German institutions participate by submitting outstanding proposals. The ICT Prize is a measure of their innovative strength, implementation ability, and creativity.

Deadline for applications is: December 4, 2006.

Application forms are available online at [www.ict-prize.org/apply](http://www.ict-prize.org/apply)

**Additional information**  
[www.ict-prize.org](http://www.ict-prize.org)

### Impressum

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## Prof. Wahlster appointed to Federal Government Research Alliance

The German Federal Minister of Education and Research (BMBF), Dr. Annette Schavan, invited Prof. Wolfgang Wahlster, along with several other well-known figures from the scientific and business communities, to be a member of the „Forschungsunion Wirtschaft-Wissenschaft“ (industry-science research alliance) for the current legislative period. Co-chaired by Prof. Dr. Hans-Jörg Bullinger, president of Fraunhofer Institute and Dr. Arend Oetker, industrialist and president of the Stifterverband für die Deutsche Wissenschaft (Germany's donors' association for sciences and the humanities), the panel is composed of leading representatives of business and science and asked to provide expert advice regarding the best strategies for Germany to further improve its reputation as a high tech country to Dr. Schavan's Ministry and the responsible state secretaries. The panel meets six times per year for consultations, normally in Berlin, and receives support from an administrative office jointly funded by the FhG, Stifterverband, and BMBF.

Dr. Schavan convened the panel on June 23, 2006 at the BMBF offices for the initial session of the new circle of advisors. The new panel is to focus efforts on the meaningful implementation of the national high tech strategy. The strategy allows forces to concentrate on the study of future oriented topics without the normal resource limitations. A central issue is how science and business may be more closely interwoven. The high tech strategy contributes to the European innovation policies. The strategy was debated in the cabinet and introduced by Dr. Schavan to the public on August 29, 2006.

On November 29, 2006, Prof. Wahlster, as an advocate of innovation in the „Information and Communication technologies (ICT)“ branch, will present a seminar to the panel together with Willi Berchtold, president of BITKOM, about the importance of ICT as the #1 motor for innovation. He

will also address the need for more research and activity in the field under the framework of the high tech strategy. In addition, Prof. Wahlster has been appointed, together with Dr. Lukas (BMBF), to lead the BMBF ICT strategy circle, where selected experts from the scientific and business communities will work with BMBF to develop the main features of a new grant program, IKT 2020. The new program is scheduled to be announced by Dr. Schavan at CeBIT 2007. The first meeting convened on 25-26 August in Kronberg resulted in the development of the major elements of the new strategic approach. At the second meeting scheduled for 3-4 November, ideas for innovation platforms and related issues will be discussed. Prof. Wahlster will schedule a presentation of the results of the ICT strategy circle to the panel.



DFKI, a successful Public-Private-Partnership (PPP) itself, is very pleased the high tech strategy provides for further development of the PPP concept as demonstrated by the following excerpt: „The expansion of the research infrastructure is more easily realized through the PPP model. The federal government is giving serious attention to examining PPP as an alternative way of financing and implementing investments in the high tech infrastructure. The PPP model, for example, with research centers jointly funded by corporate and public funds, also offers the opportunity to perform strategic research in mutual consideration of scientific and commercial interests. The federal government welcomes these initiatives and challenges research and business to do more in taking advantage of the potentials Public-Private-Partnerships provide. Here, our discussions with scientists and business leaders will focus especially on the issue of identifying the appropriate framework conditions for this model.“ (see High-Tech Strategy for Germany, Bonn/Berlin 2006, page 13, [www.hightech-strategie.de](http://www.hightech-strategie.de))

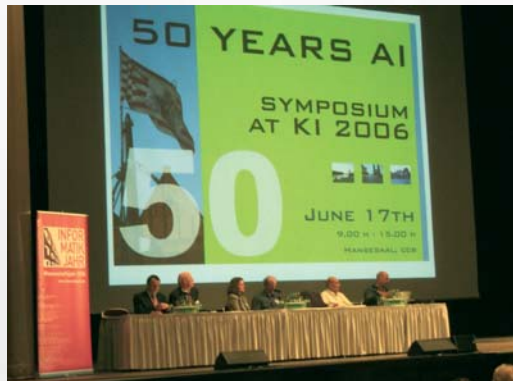


l.-r. Prof. Dr. Stefan Jähnichen (FhG FIRST), Prof. Dr. Erich R. Reinhardt (Siemens AG), Prof. Dr. Lutz Heuser (SAP AG), Dr. Siegfried Dais (Robert Bosch GmbH), Dr. Erasmus Landvogt (BMBF), Karl-Heinz Lust (Lust Antriebstechnik GmbH), Prof. Dr. Doris Schmitt-Landsiedel (TU München), Dr. Manfred Dietrich (BMBF), Prof. Dr. Claudia Eckert (FhG SIT), Dr. Johannes Helbig (Deutsche Post AG), Prof. Dr. Wolfgang Wahlster (DFKI), Dr. Wolf-Dieter Lukas (BMBF), Christopher Schläpfer (Deutsche Telekom AG)



▶ 50 Years of AI Research

The 29th Annual Conference on Artificial Intelligence was held at the Conference Center Bremen (CCB) on June 17, 2006. AI researchers from across Europe, USA, and Japan gathered to celebrate the golden anniversary of the Dartmouth Conference, held in 1956 in Hanover, New Hampshire, USA and considered as the official beginning of the era of Artificial Intelligence research.



