

NEWSLETTER



GERMAN RESEARCH CENTER FOR ARTIFICIAL INTELLIGENCE

1/2006

RESEARCH LABS

IMAGE UNDERSTANDING AND PATTERN RECOGNITION

KNOWLEDGE MANAGEMENT

INTELLIGENT VISUALIZATION AND SIMULATION

DEDUCTION AND MULTIAGENT SYSTEMS

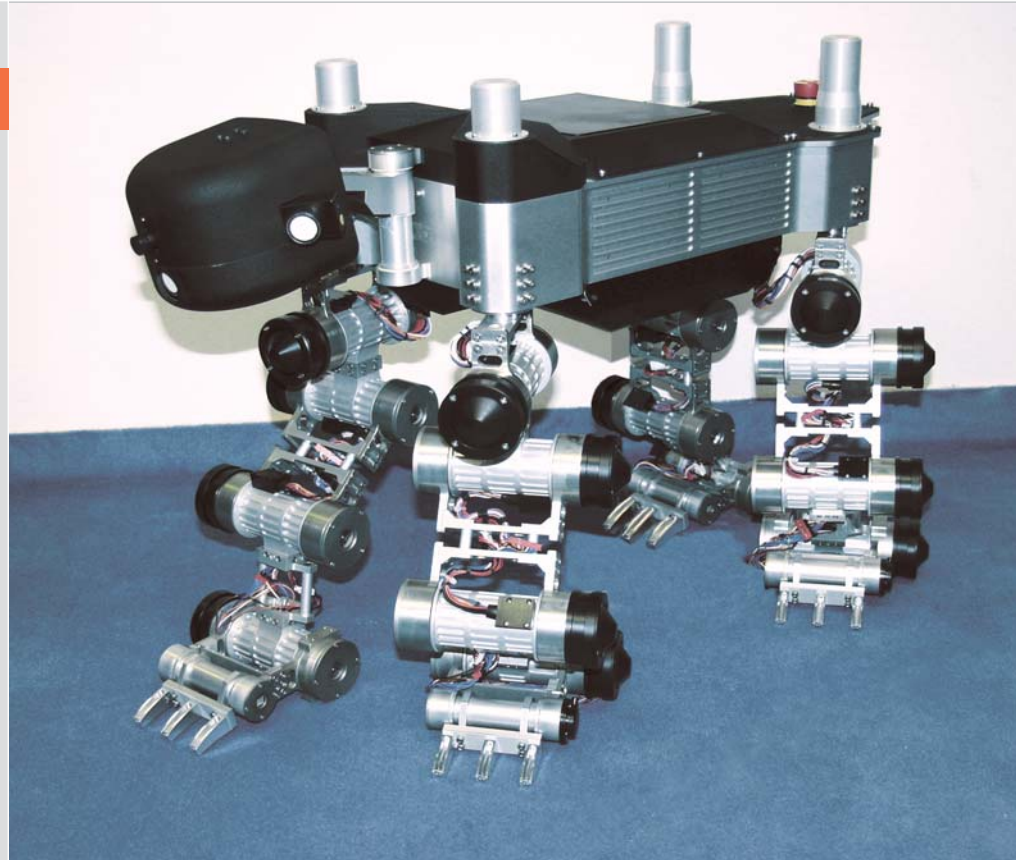
LANGUAGE TECHNOLOGY

INTELLIGENT USER INTERFACES

ROBOTICS AND INTELLIGENT TECHNICAL SYSTEMS

SAFE AND SECURE COGNITIVE SYSTEMS

INFORMATION SYSTEMS



DFKI Opens New Lab in Bremen

DFKI at CeBIT 2006



Special Exhibit Human Computer Interaction

GEFÖRDERT VOM



Bundesministerium
für Bildung
und Forschung

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Germany Land of Ideas



www.land-of-ideas.org

„Selected Places 2006 – DFKI in the Land of Ideas“

DFKI has been selected as one of 365 places – one for each day – in “Germany - Land of Ideas”, an initiative under the patronage of the President of the Federal Republic of Germany. In the year 2006, one specific day has been assigned to each selected place, when it will present itself, its ideas, and its results to the public.

Within the framework of this initiative, DFKI invites the public to learn more about the work being performed here on September 22, 2006:

Rendezvous with Innovation – Intelligent programming lets computers understand human language and gestures



German Research Center for Artificial Intelligence GmbH

DFKI Opens New Lab in Bremen



The establishment of the new DFKI lab is supported by the state of Bremen and the Federal Ministry for Education and Science (BMBF). The opening ceremony for the DFKI-Bremen Lab was on February 27, 2006 and took place in

the Upper Chamber of the Bremen City Hall.

As the third site for DFKI, along with the Saarbrücken and Kaiserslautern locations, the new facility will concentrate on "Robotics" (Head, Prof. Dr. Frank Kirchner) and "Safe and Secure Cognitive Systems" (Head, Prof. Dr. Bernd Krieg-Brückner). The site speaker is Prof. Kirchner. The state of Bremen has agreed to provide funding for the Lab in the amount of € 1.3 million and, starting in 2008, BMBF will also provide support to the DFKI-Bremen Lab totaling € 1.3 million.



Senator Willi Lemke, Bremen; Prof. Wilfried Müller; Prof. Frank Kirchner; Ltd. MR Heinz-Josef Mentges, Rheinland-Pfalz; State Secretary Dr. Susanne Reichrath, Saarland; Parliamentary State Secretary Thomas Rachel, BMBF; Prof. Wolfgang Wahlster; Prof. Bernd Krieg-Brückner; Ir. Anton H. Schaaf, Deutsche Telekom AG

Prof. Wolfgang Wahlster, Chairman of the Executive Board at DFKI, sees DFKI as a dynamic partner for innovation. "DFKI transforms research monies into know-how but does not stop there, rather it goes on to rapidly convert this know-how into marketable products, value-added services, and finally, back into money so that the entire innovation cycle can start again," said Prof. Wahlster. "The leverage effect of the funding for innovation is unique at DFKI: for every euro provided by the host states to DFKI in 2005, we created 13 euros."

