NEWSLETTER DFKI

2/2008

▶ RESEARCH LABS

Image Understanding and Pattern Recognition

Knowledge Management

Robotics

Safe and Secure Cognitive Systems

Institute for Information Systems

Agents and Simulated Reality

Augmented Vision

Language Technology

Intelligent User Interfaces

DFKI – 20 years of innovation

New research department: Augmented Vision

THESEUS MEDICO

future talk CeBIT 2009

The future talk at CeBIT 2009 (March 3-8, 2009, Hall 9, Stand A54) provides an opportunity for the future parc exhibitors to introduce their projects and ideas.

As the central event venue in the future parc, the future talk program offers an outstanding presentation platform for results, innovations, and perspectives. DFKI will be there to participate with a number of lectures and project presentations.

l.-r. Prof. Dr. Hans-Jörg Bullinger, Fraunhofer Gesellschaft; Christopher Schläffer, Deutsche Telekom AG; Prof. Dr. Peter A. Grünberg, Jülich Forschungszentrum; Prof. Dr. Wolfgang Wahlster, DFKI; Ministerialdirektor Dr. Wolf-Dieter Lukas, Federal Ministry of Education and Research; Presentation: Reinhard Karger, DFKI

future snack

Smart Textiles

LÄNDERPRÄSENTATION IT-ITALIEN

Internet der Dinge

futureTainment

THESEUS-Forschungsprogramm

internetbasierte Wissensinfrastruktur

Space Innovations für die Raumfahrt

INTERNET DER DIENSTE

Ambient Assisted Living

Cloud Computing

INFORMATIKSTUDIUM

USER EXPERIENCE

Design Thinking

BITKOM Innovator´s Pitch

D21   GreenIT

Live Hacking

Mobiles Internet

SerCHo   Digitale Identität

DIE ERFINDUNG DES COMPUTERS

future talk 2009

every CeBIT Day
10:00 a.m. - 6:00p.m. (Sunday to 3:00p.m.)

Program coordinator: Reinhard Karger, DFKI

www.cebit.de/futureparc_e

Germany's Third National IT Summit: ICT – the "No. 1 engine of innovation"

The 3rd National IT Summit held on November 20, 2008 in Darmstadt contributes to the development and further exploitation of Germany's role as a strong business location for Information and Communication Technology (ICT). In addition to the closed sessions of the nine working groups, discussion topics were organized in four open forums: areas of growth in the ICT sector, expansion of the broadband network, IT security and electronic identities, ICT fields of application research and digital identities.

l.-r. Prof. Wahlster, Federal Minister Dr. Schavan and Prof. Heuser

In Forum 3, "No. 1 in areas of growth through ICT research", Prof. Wahlster introduced his core message advocating ICT as the No. 1 engine for innovation and discussed the topic with Prof. Dr. Raymond Freymann, BMW, Prof. Jörg Menno Harms, BITKOM, Prof. Dr. Lutz Heuser, SAP, Dr. Karsten Ottenberg, Giesecke & Devrient, Prof. Dr. Hermann Requardt, Siemens, Dr. Annette Schavan, Federal Minister of Education and Research, and Christopher Schläffer, Deutsche Telekom.

Interesting topics included the "Internet of Things", "ICT in complex systems", and "new business processes and production methods."

The aim of this forum was to underscore the positive future of Germany as an attractive investment location for the ICT sector. The dominant consensus appears to be that ICT will remain the No. 1 motor of innovation for the major German export industries and, especially in times of crisis, it must run at full throttle with the Internet of Things making business, production, and logistic processes more secure, more resource efficient, and still more cost effective. This is why the most important areas of innovation in the federal government's high-tech strategy are found in the information and communication technologies.

"The Internet of the future, facilitated by semantic technologies, will link the Internet of Things with the Internet of Services; users will have the tangible and useful experience of a 3D-Internet of virtual and physi-

cal worlds", according to another core message of Prof. Wahlster.

Imagine an Internet of Things where objects are networked and able to communicate. They know their origins, their histories and their destinations. RFID labels, or "smart labels", offer a digital product memory and support intelligent, resource-efficient logistics. Integrated sensors render manufacturing interrelationships transparent; supply chain and environmental impacts can be traced and replicated. The result: better informed consumers, help for the producers. The Internet of Things will automate logistic processes, transfer product data directly into production and business processes, and result in process optimization.

The semantic approach to knowledge exploitation enables the rapid access to information from digital product memories, as well as serving as the basis for the Internet of Services, as developed under the BMWI lighthouse project, THESEUS. Since 2007, the German government and industry have invested in THESEUS technologies that enable access to information and combinations of online services. Networked data creates new know-how and forms the basis for new online services.

Two out of the four lighthouse-exhibits that were presented to the German chancellor had been developed mainly by the DFKI:
- SoKNOS – the Internet of Things
- THESEUS MEDICO – the Internet of Services

The basic technologies for the Internet of Things and Internet of Services now being co-developed at DFKI contribute to the implementation of the government's high-tech strategy, ICT 2020.

More information
www.bmwi.de/BMWi/Navigation/Technologie-und-Innovation/Informationsgesellschaft/it-gipfel
https://it-gipfelblog.hpi-web.de
http://theseus-programm.de
www.soknos.de

DFKI – 20 years of innovation

Business, research, and government were all represented among the large number of guests that celebrated the success of the DFKI "Public-Private-Partnership" model – a new instrument for promoting innovation in Germany in addition to the state universities, base funded research, and private sector R&D facilities. Agreements were signed on July 4, 1988 that established DFKI at the two locations Kaiserslautern and Saarbrücken. DFKI activities have expanded and in 2006 a third location was opened in Bremen for the field of Robotics and Secure Cognitive Systems; and the project office in Berlin opened in 2007.

