NEWSLETTER DFKI

GERMAN RESEARCH CENTER FOR ARTIFICIAL INTELLIGENCE

1/2008

**New Research Department
Graphics and Agents**

DFKI at CeBIT 2008

Selected Place in the Land of Ideas

Germany
Land of Ideas
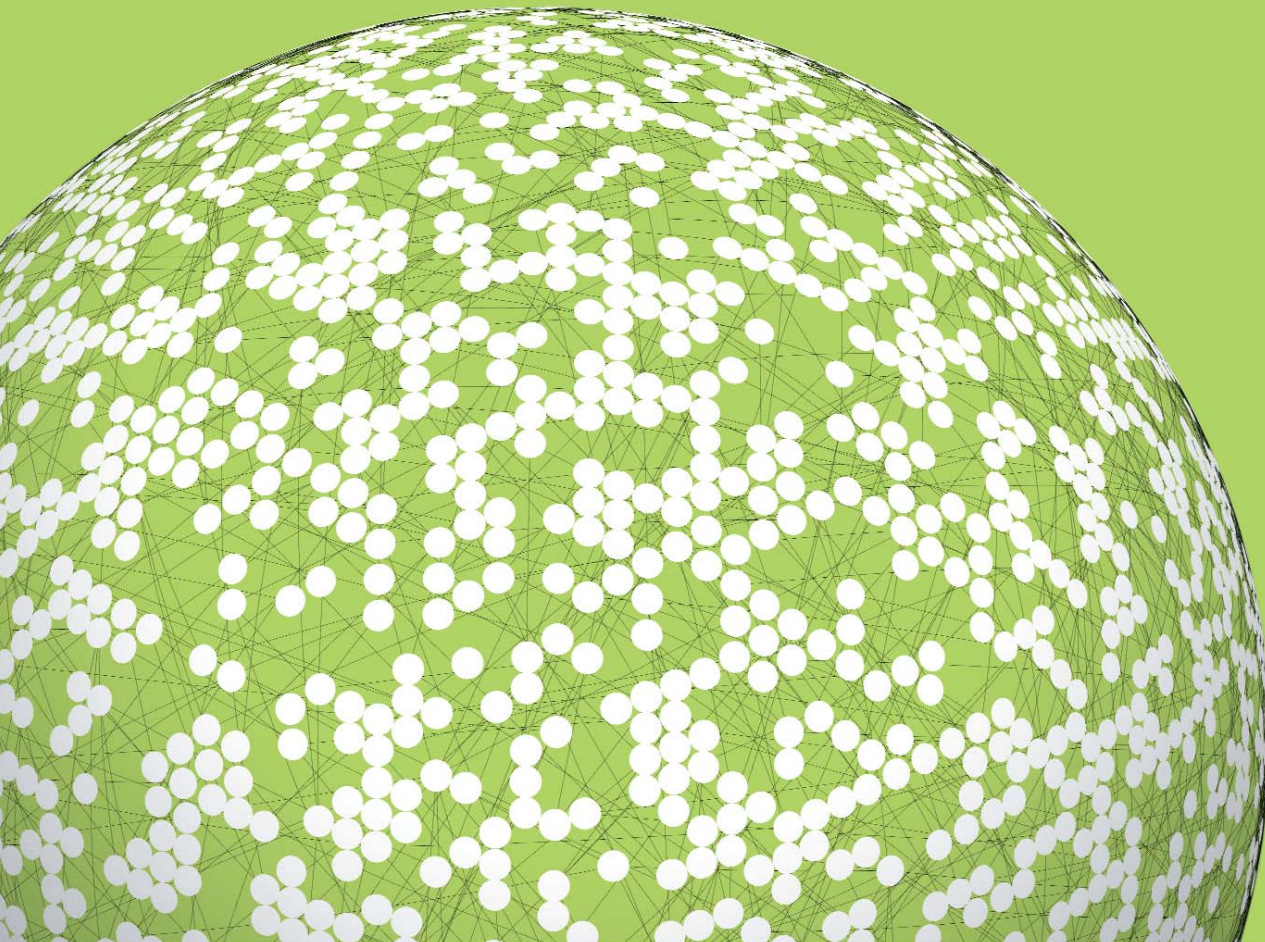
Selected Place 2008

THESEUS
Research program for a new
Internet-based knowledge infrastructure

MAKE YOUR CONTRIBUTION TO THE INTERNET OF THE FUTURE

THESEUS TALENT CONTEST 2008

Win up to **10.000 euros** in prizes.

The THESEUS research program seeks to develop a new internet-based knowledge infrastructure and invites all the talent in Germany to come together to work on the Internet of the future.

The THESEUS TALENT CONTEST 2008 is seeking solutions to 29 different questions arising from this multifaceted research project. Are you a young scientist, a freelance programmer, a student, a problem solver, or an unconventional thinker? There are no limits placed on your creativity!

Attractive cash prizes await the winners – up to 10,000 euros and the opportunity to realize your ideas within the framework of the THESEUS project.

For a detailed questionnaire, contest rules, and application documents visit us at: www.theseus-programm.de/talente.

The deadline for submission of entries is **April 14, 2008**.

www.theseus-programm.de/talente

DFKI-Bremen Labs: Selected place 2008 – Land of Ideas

**SAFETY ROBOTICS – FROM THE WESER TO THE MOON**

Germany
Land of Ideas

Selected Place 2008

DFKI is one of 365 places in the "Land of Ideas" in 2008 and once again has one day designated to present its innovations to the public. The "Germany – Land of Ideas" initiative is sponsored by the Office of the Federal German President. The public is invited May 9, 2008 to visit and discover the work of DFKI-Bremen Labs.

On "Robotic Activities Day", visitors will have the chance to test how difficult it is to control an underwater robotic arm in performing the task of grasping objects underwater. DFKI will also demonstrate how their programmed robotic arm, CMANIPULATOR, solves this problem autonomously; a sort of dexterity contest between humans and machines.
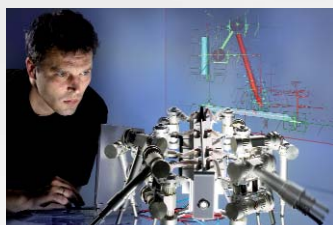
The walking robots ARAMIES, SCORPION and SCARABAEUS will be demonstrating their capabilities on Activities Day. SCORPION will climb a man-made moon crater and collect "moon rocks" for the visitors as souvenirs and the most recently developed latest robot ASGUARD will attempt to negotiate an obstacle course with five different surface characteristics (sand, water, stone, grass, hills).

"We are extremely pleased with our selection as a 'Selected Place' in the Land of Ideas 2008", said Prof. Dr. Frank Kirchner, member of DFKI management. "Founded in February 2006, DFKI-Bremen Labs work on secure, mobile, and autonomous robot systems for use on land, under the water, and in the air or outer space. Our robot designs benefit from the variety of nature: biomimetic systems – four- or eight-legged climbing/walking robots, and snake-form underwater systems resemble patterns in the natural environment and combine the advantages of modern materials with successfully evolved forms of locomotion and movement."

Space and deep sea worlds fascinate humans emotionally and economically. Mobile underwater robots open up possibilities for the discovery and mining of raw materials from the ocean floors; industrial manufacturing in zero gravity will be possible when intelligent robot systems can be employed in outer space.

Spectating is fine, but participation is better when visiting DFKI-Bremen Labs – a "Selected Place 2008". All are invited on May 9, 2008 to take the controls of the SCORPION or even help replace individual robot parts, for example, one of the legs of SCORPION or SCARABAEUS. In a children's workshop (from 10 years and up) with instruction, mini-walking robots can be constructed, which can later be entered into a small competition to show off your talents and skills.

Robots are highly capable machines, a combination of a selected form, applied materials, sensors and actuators and the associated controls. In the process, the robots are examined individually or in self-managed teams, but also where robots learn the interplay with humans, to take the specific physiological frailties and strengths of human beings into account.

The research team "Safe and Secure Cognitive Systems" at DFKI-Bremen Labs has developed a safety system that protects vehicles from collisions. A model car currently functions as a demonstrator and is available for testing on Robotic Activities Day, along with the intelligent wheelchair, Rolland, which comes equipped with a navigation system. A special test environment for Rolland is the BAALL (= Bremen Ambient Assisted Living Lab), a home for elderly and physically challenged persons constructed within the research project facility.