The work effort of the Robotics Lab at DFKI-Bremen will concentrate on research, technology development, and the relevant application of intelligent, cognitive robotic systems, as well as complex, integrated systems. "Our special focus in Bremen is on underwater and space robotics," explained Prof. Dr. Frank Kirchner. "We are de-

veloping autonomous vehicles for the exploration of space and the underwater sea world; in the future, we will supply intelligent robots that possess a high degree of mobility and maneuverability, in addition to an ability to autonomously draw conclusions and derive alternative actions based on the environment being explored."



Senator Willi Lemke, Bremen; Prof. Frank Kirchner; Parliamentary State Secretary Thomas Rachel, BMBF; Prof. Wolfgang Wahlster

Because of the existing competence in Bremen, this is viewed as an extension of the other DFKI locations. Initial plans call for the gradual expansion of the three business segments: underwater robotics, space robotics, and logistical robot systems, as well as, the pursuit of cooperative agreements with suitable local and extra-regional partners in industry. The research group for "Safe and Secure Cognitive Systems" will continue the research and development activities of the Bremen Institute for Safe and Secure Systems (BISS), as well as expand the results of the basic research conducted into the special area of "Spatial Cognition". These areas will eventually be combined into one innovative field of application.



Speaker DFKI-Lab Bremen

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CityGuide Mobile – A Navigation System for Mobile Phones



CityGuide Mobile is a multi-lingual, interactive mobile navigation system, developed by DFKI in cooperation with the City of Kaiserslautern and Webnologic Internet Systems, a company based in Koblenz, Germany. CityGuide Mobile can be employed as a pedestrian city guide as well as a guide for trade fairs and exhibits. The system is based on a platform-independent software application, which runs on most Java equipped mobile phones and handheld computers. In contrast to most other systems, it does not require a GPS receiver. The system runs at minimal expense as you only pay for the internet connection to the city server. CityGuide Mobile was first deployed successfully as a guide at the Intergeo Trade Fair in Düsseldorf in October 2005.



CityGuide Mobile provides a rapid and accurate orientation to a foreign environment. All that is required is the entry of your present location and your target destination. The shortest path is then displayed on a map section or in written directions.

The technology used in the City Guide originated with our partner, Webnologic Internet Systems, which also developed the software for the

mobile application. The basic content and mapping as well as the routing network were prepared and implemented into the system by the offices of Urban Development and Organizational Management of the City of Kaiserslautern.

Being the product of a DFKI initiative, the project was the winner of the multimedia competition "Media in Motion" in 2003/04 sponsored by the state of Rheinland-Pfalz and has been developed for the World Soccer Championships 2006 in Germany. The implementation received funding support from the state government's multi-media initiative "rlp-inform" in the amount of 100,000 €.

Services offered by DFKI

Project coordination, consulting, design, and evaluation in the area of mobile navigation and personal information services

Additional information

<http://cityguide-mobile.com>

Contact **CeBIT HALL 9, STAND B45**

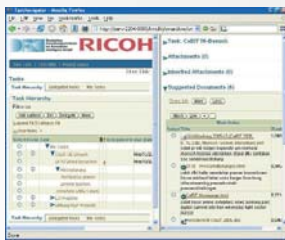
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TaskNavigator – An Agile Tool for Knowledge Worker Processes



TaskNavigator is a web based, workflow management system, which assists individual knowledge workers and teams to schedule, manage and coordinate their tasks in the form of work breakdown structures (WBS).

Various documents from

different sources, such as document management systems, e-mail, or local desktop computer, which could be relevant to these tasks, are automatically suggested by the TaskNavigator. Further, the user is shown a task similar to the one at hand that was accomplished in the past and can be copied, as appropriate as the current solution.

An individual knowledge worker benefits from the TaskNavigator's direct access to the process know-how of colleagues without having to search through various document sources within the company for the relevant information. The TaskNavigator provides a web-based collaboration tool, including ad-hoc workflow and process tracking, with global access for distributed, dyna-

mic teams. The company benefits from minimizing the risk that relevant documents will be overlooked, as well as from the continuous collection of know-how during job processing and the "recycling" of the acquired knowledge.

DFKI develops the TaskNavigator under the auspices of the Competence Center "Virtual Office of the Future". Together with RICOH, innovative software solutions are designed and tested for the effective support of knowledge intensive work processes.

Services offered by DFKI

Consulting, design, and evaluations of the proactive provision of task-specific information based on personal and company-specific organizations and contents.

Additional information

www.dfki.de/vof

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Semantic Desktop – EPOS and Gnowsis Intelligent Tools for Personal Knowledge Management



The Semantic Desktop application EPOS uses individually structured work stations with heterogeneous information sources, such as file directories, e-mails, and bookmarks, to create a homogenous personal knowledge room. In this way, the high costs of organizational and administrative effort, the redundant data storage, and the aggravating searches for information which accompany the distributed data of various applications running on a desktop computer are all significantly reduced.

gnowsis The Gnowsis adapter framework extends the existing desktop applications via semantic web interfaces and permits a uniform semantic representation of data – independent of the software used to create it. It is now possible to link together data across application boundaries and retrieve information from an intelligent, semantic search.

The personal computer becomes a web, in which the user can conveniently surf for the desired data. Further, the system recognizes what the user is working on and proactively offers relevant background information (automatic context generation).

The Gnowsis and EPOS concepts are being further developed as a social semantic desktop in the EU Project "NEPOMUK", by 16 partners in six countries and under the management of DFKI. The project will allow networking of individual knowledge rooms, so that they can be used as a distributed corporate memory.