At the gala event, „50 Years of AI Research“, Prof. Wilfried Brauer (TU Munich, University of Bremen), moderated a review of the past 50 years of AI research – the opportunities, hopes, plans, and products – followed by a presentation and discussion of the visions for the next 50 years.

The conference symposium was opened by Dr. Bernd Reuse, Head of Division at the Federal Ministry of Education and Research (BMBF), with opening remarks



Front row from left: Eva Raehte, Prof. Hiroshi Ishiguro, Prof. Jörg Siekmann; 2nd row from left: Prof. Wilfried Brauer, Prof. Aaron Sloman, Prof. Marvin Minsky, Prof. Christian Frecksa, Prof. Wolfgang Bibel, Prof. Wolfgang Wahlster, Dr. Ulf Lange (BMBF), Prof. Kerstin Schill, Prof. Sebastian Thrun

that included a comprehensive overview of the AI research grants provided by BMBF.

DFKI provided two keynote speakers: Prof. Jörg Siekmann, DFKI department head, provided an interesting look at the work of the 80's; Prof. Wolfgang Wahlster, Director of DFKI, spoke about the three decades of speech technology in Germany – the projects, the scientific results, as well as the commercial results.

He was followed on the agenda by Prof. Marvin Minsky of MIT in Boston, USA and one of the original co-organizers of the Dartmouth Conference. He presented the topic „1956–1966, How did it all begin? Issues then and now.“

Prof. Aaron Sloman of the University of Birmingham then continued with a review of the years 1966 to 1976, which included the major issues in the AI research of the period.

Prof. Wolfgang Bibel spoke of the beginnings of AI research in Germany in his speech titled, „1976–1981, Towards the AI Summer“.

Prof. Sebastian Thrun, Director, Stanford AI-Labs (SAIL), USA discussed the topic of autonomous robots and computer controlled vehicles.



Prof. Minsky visits the DFKI display booth

The closing presentation was made by Prof. Hiroshi Ishiguro of the University of Osaka, Japan which covered the current state of the art in the development of androids.

The event was located very close to and held at the same time as the RoboCup 2006, the world cup of soccer playing robots. DFKI participation at RoboCup 2006 included its own exhibit stand and the special exhibit „50 Years of AI“ where visitors could learn more about the research projects Virtual Human, SmartWeb, Compass 2008, and TaskNavigator.

AI Summer Party – Visit to the DFKI-Lab in Bremen ◀

Nearly 300 people made their way to Bremen to participate in the DFKI Lab's open house. „The large number of innovative presentations, as well as, the curiosity of the visitors insured this was an unforgettable event,“ said Prof. Frank Kirchner, spokesman for DFKI-Lab Bremen.

And, there was a 25 foot tall robot to greet each guest who followed up their trip to the AI symposium at the Bremen Conference Center with a visit to the nearby DFKI-Lab.

Two DFKI research groups, Safe and Secure Cognitive Systems and Robotics, together with the Technology Center for Informatics (TZI) and the special research department TR8 (SFB-TR8), presented the results of more than 20 projects.



„In addition to gathering information about the projects, the visitors could actually „experience“ many of the projects in action,“ Prof. Frank Kirchner added. The eight legged walking robot named SCORPION demonstrated not only stable walking control on sand, but also mastered a challenging obstacle course.

The following projects (selected) were introduced by DFKI-Lab Bremen:

Research Group Robotics:

- ▶ A6 [Reactive Space], evaluation of senso-motoric coordination when learning to recognize objects
- ▶ ARAMIES – a four-legged walking robot for steep terrain
- ▶ Electronics Engineering and Measurement Lab
- ▶ Aerial robotics lab
- ▶ Framework for evaluation of reinforcement
- ▶ Humanoid „BIN-HUR“
- ▶ Artificial hand
- ▶ Component test lab
- ▶ Learning processes
- ▶ MEHEN – a waterproof, swimming snake robot
- ▶ „Pithekos“ – an apelike, four-legged robot
- ▶ SCORPION – an eight-legged walking robot
- ▶ Simulator for kinematically complex walking robots



Research Group Safe and Secure Cognitive Systems:

- ▶ HETS – a heterogeneous tool set
- ▶ A toolkit for the formal development of dialog systems
- ▶ Sketches

The official speeches were delivered by Prof. Wolfgang Wahlster, Prof. Angelika Bunse-Gerstner (Co-director for Research, University of Bremen), Prof. Bernd Krieg-Brückner, and Prof. Frank Kirchner.

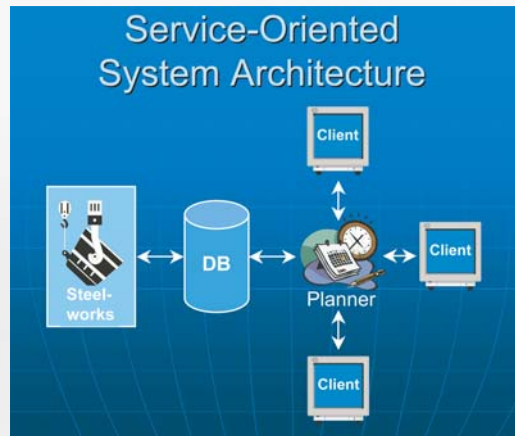




## ▶ Steel and Chips: DFKI Software Agents support Production Control ◀



The manufacturing processes found in the steel industry are still inadequately supported by traditional ERP systems. This is why Saarstahl AG and DFKI decided to jointly develop a planning and control system, based on the use of software agents and deploy it to the production plant in Völklingen.