More information
www.land-der-ideen.de
www.land-der-ideen.de/MEDIA/11133,0.pdf

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▶ BabbleTunes – Talk to your iPod

Whether in your car or in your living room – wouldn't it be nice to access the right song for any occasion right away? MP3 players now let you manage a large number of titles. However, the options provided by the current user interfaces are often inadequate for finding your way through the data jungle.

DFKI is presenting a multimodal interactive system known as BabbleTunes in Hall 9, B37. It will enable the intuitive, language focused operation of your iPod. What is unique about this is the direct access to your complete music collection and the ability to say, for example, "Play 'Kalter Kaffee' by Clueso" to the system, and have the desired title cued for immediate play. This type of user interface enables natural language access to all of the basic functions of an MP3 player, without the need to learn special speech commands. Of course, there is still the option to operate the MP3 player using the touch screen.

BabbleTunes is a continuous development of the SAMMIE dialog system, which was developed under the framework of the TALK research project. The interactive system is based on an ODP framework, as implemented in the THESEUS research program. ODP is a generic platform for the implementation of multimodal dialog systems, and greatly facilitates the development of such systems. In addition to the fact that there is almost no lag time in processing, another unique feature of BabbleTunes is the voice access to all musical content via the iPod

interface. New and often multilingual content can be accessed through the use of modern linguistic methods.

More information
www.dfki.de/babbleTunes

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▶ i2home – Mobile multimodal access to the digital home for everybody

DVD player, internet telephony, air conditioning unit or TV: Imagine that every device and service unit in your home is networked together and it's child-play for you to operate them all from a personal remote control. That is the goal of the i2home project, funded by the EU and managed by DFKI Saarbrücken. The project consists of nine partners in research and business implementing an open, standards-based platform (universal remote console ISO/IEC 24752), that makes it possible to interact with an unlimited number of devices and services over a central, operator interface customized for the user's personal needs.

At CeBIT 2008 in Hall 9, B37, DFKI is presenting a multimodal dialog system that is based on the ODP framework also developed at DFKI. Using a smartphone as the end device, it represents a version of the operator interface developed for i2home. In this system, the focus is on a language and gesture controlled operation of the network, for example, to give the elderly or the learning impaired easier access to the digital home. It is possible with this system, in a relatively simple way, to operate the home's air conditioner: The exhibit will show how with the voice command, "Set the air conditioner to 20 °C", the air conditioning unit can be activated and set to the automatic mode.

More information
www.i2home.org

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IDEAS4Games – A.I. Poker at a virtual casino

At Casino Virtuelle, people play poker on an instrumented Las Vegas poker table against Sam and Max, two computer characters. The 52 poker cards are dealt in the virtual world of play with RFID technology. Various poker algorithms from Sam and Max assess all actions and examine their own poker hand. True to character and emotional state, they comment on the actions differently and have the self confidence to bluff.

The IDEAS4Games project further develops and customizes AI research processes so that they will be useful for later generations of computer games. IDEAS4Games is a ProFIT Project, part of an EU EFRE grant for Berlin and is managed by DFKI in cooperation with Investment Bank Berlin IBB over the period 02/07 – 11/07 with project partners RadonLabs (Berlin) and the University of Augsburg. AI technologies are analyzed that offer added value for the next generation of computer games. Included among these is an efficient poker algorithm that consists of only 34 rules.
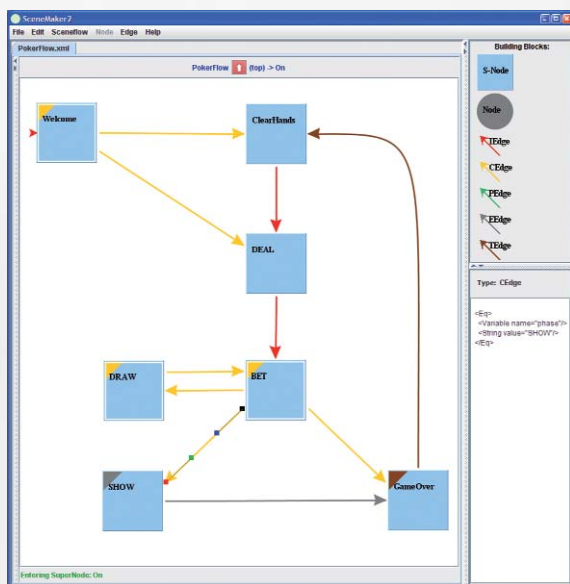
A major component of IDEAS4Games is the AI authoring suite SceneMaker, which enables the convenient creation of interactive applications. Because of the strict division of process and content, separate scenes can be compiled to game plots without any need for special programming skills.

The game play and the processing of user actions is based on hierarchical state graphs, created and visualized with the aid of a graphics editor. The integration of graphic programming with the Java programming language allows the use of all Java programs and methods, which in turn represents the maximum flexibility for software programming options. The result is the ability to create processes in computer games in the style of "rapid prototyping" and the convenient creation and extension of dialogs as well as their localization.

In order to improve the expressiveness of the virtual characters in computer games, innovative speech synthesis approaches for expressive comments and an advanced simulation of emotions are used. In association with the authoring-approach, this results in a more

flexible type of dialog management and improvements of the expressive behavior of virtual characters. Innovative methods in the language synthesis system, MARY lend synthetic language a controlled quality and enable emotions to be expressed in the synthetic voice. The ALMA computing model is used to transfer the current psychological insights about feelings over to the computer model required for the simulation of emotions. The emotions and moods calculated in real time on the basis of game events influence the interactive language and behaviour of the two virtual players.

The virtual poker players Sam and Max are in a position to show overall believable, emotional expressions that realistically reflect user actions and game outcomes.

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SAMS – Safety component for Autonomous Mobile Service robots

At CeBIT 2008, the DFKI Safe and Secure Cognitive Systems Team demonstrates SAMS, a prototype of a certifiable safety component designed for use with service robots and driverless transport systems. Installed on a test vehicle that can be controlled by the trade fair visitor, the component applies the brakes just in time to avoid collisions with obstacles – even overriding the wishes of the driver when required. Visitors will see for themselves how the safety component works when they attempt to drive the test car through an obstacle course.

Although SAMS is conceived for much larger systems like wheel chairs or industrial transport robots, the demonstrator employs the original technology. The component uses a laser scanner to monitor a protection zone and actively adjusts to the changing speed, direction, and steering angle of the vehicle. The laser scanner provides contact-free measurement of distances to obstacles, by measuring the time it takes for a laser beam to bounce back. If this measurement indicates that an obstacle is within the protected zone, the brakes are applied before a collision can occur. For research prototypes, this is already the state of the art; the aim of the SAMS project is to develop a system that satisfies the ISO 61508 requirements for safety devices, which has to be certified by an external agency (e.g. TÜV). The major goals are the formal
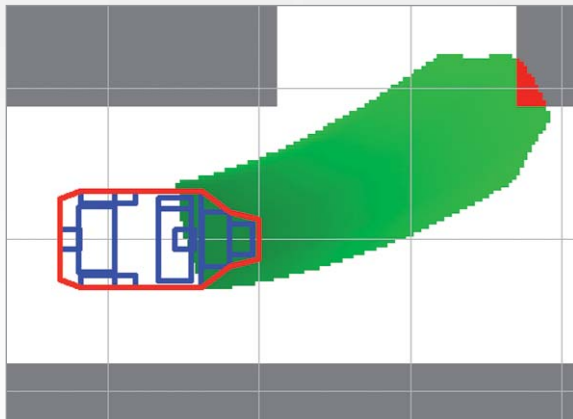
mathematical modeling and the proof of correctness of the implementation. The safety component is to be implemented as a stand alone device to give manufacturers of service robots the option to purchase a solution to their safety issues and to concentrate in their own areas of application development. This is why the safety certification is so important to the project.

Using well-known formal methods from the field of critical secure systems, the project is exploring an exciting new scientific frontier in the field of robotics and especially, service robots that represents a tremendous econo-

mic potential. The ability to avoid collisions and insure safety is a regulated licensing requirement for every service robot. However, the best way to solve the safety issue for service robots remains uncertain. The work of the SAMS project represents a significant first step in the right direction.

The SAMS joint project is being managed by DFKI Bremen Labs as the lead agency, with partners, Leuze Electronic and the University of Bremen. It is funded by a grant provided by the Federal Ministry of Education and Research within the lead innovation Service Robotics. The project is scheduled to run from May 1, 2006 to April 30, 2009.