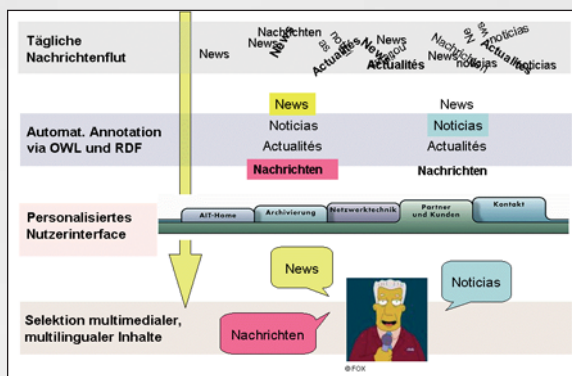
Services offered by DFKI
Project coordination, component development for Desktop Application Integration, working with semantic desktop standards, project consulting and implementation in the area of the semantic web, training

Additional information
www.gnowsis.org
www.dfki.de/epos

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NEWS – Semantic Web Services for Accurate News Processing



NEWS is an EU project to develop technologies for the annotation, analysis, intelligent search and syndication of online content for the suppliers and users of news.

NEWS develops freely definable interactive web services to facilitate the multi-medial and multi-lingual annotation and semantic search for news items automatically. In addition, NEWS technologies allow for the automated creation of trend analyses and the setup of customized user interfaces.

The consistent use of established semantic web standards like RDF and RDFS is an underlying principal of NEWS. Similarly, the existing ontologies and XML-based news standards like NITF or NewsML are always considered. A web services based architecture allows for a flexible integration with existing systems and work processes employed at news agencies and their customers.

The Knowledge Management research department at DFKI works on this project together with partners from Israel, Italy, and Spain.

Services offered by DFKI
Project coordination, component development, consulting, and training

Additional information
www.news-project.com

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C4 – Competence Center Computational Culture



The influence of digital media is now pervasive throughout our daily social life. Educational and leisure activities have been transformed by a computational culture, even though we may not be immediately aware of this. The cultural and social

changes and processes associated with this have assumed a more significant place in the eyes of artificial intelligence: C4 is the focal point for DFKI project activities that deal with this phenomenon. At CeBIT 2006, C4 is exhibiting two new approaches to Human-Computer-Interaction.

TOUCH-A-SOM – EXPLORATION OF EXTENSIVE MUSIC COLLECTIONS

This application enables navigation through a music collection that relies on 60GB mp3's and the metadata from various Internet music distributors (Netlabels). The metadata are used to train an artificial neural network that will automatically group similar musical titles into 180 clusters. The user is encouraged by an attractive graphic presentation and the use of touch screens to engage in an intense interaction with the musical material.

BLOGMIX – BLOGOSPHERE MEETS ARTIFICIAL INTELLIGENCE

Blogs have become a mainstream topic in Germany. The subjects offered range from individually maintained

online diaries to journalistic filter blogs and knowledge blogs for specialists. In addition to the already well known and established technologies like RSS readers and aggregators, BlogMIX has tools for semi-automated, user-supported selection, compression, and elimination of redundancies that help you come to grips with the daily Blog reading matter. This relies on the project results from the research departments Knowledge Management (DynaQ) and Intelligent Visualization and Simulation (@VISOR, page 18).



Services offered by DFKI Consulting, design, and implementation of systems and applications

Additional information

www.computationalculture.org

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„SNAP LOC“ – Hybrid Positioning Service for Smartphones



The mobile web service SNAP LOC provides GPS independent positioning everywhere that has no access to a GPS signal, for example, in concentrated built up areas of the inner city.

The user snaps a photo of the building before him with the camera in his smartphone. The snapshot is sent to a server together with the cell-ID and where it is analyzed.

Through various image processing and pattern recognition methods, the server determines a canonic image detail of the face of the building and a corresponding hash value, which it then compares to a database using statistical filters and known abstracts of building characteristics such as the arrangement and number of window groups. It sends the best hits corresponding to the attained quality, along with the corresponding coordinates to the mobile client, or uses the data as

positioning information for a

MULTIMEDIA-INITIATIVE



subsequent web service. SNAP LOC implements object recognition by means of image processing and context information. It can be employed anywhere where location based services are required, for example, pedestrian navigation, mobile digital tourism, shopping or restaurant guides, or even for leisure trends like geocaching.

SNAP LOC is the result of a DFKI project under the framework of the multimedia initiative sponsored by the Ministry for Economic Affairs, State of Saarland and Deutsche Telekom AG.

Services offered by DFKI

Support and consultancy in the development of mobile broadband services and product prototypes

Contact **CeBIT HALL 9, STAND B45**

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CASCOM – Agent Technologies in Mobile Applications



The aim of CASCOM research (www.ist-cascom.org) is the intelligent coordination of mobile transaction services at any time from any location from the innovative integration of technologies from the fields of multi-agent systems, semantic web services, peer-to-peer, and mobile telecommunications. In the CASCOM project, application-specific services are encapsulated with intelligent agents that are capable of efficiently solving highly complex tasks in dynamic environments.

So far, during the term of the project application scenarios (e.g., emergency medical assistance, telemonitoring, shopping mall) have been defined, described in UML and discussed. Further, the underlying design architecture for the mobile P2P network, as well as, the components and methods for the semantic service coordination have all been defined and in fact, have already been partially developed in the first prototype versions.