Called MasDispo, the DFKI multiagent technology for steel production has been installed at the production control room (Leitstand) at the Völklingen steel works and now supports planning and control activities there. MasDispo calculates an optimal solution for the specified daily targets based on selectable criteria and compares this with the actual production data and the production planning figures. It recognizes the dependent relationships in such a way that potential variances or problems in the production processes are recognized early enough to allow corrective actions.

Dr. Klaus Richter, Operations Manager for the steel plant explains: „Because of the strict temperature controls required in plant operations, we have only short time windows in our processes. MasDispo helps us to identify and then avoid potential variances from the production plan in a timely manner.“

„MasDispo has to focus on the short term planning on the basis of daily targets at a steel plant,“ said Dr. Klaus Fischer, DFKI project leader: „The goal of an agent based planning system is the optimal utilization of the manufacturing resources at the steel plant.“

The long term objective of the cooperation between DFKI and Saarstahl AG is a totally computer aided supply chain management (SCM): Customer orders dictate the output along the entire chain, from the deliveries of raw materials to the further processing of the steel in the rolling mills. Prof. Jörg Siekmann, Head of Research

department Deduction and Multiagent Systems explains: „What we want is a complete agent-based supply chain management system that will plan and monitor the flow of materials in the production cycle of Saarstahl AG. Nevertheless, please remember our system is not restricted only for use at steel plants. Agent based platforms can support planning and control to increase productivity and contribute to keeping Germany economically competitive as a steel producer.“

Agent technologies that support the interoperability of business processes are being investigated at DFKI as part of Project ATHENA (Advanced Technologies for Interoperability of Heterogeneous Enterprise Networks and Applications). Here, the integration of agent technologies with service oriented and model driven architectu-



res is the technological focus. The State Ministry of Education, Culture, and Science promotes the application of the ATHENA results to the steel industry under Project AgentSteel. Beyond this, Saarland's Ministry of Economics and Labor is also planning further activities.

**Additional information**  
www.athena-ip.org

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## ▶ Lab opens for Banking Intelligence Services ◀

**THE OPTIMIZATION OF BUSINESS PROCESSES WITH THE AID OF ARTIFICIAL INTELLIGENCE**

DFKI and Volkswagen Financial Services AG established the Banking Intelligence Services (BIS) Lab at the end of June 2006 in Kaiserslautern.

Banking Intelligence Services Lab employs a staff of four researchers and puts the latest developments in office automation and software technology into practical applications. Besides Volkswagen Financial Services, also joining the team as a technology partner is the



l.-r. Rolf Grönig, Prof. Andreas Dengel, State Secretary Dorothee Dzwonnek, Reinhard Karger

Institut für Technologie und Arbeit (ITA), directed by Prof. Klaus J. Zink, on the campus of the Technical University of Kaiserslautern.

The opening remarks by Prof. Andreas Dengel underscored the importance of cooperation between the business and research sectors, especially in the development of an intelligent assistance system for knowledge intensive office work. He added, „The establishment of the Banking Intelligence Services Lab at DFKI confirms a successful strategy of actively integrating global companies in the development of innovative software. It can only strengthen the reputation of Kaiserslautern as an internationally recognized center for IT research. We are particularly excited about this joint venture between business, DFKI, and the University and hope the cooperation, which is an outstanding demonstration of the shared competencies of all participants, will lead to further successful projects.“

The development and implementation of forward looking technologies is the major effort during the initial phase of the partnership. These include intelligent software to improve automated document processing upon entry, or for providing the optimal documents for current work processes, or the development of an interactive information kiosk.

## ▶ SmartFactory<sup>KL</sup> – Grand Opening of the Intelligent Factory of the Future ◀



Dr. Manfred Oesterle, Member of the Management Board at SmartFactory<sup>KL</sup>

Secretary Englert praised the pioneer spirit of this technology initiative: „This economy needs innovations and impulses from science. The initiative, brought to life by Professor Zühlke is an outstanding example of the joint development of new technologies by the user, the supplier and the researcher.“

Prof. Zühlke went on to explain the future developments planned on the premises of the new factory: „We develop and test the use of the so called 'smarter technologies', such as those already in use in the consumer goods sector, in an industrial environment – but only those that are at the threshold of practical deployment, for example, the use of safe radio networks or intelligent mini-computers. We also examine the use of new hardware, such as the data glove, or RFID chips, or the eye tracker in the development and production processes at industrial plants.“

**Additional information**  
www.smartfactory-kl.de

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The „intelligent factory of the future“ already exists. It officially opened its doors on June 9, 2006. Prof. Siegfried Englert, state secretary at the Ministry of Economics for the state of Rhineland-Palatinate officiated at the event. Prof. Detlef Zühlke, Chairman of the Board of SmartFactory<sup>KL</sup> and Director of the Center for Human Machine Interaction at DFKI, along with Dr. Gunther Kegel, Chairman of the Management Board of Pepperl+Fuchs GmbH, in Kaiserslautern-Siegelbach also spoke at the ceremonies.

**DFKI technology at Autostadt**

Earlier this year, on April 24, 2006, DFKI opened its innovative „Virtual Design Assistant“ attraction at the Volkswagen's theme park, Autostadt where virtual humans assist in solving a three dimensional „Auto Puzzle“ and explain the latest technical innovations.