More information
www.dfki.de/sks/sams or www.sams-project.org
www.jahr-der-mathematik.de

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SentryBot – an autonomous, cooperative multi-robot property surveillance and security system

The DFKI SentryBot guards the exhibit area of the Federal Ministry of Education and Research at CeBIT 2008 in Hall 9, B40. Mobile units of the indoor monitoring system will patrol the BMBF exhibit area and demonstrate the integration of Artificial Intelligence with security robotics.

DFKI-Bremen Labs developed the SentryBot Indoor, a system capable of autonomous navigation – no need to acquire prior knowledge of the surveillance channels – and able to initiate alarms on the basis of radar technology, infrared sensors and camera imagery. The use of integrated electronic chargers and independent startup of the charging station insures an autonomous energy supply for the robots and makes a permanent deployment possible without any need for human intervention.

In the SentryBot project, a security system is now under development that will one day consist of a team of five autonomous, mobile robots working in cooperation to protect buildings and facilities. This includes four identical monitoring systems for the interior areas and AS-GUARD, a robot designed to secure the exterior of the property. Special wheeled legs enable ASGUARD to travel over various surface features and negotiate obstacles. SentryBot can be effortlessly integrated with existing security systems. In this way, existing security infrastructures are rendered more effective.

SentryBot represents an example of the potential applications to be exploited in the area of security technology through the use of Artificial Intelligence.

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DFKI Interview: Dr. Christoph Lüth

Dr. Christoph Lüth is Deputy Head of the research team Safe and Secure Cognitive Systems at DFKI Bremen Labs. After studying computer science at the TU Berlin, he earned his Ph.D. at the University of Edinburgh and his habilitation in 2005 at the University of Bremen. He specializes in the field of formal methods and safe software, currently in the application area of robotics.

What do you see as the application potential in your research?
As more and more functionalities are implemented with software, the correctness of software is becoming more important. This is a wide open field, especially in the area of robotics.

When did your interest in artificial intelligence begin and how have AI processes changed since that time?
My contact with AI began during my college days, mainly from studying deduction techniques. It was once considered quite visionary to proof the correctness of software programs by machine, or to formalize mathematics in a computer; today, these techniques are on the verge of industrialization.

What are the greatest challenges and opportunities for AI systems today?
In the mid term outlook, software verification will become an engineering discipline and formal verification will be essential for software certification, just as every building today must have a statics.

What do you enjoy doing when you are not working as a research scientist?
Well, after an all too often too long day of sitting at my computer, I need some physical exercise. Then I go out for a run or play some football.

Are there parallels there to your professional life?
Yes. Success in scientific work also requires endurance, good technique and the ability to quickly and intuitively comprehend new situations.

What are your current projects?
Secure components for autonomous mobile service robots. The project is highly innovative, because it brings the use of formal methods into robotics for the first time and there is a high potential need for such practices.

PROLIX – Reference architecture for learning and business processes

An EU research project called PROLIX has the goal of combining learning and business processes so that organizations can more quickly target and adjust the qualifications of employees to their operating needs.

PROLIX is developing open, integrated process-oriented learning and process-oriented information exchange reference architecture to link Business Process Intelligence tools with both learning systems and knowledge management systems.

PROLIX addresses the entire life cycle of business learning processes while including methods and integrating IT application systems for

- Qualifications-oriented analysis of complex business situations,
- Identification of individual and organizational learning objectives,
- Analysis of required skills and qualifications and comparison to current individual skills (target/actual),
- Definition of appropriate learning strategies and simulation of competence-oriented processes,
- Implementation and execution of individual learning processes,
- Visualization of performance improvement by the student.

For illustrative purposes, PROLIX is being implemented in five sample test cases in different fields of application.

These include: the healthcare industry, represented by Social Care Institute for Excellence (SCIE), the telecom industry with British Telecom (BT), educational publishing (Klett), and the banking sector with GENO (cooperative financial society). In the coming year, another application scenario is in planning for the public sector in cooperation with the Slovakian interior ministry.

PROLIX combines the competencies and experience of 19 partners in 9 different European countries. These include IMC and Giunti Learning Labs, two well known software companies for learning management, as well as IDS Scheer. We also have other European research partners in the field of learning technologies, didactics, software perception and architecture for technology-aided learning. Testing and practical application of the project solutions are implemented in sector specific application scenarios with cooperation partners British Telecom, KLETT, GENO, and SCIE.

More information
www.prolix-project.eu

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1st e-Government Symposium Saar-Lor-Lux

TAKING STOCK OF POLITICS, MANAGEMENT AND RESEARCH

SaarLorLux is a dynamic, trans-national region in the heart of Europe. The first "e-Government Symposium SaarLorLux" is planned with the aim of intensifying relationships in the area of public administration in SaarLorLux with a forward looking focus on "eGovernment". The use of modern information and communication technologies in public administration is the main topic of policy discussions concerning a modern, strategically focused administrative reform. For the agencies, it is a matter of efficiency and effectiveness brought about by the use of new technologies and a greater focus on service and closeness to the public. The sciences provide innovative concepts, methods and technologies. The first e-Government symposium will stimulate and promote the exchange between the policy, administrative, and research communities. The aim is to promote cooperation and, together with partners from scientific and administrative agencies of the Saar-Lor-Lux region, discussion of current and future e-Government activities in order to

Identify synergistic effects,
Support responsible actors in effort to build networks, and Exchange experience in dialog with neighboring regions.

The symposium is devoted to current and future issues in administrative modernization and e-Government. The symposium is scheduled for March 11, 2008 from 9:30 a.m. – 6:00 p.m. at DFKI-Saarbrücken.

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R4eGov – Cooperation among public administrative organizations

The aim of the R4eGov project is to support cross-organizational processes and to implement the service oriented concept of "interoperability at large" among European administrative agencies. Scenarios are compiled for the respective processes and requirements of the participating agencies (including Eurojust, Europol as well as the Austrian Federal Chancellery). To date, three overall requirements have been identified:

Articulate the need for a decentralized solution on the basis of the traditional independence of public organizations, in a way that there is no need for a dominant partner or "process owner" to prescribe or centrally carry out the global processes.

The sensitivity of the data used by public offices demands comprehensive measures to insure confidentiality.

Although many process elements are assigned to certain official agencies by laws and regulations, the combination of different process elements and actors provides a large number of potential process variants and creates a need to model and automate flexible processes.

An interoperability architecture has been created on the basis of these requirements to allow various administrative offices to specify and publish their offers and needs in the area of cross-organizational processes in form of interface descriptions. This takes place on two levels: At a conceptional level, the so called "Business Interoperability Interface"(BII) defines the official views as an ARIS dimension. The ARIS concept (Architecture of Integrated Information Systems) by Prof. Dr. Dr. h.c. mult. August-Wilhelm Scheer), divides a company into the following dimensions: process, function, performance, data and organization in order to systematize the development of the company business information systems. Using a BII, the interactions with partner organizations as well as cross-organizationally relevant services, document types and views can now be systematically defined for organizational units (permissions and roles) via so called "process interfaces" without ever disclosing internal company data.

In addition to design-time activities like coordinating cross-organizational processes, the BII also supports run-time activities. Here, the content of the BII is stored for each organization in a repository that permits viewing by the collaboration partner to support the release, discovery, and binding of services. The exchange of information is implemented over a technical interface component called the "Interoperability Gateway". This insures proper routing of information and a secure transfer.

Besides the concept architecture, IWi is currently developing prototypes for modeling the BII content. This includes a special tool for modeling the process interfaces of separate official agencies as well as a tool to coordinate the process interfaces of the collaboration
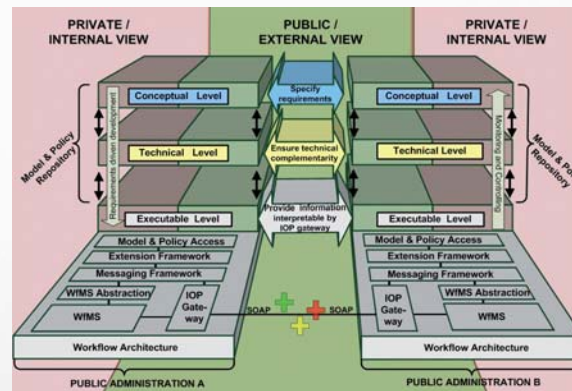
partner. Further development plans call for a tool for monitoring the information exchanged across the organization.