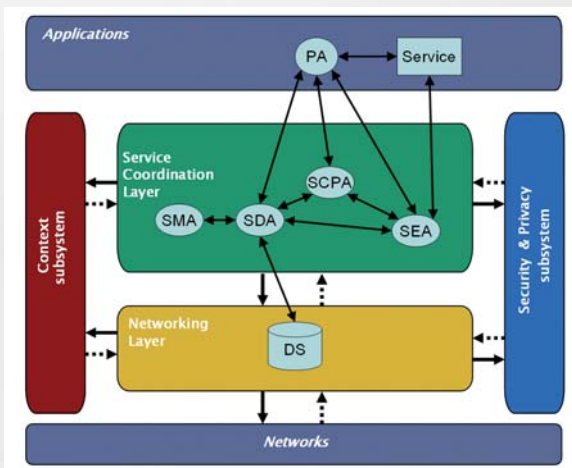


Figure 1

This allows, for example, a tourist vacationing in a foreign country to access the data base of the family doctor or insurance agency using a PDA and the personal CASCOM agents in order to pass on information about prior existing illnesses to the local doctors. The medical team is provided with detailed information faster and much better than the affected patient could ever report on his own. Expensive and repetitive diagnostic procedures that have already been performed at the patient's home can be avoided and many of the associated risks and costs can be minimized. The information transferred in this way is

evaluated to determine whether the patient should be given immediate treatment or whether the decision should be made to transport the patient back to their attending doctor. The networked information sources guarantee that the costs incurred will be covered by the insurers. Emergency medical personnel who answer a call for assistance from a completely unfamiliar patient also benefit from the CASCOM architecture through accessing ad hoc communications and retrieving relevant data while on the move.

Agents play an essential role in supporting the user during system operation by helping to locate the relevant services among the various sources and composing the appropriate response. Before such a dynamic composition can occur, a

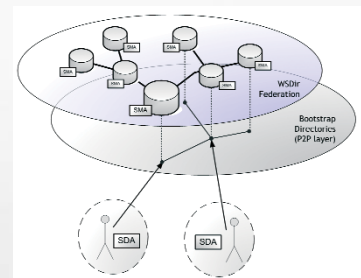


Figure 2

semantic description of the services must be available. Another prerequisite to employment is the integration of trustworthy and reliable security functions. Network and service providers must cooperate on a Europe-wide basis to insure mobile users have the access to the services. This is precisely why the CASCOM architecture prefers agent based coordination of services. The underlying processes are kept generic to permit other uses of the system apart from the medical applications used in our examples.

The generic architecture (see Figure 1) of CASCOM illustrates the different types of components and their interactions. These consist of functionally interdependent layers which serve as the basis for the coordination required by the underlying network management and semantic services. The two vertical dimensions represent the context and security of the respective processes.

An integrated demonstrator of the all CASCOM technologies is to be introduced in connection with a workshop and then evaluated in field testing in 2007.

Additional information
www.ist-cascom.org

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MATS II – Multi-agent Technology for Steel Production



DFKI designed, developed, and implemented a planning and scheduling system for Saarstahl AG to manage the production of steel at the Völklingen steel plant. The implementation phase concluded with the successful start of production operations in December 2005.

Flexibility and rapid reorganization are essential criteria for production planning and control in dynamic, fault prone environments such as those commonly found in the steel industry. The agent based planning system from DFKI controls the manufacturing flow and insures high quality steel.

At the core of the prototype system is a short range planning function for the steelworks based on the daily planning targets. The job of the planning unit is to determine

the optimal utilization of the steel work aggregate and manufacturing resources. In the event of an interruption of the processes, the planning and scheduling system facilitates a rapid return to manufacturing operations.

The system is installed at the control room and supports the planning and control of the steel mills by calculating an optimal solution for the specified daily program targets. Selectable criteria are considered in conjunction with continuous data received from the mills and compared to the calculated planning figures in a way that permits early recognition of problems and allows for timely corrective actions to be taken.

Long term goals include a complete agent-based supply chain management system that will plan and monitor the flow of materials throughout the production cycle of Saarstahl AG.

Services offered by DFKI

Generic, agent based solutions to support planning and control of steel production

Contact **CeBIT HALL 9, STAND B45**

Dr. Klaus Fischer

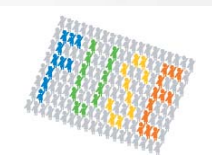
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FUSE – Free Universal Secret Equal Elections: IT Security for eVoting Systems



The FUSE – Free Universal Secret Equal Elections – project at DFKI develops standardized test criteria for eVoting systems. Under a contract from the Federal Office for Information Security (BSI), the IT Security Testing Center at DFKI pre-

pare suitable security profiles for electronic elections over open networks. Based on the internationally recognized Common Criteria (CC), the profiles reflect the prerequisites to establish the reliability of eVoting products and are an important milestone on the way to general acceptance by the voters.

The strategic challenge of designing, developing, and attaining IT security certification for eVoting systems extends beyond basic compliance with the security standards in eGovernment. The eVoting systems must not only satisfy the security requirements for proces-



sing and exchanging sensitive data over electronic media, but also respect the democratic principal of general, free, equal, and secret elections.

The creation of eVoting security profiles for elections over open networks is just an initial goal along the path to insuring reliable association, works council, social insurance, or parliamentary elections against the backdrop of a European wide development of eDemocracy.

Services offered by DFKI

Evaluations performed in accordance with the requirements of CC and ITSEC; software developer training based on CC; preparation of protection profiles and security targets according to the CC; and consulting in security management.

Additional information

www.dfki.de/fuse

www.dfki.de/pits

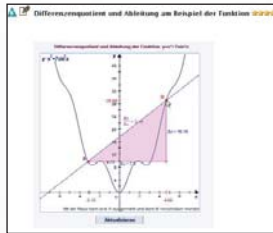
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The competence center for eLearning at DFKI designs its service offer for companies, public institutions, and educational service providers while supporting all forms of learning to include networked learning.

Our goal is to implement practical applications of leading research in technology aided teaching and learning systems. In cooperation with psychologists, educators, and practitioners in the field of education, we provide the competencies of the DFKI research departments.

We develop concepts and applications in the following subject areas:

"Intelligent learning environments" develops a broad range of intelligent technologies and tools for the educational environment including: semantic web technologies and metadata, service architectures, web presentations for mathematical formulae, customizable and adaptive hypermedia, context-adaptivity, user modeling, interactivity with personal feedback, authoring tools for interactive applications, and technologies for the implementation of new concepts in education.