The installation provides visitors to the Autostadt with a very impressive, long lasting memory of their interactions with two photorealistic virtual characters. Using ten automotive parts at a scale of 1:5.5, and five different positions on the designer's bench, the visitor can produce, with the expert guidance of Jara and Taron, over 800,000 variants of the 3-D puzzle, whereby 30 of these actually lead to a potentially successful model of a future vehicle.

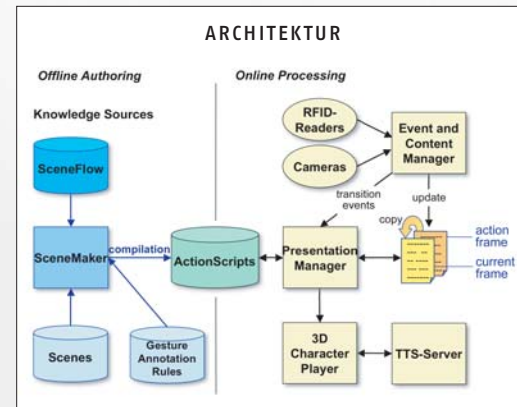
„The complex combination of technologies represents a worldwide first in the field of Artificial Intelligence. The latest RFID technology for automated situational awareness and the real time animation of virtual humans with coordinated voice synthesis, combine with a situation-dependent dialog designed for a „just for fun“ transfer of knowledge regarding innovative automotive technologies. This interactive installation, which is controlled in parallel by three computers, creates a new dimension in „intelligent edutainment“. We are very proud of the fact we were able to use our state of the art research results in Artificial Intelligence as the basis to develop this innovative edu-tainment attraction for the Autostadt and today, inaugurate the operation as a key theme in the new Panorama of Knowledge,“ explained DFKI Director, Prof. Wolfgang Wahlster.



Prof. Wahlster and Dr. Ndiaye in the Panorama of Knowledge

„The novelty of this highly complex AI system, in contrast to past virtual humans in film productions or computer games, is that Jara and Taron, our virtual characters, do not always read from a fixed script. Rather, by their gestures, expressions and their contributions to the dialog, they respond intelligently to the behavior of the visitor – even taking into account the current weather, the day of the week, and the time of day. In this way, they are actually quite interesting discussion partners and are never boring!“ added Prof. Wahlster.

Both characters are presented as life size projections and comment on the construction steps taken by the visitor. They provide the user with direct references in the construction of variant models. In addition to the design assistance, the virtual automobile experts discuss the latest research results, for example developments in driver assistance systems, hybrid engines, or alternative



fuels. They also offer, on occasion, plans to increase accident prevention measures. Jara and Taron represent the Volkswagen Corporation's Research and Development department in the Panorama of Knowledge.

The opportunities are fascinating when these virtual humans express themselves – through language and graphics software that seems to breathe life into them. Visitors get the impression that both presentation agents are watching them, understanding and answering them. As the declared experts, the support they give is dependent on the state of the design as they explain the research and technologies in automobile industry and motivate the user to continue.

DFKI partners in this project included: Charamel GmbH, for the design of the two virtual characters and their surroundings, as well as, the University of Augsburg (Department of multimedia concepts and applications) for the component that recognizes the approach and departure of a visitor.

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**VOICE Days 2006: Voice has arrived... Everywhere.**



Dr. Becker presents TALK

On October 18, 2006, as sponsor of VOICE Days and Chairman of the VOICE Awards Jury, Prof. Wahlster traveled to Bonn and the former German Parliament building to present the VOICE Awards in conjunction with VOICE Days 2006.

The competition for the „Oscar“ of the speech technology branch included 72 voice controlled services based in Germany, Austria, and Switzerland. Of these, 42 systems qualified to enter into the final round. Based on a comprehensive elimination procedure, 14 were then nominated in five categories defined by the jury. The competition evaluates telephone services that allow a user to have a dialog in the German language with a computer, without the system needing any prior training to recognize the voice of the respective user.

The annual VOICE Awards, presented this year for the third time, recognized the voice portal 2006 for customer service from T-Mobile Deutschland as the best German language application in operational testing in the main category, „Best Practice“. In other categories, the jury awarded the „Best Innovative Application“ to DaimlerChrysler's Personal Assistant; „Best Enterprise Solution“ went to DHL Package Info and, the „Best Value Adding Service“ was judged to be Golfscore from Voice Business.

This year „Best VOICE Campaign“ was added to the competition as a new category to highlight the best marketing campaign supported by a telephonic language application. It was awarded for the first time to Cisco for its Booming Campaign. The award for developers, VOICE Contest, was won this year, as in 2005, by Sympalog, however, this time in partnership with Avaya.

**Additional information**  
[www.voicedays.de](http://www.voicedays.de)

**Prof. Wahlster on stage with Günther Jauch**

An initiative of ThyssenKrupp, the „Festival of Ideas“ quickly became a highlight at the Idea Park created at the Hannover Fair grounds (20-28 May) under the theme: Discover Technology, Design the future. Overall, more than 200,000 visitors came to appreciate the exhibits on display on the 30,000 sqm. showroom floor.