More information
www.r4egov.eu

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▶ PIPE – Hybrid added value for machine and plant construction

PIPE

The PIPE project is developing a process oriented information system for mobile, internet-based support for technical customer services in the equipment and plant construction sector. Service information about the plant under construction is provided to the technical service contractors over an interactive mobile application, for example, a PDA or notebook. Included, in addition to the statistical data, are texts, photos, videos and even step by step interactive instructions, i.e., the fitters are guided through the service processes.

The life cycle of this process oriented service information is central to the project. This data is developed then provided, used and continuously improved in cooperation with plant construction companies, specialized service companies and their customers. The large number of services associated with this service information are considered and managed as a whole together with the technical product development and customer service departments, so that the technical units and the services finally merge into hybrid products, available to the customer service organizations for convenient use. The system potential is illustrated using real case examples from the fields of plumbing, heating and airconditioning.

The lead manager for the PIPE project is the Institute for Information Systems (IWi) at DFKI. Members of the joint venture include: Vaillant & Co. of Germany, the Association of Plumbing, Heating, and Airconditioning for Hessen, the German Institute for Standardization (DIN Deutsches Institut für Normung e.V.), INTERACTIVE Software Solutions of Saarbrücken, and the Chair of Information Systems at the University of Hamburg.

More information
www.pipe-projekt.de

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▶ MAS-Dispo XT – Multiagent technology for steel production

MAS-Dispo-XT is an advanced version of a planning and control system jointly developed by DFKI and Saarstahl that has been used successfully since early 2006 for the manufacturing processes at the steel mill. MAS-Dispo-XT will provide a complete planning, production and control system for the steel production supply chain.
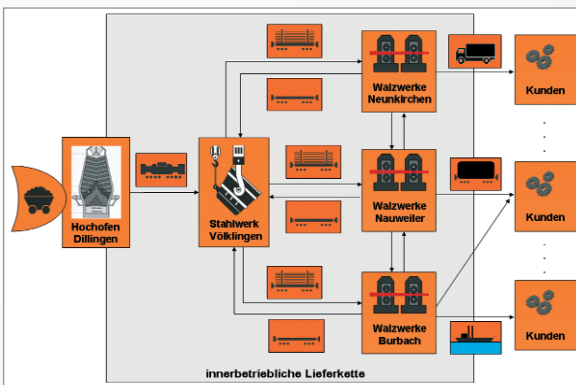
At the core of the MAS-Dispo system is a short range planning system for the steel works based on a daily target plan. The job of the planning unit is to determine the optimal capacity of the steel work aggregate and production resources. In the event of an interruption in the process, the planning and scheduling system facilitates a rapid return to standard manufacturing operations. The system is installed at the control room and supports planning and control of the plant by computing, according to selectable parameters, the optimal solution for a specified daily target. Current manufacturing data is compared with the production plans for the respective aggregate and any variance is identified early on to allow timely adjustments to be implemented.

The current development phase is scheduled to last until fall 2008 and will concentrate on the short term planning processes for the annealing operations for rods and wire as well as on the rough capacity planning. MAS-Dispo will be integrated into the systems environment of the steel mill and technical data such as temperature calculations will be supplied to the other production relevant systems. Initial testing of the data storage from MAS-Dispo in the steel mills computer was successfully completed at the end of 2007.

Services offered by DFKI
Generic, agent-based solutions that support the planning and control of steel production

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Verisoft XT – comprehensive, formal verification of computer systems

More and more of the activities in our daily lives are being performed by computers. This offers more convenience and, above all, more safety. However, the use of computers in areas where safety is critical also poses risks – one just has to imagine the effects faulty hard and software might have in the areas of automotive electronics or banking

At the same time, there is a drastic rise in the complexity of these systems, which leads to the same degree of manageability loss. The conventional testing, at least as applied in industry until now, is stretched to its limits. Formal verification, the proving of the absence of error in a system with mathematical precision, presents an alternative testing methodology.

Verisoft XT, a research project funded by the Federal Ministry of Education and Research, brings industrial market leaders in the fields of operating systems, avionics and automotives together with top level research centers for information systems in Germany in order to cooperate in the development of tools that support the formal verification of highly complex, real industrial systems. The industrial partners of DFKI include Microsoft, Audi, Infineon, Bosch, TÜV Süd, OneSpin Solutions, Absint, ESG, SysGo, and Sirrix. Support on the academic side is provided by the Universities of Bremen, Freiburg, Koblenz-Landau and Saarbrücken, as well as the Technical Universities of Kaiserslautern and Munich.
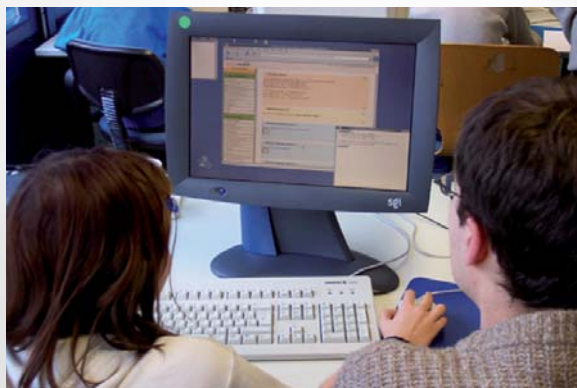
More information
www.verisoft.de

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User adaptive, interactive e-Learning with the ActiveMath platform

ActiveMath is an intelligent, web-based learning platform for mathematics, which adapts to the abilities and needs of the student. ActiveMath is configurable for special applications. It can be employed at schools, universities as well as for independent learning. It has been evaluated several times at a variety of schools and universities all across Europe and is currently successfully used by quite a few early-adopters in several countries.

ActiveMath is a multi-lingual learning environment that not only adapts to the user in terms of language and formula presentations but also with respect to selected content, difficulty of exercises, the feedback and to the tutorial strategies. The platform is presently integrated into various Learning Management Systems, like Moodle and Clix.

For teachers and tutors a supplementary tool summarizes and visualizes the performance of a class or of individual students, the difficulties with certain problems, or the intensity of the student's online-work.

In the Year of Mathematics, 2008, ActiveMath is one of the few platforms in the world that support students in self-regulated, assisted learning. Thanks to its adaptivity, it is well suited for personalized learning mathematics through understanding and training. The platform is being used for adaptive 'bridge courses' for mathematics, with the intent of facilitating the transition from schools to higher education.

Professor Jörg Siekmann, Head of the eLearning Competence Center at DFKI, will present the keynote address on Friday, March 7, 2008 at 2:00 p.m. CeBIT "Learning & Knowledge Solutions" forum (Hall 6, Stand B38). His topic: 'Bridging Courses' with ActiveMath.

More information
www.activemath.org
www.jahr-der-mathematik.de

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CASCOM – Intelligent service agents for medical emergencies

The aim of the European research project CASCOM is the intelligent coordination of medical services, context sensitive and available at any time from any location. Project CASCOM combined innovative technologies from the fields of multi-agent systems, semantic web services, peer-to-peer, and mobile telecommunications.

Application-specific services were encapsulated with intelligent agents capable of efficiently solving highly complex tasks in dynamic environments. The possibility to safely transfer sensitive personal data – independent from a stationary infrastructure – opens a whole new range of efficient communication possibilities.

An "Emergency Assistance Scenario", designed to assist tourists who become ill while on vacation was selected for exemplary implementation. The underlying design architecture for the mobile P2P network, the components and methods for the semantic service coordination have all been defined and developed. With the personal CASCOM agent, a tourist vacationing in a foreign country can access the data base of the family doctor or insurance agency using a PDA in order to get information about prior existing illnesses to the local doctors.

In extensive field testing, CASCOM proved to be very robust and was successfully tested not only in the ambulances, but also under extreme conditions in rescue helicopters. Long term, the entire CASCOM technology will be released as "Open Source". The underlying processes are kept generic to permit other uses of the system outside of the medical environment (i.e. telemonitoring, e-commerce)

The project was sponsored by the European Commission under the 6th EU Framework Program with total funding of € 2.69 million and had a term that lasted from September 2004 to December 2007. There were a total of 8 participating partner institutes and companies from Germany, Finland, Italy, Portugal, Switzerland and Spain. Project coordination is performed by DFKI.