"The DFKI is doing in its field what the Federal Government intends to do on a national scale with its High-Tech Strategy for Germany," said Dr. Annette Schavan, Federal Minister of Education and Research in her congratulatory message published in the Festschrift "DFKI – 20 Years of Innovation". "Many companies have entered partnerships with DFKI; while many others still want to become shareholders in the limited liability company," wrote Kurt Beck, Minister President of Rhineland-Palatinate. "Success speaks for itself: since the founding of DFKI 20 years ago, it has produced more than 50 spin-off companies comprising 1200 high-tech jobs," said Peter Müller, Minister President of Saarland, in the commemorative publication. "I am very impres-

Acting Chairman of the Supervisory Board Prof. Beyerer presents Prof. Wahlster and Dr. Olthoff with the votive medal for 20 years of successful innovations

sed by the success of this institute," added Jens Böhrnsen, Mayor and President of the Senate of the Free Hanseatic City of Bremen.

On September 25, 2008, at the commemorative ceremonies honoring its twenty-year history, DFKI was presented as an imaginative, non-profit company that

DFKI – 20 years of innovation

supports entrepreneurial ideas. Distinguished guest speakers and well-wishers included Doris Ahnen, Minister for Education, Science, Youth, and Culture for the State of Rhineland-Palatinate, Joachim Rippel, Saarland's Minister for Economic Affairs and Science, MinDir Dr. Wolf-Dieter Lukas, Key Technologies – Research for Innovation (Federal Ministry of Education and Research), Prof. Hans Albert Aukes, Chairman of the DFKI Supervisory Board, Dr. Klaus Weichel, Lord Mayor of Kaiserslautern, and Prof. Dr. Gerhard Barth, DFKI's first CEO, along with approximately 200 invited guests.

In the years since its founding, DFKI has developed into an internationally recognized Center of Excellence. "No other information technology organization in Germany enjoys such wide visibility, both at home and internationally," said Prof. Dr. Dr. h.c. mult. August-Wilhelm Scheer, President BITKOM in the DFKI 20-year Festschrift. The basis for this broad visibility is "Innovation through Competition", the credo of Prof. Wolfgang Wahlster,

r.-l. Lord Mayor Dr. Weichel, Dr. Olthoff, Ministerialdirigent Mentges, Prof. Dengel, Ministerialdirektor Dr. Lukas, State Minister Ahnen, Prof. Wahlster

Chairman of the Board of DFKI. This driving force is specified by Prof. Wahlster in three maxims about the DFKI selection of methods, the consideration of the entire innovation chain, and the treatment of patent protections and rights to use:

"At DFKI, the methods of Artificial Intelligence (AI) are always combined with other Information and Communication Technologies (ICT) as well as with practical and expert knowledge in order to implement innovative software solutions with our partners and clients."

"In the current topics of ICT research, DFKI has always worked on the complete innovation chain, from basic research to the transfer of scientific results into commercially viable products."

"DFKI gladly passes, without reservation, its patents, protections, and rights to use to our shareholders, clients, and partners in industry, because in the end, they are the ones that keep the cycle going that DFKI

depends on for survival: the conversion of cash into knowledge, which in turn, is used to create more cash."

Managed by Prof. Dr. Andreas Dengel, member of the senior management and press speaker for DFKI-Kaiserslautern, visitors and representatives of the media could view an exhibit of DFKI's research prototypes and various systems at the DFKI Showroom. These include a voice controlled iPod and a computer controlled by eye movement, open source text recognition for the Google Books project, robots that navigate even the most challenging terrains and slopes, a digital sommelier for wine selection, intelligent video searches, and a selection of planning tools for the production and logistics associated with organic materials to support today's modern farmers.

The mobile components of the intelligent factory of the future were also on display by the Center for Human-Machine Interaction (ZMMI) at DFKI. Participants also had the opportunity to join a tour to the SmartFactory^{KL} located in Kaiserslautern–Siegelbach. Organized as a registered association and "Living Lab", SmartFactory^{KL} is a technology initiative that offers inventors and users of forward looking technologies the chance to test innovative developments in a realistic manufacturing environment. The research and demonstration platform is a flexible, networked, self-organizing, and user-oriented production system. It places a high value on user friend-

l.-r. Prof. Linneweber, State Minister Ahnen, State Secretary Dr. Ege, State Minister Rippel, Prof. Dengel

liness, can be customized and expanded to link any number of components from various suppliers, and it allows components to independently perform context-related tasks.

DFKI has no basic funding, but is supported on the basis of fixed-term project funding, a form of so called tranche funding, for 5-year periods. The federal government contributes to promote selected preliminary studies for basic research projects. The EU and the federal states also support program related technology transfer projects, and private partners award technology deve-

lopment project grants. Each element of the partnership, comprised of federal government, state governments (Rhineland-Palatinate, Saarland, Bremen) and private sector companies, currently contributes € 3.25 million for a combined annual total of approximately € 9.75 million, either with direct funding or services/ capital in kind. DFKI also obtains a major share of revenue from competitive grants awarded by the European Union and federal ministries as well as from private sector orders. In 2008, the total DFKI budget amount was approx. € 26.0 million for more than 300 full-time employees.

New DFKI research department "Augmented Vision"

Prof. Dr. Didier Stricker

"Augmented Vision" – a term that encompasses the goal of our new research department under the direction of Prof. Dr. Didier Stricker – aims to assist people in their daily and professional activities by applying new, human centered technologies.

The main task of the "Augmented Vision" department is the development of innovative solutions in the fields of computer vision, sensor interpretation and fusion, human centered visualization, and virtual and extended reality.

The "Augmented Vision" research focus is twofold:

Augmented (Human) Vision: Vision is a central, often dominant capability for humans, and it allocates the main portion of processed cognitive information. For this reason, sight is at the center of the research effort. The focus is on exploring methods to extend natural eyesight with supplemental information from other channels, such as auditory or tactile feedback. A major aspect involves visualization and the objective to converse abstract information into easily comprehensible, interactive 2D and 3D views. The Competence Center for "Human-Centered Visualization" is dedicated to these activities.