The Idea Park was opened with a gala ceremony. The focus of this event was on the three main themes of the Idea Park: Mobility, Living and Environment, and Creativity. In talking with Günther Jauch, Prof. Wahlster explained the concepts and opportunities of AI. DFKI pro-



vided live demonstrations of the eight-legged and language controlled robot named SCORPION, which were witnessed by over 2500 guests. A normal obstacle could have been used for the demo, but Mr. Jauch wanted to try it out himself. So, he laid down on the stage in his business suit and experienced first hand that SCORPION can also climb over his body. If it's been told to.

**Additional information**  
[www.zukunft-technik-entdecken.de](http://www.zukunft-technik-entdecken.de)



► **Rendezvous with Innovation in the Land of Ideas**

The „Selected Place 2006“ in Germany on September 22 was DFKI, an honor achieved because of its history of successful innovation. As one of the „365 Selected Places“ in the Federal President's initiative „Germany – Land of Ideas“, DFKI was asked to present its current ideas and research results. The public was invited to visit DFKI and learn more about the ongoing work there. Klaus Bingel, representing the Deutsche Bank, one of the partners in the initiative, explained: „DFKI is an outstanding example of the richness of our country in the area of scientific innovation.“



Front row from left: State Secretary Dr. Ege, BMBF Undersecretary Dr. Jansen, State Secretary Dzwonnek

Government officials in attendance included three state secretaries, Dr. Susanne Reichrath and Dr. Christian Ege of the Saarland and Secretary Dorothee Dzwonnek for Rheinland-Pfalz. Their presence underscored the importance with which this initiative is viewed by the host federal states.

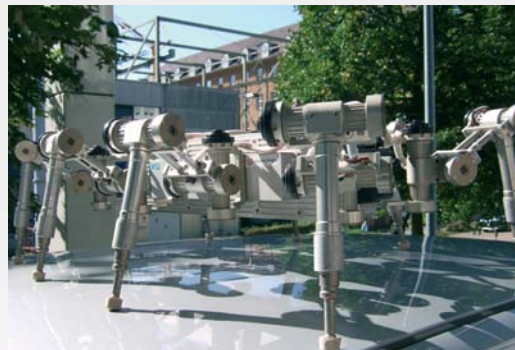
DFKI presented innovative projects from each of its locations as part of the Open House at DFKI Saarbrücken. The day's theme was „Rendezvous with computers“ and included a large selection of systems and demonstrators. These included:



Verbmobil, the first machine interpreter to take intonation into account and SmartKom, the first system to simultaneously process the spoken language and expressions – imagine, for example, controlling your TV using this technology.

SmartWeb lets you search the Internet with spoken queries; the system was demonstrated on a mobile computer, but also installed in the Mercedes R-Class and A-Class cars. COMPASS 2008 will assist foreign visitors to get information and help with translation via their mobile devices at the Olympic Games 2008 in Beijing. DynaQ processes interactive queries for document based, personal information rooms. MPeer makes it possible to search for music in the Internet using semantic web technology to find the music you like simply by entering your favorite song title.

The eight legged SCORPION walking robot is used to negotiate difficult terrain, which until now has been impassable for other robots. The robotic snake MEHEN swam in a large pool just outside the DFKI building while transmitting the images seen by its video-eye to a nearby monitor.



„Virtual Humans“ act as artificial quiz masters and others were soccer experts that assist in choosing a lineup for the German national soccer team. „Virtual Constructors“ link the real and virtual worlds in a 3D auto puzzle and explain the latest technological innovations.

Numerous visitors and members of the media enjoyed the combination of short lectures and compact live-demonstrations that allowed them to learn about and personally experience many of the concepts in Human Machine Interaction.

Rounding out the day's highlights at this „Selected Place 2006“ was the official ceremony to honor Dr. Bernd Reuse, Head of Division at BMBF, and confer upon him the title of DFKI Fellow.

**Dr. Bernd Reuse honored as DFKI Fellow** ◀

Scheduled as one of the events at the „Land of Ideas“ celebration on September 22 at DFKI Saarbrücken, Dr. Bernd Reuse, Head of Division in the Federal Ministry of Education and Research (BMBF), was named as a DFKI Fellow. The recognition as a DFKI Fellow is the highest honor that DFKI can bestow. It is awarded to top, internationally respected scientists and supporters of DFKI.

More than 100 research scientists from all across Germany, two cabinet ministers, two state secretaries, the president of the Gesellschaft für Informatik, eight directors of the Fraunhofer Gesellschaft, directors of the Max Planck Institut and many research and development department heads from the leading IT companies throughout Germany attended the ceremonies.



Dr. Reuse receiving the certificate from Prof. Wahlster

Rounding out the DFKI ceremonies were two other high level presentations. One, making Dr. Reuse an honorary professor at Saarland University was presided over by Saarland's Minister for Education, Culture, and Science, Jürgen Schreier. The other, a presentation of the Fraunhofer Medal to Dr. Reuse by Professor Dr. Dr. h.c. mult., Dr. e.h., Hon. Prof. mult. José Luis Encarnação, Fraunhofer IGD.

These honors were intentionally planned to coincide with the day allotted to DFKI as a „Selected Place in the Land of Ideas 2006“ in Germany. Dr. Bernd Reuse has served more than twenty years in the Ministry of Education and Research and has been instrumental in shaping the IT environment in Germany. This honor underscores the effectiveness of Dr. Reuse and the importance of his work to DFKI and the entire German computer science community. „Head of Division Dr. Bernd Reuse of the Federal Ministry of Education and Research is hereby named a DFKI Fellow, in recognition of his outstanding contributions and his exemplary engagement to support, structure, and advance the German Research Center for Artificial Intelligence in Kaiserslautern, Saarbrücken, and Bremen,“ said Prof. Wahlster in his remarks.