Photo: Basel University

More information
www.ist-cascom.org

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Scallops – Secure Agent-Based Pervasive Computing

DFKI researchers in the SCALLOPS project work on innovative methods, techniques and tools to develop and coordinate secure semantic web services for the high performance networked information society of tomorrow. Soon, information and services will be available from the semantic web that can be evaluated, combined, and re-used by machines.

The major aspects of the project are search, composition and management of semantic web services with the aid of intelligent agents. In the process, the integrity and reliability of the information exchanged is guaranteed.

SCALLOPS provides the required innovative technologies, which range from a selection of syntax and logic based relevant web services to a dynamic, semantic composition with the help of

AI planning. The transfer of information is controlled by user-defined, individual security parameters that are actively transferred to the new or modified data.

The latest developments have been successfully demonstrated in applications in the field of electronic health systems. For example, intelligent agents on mobile devices such as smartphones or PDA's, coordinate the medical emergencies and safe travel home for patients who are ill or injured while in a foreign country.

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future talk CeBIT 2008

"Future talk" is the focal point for communications events at the CeBIT "future parc" research exhibit (Hall 9, A30). Scheduled as part of the official opening 2008, is a discussion of the German government's High-Tech Strategy and ICT 2020, the framework program for Information and Communication Technology. The distinguished panelists include Prof. Wahlster, Physics Nobel Prize winner Prof. Peter Grünberg, Dr. Wolf-Dieter Lukas, Department Head at BMBF, Prof. Hans-Jörg Bullinger, President of the Fraunhofer Gesellschaft, and Christopher Schläffer, Chief innovator at Deutsche Telekom. DFKI is also presenting a broad agenda of lectures and podium discussions with numerous ideas, project results, and future perspectives.

FUTURE TALK PROGRAM
TUESDAY, MARCH 4, 2008 **CeBIT** HALL 9, STAND A30

Opening podium discussion
11.45–12.30
Bright Minds for Innovation:
Interim Balance of ICT 2020
Prof. Dr. Hans-Jörg Bullinger, Fraunhofer Gesellschaft
Prof. Dr. Peter A. Grünberg, Research Centre Jülich
Ministerialdirektor Dr. Wolf-Dieter Lukas, Federal Ministry of Education and Research, BMBF
Christopher Schläffer, Deutsche Telekom AG
Prof. Dr. Wolfgang Wahlster, DFKI

Moderation: *Reinhard Karger*, DFKI

THESEUS: Research program for a new internet-based knowledge infrastructure, Federal Ministry of Economics and Technology (BMWi)
14.15–15.00
From Search to Find: The THESEUS project
Prof. Dr. Lutz Heuser, SAP AG
Thomas Kuhn, Wirtschaftswoche
Prof. Dr. Wolfgang Wahlster, DFKI
Prof. Dr. Stefan Wrobel, Fraunhofer Gesellschaft, IAIS

Moderation: *Reinhard Karger*, DFKI

WEDNESDAY, MARCH 5, 2008 **CeBIT** HALL 9, STAND A30
ICT 2020, Information and Communications Technology
12.00–12.30
Future Factory thinks for itself: SmartFactoryKL –
ICT for the intelligent factory of the future
Prof. Dr. Detlef Zühlke, DFKI

12.30–13.00 Verified deduction: Verisoft XT /
Microsoft Hypervisor
Tom in der Rieden, DFKI / University of Saarland

THURSDAY, MARCH 6, 2008 **CeBIT** HALL 9, STAND A30
Entertainment & Broadcasting
13.20–13.40
InViRe – Similarity-based video search and automated video-tagging
Christian Schulze, DFKI

FRIDAY, MARCH 7, 2008 **CeBIT** HALL 9, STAND A30
Web Meeting / Web Collaboration / Future Web
16.30–17.00
Brave new metadata world
[Expert, computer and user generated content]
Martin Memmel, DFKI

17.00–17.20
SAMS – Safety Components for Autonomous Mobile Systems
Dr. Christoph Lüth, DFKI

SUNDAY, MARCH 9, 2008 **CeBIT** HALL 9, STAND A30
Goosebumps Informatics
13.00–13.15 Where are the goosebumps? How much personal data or innovative algorithms are needed beyond OPML, APML to give more humanness to the digital fantasy world.
Dr. Stephan Baumann, DFKI

13.15–14.00 Podium discussion: Islands of Relevance – Where is the quality in the recommendation systems as promised in Web 2.0?
Dr. Jan Schmidt, Hans-Bredow-Institut for media research
Dr. Stephan Baumann, DFKI

Moderation: *Reinhard Karger*, DFKI

Presentations are held in German.

Research Department Graphics and Agents

CHANGES   von Prof. Dr. Philipp Slusallek

Although Jörg Siekmann will continue his work at DFKI, the transfer of the symbols of office to his successor still marks a major change. One of the founders of DFKI and a pioneer of Artificial Intelligence not only in Germany, Jörg Siekmann, to a certain extent, is stepping away. Any attempt by his successor to walk in his far ranging footsteps would be presumptuous.

Mine is a completely different story. My research to date has been focused on Visual Computing. Since the end of the 1980's the accurate description of virtual 3D worlds and the rapid synthesis of realistic images have been companions in my research efforts. However, over the years it seems many different topics have been added: methods in the field of Computer-Vision as well as the use of digital TV technology during my time at Stanford, the development of networked middleware for multimedia services (NMM), e-Teaching, the design of new hardware architectures, the development of new languages for GPUs, the technical visualization, and Virtual and Augmented Reality (AR/VR).

Here, during the last eight years in Saarbrücken, we have achieved a great success with real-time ray tracing: in the beginning, labeled as a "totally crazy idea", the technology today uses hardware and software that we, to a large extent, helped to develop and it has become the focus of attention for the large chip makers. Intel and NVIDIA are running neck and neck since last year to be the first to deliver the best ray tracing hardware. The teams at both companies consist mainly of my former colleagues. Unfortunately, our intensive efforts to market the technology in Germany – as with so many examples – failed to bear fruit.

However, behind the success of real-time ray tracing stands another major innovation – a change in the area of hardware, which will have a major impact on the entire field of information systems. The scale of this innovation is entirely obvious but is still often overlooked, because it occurs not in, but next to the CPU – on the graphics card. While there are still complaints about the various SW problems from multi-core CPUs with 2, 4 or perhaps soon to be 8 cores, positioned next to many PCs today is an NVIDIA graphic chip that already has 128 in CUDA (a C/C++ dialect) freely programmable cores with significantly higher performance level (sometimes, several hundred times faster). Moore's Law makes it easy to predict soon there will be 256, then 512, 1024 and more cores. These chips, in contrast to the earlier, massive, parallel mainframe computers, profit from an "economy of scale" and hundreds of millions are already be supplied to the consumer sector. Does your PC perhaps have dozens of processors that you didn't think about? Even supercomputers are to be equipped with these chips and a mobile variant for mobile cell phones was introduced at the start of February. Even Intel has announced the introduction of its own massive parallel HW architecture, "Larrabee".

The young seniors

Jörg Siekmann (Prof. Dr. Ph.D. grad. Ing.), one of the founding fathers of DFKI has reached the golden age of retirement – but he isn't quite ready for eternity!

Prof. Siekmann will resign his two large research teams "Deduction" and "Multi-Agent Systems (MAS)" as of

What has this innovation in the HW area to do with DFKI? Everything!!

These massive parallel chips will run not only the 3D graphics (on SW rather than HW), but also a large number of other algorithms – and this is precisely where Artificial Intelligence finds itself most at home. Just a few of the topics in the broad palette of DFKI competencies are mentioned here: ubiquitous, multi-modal user interfaces with embedded real-time pro-

cessing of language, image, and other signals, the complex extraction of knowledge from these data volumes, the organization and processing of this knowledge as well as the deduction and simulation of possible application scenarios. DFKI is also represented in this new and exciting world with research from

the Saarbrücken excellence cluster "Multimodal Computing and Interaction", which includes the research team "Large-Scale Virtual Environments" that I will be leading. Finally, it is all about new software and systems aligned with this highly parallel hardware, about programming models and languages, and about the rapid advancement in the development of the hardware itself.

Innovation, after all, is the aim of our work and close cooperation from the basic research to the industrial application is the prerequisite for change. Above all, as at all times of change, we build on the successes of the past and combine them with new ideas – and take one more footstep forward ...