Augmented (Computer) Vision: The research aim in the "Augmented Computer Vision" group is to design new technologies that deepen the insight in how visual perception of machines works, and which use human visual perception as a source of inspiration. Research is focused not only on new algorithms in the area of computer vision, but also on its potential expansion by combining additional sensor data, for example, from ambient sensors or sensors worn on or attached to the body. The sensors, in this case, supply valuable contextual data about the user situation, activities, and interactions.

AVILUSplus – A long term focus on applied virtual technologies for production resources and product lifecycles

The aim of AVILUSplus is to investigate long term technologies in the context of virtual and extended reality and, in cooperation with industry partners, perform test and evaluation. The focus of DFKI's contribution is on the accurate determination of the user's position and interactions. The goal is a 3D visualization of job instructions that can be displayed in the correct position within the scene and are appropriate for the current operation. The compilation is image-based and is captured with a wide-lens camera that includes both the work area as well as the hands of the user. AVILUSplus has been funded for a period of approximately three years by the Federal Ministry of Education and Research (BMBF).

NetVis – Design and implementation of new visualization metaphors for planning, scheduling, and operative control of business processes
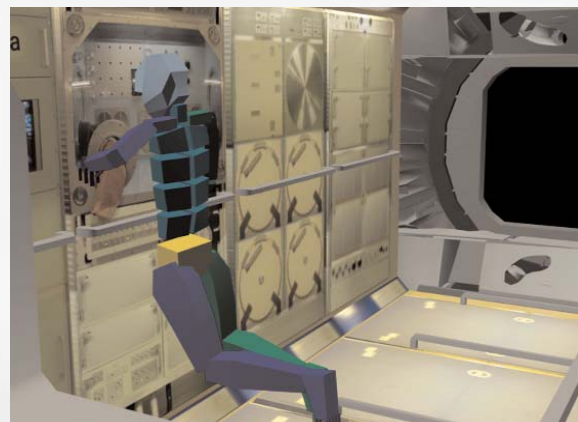
The planning, scheduling, and operative control of complex logistic processes are extremely laborious activities. Usually, such systems consist of a series of functional units that interact with one another in a way that any change to one object within the process has a direct effect on other objects.
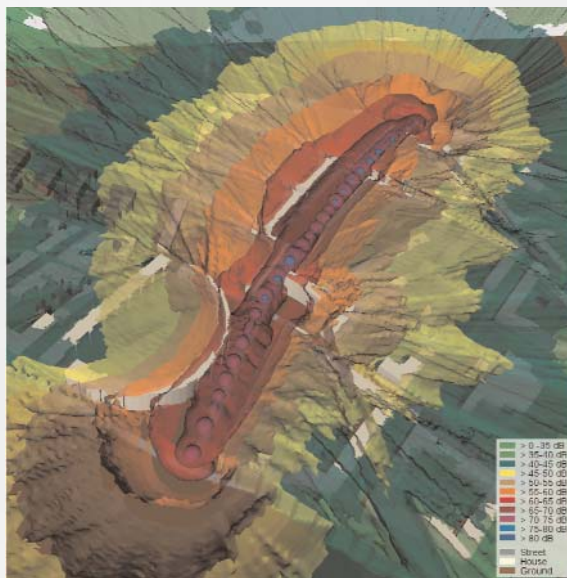
The NetVis project is developing new visualization and interaction metaphors in order to provide effective support to the user in such situations. The developed metaphors are intended to enable a standard integrated view of the multiple resources that make up such complex processes. In addition, these metaphors will improve the user's ability to determine the current state of the ongoing process far beyond what is possible with today's visualizations. Similarly, changing the process parameters in response to external affects will be greatly simplified as the new metaphors combine for a more efficient control of the integrated processes.

iACT – Multi-Channel Interaction in Virtual Environments

The aim of iACT is to investigate, develop, and evaluate tools and strategies in order to better understand and support the opportunities for interaction with large data volumes. The main topics of research are: the design and examination of visual metaphors for large immersive displays, the development and evaluation of suitable methods of interaction, and a conceptual design of visual metaphors and interactive technologies to further collaborative efforts.

More information
www.dfki.de/av

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Student team from Prof. Dr. Frank Kirchner's Robotics Lab wins ESA-Lunar Robotics Challenge

From October 20 – 27, 2008, student teams from all across Europe converged on Tenerife to present and field test their robots inside a replicated moon crater. The winner of this competition was Team CESAR from the University of Bremen, supported by scientists from the DFKI Robotics Lab, managed by Professor Kirchner.


The students were given six months time to implement their previously submitted winning designs. The challenge was to construct a robot capable of taking a soil sample of at least 100 g from a crater 15 meters deep and transporting it back to the surface. The crater walls could have a slope of up to 40 degrees. Additionally, the robots had to adjust to differing light conditions, from

bright sunlight to total darkness inside the crater. The upper weight limit was 100 kg, the energy consumption could not be greater than 2 kw, and the robot had to fit into a transport container with a volume of 0.5 cubic meters.

The Bremen team's CESAR (Crater Exploration and SAmple Return Robot) robot was the only contestant to find the

red sand in one of the craters on the El Teide volcano and transport 95 g of it back to the sample box of the landing station. The Bremen students succeeded because of their innovative "intelligent mobility" approach. They chose not to orient on traditional solutions like the wheel, legs, or tracked drive but, rather, relied on the hybrid-method of a five star wheel gear for locomotion. Equipped with two star wheels, a drum type wheel at the rear, and a camera arm above, the robot moved quickly through the sand and was not even slowed down by large rocks. The robot measures 85 cm x 120 cm and weighs eight kilograms. Also quite interesting is CESAR's concept for navigating in the dark: A laser projects a red line onto the ground approximately one meter ahead of the robot.
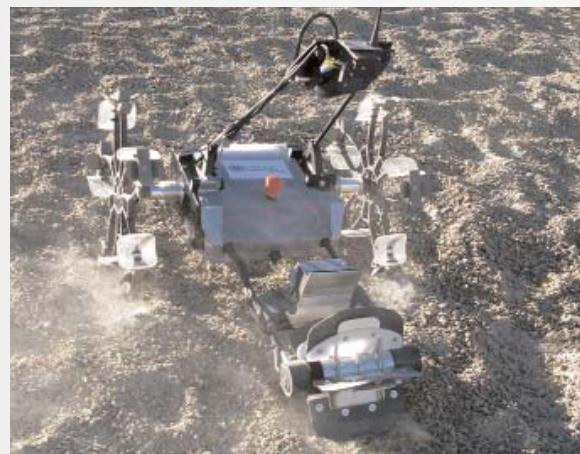
This assists the operator in the control center to judge the surface properties and to recognize obstacles and in particular trenches in good time.