Jürgen Schreier, Minister for Education, Culture, and Science for Saarland also congratulated Dr. Reuse and

added: „Dr. Reuse is the most important broker and facilitator at the federal government level for Germany's development as a leading center of informatics and, by association, for the 'Information State' Saarland.“



Prof. Wahlster, Dr. Reuse, Minister Schreier

Minister Schreier made his comments in recognition of the services rendered by Dr. Reuse and their long term impact on the Saarland and, then as a highlight of the day's events, awarded him the highest scientific honor – the title of Honorary Professor of the Saarland. „His influence demonstrates the forces and the dynamics that can develop when the power of innovative ideas, political impulse, and management know-how in the research and scientific disciplines, combine to complement each other in a common purpose,“ said Schreier.

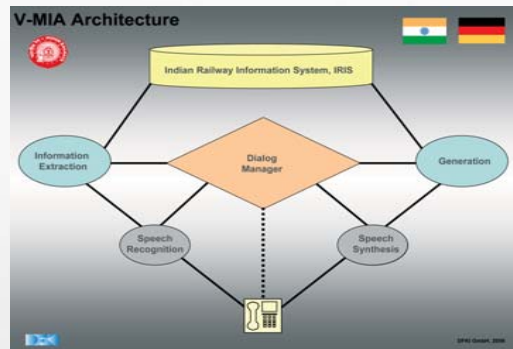


„The efforts of Dr. Bernd Reuse have resulted in a German informatics landscape dotted with internationally renowned, competitive, and advanced research centers,“ said Wahlster. „The new models of cooperation between business and research, such as DFKI, and numerous innovative breakthroughs, have not only contributed to the international reputation of German research, but more importantly, have also helped to create economic value, new companies, and high value, high tech jobs.“



▶ **DFKI Joint Venture V-MIA at Hannover Messe 2006**

DFKI introduced the V-MIA initiative to visitors at the Federal Ministry of Education and Research stand at the Hannover Messe 2006. The Lighthouse Project (Leuchtturmprojekt) is a scientific-technical cooperation between India, this year's official national partner at the Hannover Messe, and Germany.



V-MIA is an application oriented language technology project with the goal of implementing a multi-lingual telephone dialog system. The project is a component of the Indian government's roadmap strategy for the



Dr. Schavan visits the DFKI display booth

research intense field of multi-lingual, knowledge based language technology. Funding for the Indian project partners is provided by both the Ministry of Science and Technology (DST) and the Ministry for Information Technology (DIT) of India.

The exhibit attracted many high level visitors. Prof. Wahlster explained the system to Dr. Annette Schavan, German Minister of Education and Research. Also, Kapil Sibal, India's Minister of Science and Saarland's Economics Minister, Dr. Hanspeter Georgi were there and were impressed with what they observed at the DFKI booth.

▶ **Prof. Wahlster presents Hermes Award at Hannover Messe 2006**

Scheduled as part of the opening festivities at the Hannover Messe (April 24-28, 2006), Prof. Wolfgang Wahlster presented the Technology Prize of the Deutsche Messe AG with a value of 100,000 euros, to „Harting Mitronics.“

Present at the award presentation, also known within the sector as the „Innovation Oscar“, were German Federal Chancellor Dr. Angela Merkel, and India's Prime Minister Dr. Manmohan Singh. High ranking guests also included Dr. Annette Schavan, Federal Minister of Education and Research and the minister-president of Lower Saxony, Christian Wulff.

The „Hermes Award“ this year was presented for a revolutionary new RFID transponder, which uses 3-D antenna



Prof. Wahlster and Minister-President Christian Wulff

technology that allows the transponder to be employed for the first time ever in the vicinity of metals and liquids. The transponder has a range of more than five meters and comes with a casing well suited for industrial and extreme environments.



Sepp D. Heckmann (Deutsche Messe AG), Dr. Burmeister (Harting Mitronics), Minister-President Wulff, Dr. Schavan, and Prof. Wahlster

„Harting's passive transponder series, HARfid, represents a real breakthrough in that it paves the way for new fields of application under the topic of ambient intelligence“, said Prof. Wahlster in explaining the jury's decision.

**dropping knowledge – Changing the World with Questions** ◀

dropping knowledge has set ambitious goals for itself: The initiative hopes to inspire a worldwide dialog that focuses on the most important issues of our time and results in proposals of possible solutions.



At the „table of free voices“ at the Bebelplatz in Berlin on September 9, 2006, 112 „alternative thinkers“ met to answer 100 essential questions for the human race. Moderators at the largest round table in the world were the American actor Willem Dafoe and Nigerian civil rights activist Hafsat Abiola. Each of the 112 participants was given three minutes to answer each of the 100 que-

stions. All 11200 statements were then recorded and stored as video and text in the „living library“ at dropping-knowledge.org.

**AN INNOVATIVE INTERNET PLATFORM FROM DFKI**

„In order to support the global dialog to the widest extent while maintaining the necessary depth, we created a new kind of Internet platform. The dialog forum is linked to a knowledge base that „knows“ cross connections and background data for thousands of topics,“ explained Prof. Hans Uszkoreit, director of language technology at DFKI and member of the supervisory board of dropping knowledge. „The semantic web technology continuously reorganizes the content: The ever current assessments and the number of retrievals by users let the system 'learn' the relevant importance of the individual content.“

The platform is a search engine and a library all in one: Users can either perform a full text search or gain access via an intuitive, optical navigation to conduct their research. Even natural language text queries will return results.