I look forward to our opportunities to cooperate in the future!

Philipp Slusallek

March 31, 2008: The MAS area will continue to develop in the area of virtual agents and other related topics under the leadership of his successor Prof. Dr. Philipp Slusallek. The deduction team will be expanded into a separate department under the leadership of Dr. Werner Stephan and integrated as part of the new Competence Center Safe and Secure Cognitive Systems at DFKI-Bremen Labs headed by Prof. Dr. Krieg-Brückner.

Prof. Siekmann will continue to manage the third, smaller area he has lead until now – the Competence Center for e-Learning (CCeL) – and, it will include the teams now headed by Dr. Erica Melis and Dr. Josef Burgard. The CCeL will report directly to the executive management board.

The aim is to significantly expand the area of e-Learning in Saarland and to work in close cooperation with the new Competence Center at the University of Saarland headed by Dr. Igel. Jörg Siekmann plans to continue to serve as a senior professor at the Saar-University.

Artificial Intelligence – powered by bruno banani

A cooperation at DFKI between Prof. Dr. Jörg Siekmann and Prof. Dr. Philipp Slusallek is working on a prototypical installation for the presentation of virtual realities. Based on state of the art technologies from the fields of real time image processing, object oriented audio tech-

l.–r. Prof. Jörg Siekmann, Wolfgang Jassner, Gerhard Fischbach

nology, Artificial Intelligence, and spatial projection, they have built the five-sided presentation room, PentAI™.
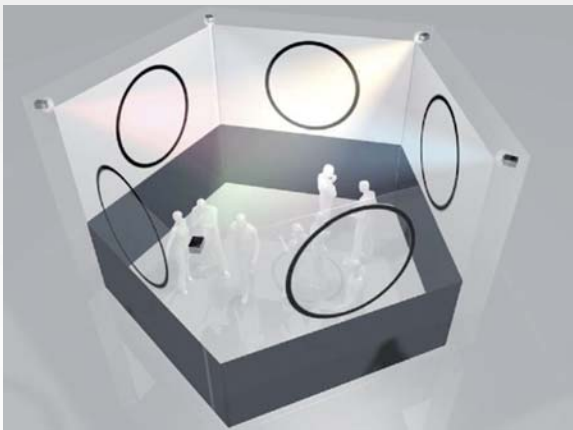
The five-sided presentation room, PentAI™

Designed by Heiner Büld Datenräume of Berlin, the installation projects a representation within a five-sided room (see photo) and is able to eliminate the cost intensive external CAVE projection.

The design and development of PentAI™ is funded and supported by the bruno banani underwear company, which plans to show its collections in a virtual fashion show.

Applications are planned for the entertainment and gaming industry, infotainment venues and museums, but also for management information systems for emergency disaster protection as well as for architectural design and city planning. The system is to be marketed by DFKI spin-off PantAIon.

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Public Private Knowledge Management in the farm sector
Green IT providing for the general interest

DFKI is developing innovative solutions for the collection, exchange, and use of networked data about energy crops on behalf of the Ministry for Economy, Transport, Agriculture and Viniculture (MWVLW) in the state of Rhineland-Palatinate.

Modern technologies – especially in the farming sector – are a response to the challenges raised by the increasing scarcity of fossil fuels. One of the basic requirements in a growing global population is a sustainable supply of food and energy. The reduction of CO_2-emissions is another goal in the context of providing for the general interest.

Green IT in the farm sector, with information, communication, and sensor technologies promises major innovation leaps. However, an important precondition is intensive networking of actors for the timely collection of data and the broadest possible distribution of the information derived from the data.

There is a large supply of public knowledge in the areas of agriculture and the environment, financed and prepared by the state. The technologies of green IT can contribute to the design of a better and more efficient, continuous update of this essential knowledge on behalf of the public interest.

Photo: John Deere

Specifically, the expansion of the public pool of knowledge to include more and more country specific geo-data infrastructures and land-related information must be accelerated by the use of sensor data from agricultural enterprises. This can be facilitated with the introduction of "Public Private Knowledge Management" that protects data sovereignty and the competing business interests, yet still promotes society's job of providing for the general interest.

For decision support in the area of energy crops, DFKI has developed a customized planning tool for the production and logistics of biomass based on the operating location characteristics (web-based spatial decision support systems). The development of an infrastructure based on web services was achieved in cooperation with the responsible geologic and agricultural agencies in Rhineland-Palatinate using existing digitized geo-data regarding cultivated areas and soil qualities.

Photo: John Deere

GPS supported sensor data, provided by the harvesting machines of farm equipment manufacturer John Deere, was integrated into this information cycle to validate the yield forecasts. The results demonstrate that digitized, processed geo-data and current, sensor generated data surveys provide a promising basis for various forecasting and planning services in agricultural production. In the form of individual and timely online consulting, such services can contribute significantly to a yield optimized and ecological production of food and energy resources and, as a side effect, expand the socially-relevant knowledge pool.

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Nepomuk – The Social Semantic Desktop

The NEPOMUK project is developing a "social semantic desktop" or, a working environment for knowledge workers, to support personal information management and communication in social networks. By bringing the technologies of the semantic web to a PC, existing data sources and software programs can be flexibly linked and annotated in a standardized way. The knowledge acquired in this way – in consideration of the individual protection and access permissions – can then be communicated and exchanged between different work stations.

NEPOMUK is funded under IST, one of seven thematic areas under the 6th EU Framework Program. DFKI is the lead manager among 15 partners from all across Europe working to realize the social semantic desktop and integrate the required technologies, such as the natural language interfaces, peer-to-peer (P2P) networks, semantic search, ontologies, and other integrative technologies to enable machine processing of content beyond any individual limitations. Practical testing of solutions is ongoing in case studies in the fields of biotechnology, consulting, industrial R&D as well as community help desks. NEPOMUK provides a framework of standardized interfaces that enables the simple integration of third party software. The core technologies of the project are distributed via open source licenses. Active open source communities are now contributing to the distribution, use, and expansion of the project results; NEPOMUK, for example, is integrated in KDE 4.0.

Services offered by DFKI
Technologies for the personal semantic web, methods and tools for collaborative ontology-development, individual process-oriented knowledge management

More information
http://nepomuk.semanticdesktop.org

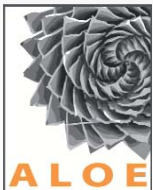**Contact** CeBIT HALL 9, STAND B37
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ALOE – Social Media Sharing

ALOE is a social media sharing platform where users organize and exchange multimedia resources and, beyond that, annotate the resources with formal metadata sets in various formats.

ALOE manages multimedia content, sets bookmarks and tags, establishes user groups, and progressively releases resources and metadata (private/public/group). Resources are retrieved using various search and filter processes, and a ranking of results is calculated on the basis of various criteria. Any volume of formal metadata sets can be associated with the resources. Additionally, web service interfaces like SOAP or REST are provided.

The open architecture of ALOE allows both formal and statistical descriptions of resources, as well as data for Web 2.0 in various applications and contexts characteristically generated by the user.

Companies can use ALOE as a platform to realize social (intranet) portals. The system itself provides the possibility to integrate existing content and applications. A social component supplies the basis for methods used with "collective intelligence", for expert location, and for creating social networks and requests for collaboration.

More information
http://aloe-project.de
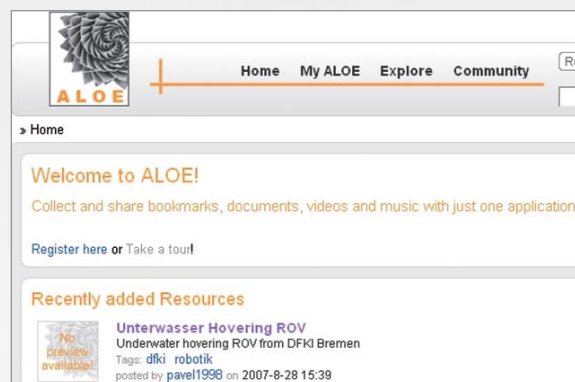
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iDocument – Intelligent information extraction from documents

Electronic documents are a widely used medium for the exchange of information. However, when reading and interpreting it is often difficult to correctly and reliably discern the knowledge level of the authors. Different understandings of terms, abbreviations and relationships frequently lead to miscommunication.