More information
www.cesar.dfki-bremen.de

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DFKI Robotics at Parliamentary Evening of the Bremen State Offices in Berlin

"Perspectives on Bremen as a robotic center" was the headline banner for the Parliamentary Evening on September 16, 2008, organized by Renate Jürgens-Pieper, Senator for Education and Science of the Free Hanseatic City of Bremen. Presentations included the perspectives for Bremen as a robotic center as well as current systems of DFKI-Bremen.

Robotic technology has reached a level of great scientific, economic, and also, increasingly, social significance. Bremen has positioned itself over the past few years as one of the most important centers for robotics in Germany. Since the establishment of DFKI-Bremen Labs in 2006, Bremen and the Federal Republic of Germany have been actively engaged in increasing the German share of the high-tech growth market for robotics. The common aim of the state and the DFKI for the coming years is to continue the expansion of research activities and to insure a sustainable place for Bremen among the top-3 robotic centers in Germany. Another major component of the long term strategy for growth is the establishment of a Robotic Innovation Center (RIC).

Edelgard Bulmahn, Member of Parliament and Chairperson of the Committee for Economy and Technology of the German Bundestag, MinR Dr. Rainer Jansen, Federal Ministry of Education and Research, and Prof. Dr. Matthias Busse, head of the Fraunhofer Institute for Manufacturing and Advanced Materials (IFAM), explained the importance of robotics for Bremen and Germany. The Chairman of the Board of DFKI, Prof. Dr.

l.-r. State Councillor Dr. Kerstin Kießler; Volker Kröning, Member of Parliament; Edelgard Bulmahn, Member of Parliament; Prof. Wolfgang Wahlster; MinR Dr. Rainer Jansen, BMBF; Senator Renate Jürgens-Pieper

Wolfgang Wahlster, and the head of DFKI Bremen Robotics Lab, Prof. Dr. Frank Kirchner, rounded out the research and application perspectives for robotics as envisioned by DFKI.

DFKI-Bremen presented SCORPION and SentryBot in the Federal State Offices. SentryBot is a security and surveillance robot that can navigate autonomously and is also capable of detecting motion and initiating a movement alarm on the basis of radar technology, infrared sensors, and camera images. The biomimetic, eight-legged walking robot SCORPION was developed for employment on rough terrain and for extraterrestrial exploration.

DFKI at the IFA 2008

DFKI presented selected research project results to the Science and Technology Forum (TWF) at the IFA, the world's largest consumer-electronics trade show from August 29 – September 3, 2008 in Berlin, and also introduced Yocoy and SemVox, two of its spin-off companies. New game technologies, content-based searches for videos and images, and movement controlled operations of computer programs were brought to life for you to experience at IFA.

DFKI presented prototypes of the InViRe and TubeTagger projects that facilitate the retrieval and selection of videos and photos. InViRe enables a content-based search of video archives. After the selection of an image, the videos are searched for similar scenes on the basis of visual characteristics. TubeTagger analyzes images and videos and independently labels them with key words.

The DFKI-Berlin Project Office presented A.I. Poker, a virtual poker table from the IDEAS4Games project. On a poker table fitted with RFID-chips, players compete against Sam and Max, two virtual characters. Thanks to

Miss IFA is surfing in the Internet

innovative approaches in synthetic voices and the simulation of emotions, the two react to game events, comment on the draws, and even have the self-confidence to attempt a bluff. The project receives funding from the Investitionsbank Berlin (IBB) within the framework of the EU ProFIT program.

Using the Wii™ Balance Board, researchers demonstrated a system for the interactive control of computer programs. By moving on the Balance Board it is possible to control a figure in "World of Warcraft" or to glide over Google Earth™; a mouse or a joystick is no longer required. In the framework of the THESEUS project, funded by the Federal Ministry of Economics and Technology, the AdvanTI-Lab therewith contributes to the research in new forms of access to internet-based knowledge infrastructures.

Yocoy and SemVox, two companies that emanated from the research center, presented their information- and translator assistants as well as another result from the THESEUS project – the operation of an iPod via voice commands.

l.-r. Dr. Rainer Hecker, Chairman of the Board of the gfu; State Secretary Martin Stadelmaier, Chief of the State Chancellery of Rhineland-Palatinate

DFKI on the Germany-Promenade in China

Under the auspices of "Germany and China – Moving Ahead Together", DFKI exhibited current research prototypes on the Germany-Promenade in Guangzhou, from November 7-15, in the pavilion of the Federal Ministry of Economics and Technology (BMWi).

DFKI is participating in a series of events co-sponsored by the German Federal President, Horst Köhler and the Chinese State President, Hu Jintao, with exhibits in the area of intelligent user interfaces and language technologies.

The German Wine Princess Sarah Schmitt welcomes the Vice-Governor of the Province Guangdong, Song Hai at the DFKI-exhibit „Digital Sommelier"

BabbleTunes, a DFKI innovation developed under the BMWi-THESEUS project, enables the operation of an iPod through voice commands. Songs no longer have to be searched for in an extensive list but can be selected

directly with a simple voice command like "Play: 'What I've Done" by Linkin Park". Playlists can be set up and the volume adjusted via spoken input – any MP3 player function can be controlled by voice. Voice command applications are especially interesting in the automobile industry where they can make an important safety contribution. BabbleTunes is an illustration of the potential and success of semantic processing – one of the main concerns of THESEUS.