"Building learning networks" encourages cooperation between companies, public and private organizations

CCeL – Competence Center eLearning

and has the goal of improving learning with new media and innovative technologies. We facilitate technology transfer and use in permanent learning networks.



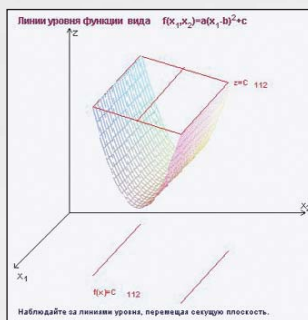
"Lifelong learning" includes the concepts, methods, and technologies that deal with the growing demand for information and knowledge at all phases of the learning cycle - starting with basic skills training and advanced education through the continuous update of the knowledge base in all routine fields of activity.

"eLearning and knowledge management" supports the design and specification of learning objects and the associated architectures for adaptive and customized learning in various contexts. This includes authoring tools, course development, and intelligent memory and search.

Additional information
<http://ccel.dfki.de>

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LeActiveMath – Language-supported, User-adaptive, Interactive eLearning



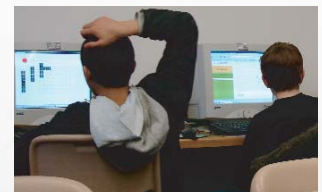
LeActiveMath is one of the technology enhanced learning projects carried out under the 6th EU Framework Program. LeActiveMath focuses on the development of an intelligent, web-based learning environment for mathematics and is currently under evaluation in several European countries both at

secondary schools and universities. It is also applied in individual study programs.

The system adjusts its content, procedures, and suggestions to the situation, knowledge, goals, and motivation of the student. In the process, the learning program is modified for the users and their learning goals: Students who want to prepare for an examination are handled differently than users who are searching for additional information about a special subject area: Gaps in knowledge and skills can be filled in and exercised, experts can solve complex problems or skip to the next topic.

LeActiveMath supports learning through tutorials, feedback in interactive exercises, and active learning tools. Greater control and more responsibility for learning is given to the student as a result of this transparent user model.

The tools and components in LeActiveMath are developed on the basis of didactic and cognitive research results. The technology of multi-lingual systems are demonstrated here with the aid of mathematics, but such a system may also be employed in other areas.



Additional information
www.leactivemath.org

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▶ Business Process Management – Institute for Information Systems



The Institute for Information Systems (IWi) at DFKI under the scientific leadership of Prof. Dr. Peter Loos is home to more than 60 employees - 20 of whom are full time staff in the area of applications research. Their work is focused on examining economic management issues, the design of business information systems, and the use of modern technologies in manufacturing, service, and government. The Institute explores the methods and applications required in the areas of lifelong learning, business integration, and e-government.

Business process management has been an important focus of research since the early 1990's and has been among the core competencies of the Institute ever since that time. This is where the ARIS-House of Business Process Management developed the framework concept for the integrated management of business processes. An important concept that has emerged in the design of business processes is based on the semiformal, descriptive languages for information modeling, for example,

the eventdriven process chain (EPC), which was also developed here at the Institute. The reference models that can be employed to support such modeling represent another important area of IWi research.

The capacity portfolio of the Institute includes the implementation of national and international research projects in cooperation with various partners, as well as coaching, consulting, and the implementation of projects or studies. By integrating the generation and transfer of knowledge, the Institute has created a rich environment for interdisciplinary research, which promotes scientific advances in the area of information systems.

Additional information
www.iwi.uni-sb.de

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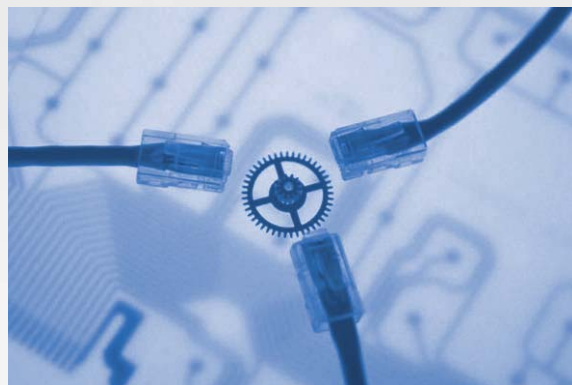
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▶ Sphere of Competence Business Integration

The ability of a company to integrate into today's global, value added networks has become a decisive factor for success. Choosing the right business model and integrating the appropriate information and communication technologies, organizational structures, and business processes are the keys to commercial success.

Although there are currently numerous technical networking solutions being researched under the key words EAI, EDI, and web services, the problems of integrating the business management aspects are, for the most part, neglected. In particular, it has been found that rather than data transfer, it is the integration of business processes that is the key design element of successful companies. The Competence Center for Business Integration (CCBI) in Saarbrücken addresses this situation and focuses on a holistic examination of process oriented integration concepts and the process-aided information technologies. CCBI contributes as a key partner in the European Network of Excellence project INTEROP (www.interop-noe.org).

The results of CCBI research performed under different national and European projects all have collaborative business processes as their focus and contribute to solutions in various domains. These industries include: automotive, aviation and space, mobile communications, and furniture (Project ATHENA, www.athena-ip.org),



also, construction (Project ArKoS, www.arkos.info), logistics and factoring (Project P2E2, www.p2e2.de), judicial applications (Project eJustice, www.ejustice.eu.com), and public administration (Projects: InfoCitizen, www.infocitizen.org and R4EGov).

Additional information
www.ccbi.de

CeBIT HALL 9, STAND B45



Lifelong learning, from basic skills training and advanced education to refresher training to insure the use of state-of-the-art knowledge in regular work activity, is firmly established as an educational principle in a knowledge society. The IWi develops applications in the field of lifelong learning using concepts, methods and technologies designed to respond to the growing demand for information and knowledge at every phase of the learning cycle. Under the co-direction of L3S and DFKI, 19 international partners are working as part of the EU framework Network of Excellence project "ProLearn" (www.prolearn-project.org), in collaboration with over 150 associated organizations from research and industry, to coordinate research throughout Europe in the field of technology-enhanced learning.