**Additional information**  
www.droppingknowledge.org

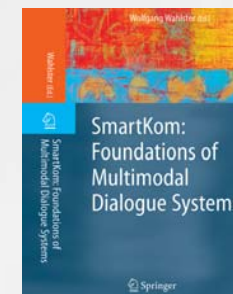
**SmartKom – the Book!** ◀

With contributions by leading scientists in the field, this book gives the first comprehensive overview of the results of this seminal project.

Wolfgang Wahlster (Ed.)  
Smartkom: Foundations of Multimodal Dialogue Systems

Publisher: Springer, Berlin, 2006

€ 80.20  
ISBN 3-54023-732-1



The result of four years of intensive research in a large multimodal dialogue project involving 12 partners from academia and industry, SmartKom is one of the most advanced multimodal dialogue systems worldwide and is a landmark project in the history of intelligent user interfaces.

The system provides symmetric multimodality in a mixed-initiative dialogue system with an embodied conversational agent. The same software architecture and components are used in three fully operational application scenarios. The theoretical and practical foundations of SmartKom represent a new generation of multimodal dialogue systems that deal not only with simple modality integration and synchronization, but cover the full spectrum of multimodal dialogue.



## ► „Richtfest“ Ceremony at the Kaiserslautern Construction Site

The project is not completed but the first milestone has been reached. Just five months after the groundbreaking, the skeleton construction of the new DFKI building



*l.-r. Architekt Ohliger, Dr. Olthoff, Dr. Kieninger, Prof. Wahlster, Prof. Dengel*

was completed on July 14, 2006 and the traditional „Richtfest“ or topping out ceremony, was performed by the construction workers at the Kaiserslautern construction site. Many employees took advantage of the opportunity to visit the new building and get a first impression of their future work place.



The cost conscious planning without forfeiting any functionality is evident in many conceptual details. For example, the use of raised floors insures maximum flexibility and low costs in the event of future changes in the cable layout. In the same manner, this concept allowed electrical power lines, normally built into the ceilings, to run under the floors and thus eliminate the need for hanging ceilings. This had the effect of reducing the space requirements for the height of the ceilings which, in turn, led to lower overall building costs. The new building should be ready for occupancy in early 2007 and is part of the new PRE-Uni Park on Trippstadter

Street, a valuable location because of its close proximity to the Technical University of Kaiserslautern.

The DFKI building is set back a good distance from the street which leaves room for a large plaza in front of the entrance. Plans for the adjacent areas call for a shuttle bus stop for the new university-shuttle and a pedestrian bridge that connects to the university campus. The development association PRE is also planning to build a futuristic looking construction, the so-called „boarding house“ in the immediate area. Plans envision a 130 foot tower (approximately 40 meters) with guest rooms for visitors.

The new DFKI building consists of 6 floors (including an underground parking lot) and 4200 sqm. floor space, offices for a staff of 102, and also 11 spacious rooms for research assistants and labs, 4 air conditioned conference rooms, as well as, 4 creativity zones for ad-hoc discussions or team meetings. In addition to the foyer and reception area, the first floor consists of a 160 sqm. area that can be asymmetrically divided into an auditorium or lecture hall, as well as, a showroom where research demonstrators will be presented and large viewing windows permit viewing from the outside plaza. The top floor includes a 47 sqm. multi-functional room for interdepartmental events, an adjoining kitchen, and a rooftop terrace.

The dedication ceremony for the new building is currently planned for April 27, 2007.



Funding for the new construction is provided by:

- ▶ Ministry for Science, Advanced Education, Research, and Culture, Rheinland-Pfalz
- ▶ Ministry for Economics, Transportation, Agriculture, and Viticulture, Rheinland-Pfalz
- ▶ Ministry for the Interior and Sport, Rheinland-Pfalz
- ▶ City of Kaiserslautern



Dr. Ansgar Bernadi is the deputy director of the Knowledge Management department. He joined DFKI in 1990 starting out in the department of intelligent engineering systems, which later became part of the knowledge management area.

The focus of his work is on the development of decision support systems in the context of individual and corporate knowledge management.

*What do you see as the application potential in your research?*

The goal oriented handling of information in a quickly changing context by flexibly assembled teams will increasingly come to influence our working world and living conditions.

The work of our research department has the potential to give the people in this challenging environment the ability to be more creative and more effective.

DFKI employees at both sites and the new DFKI Lab in Bremen chose their representatives to the new works council. Due to the growth in the number of employees, the works council will be composed of 11 members for the next four years. The first meeting of the council involving the new members representing all three locations was convened in June with the organizational challenge of physical separation to the new lab in Bremen being mastered through the use of video conferencing.

DFKI employs a very employee-centric business model: the traditional, rather flat hierarchical structure is evident in the acquisition and performance of projects and promotes individual responsibility and employee flexi-



*l.-r. Walter Bieniossek, Sabine Kowalke, Thomas Roth-Berghofer, Stefan Agne, Ludger van Elst, Christian Hauck, Gerda Peach, Klaus Elsbernd, Stefan Winterstein, Gerd Herzog*

## DFKI Interview: Dr. Ansgar Bernadi ◀

*What are the greatest challenges and opportunities for AI systems today?*

We are on the verge of being able to or, rather having to, model and facilitate extremely complex scenarios and interactions. The challenge is to take the complexity required to produce useful results and make it easily manageable for the people who work with it.