The DFKI digital sommelier provides product information to the customer to assist in selecting the appropriate wine. An RFID chip affixed to the bottle stores data about what region and which vineyard the wine is from and knows which foods it amends well, and at what temperature it should be enjoyed. As the bottle is taken from the shelf, the consumer hears the information via voice output. A variety of supplemental sensors can also deliver situation-related data, for example, whether the wine has been shaken, or whether it should be decanted after opening. The application potential for these Smart Labels ranges from the food processing to the automotive sector. The customers learn the exact origin of the product and how it got here. The suppliers also benefit because they know immediately how the respective goods are to be stored and transported.

Yocoy, a DFKI spin-off company, presented mobile information and language translation assistants for foreign visitors. Developed for the Olympic Games in China, one application called Smart Dining offers a practical helper at the restaurant. There is also the taxi exchange assistant that facilitates understanding between Chinese taxi drivers and their foreign passengers. Yocoy is an electronic tour guide, dictionary, and interpreter program all in one with software that runs on internet

enabled mobile phones, SmartPhones, or PDAs. The user, regardless of the situation, can choose or input a query, response, request, or command in their native language, which is then displayed and, if required, spoken to the partner in the local language. Of course, this also applies in the opposite direction as the answers from the partner are translated and shown to the user. In summary, the system gives the user the ability to communicate in a foreign language and not only in the simple "please and thank you", terms, but rather in real conversations.

"Germany and China – Moving Ahead Together" has the goal of promoting mutual understanding as the basis for successful cooperation and strengthening the image of Germany as a forward-looking, innovative country.

More information
www.deutschland-und-china.com
www.yocoy.com

Feldafinger Kreis releases new recommendations for the information society in Germany

On October 30, 2008, Prof. Wolfgang Wahlster, DFKI and Prof. Hartmut Raffler, Siemens AG, presented the findings of the latest study by the Feldafinger Kreis with recommendations concerning current trends in Internet research and delivered them to Andreas Storm, State Secretary at the Federal Ministry of Education and Research (BMBF).

l.-r. Prof. Hartmut Raffler, State Secretary Andreas Storm, Prof. Wahlster, Prof. Encarnação, Prof. Heuser

The findings of the study, which was released at a press conference by the Feldafinger Kreis in Darmstadt, were compiled by Germany's leading scientists and private sector researchers. The process included the identification of megatrends in the Internet society, an assessment of Germany's competitive standing in relation to these megatrends, and the formulation of recommendations to gain from future opportunities.

The Feldafinger Kreis performs a valuable service in bringing together business and research. The proposals offered by the experts provide a significant impulse for the continued development of the Internet. "In recent years, it is apparent that economics and science have come together to form innovation alliances. The government has, to a large extent, implemented the actions recommended by the Feldafinger Kreis," explained Prof. Wolfgang Wahlster, co-spokesperson for the Feldafinger Kreis together with Hartmut Raffler from Siemens AG. For example, the focused approach to the trend of "self-managed systems" is a very positive implementation of Feldafinger Kreis guidance. "The Feldafinger Kreis assumes that in the future more and more items of daily use will be wirelessly connected via the Internet," explained Prof. Hartmut Raffler. "This requires self-organizing mechanisms in order to limit the complexity and to insure the efficiency and reliability of networked systems."

In addition to the more technology-oriented trends, the recent Feldafinger Kreis study also identified important application domains, which will become realizable only with the arrival of new internet technologies. These include, for example, networked cars equipped with driver assistance systems that proactively guarantee safety and offer mobility support services to the occupants. Similarly assessed as another important trend is "Ambient Assisted Living", a digital environment that assists people to master their daily routines and permits extended independent living, especially for the elderly and the handicapped. Still another important field of application is intelligent resource management, for example in the field of energy, which is made possible only through new information and communication technologies.

Innovative products with embedded software form the basis for the continued success of German exports in the areas of automation, automotive industry, logistics, or medical technologies. This is also reflected in the latest Kreis recommendations.

More networked than they are today, the embedded systems of the future will exchange information and know-how, offer multi-functionality, and will develop into core assistance systems for the user.

l.-r. Ministerialdirektor Dr. Lukas, State Secretary Storm, Prof. Raffler, Prof. Encarnação

"Research results must be further developed into commercially accepted products, solutions, and services, before real innovation can occur. This transfer process achieves most success when science and business companies work hand in hand together," explained Prof. Hartmut Raffler.

Download the actual study at:
http://www.feldafinger-kreis.de/Feldafinger-Kreis_Studie_2008.pdf

DFKI hosts European e-Government symposium SaarLorLux

"First step towards European e-government" claimed the industry newspaper eGovernment Computing on the title page of the March 25, 2008 edition in covering the "1st European e-Government Symposium, SaarLorLux", organized to take place on March 11, 2008 by the Institute for Information Systems (IWi) under the management of DFKI Prof. Dr. Peter Loos.

The use of modern Information and Communication Technologies (ICT) in public administration (eGovernment) was the theme of the conference attended by approximately 80 experts from academia, business, and government from all the areas of the SaarLorLux region. The region includes the border areas of the countries of Germany, France, Belgium, and Luxembourg, an area that in the past has initiated and institutionalized numerous common programs.

The catalyst for the event was the awareness that the bundling of political and economic potential by regional partners can produce a synergistic effect. The aim of the symposium was to strengthen and expand this awareness into the area of public administration. In this way, it effectively stressed the importance of the border region as a model of European integration in the study of management research and practice.

Besides the many regional eGovernment officials, many scientists from Koblenz, Kaiserslautern, Saarbrücken, Luxembourg, and Paris also attended. They proposed concepts, methods, and technologies for the electronic networking of administrations, in order to improve cross-border processes and to provide more user friendly services. This served as food for thought with innovative approaches and insights into current research. The presentations of practical examples and a podium discussion with experienced representatives completed the agenda.