As national research efforts are concentrated in the EXPLAIN project (www.explain-project.de), which focuses on efficient design processes for creating training materials, as well as the organizational and computer-aided integration with product development, the EU project PROLIX (www.prolixproject.org) is developing



A crucial element in the modernization of public administration is the employment of innovative information and communication technologies. The Competence Center for eGovernment at the Institute for Information Systems (IWi) provides a re-

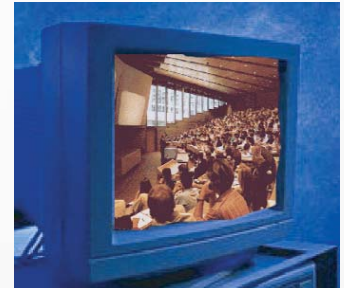
search infrastructure for the establishment of projects in the subject area "eGovernment". The availability of a knowledge base for the acquisition of research projects and the exchange of know-how between scientific and government sectors serves as the foundation for the activities performed at the competence center. Here, there is a continuous monitoring of scientific and practical developments in the area of eGovernment.

A key factor in this effort is the number and quality of relationships to institutions in the academic and government communities where extensive contacts have been established at national and European levels.

The DFKI competence center manages projects at the European level (www.ejustice.eu.com, www.r4egov.info), the federal level (www.rafig.de), as well as the state level (Project Online Services Saar).

Sphere of Competence eLearning

open, service-oriented reference architecture for process oriented learning and process oriented information exchange. The major goal is to coordinate the learning and business processes that occur in complex work situations take into consideration the (learning) needs of the workers and the company. In addition to the international and national research efforts, the IWi Competence Center eLearning networks its research activities in the area of lifelong learning with related research being conducted at DFKI.



Additional information
<http://ccel.dfki.de>

CeBIT HALL 9, STAND B45

Sphere of Competence eGovernment

The major goal of the competence center is a comprehensive knowledge transfer between research, academia, and government. The knowledge and insights gained from the IWi projects in the area of public administration should remain available for extended use beyond the respective project terminations. Specifically, this applies to use in ongoing research projects in addition to the external transfer of the data.

The knowledge base is constantly being expanded through project implementations as well as by the preparation of studies in the area of eGovernment. For example, a contract awarded by IDS Scheer AG to perform a nation-wide empirical survey on the topic, "Process Orientation in Public Administrations" included an analysis of the current eGovernment initiatives at the federal and state levels. Another international survey performed on behalf of RICOH provided insights about poorly structured management and workflow support processes.

Additional information
www.e-government-cc.org

CeBIT HALL 9, STAND B45

DFKI in Future Talk at CeBIT 2006

DFKI will place its stamp on numerous presentations and discussions as part of the "Future Talk" at CeBIT 2006 (Hall 9, A40). Opening Day sessions on Thursday, March 9, (11:35 - 12:30) will include current topics in IT development for 2006, the Informatics Year, as discussed by Prof. Dr. Wolfgang Wahlster and Prof. Dr. Hans-Jörg Bullinger (President of the Fraunhofer-Gesellschaft), Dr. Wolf-Dieter Lukas (Federal Ministry of Education and Research - BMBF), Christopher Schläffer (Corporate Development Officer, Deutsche Telekom AG), and Prof. Dr. Jürgen Lehold (Volkswagen AG).



The theme for Friday, March 10, is the "Next Generation Web/Multimedia", and Dr. Norbert Reithinger is scheduled to report on the "SmartWeb - Mobile broadband access to the Semantic Web" (March 10, 10:00 - 10:20) while Dr. Alassane Ndiaye presents "Virtual Human - Anthropomorphic Interactive Agents and ZAMB - 82 million coaches" (March 10, 10:20 - 10:40).

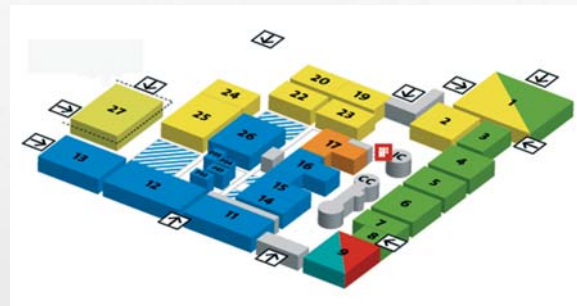
In the afternoon, at "Mobile Solutions", Dr. Tilman Becker talks about "AMI: Better than being there - intelligent meeting support" (March 10, 14:00 - 14:20). DFKI is a supporter of the Olympic Games 2008: Prof. Dr. Hans Uszkoreit will explain the results achieved to date for the DFKI "Compass2008 - Multilingual and mobile information services at the Beijing Olympics in 2008" (March 10, 16:00 - 16:20).

Live presentations of the prototypes from the SmartWeb, VirtualHuman, AMI, and Compass2008 projects are to be setup at MTI booth (A44) in Hall 9.

In the afternoon of CeBIT-Sunday, March 12, Future Talk addresses "Blogs, Computational Culture, Web 2.0" and Dr. Stephan Baumann presents "Computational Culture and Social Software" (March 12, 15:00 - 15:20). The work of DFKI in C4 (Competence Center Computational Culture) will be shown at our own DFKI booth in Hall 9, B45. The discussion format "Steamtalks: 60 Minutes of Future" was chosen by the panel members Reinhard Karger, Lars Cords (fischerAppelt Kommunikation, Press Speaker for "Du bist Deutschland"), Johnny Haeusler (Creative

Director, Spreblick Verlag), and Stefan Keuchel (Press Speaker, Google Deutschland) for the topic "Du bist Blogging" (March 12, 15:40 - 16:40).