The knowledge assistant iDocument was developed to interpret documents within an information domain and make proposals about their textual content. Based on information extraction technologies, things and relationships in the texts known with certainty are proposed and explained. The user can accept the proposals and they flow back into the information domain as learned knowledge.

The application scenario uses a business repository with projects, persons, places, organizations, tasks, topics and a whole range of possible relationships. For example, with the help of iDocument, e-mails can be enriched with proposals about recognized entries in order to facilitate understanding of the document even to update the repository with information from the document.

Services offered by DFKI
Information extraction, text mining, annotation, knowledge representation, knowledge management, semantic web, explanations

More information
http://idocument.opendfki.de

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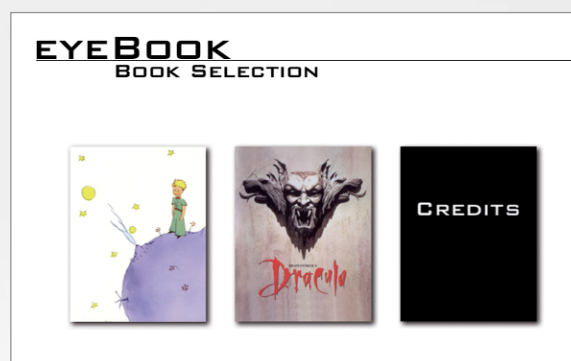E-mail: Benjamin.Adrian@dfki.de
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eyeBook – Multimedial reading

The eyeBook prototype developed at DFKI implements interactive combinations of digital media like sounds or images with traditional texts independent of content.

An eyetracker analyzes the reading behavior of the user. The system provides the reader with multimodal, context sensitive feedback related to the current text location. For example, sound effects, music, photos or color scheme changes customized for the tension level of the text currently being read. The type of multimedia feedback provided is defined by invisible annotations specially prepared for the user.

At CeBIT 2008, DFKI will use the eyeBook framework to present selected and edited chapters from the books, "Dracula" and "The little prince" which have been enriched with multimedia content. The additional informa-

tion is optimized in such a way that the emotions are intensified without interrupting the user's expectations.

Besides application opportunities in the entertainment industry and in the book publishing sector, the DFKI knowledge management research team investigates how the application could be transferred to other scenarios. Language learning software, edutainment or other types of text based information systems offer additional exciting potential for development.
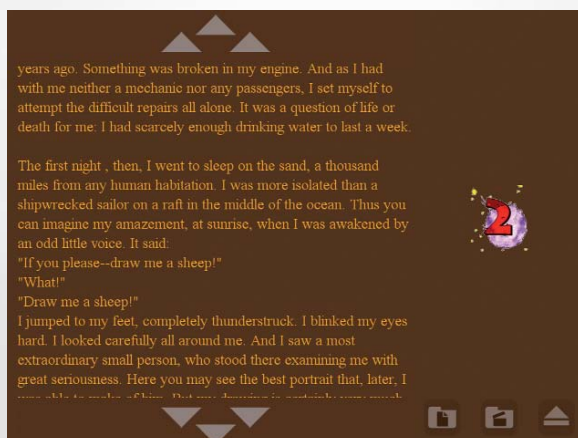
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Digital product memory in the intelligent factory of the future – SmartFactory^{KL} releases mobile module

Contingent upon shorter production cycles and the advances in product customization, future factory systems must respond with increasing flexibility to market requirements.

The concepts to guarantee this flexibility are found in the modular structures of manufacturing plants, which permit components to independently take over context related tasks and account for new manufacturing possibilities that arise from the use of modern radio technologies and mobile interactive devices. However, control over such future factory systems requires the development of new approaches to manage the growing complexities that accompany the increasing plant flexibility. Here, digital product memories can play an important role in the decentralized parameterization and configuration of adaptive processes and form the basis for a far reaching process optimization.

The technology initiative SmartFactory^{KL} takes up this concept of ambient intelligent factory environments and, as the world's first manufacturer-independent research and demonstration platform of its kind, embodies a vision for the ideal manufacturing environment of the future.

To demonstrate the potential of digital product memory, a model manufacturing process has been developed in which custom order data is stored directly by means of smart tags to individual products and used as an

input base for the decentralized parameterization of the production processes. Furthermore, with the integration of mobile control devices and innovative operating concepts, error logs can be read and process parameters monitored and changed from any location. The comple-

te SmartFactory^{KL} module itself can be integrated into the production processes and through the use of modern wireless technologies flexibly connected to the existing control systems.

Ongoing technology initiatives in the SmartFactory^{KL} research project include topics from the fields of ambient intelligence, ubiquitous computing and the virtual factory. SmartFactory^{KL} has proven itself to be an outstanding demonstrator and development platform for exploring the potential applications of digital product memory in the context of production automation.

The SmartFactory^{KL} exhibit was selected by the Federal Ministry of Education and Research (BMBF) as one of the participants invited to join the Ministry's display area at CeBIT 2008. The exhibit is called "ICT for the intelligent factory of the future" and will be presented at the BMBF joint exhibit area in Hall 9, B40.

More information
www.smartfactory.de

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OCRopus – Open Source Text Recognition

OCRopus is an open source system for the next generation of text recognition for the digitization of documents at an industrial level of production. OCRopus is supported by Google Inc. Among others, it is used for Google's book search in order to make very large numbers of books digitally available and searchable.

In the core components of the OCRopus system basic technologies are deployed which were developed within IPet, a project funded by the German Ministry of Education and Research.

The basic system can be employed as a free desktop application in business as well as private environments, for example, to convert scanned documents or any other image that contains text into editable text. Furthermore, with screenOCRopus, text can be extracted from any section of the screen.

OCRopus represents the state of the art of research in the field of OCR (Optical Character Recognition) and combines modern methods of image processing, layout analysis, pattern recognition and statistical language modeling.

Every component of this modular system, starting from the preprocessing of the input until the presentation of the OCR results is, thanks to intelligent interfaces, configurable and substitutable. This flexibility and the preferred licensing model (Apache 2) open paths for special solutions for commercial use of OCRopus.

Officially, the software is yet in the Alpha phase, but it can already be tested by interested users. The first official full version (1.0) of the basic system is planned for the end of 2008 (Linux, MacOS X, Windows).

Services offered by DFKI
Support, research and development, design and evaluation, consulting and training in the areas of document image processing, layout analysis and text recognition.

More information, links and downloads
www.ocropus.org

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InViRe – Intelligent Video Retrieval

The growing use of digital video cameras, online video portals and digital TV reception enables users to quickly create and store large volumes of digital video materials. Unlike digital photos, with videos it is not possible to capture the entire content with one glance. This requires a time consuming playback of the video at original speed.

InViRe develops methods for content based searches in video archives (content-based video retrieval). The search is performed according to the visual characteristics of the video material – an approach that selectively replaces or extends the more common text-based methods.

The search for similar videos is started by the selection of a key frame from the video database. The comparison of the database content to the queried frame is based on a series of visual features (color, texture, movement). The user can influence the search results by varying the features as well as their weights in relationship to one another. Through the use of special video features and distances, an exclusive search for identical video content can be performed, for example, to uncover copyright protected material in video databases.

The fundamental work conducted in the area of content-based video retrieval under the InViRe project was mainly sponsored by the Rhineland-Palatinate Endowment for Innovation and represents a broad and solid starting point for continued research and development in this area.

Services offered by DFKI
Support, research and development, design and evaluation, consulting and training in the field of video analysis, object recognition and intelligent video retrieval.

More information
www.iupr.org

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myCBR – Similarity based search

The development of appropriate technologies to enable direct and efficient access to relevant information is one of the key challenges for the information society. Traditional database query languages are optimized to reconcile large volume data stocks with great efficiency based on exactly specified queries. Today, many application scenarios demand more advanced technologies that offer intelligent support to the user when searching for information.

In the area of e-Commerce, for example, the user searching for a product is seldom in a position to formulate an appropriate, exact specification for a query. Frequently, either the necessary background knowledge about the product offering is lacking or, over or under specified database queries lead to empty or unmanageable results, which is of little help in finding a suitable available product. Intelligent product recommendation systems present an alternative which, even with relatively vague desires and needs on the part of the user, can recommend suitable, target oriented products.