"The symposium represents a major advance in establishing relationships among experts in the scientific, business, and government sectors in the area of eGovernment. The tremendous feedback from the speakers and participants confirmed the importance of establishing a network for the principal actors," said Prof. Loos in summing up the conference. The exchange of experience in the execution of eGovernment projects is a major result. In joint discussions, the participants debated the opportunities and potentials of new methods and technologies. In this way, an awareness of the common problems and divergent problem areas could be created among the partner regions.

The funding for the event was provided by the government of the Saarland, the Deutsch-Französische Hoch-

schule and the Europäische Bewegung. T-Systems Enterprise Services GmbH, and IDS SCHEER AG provided business support for the symposium.

More information
www.egov-net.eu

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Modeling Business Information Systems – MobIS 2008 Symposium

Prof. Dr. Peter Loos, head of the Institute for Information Systems (IWi) at the DFKI, co-hosted the MobIS 2008 Symposium 2008 together with the WI-MobIS Working Groups: business process management with event controlled process chains (WI-EPK) and component oriented business application systems (WI-KobAS).

The subject of the conference held at DFKI-Saarbrücken from November 27–28, 2008 was the modeling of business information systems between service oriented architectures (SOA) and compliance management. The symposium offered a broad forum for the presentation and discussion of current topics in the field of modeling and, in addition to the main conference, included the following tracks:

▸ Business process management with event controlled process chains
▸ Component oriented business application systems
▸ Modeling of collaborative business processes

More than 60 participants followed 32 expert presentations and, at the conclusion of the symposium, all gave positive feedback regarding the high quality content and the outstanding event organization.

The Best Presentation Award, judged and chosen directly by the participants, was given to Dr. Jörg Ackermann from the University of Augsburg. The Best Paper Award, decided by a panel of experts and presented by Prof. Loos, also went to researchers from Augsburg: Dominik Birkmeier, Sebastian Klöckner, and Dr. Sven Overhage were recognized for their paper titled "The systematic identification of services: criteria, current approaches, and classification".

The MobIS Symposium was initiated by the special interest group of the same name under the Society for Information Sciences (Gesellschaft für Informatik, GI) and provides a forum for the exchange of knowledge about current research topics and solutions in information systems modeling research. It is not least intended to promote a professional exchange between universi-

ties and appropriate commercial enterprises. The next iteration takes place in 2009 as part of the Business Process Management Conference – September 7-10, in Ulm.

More information
http://iwi.dfki.de/mobis2008

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International Computer Science Institute, Berkeley – ICSI's 20th anniversary

On October 17, 2008, high level guests joined the International Computer Science Institute (ICSI) in Berkeley, California in celebrating its twentieth year as one of the few independent, non-profit research labs in the USA. Affiliated with the University of California at Berkeley, ICSI performs basic research in areas such as information systems and information and telecommunications technologies. Established in 1987 as an initiative of the GMD – Forschungszentrum Informationstechnik GmbH and the University of California Berkeley, the aims of ICSI are:

- To create close ties of transatlantic research cooperation
- To promote technology transfer between the USA and Europe
- To facilitate the exchange of researchers between Germany and the USA.

Prof. Wahlster, as a member of the Executive Board from the very start, has accompanied ICSI in its journey to becoming a recognized "Center of Excellence", with its unique research focus on language processing and internet technologies, artificial intelligence, and bioinformatics. Within the context of the internationalization strategy of the Federal German Ministry of Education and Research (BMBF), Dr. Manfred Dietrich, Undersecretary for IT at BMBF, has worked successfully toward increasing the budget for the IT studies section of the post doctorate exchange program between Germany and the USA. These structural assistance actions form a part of the German government's High-Tech Strategy ICT 2020 and permit the top "post-doc" applicants to be selected for a visit abroad to live and work in an inspiring research environment. The ICSI exchange program between Europe – mainly Germany – and the USA is considered one of the most important of its kind. Besides Germany, ICSI is also sponsored by Switzerland, Finland, and Spain.

In 1988, at the urging of the GMD – Forschungszentrum Informationstechnik GmbH, well-known German ICT companies and research facilities joined together to
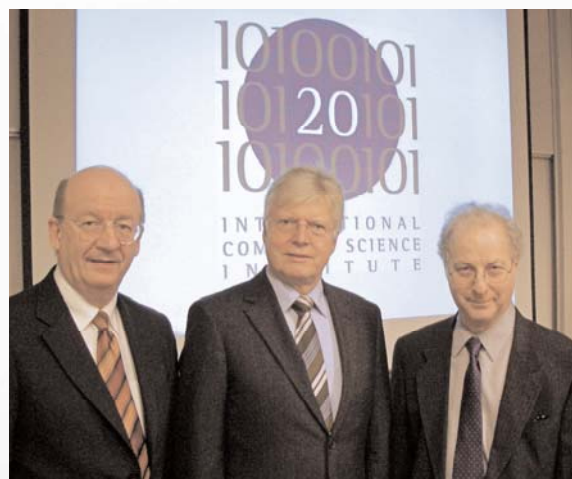
l.-r. Prof. Wahlster; MinDirig Dr. Dietrich, BMBF; Prof. Morgan, Director ICSI

form the ICSI sponsor organization. ICSI was inaugurated with the support of the former Federal German Minister for Research and Technology (BMFT) and the University of California at Berkeley. More information about the ICSI post-doctorate scholarship programs is available from the sponsoring Organization for German-American cooperation in the area of information systems and their applications (ICSI-Förderverein): http://www.icsi-fv.de

The DAAD grants are awarded for an exchange period of one year (in some cases, longer) beginning on September 1, 2009. The applicants must have completed their PhD at least at the level of "magna cum laude" by this date.