"Robotics" is the Monday morning focus on 13 March. Dr. Thomas Röfer from the new DFKI-Lab in Bremen will talk about "Robot soccer - The next big challenge in artificial intelligence" (March 13, 10:00 - 10:20). The topic for



Prof. Dr. Frank Kirchner, Speaker for the DFKI-Bremen Lab is "Bio-inspired robotics - Sturdy locomotion over difficult surfaces" (March 13, 12:20 - 12:40). The robots out of the DFKI-Bremen Lab will be on display at the MTI booth (A60) in Hall 9.



Visitors are welcome to learn more about these and other AI-Topics at the DFKI exhibit, Hall 9, B45. Exhibits and demonstrators from the areas of Knowledge Management, IT-Security, Multi-agents, Multimedia, and Computational Culture, as well as systems for eLearning, Business Integration, or eGovernment will explain how innovative research approaches are transformed into application oriented implementations.

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Computers that Hear, Speak, Move and Understand – Human Computer Interaction at CeBIT 2006

A special exhibit about Human Computer Interaction will be presented by the Federal Ministry of Education and Research (BMBF) as a highlight of the CeBIT 2006. More than 40 exhibits have been prepared for this year's CeBIT from March 9–15, under the motto: 2006 – Informatics Year and Year of the World Soccer Championships. The exhibits will be set up over nearly 1125 sqm of floor space at the Future Parc in Hall 9, Stands A44 and A60, where all of the projects, demonstrators, and prototypes are placed into environments that are oriented on human interactive situations at home, or en route, in private, or in public.

DFKI is participating with demonstrations of multimodal, speech and language understanding, multilingual and mobile systems:

"SmartWeb", for example, allows intuitive access to the semantic web over multimodal dialogs from a mobile phone (MDA III/IV, – Pro, Smartphones, etc.). An intelligent search provides meaningful answers in the context of the World Soccer Championships rather than long hit lists of team schedules, matches or players.



A virtual moderator in the demonstrator system "VirtualHuman – Anthropomorphic Interactive Agents" invites human candidates to compete for the title of "Best Coach". During the two quiz rounds of the soccer show, "ZAMB – 82 Million Coaches", virtual soccer experts assist the participants to prove their soccer skills and select their own dream team for the World Championships 2006.

The "COMPASS2008" system provides several services to make the visit in Beijing easier for tourists and visitors from all over the world. During the Olympic Games 2008, information about the city, the weather, the matches, and other events can be retrieved over a mobile phone. The integration of translation technology, voice input and output, location sensitive services, and an open, semantically structured architecture let the user find the best information in their own language from any location and at any time.



The "M3i Mobile ShopAssist" lets a user call up information to compare competitive products via PDA. Here, the users can communicate from their mobile phone per voice or pen, or "show" the system an object and then ask questions about it. An ontology based web portal, the "Language Technology World" with its semantic structure demonstrates contemporary possibilities for networking know-how and the dynamics of complex, rapidly developing field of language technology. Both projects were realized as part of the BMBF COLLATE project – Computational Linguistics and Language Technology for Real Life Applications.

"AMI – Augmented Multi-party Interaction" deals with technologies that facilitate the setup, recording, and review of meetings with multiple participants. The data collected from a meeting can be browsed for specific content with an Internet browser. Live-demonstration of AMI-Technologies: Visitors are invited to participate at a meeting in the instrumented, mobile meeting room.

The eight legged "SCORPION" developed at the new DFKI-Lab Bremen is a robot designed for semi-autonomous employment in difficult to reach terrains. Scorpion can conquer surfaces that are impassable for other robots.

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► **SmartWeb – Mobile, Multimodal Access to the Semantic Web**

SmartWeb

What were the names of the goalies in the final match between Germany-Argentina? What was the line up of the German National Team for the World Soccer Championships in Tokyo? Where can I find information about the top players? In the future, the answers to these and other questions will be provided on your mobile phone.

The soccer fans of the future will be able to receive information, for example, about team schedules, matches, or players via language dialogs over mobile communications devices such as PDA's or smartphones. Using language entries, they will "ask" their mobile phones and the phones will "answer" them with information taken from the Internet.

SmartWeb is the name of the technology that is building a prototype to make all of this possible in time for the World Soccer Championships 2006. SmartWeb initiates an intelligent search of the Internet, finds the exact answer, not a long hitlist and outputs it in natural language. The answer may also include video, graphics, text or some other media.

A special feature of the SmartWeb project is the multimodal recognition of the user's focus. In other words, the system automatically recognizes from the user query



whether or not it has been asked to respond. A microphone and a camera included in the MDA-Pro enables the identification of the user. The camera looks for a face (on-view versus off-view) that is being presented to the MDA display; prosodic voice information like volume, word length, or variations in the basic frequency are then analyzed in the speech signal

and classified as on-talk versus off-talk. The user doesn't need to press any bothersome send buttons in order to formulate a query and get the desired information response.

In the context of SmartWeb, a wireless mobile device is being integrated into a motorcycle and the integration of SmartWeb technology into a Man-Machine-Interface in a real automobile is under development. In addition to information queries, this system also permits natural language control of TV broadcasts via a digital transmission standard DMB (Digital Media Broadcasting).

SmartWeb employs the technologies and standards of the semantic web, such as ontologies, semantic search, natural language processing, peer-to-peer (P2P), which are also used for the development of distributed knowledge systems in a company or individual data volumes, for example, in a PC. Knowledge from very different sources is exploited with semantic information and can then be integrated with local information and elements from the corporate memory or the social networks that connect various individual knowledge workers. Knowledge may be spontaneously shared with others - even over P2P networks if both sender and receiver employ semantic technologies. The processes of computing technologies are approaching, in terms of results, those of humans. However, in principal, only when it is possible for every person to spontaneously enter a query or instruction into a computer system in their own native language and when the corresponding answer or response is, in turn, understandable in everyday terms, will the state of Human-Computer-Interaction be reached when the computer can be made an integral component of global cultural techniques for the knowledge society.