*What do you enjoy doing when you are not working as a research scientist?*

I am married to a practicing veterinarian and have two very energetic young children. There is never a dull moment. Also, a percentage of my leisure time is devoted to singing in a choir.

*What are your current projects?*

I am responsible for NEPOMUK, a large EU project that deals with the topic of „Social Semantic Desktops“. In addition to that, I am frequently involved in joint ventures with industry.

## DFKI votes for new Works Council ◀

It is a significant sign of the culture at DFKI that only 2 years after its establishment as a research center, a works council was formed and management approved an organizational structure that exceeded the legal minimums. DFKI is proud of the separation of responsibilities and the success story that has been jointly compiled by employees and managers. In a very fast paced world of constantly changing scientific, economic, and political conditions, it has insured the continuous development of innovation and improved performance for over 15 years.

The DFKI corporate culture plays an important role in the special position of the research center institute in Private-Public-Partnerships. Here the reliance on cooperation between employees and managers is not only manifested in the scientific area, but also in the business situation of DFKI. This explains agreements regarding work schedules, employment, and a success oriented payroll model which provide the ability to respond flexibly to the unique requirements and developments in the research marketplace.

„Mutual respect and a joint sense of responsibility will continue to form the basis of the unique DFKI culture and the new works council will continue to honor that philosophy“, said Stefan Winterstein, the new head of the works council.

*DFKI Works Council*



News in brief

Order of Merit of the Federal Republic of Germany for Prof. Wahlster

On August 28, 2006 Prof. Wolfgang Wahlster received Germany's prestigious Cross of Merit First Class (Bundesverdienstkreuz 1. Klasse), which was presented in the state chancellery in Saarbrücken by Saarland's minister-president Peter Müller. Prof. Wahlster was selected for the honor in recognition of his successful work in the development of artificial intelligence and the benefits to the Saarland University.

The Long Night of Informatics

DFKI participated in the first „Long Night of Informatics“ organized and held in Saarbrücken. The historic courtyard of the Stadtgalerie served as the backdrop for the introduction of a variety of interesting research results and prototypes. DFKI presented Project Zamb – 80 Million Coaches, as well as, COMPASS2008 – Comprehensive Public Information Services System for the Olympic Games 2008 in Beijing to curious onlookers.

CeBIT 2006 – Steamtalks: 60 Minutes Future

DFKI brought together the movers and shakers as well as the critics of national image campaign „Du bist Deutschland“ (You are Germany). Lars Cordts (Fischer-Appelt Communication and press speaker, „Du bist Deutschland“), Johnny Haeusler (Creative Director, Spreiblick Verlag), and Stefan Keuchel (press speaker, Google Deutschland) discussed the controversial topic „Du bist Blogging“. The panel was moderated by Reinhard Karger, Head of DFKI Corporate Communications.

Diplomats and Statesmen visit DFKI

Again this year, DFKI was honored to welcome many high ranking visitors from foreign governments. Included among our guests were: ambassadors from Canada, Italy, Denmark, and the Philippines, as well as, the deputy minister-president of Korea. They were able to gather information about the current state of research during their visit to the German Demonstration Center for Speech and Language Technology.

Kiyoshi Sakai visits DFKI

August 28, 2006 DFKI Kaiserslautern welcomed Kiyoshi Sakai, Member of the Board and CTO of RICOH Ltd. Mr. Sakai was provided with information about the current development of the „Virtual office of the future“. He was pleased with the results of the joint venture between RICOH and DFKI. The return visit by an important member of the RICOH top management provides a significant incentive to extend the excellent cooperation into the long term.

New competence center established: Human Centered Visualization

A new competence center has been established under the name, Human-Centered Visualization (HCV) and has the job of performing application oriented, research and development in the zone where information visualization, human machine interaction and artificial intelligence intersect. The research and development effort will concentrate on the following three topics: Information visualization, graphic interaction, and intelligent visual presentation. The head of the competence center is Prof. Achim Ebert.

DFKI at the IFA 2006 in Berlin

DFKI presented systems and prototypes at this year's International Consumer Electronics Fair in Berlin (IFA – September 1–6, 2006) as part of the Technical Sciences Forum. The focus was on the language technologies for the Olympic Games in Beijing 2008 – COMPASS 2008, and the system called TaskNavigator, an intelligent aid to knowledge based work processes. Sharing the DFKI stand were dropping knowledge and KOMME@Z with a mixed reality interface.

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DFKI – Simply Innovation

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The German Research Center for Artificial Intelligence (DFKI GmbH), with facilities in Kaiserslautern, Saarbrücken and Bremen, is the country's leading research center in the area of innovative software technology for commercial application. In the international scientific community, DFKI is recognized as one of the most important „Centers of Excellence“ in the world for its proven ability to rapidly bring leading edge research to commercially relevant application solutions.

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- Multiagent systems and agent-technology
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- Intelligent visualization
- Image understanding and pattern recognition
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- Intelligent robotic systems
- Intelligent product search, data mining and text mining
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- Organizational memory and user modeling
- Semantic web and Web 3.0
- Ambient intelligence and Assisted living
- Intelligent solutions for safety and security
- Driver assistance systems and Car2X communications



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