Studies at international research and technology centers (FIT): Post-doc scholarships for research abroad at the International Computer Science Institute in Berkeley, California, USA:
http://www.daad.de/ausland/foerderungsmoeglichkeiten/ausschreibungen/09391.de.html

l.-r. Prof. Wahlster and MinDirig Dr. Dietrich with the post-doctorates from Germany (FIT-Program) on the roof of the ICSI building
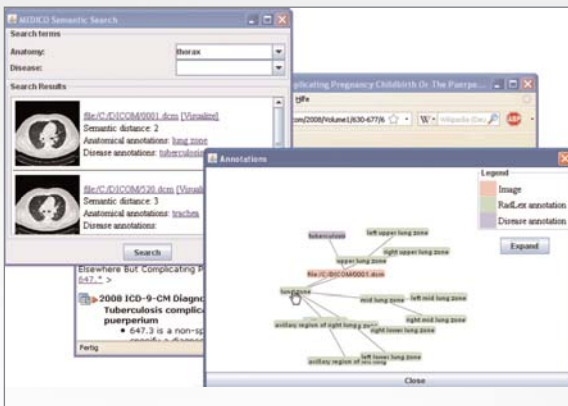
THESEUS MEDICO – Intelligent research in medical data bases

MEDICO is one of the six THESEUS program scenarios in which new technologies for the "internet of services" are tested and implemented. Under the umbrella of THESEUS, 30 research and business partners develop new technologies that combine information more intelligently, clarify interrelationships, and thus make stored data more useful as networked knowledge. The goal: THESEUS enables easy and efficient access to knowledge and creates the basis for the development of new online services.

Diagnostic imaging is a major basis for medical diagnosis and therapy and as such is seen as a key component for medical progress. The aim of MEDICO is the interpretation of images to identify similarities and connect them with textual content in a useful manner. The results of the project should greatly simplify the daily routines of doctors and others working in the health sector in the future by connecting intelligently all available information, both image and text based findings, concerning a patient.

modeling, computer-aided identification systems, or clinical decision aids. The ontologies enable computers to use medical knowledge to present information in a clear, semantic structure. One of the goals is to organize the extracted data into a hierarchy of human anatomy, based on the detailed Foundation Model of Anatomy (FMA), that also integrates existing methods for displaying knowledge.

The main challenge for MEDICO is to develop an assortative structure for the vast quantities of information which is based on the special terminology used in the field of medicine – and to integrate the relevant information extracted from image data into this structure in order to make them available for clinical search queries.

More information
http://theseus-programm.de

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MEDICO will not only identify anatomical structures like bones, blood vessels, or organs, but it can also automatically catalog data and collect comparison photos and reports of treatment from multiple databases. In this way, serious health problems can be recognized more quickly in the future.

How does MEDICO work? Initially, the computer must be enabled in a way that permits independent extraction of key data from the respective content presented in the image. MEDICO links this image-based data to similar clinical symptoms from other patients and supplements it with information from professional and research publications. However, there is still much work to be done before that can happen. Many of the required components have yet to be developed: pattern recognition processes, for example, the ontology

DFKI at 2008 Venice Architectural Biennale

Project MACE (Metadata for Architectural Content in Europe) was represented at the 2008 Venice Architectural Biennale by the interactive installation titled "Maeve", which provides innovative access to information about architectural projects. Maeve was developed by the Interface-Design-Group, Technical College of Potsdam.

The MACE project links architectural repositories with large data volumes in order to create a standard access to these distributed heterogeneous data sources, primarily for educational purposes. Content that previously was only accessible for informed user groups can now be located more easily. This promotes the knowledge exchange and discussions among users. As future users will live and work anywhere within Europe, the project accounts for multicultural and multilingual aspects. MACE is funded until the end of 2009 by the European Union within the framework of the European eContentplus program.

In MACE, the backbone of the open services is the ALOE system developed by the consortium partner DFKI. This social resource-sharing platform permits users to comment, organize, and exchange multimedia resources and also allows formal metadata with different formats to be associated with the resources. Users can upload their own files in ALOE or create bookmarks to existing resources. All resources can be tagged, commented, and rated. Additionally, there is a web-service interface to all functionalities. The open and generic architecture of ALOE allows the use of formal and statistical descriptions of resources as well as user-generated information (characteristic for Web 2.0), in various applications and contexts.

More information
www.mace-project.eu
http://aloe-project.de

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DFKI Interview: Dr. Klaus Fischer

Dr. Klaus Fischer

Dr. Klaus Fischer is the head of the Multiagent Systems Group and assistant manager of the Agents and Simulated Reality Department. Dr. Fisher joined DFKI in 1992 after completing his studies in Information Systems and earning his doctorate at the Technical University, Munich.

What do you see as the application potentials in your research?
The greatest potential lies with agent-based systems that support business applications. The most successful industrial project to date is DISPO, a control system developed in cooperation with Saarstahl AG, which is employed in 24-hour steel production operations.

When did your interest in artificial intelligence begin and how have AI processes changed since that time?
My doctoral work finally led me to AI and agent-based systems. Since that time, the corresponding development tools have become much more professional. The model-driven system development and the integration of service-oriented architectures are relatively recent developments, and there is still much room for innovation.

What are the challenges and opportunities for AI systems today?
There are great challenges and opportunities ahead to make reasoning-algorithms efficient enough to be of practical use in the areas of knowledge presentation and activity planning and execution.

What do you enjoy doing besides working as a research scientist?
I combine music and exercise, for example dancing. I also enjoy skiing, jogging, and cycling. Every now and then, in the interest of DFKI, I will even go so far as to get my soccer equipment out of the basement.

Do you see any parallels to your professional life in this regard?
I prefer to think of my leisure activities as balancing my professional challenges.

What are your current projects?
Besides the important project work for Saarstahl, I am working on EU projects that involve interoperability of business applications, model driven system development for service oriented architectures, and semantic web services.