Such knowledge based product recommendation systems are being developed primarily on the basis of technologies from the field of Case-Based Reasoning or CBR. The central idea here is to search on the basis of similarities to the stated inquiry, which always enables the return of the most appropriate, available information sorted by relevance. A major role is played by the inclusion of knowledge domains in the form of ontologies and other application specific similarity measures.
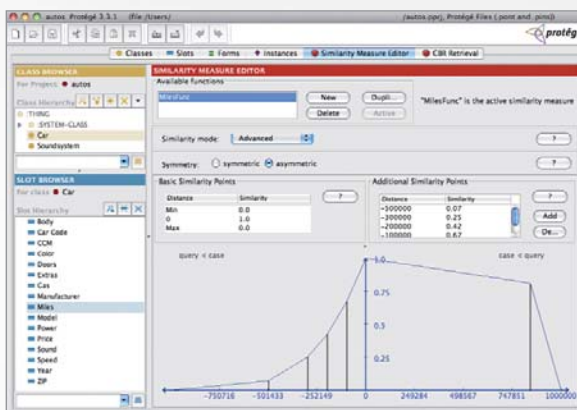
The open source tool myCBR designed by DFKI permits the simple development of a similarity based search function for a variety of different application scenarios. It is an extension of the widely used ontology editor called Protégé, which makes use of convenient graphical user interfaces to enable the semi-automated generation of domain models from existing data and to model appropriate application specific similarity measures at minimal cost. There are numerous similarity editors available for convenient knowledge modeling and interfaces for detailed analysis of the similarity measu-

res. The resulting domains and similarity models can be exported in XML format. A stand-alone retrieval engine can, at a relatively low cost, be integrated with existing applications for the realization of a similarity-based search.

myCBR is a cooperative effort by two DFKI research teams, Knowledge Management and, Image Understanding and Pattern Recognition. It is already undergoing first use at academic facilities and the first industrial project.
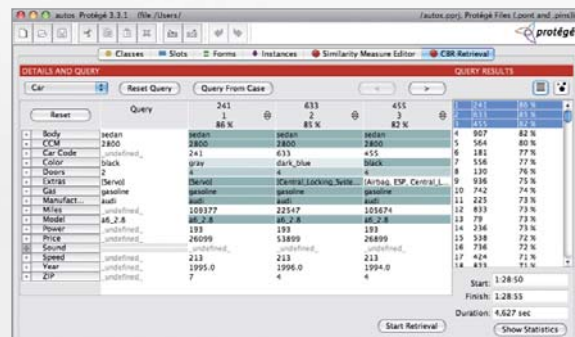
Future plans call for the integration of additional functionalities such as database connections, methods for automated learning, and optimized similarity models or generation of explanations.

More information
www.mycbr-project.net

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Prof. Wahlster elected chairperson, Berlin Technology and Innovation Council

The recent constitutive meeting of the Technology and Innovation Council for the State of Berlin, convened by the governing mayor Klaus Wowereit at the "Rotes Rathaus" (city hall) on January 30, 2008, elected Prof. Wahlster from among its membership to be the new chairperson.

The TIR advises the state of Berlin in technology-policy issues. Beyond that, the TIR provides recommendations concerning project grants from the state's Future Fund, which over the last seven years has provided a total of € 49.5 million euros for future oriented projects.

Mayor Klaus Wowereit chaired the first session and looks forward to the future cooperation with the new TIR: "The importance of innovation policy is steadily increasing and with the new Technology and Innovation Council, a flow of new impulses and ideas from the outside will accompany me in the further development of Berlin's top priorities. The Senate will conduct an annual strategy workshop with the TIR. It will entrust the TIR with the development grants of the Future Fund, the strategic instrument of Berlin's innovation policy. It is about further strengthening the cooperative efforts between technology and business and about making competitive products from the innovative research conducted in Berlin."

Since fall 2007, Prof. Wahlster has served as chairperson of the steering committee, Deutsche Telekom Laboratories in Berlin and as a member of various other top level committees bridging science, economics and politics. In his new office, Prof. Wahlster will continue to devote himself to these same issues. Among the other members of TIR are board members of Deutsche Bahn, Philips, Bayer Schering, and T-Mobile.

Berlin Technology and Innovation Council

▶ News in brief

DFKI SUPPORTS SOS KINDERDORF

A total of € 1,160 was collected as a result of the active participation of the DFKI employees in the Christmas raffle 2007. The amount was donated to the SOS Kinderdorf in Eisenberg where it will be used to fund general activities.

l.-r. Hans-Joachim Sailer, Head of SOS Kinderdorf in Eisenberg;
Dr. Walter Olthoff, Chief Financial Officer, DFKI

RICOH AWARD FOR DFKI DIPLOMA THESIS

The diploma thesis written by Sebastian Bäumgärtner "Towards Human Centered Immersive Environments – A Hybrid 2D + 3D Approach", won the "Ricoh Awards 2007" for "best paper" in the area of future office applications. The diploma study was prepared at the Competence Center for Human Centered Visualization, under the guidance of Jun.-Prof. Dr. Achim Ebert.

l.-r. Sebastian Baumgärtner, Prof. Andreas Dengel,
Kazushige Asada, Ricoh Software R&D Group

DFKI AT NEW YEAR'S RECEPTION OF THE MINISTER PRESIDENT OF RHINELAND–PALATINATE

Under the framework of the new year's reception, DFKI presented itself by invitation of the State Chancellery in Mainz to Kurt Beck, Minister President of Rhineland-Palatinate in the historic "Fruchthalle" in Kaiserslautern.

Dr. Walter Olthoff, Chief Financial Officer, DFKI and Prof. Dr. Andreas Dengel, Head, Knowledge Management Department welcomed the minister president to the DFKI exhibit. Minister President Beck was notably intrigued by Ligabot, a system for natural language interaction with a virtual dialog partner that informed him about the current scores from the national soccer league.

l.-r. Prof. Andreas Dengel, Minister President Kurt Beck.
Photo: State Chancellery Rhineland-Palatinate / Rainer Voss

CAN MACHINES THINK?

Prof. Dr. Jörg Siekmann lectured more than 500 "junior students" at the University of Saarland's children's university about the fundamentals of AI research. In terms understandable to children, Prof. Siekmann explained core issues

of Artificial Intelligence. How can a computer function intelligently? How can it experience the world around it, acquire global knowledge and then draw conclusions about it? The young students were highly motivated and bombarded the professor with questions at the conclusion of his lecture.

Publications

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

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as well as the associated Center for Human-Machine Interaction (ZMMI) (Prof. Dr.-Ing. Detlef Zühlke).

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With an overall annual budget in 2007 of almost € 23 million, the previous year's record results of € 21 million were surpassed and once again a positive annual net profit was reported. Currently, DFKI has 274 employees and 225 student assistants. The circle of DFKI industrial partners comprises among others Daimler AG, Deutsche Telekom AG, SAP AG, IDS Scheer AG, Bertelsmann AG, Microsoft Deutschland GmbH, Deutsche Post AG and BMW AG. In 2007, the circle has been expanded by Deutsche Messe AG, EADS Astrium GmbH at Ricoh Ltd.

DFKI-Lab Bremen

All work is organized under projects that have a clear objective and are scheduled to last for a specific period of time. This leads, among other things, to patented solutions, prototypes, or new or improved product functions. At the present time, there are more than 77 ongoing projects. Project progress is checked once a year by an independent, international group of respected experts. In addition to the BMBF and EU grants for large, joint research projects substantial contracts from business enterprises could also be acquired in 2007. The successful transfer of DFKI research results to functional products is continuing. The DFKI model of a non-profit Public-Private-Partnership (PPP) was positively received at numerous presentations and is often referenced as the recommended structure. December 2004 marked the 5-year review of DFKI by the Federal Ministry of Education and Research (BMBF). The evaluation is complete and the results are positive. There is even an effort to incorporate the PPP organizational structure into the Federal Grant Handbook and the text of relevant laws. DFKI has membership rights in the Center for the Evaluation of Languages and Technologies (CELCT), based in Trento and in Yocoy Technologies GmbH (Berlin).

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- Usability engineering
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- Shopping assistance and intelligent logistics
- Semantic product memories
- Safe and secure cognitive systems
- Organizational memory and user modeling
- Semantic web and Web 3.0
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- Driver assistance systems and Car2X communications

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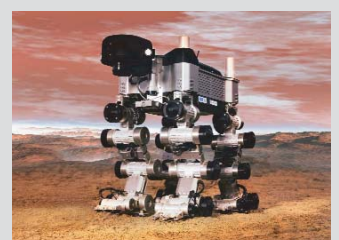
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