News in brief

JAPANESE RESEARCH CENTER MODELED ON DFKI

As a founding member, Prof. Dr. Andreas Dengel partici-pated in the festive opening ceremonies for the Institute for Document Analysis and Knowledge Science (IDAKS) at the Osaka Prefecture University (OPU). Prof. Dr. Tsutomu Minami, OPU President, emphasized the function of DFKI as a role model in the establishment of IDAKS and thanked Prof. Dr. Andreas Dengel for his support in the organization of the center. Prof. Tsuji and Prof. Kise, co-directors of the center, announced plans for a long term cooperation with DFKI.

l.-r. Shingo Kubo, Prof. Koichi Kise, Prof. Tsutomu Minami (President), Prof. Taketoshi Okuno (Dean), Prof. Andreas Dengel, Prof. Hiroshi Tsuji

OUTSTANDING ACHIEVEMENT AWARD FOR BENJAMIN ADRIAN

On October 23, 2008, at a celebration marking the end of the academic year, the University of Kaiserslautern's Association for the Advancement of Computer Sciences (Verein zur Förderung der Informatik, FIT), announced the department's new, annual "Outstanding Achieve-ment Award". The first winner is Benjamin Adrian, from the Knowledge Management Lab, who was recognized for his role in the planning and execution of "Informa-tion Systems", a project week for high school seniors.

NAKANO AWARD FOR GEORG BUSCHER AND ANDREAS DENGEL

Georg Buscher and Prof. Dengel received the first-ever "Nakano Award" for Best Paper at the IAPR Document Analysis Systems Workshop in September 2008. The win-ning paper titled "Attention-Based Document Classifier Learning" discusses a concept for highly accurate docu-ment classification within the "Mymory" project. The concept is based on using eye tracking methods to explain the thought processes that lead people to assign a document to a certain category. The information obtained in this way provides indications as to the ongoing deliberations in the mind of the user, which then can be algorithmically applied in the system to for-mulate very precise document characteristics.

PROFESSORSHIP FOR DR. PETER DANNENMANN

Dr. Peter Dannenmann (Competence Center for Human Centered Visualization at the Augmented Vision Research Department) has accepted the appointment to a W2 Professorship at the University of Applied Sciences of Wies-baden. Starting in the summer semester of 2009, he will teach Computer Engineering at the Department of Engi-neering Sciences located in Rüsselsheim. Prof. Dannen-mann will retain his links to DFKI in his new position in order to contribute to future joint research projects.

AWARDS FOR DFKI ROBOTICS RESEARCHERS

A technical paper titled "A Versatile Stair-Climbing Robot for Search and Rescue Applications" by DFKI-Bremen researchers Markus Eich, Felix Grimminger, and Prof. Dr. Frank Kirchner won the award for Best Paper submitted to the IEEE Robotics and Automation Society in Sendai, Japan. The DFKI scientists introduced an innovative, proprioceptive approach to the control of hybrid mobile robots. The Institute of Electrical and Electronics Engineers (IEEE) is the world's leading professional asso-ciation for the advancement of electronic technologies and information systems.

At the "11th International Conference on Climbing and Walking Robots" (CLAWAR 2008) in Coimbra, Portugal, three DFKI research scientists, Markus Eich, Felix Grimminger, and Prof. Dr. Frank Kirchner have been awarded with the Innovation Award 2008 for their work on "Adaptive Stair-Climbing Behavior with a Legged/ Wheeled Hybrid Robot". CLAWAR is the world's most important conference on climbing and walking robots.

BEST PAPER AWARD GIVEN TO DR. ALEXANDER KRÖNER AND MICHAEL SCHNEIDER

The contribution "The Smart Pizza Packing: An Application of Object Memories" by Dr. Alexander Kröner and Michael Schneider of the research department Intelligent User Interfaces has been granted the Best Paper Award at the 4th IET International Conference on Intelligent Environments in Seattle.

PROF. DR. DETLEF ZÜHLKE ON THE BOARD OF IFAC

In July 2008, Prof. Dr. Detlef Zühlke, Director of the Center for Man-Machine Interaction at DFKI, was appointed as a member of the Technical Board of the International Federation of Automatic Control. IFAC is the worldwide federation of 48 national member organizations re-presenting automated control tech-nologies in each of the respective

countries. Since its establishment in 1956, the aim of the Federation is to promote the science and technology of control systems in the broadest sense, both in theory and in application. Prof. Zühlke will chair the Department of Mechatronics, Robotics, and Human-Machine Systems.

PROF. DR. DR. H.C. MULT. WOLFGANG WAHLSTER INDUCTED TO THE BERLIN-BRANDENBURG ACADEMY OF SCIENCES

In presence of the Federal German President Köhler, Prof. Wahlster has been admitted as a Full Member of the Class of Technical Sciences at the Leibniztag 2008. In the laudation, Prof. Wahlster was honored for his role as "an outstanding worldwide representative of multi-modal user interface research" and, as the winner of the German President's Future Prize, one who has always advocated cooperation beyond disciplinary boundaries between the sciences and humanities.

Eulogist Prof. Dr.-Ing. Klaus Lucas (RWTH Aachen and the Berlin-Brandenburg Academy of Sciences) hands the certificate on to Professor Wahlster

20 YEARS OF SERVICE TO DFKI — SIGRID HERZOG

Sigrid Herzog, one of the original DFKI employees, is also the first to receive formal recognition for 20-years of service to DFKI. Over the course of this time, Ms Herzog has accompanied and supported the organization and development of the German Research Center for Artificial Intelligence from various positions within the management, research departments, and administration. Her

Sigrid Herzog, Dr. Walter Olthoff

contributions were of particular importance to the organization in its formative years, when nearly every organizational unit had to be planned and implemented from scratch. The many and varied contributions of Ms Herzog are a significant part of the growth and success of DFKI.

Publications

WE ARE PLEASED TO PRESENT THE FOLLOWING PARTIAL LISTING OF OUR STAFF'S RECENT SCIENTIFIC PUBLICATIONS

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