Additional information
www.smartweb-project.org

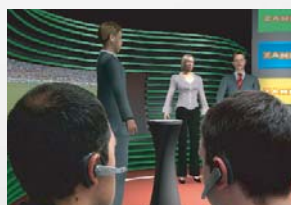
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VirtualHuman – A Soccer Quiz with Anthropomorphic Interactive Agents



The VirtualHuman project, sponsored by the Federal Ministry of Education and Research (BMBF) studies the natural interactions between humans and virtual characters. The technological challenge of designing such an interactive human-computer system is many times greater than that of animating film figures or computer games. Creating a virtual figure as a conversation partner requires detailed, anthropomorphic design of the character, realistic speech, and emotional interactions, as well as, the exact simulation of movement in real time.

Just in time and appropriate for this year's World Soccer Championships, two human visitors can take part in a game with our virtual characters. The special game is called "ZAMB – 82 Million Coaches". Here, every armchair coach has a chance to prove that they could coach the national team. It goes like this: Our virtual moderator invites two quiz participants to play two rounds in an attempt to win the title "Best



coach". In round one, video sequences of familiar situations in soccer are shown and frozen just at the crucial moment. The participants must decide how the play will continue. Two virtual soccer experts provide assistance. The winner advances to the next round.



Round two is concerned with no less than selecting players for the German national team. The winners of round one can pick their own dream teams for the World Championships 2006. Our moderator then evaluates their choices and, perhaps, proclaims them as best coach for the national team.



Using this scenario, VirtualHuman demonstrates complex technological solutions in the area of multimodal user interfaces and realistic virtual characters.

Additional information
www.virtual-human.org

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SCORPION – A Biomimetic Walking Robot



The SCORPION is an eight-legged walking robot for hazardous outdoor-terrain. Using a biomimetic control concept, which allows a very flexible, robust walking behaviour, SCORPION can conquer surfaces that are impassable for other robots.

The SCORPION can be controlled with a GUI and an optional voice control.

The developed models of the biological motor systems enable the robot to adapt to a multitude of different terrains and obstacles.

The system has a weight of 11kg including rechargeable batteries. Its size in its typical posture (see picture) is 60 cm x 40 cm x 30 cm. SCORPION comprises 24 capsulated active joints, allowing the robot to move with 1/2 body-length/sec. SCORPION comprises over 50 proprio-

ceptive sensors, tilt sensors, infrared/ultrasound distance sensors, and a video camera for tele-operation.

Possible future fields of application include exploration of hazardous environments, e.g. in SAR missions. Currently an amphibious version of the SCORPION is under development.

The SCORPION was developed under the direction of Prof. Dr. Frank Kirchner, head of Robotics Group at the Department for Mathematics and Computer Science at the University of Bremen and Director of the newly founded DFKI Lab Bremen, research group 'Robotics and Intelligent Technical Systems' (RITS).

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▶ COMPASS2008 – Innovative Technologies for the Olympic Games in Beijing

The initial results of a German-Chinese cooperative project called COMPASS2008 will be presented by DFKI at the special, Federal Ministry for Education and Research (BMBF) exhibit "Human Computer Interaction" in Hall 9, Booth A44.

COMPASS2008 is the digital escort for participants and spectators at large events, like the Olympic Games 2008 in Beijing. Multi-lingual tourist information will be available to the user via a mobile phone, notebook computer, and Internet from hotel rooms, airport terminals, en route, or in the stadiums. Multi-lingual mobile services assist foreign visitors during their stays in many daily situations - whether in communicating with a waiter, a taxi driver, or for getting your bearings in the city, in emergencies or numerous other situations.



These multi-lingual services are provided by the "COMPASS2008 Olympic Service Platform". In addition to the information users will require for their visit to Beijing, translation services are also being developed under the COMPASS2008 project. Services will be semantically structured in the form of taxonomy and the opportunity is also being offered for service providers to register their products with COMPASS2008. COMPASS2008 assists users to locate desired services in their own preferred language. All services may be called up over the Internet as well as from the various mobile devices.

For example, a user located in a taxi could enter the desired destination, such as "Forbidden City" and an appropriate category like, "Attractions". The system translates the destination into Chinese, pronounces the word in the target language as necessary, and as an added benefit to the user, provides information about distance and estimated price.

At the restaurant, COMPASS2008 supplies access via the mobile phone to a selection of meals and permits detailed questions to be asked about ingredients, origins and tastes. The Compass-Service "Smart Dining Translation Assistance" helps the guest to order the selected menu items in the local language.

Both of these functions are based on the COMPASS2008 Hybrid Machine Translation Service, which offer users the opportunity to translate individual phrases, or even entire text passages, into Chinese. Free online machine translation services are integrated as is a digital tourist glossary that



includes sentences and phrases frequently used by tourists in foreign countries, especially created for China. The system employs general machine translation systems, as well as specialized machine translation technologies.

The COMPASS2008 project is sponsored by the BMBF and the Chinese Ministry of Science and Technology. DFKI is the lead project manager for Germany. The project partners:

Fraunhofer Institute for Software and System Engineering (ISST)



CAPINFO Ltd. Beijing

Institute of Computing Technology (ICT), Chinese Academy of Sciences, Beijing

Deutsche Telekom AG Laboratories, Berlin

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M3i Mobile ShopAssist – Mobile Product Information

The M3i Mobile ShopAssist is a mobile and multimodal demonstrator designed to showcase any set of products. Applied to a set of Natural Language Technology (NLT) products, a user can learn about the latest advancements coming into a market by enquiring about product features, and by comparing multiple products. As a result, users can interact with the system via the communication modes speech and handwriting, but also via gestures that allow one to interact with physical objects on a shelf, or their digital-world counterparts displayed on the mobile device's display.



The demonstrator recently formed the foundation for a series of user studies that determine what modality combinations are best suited to changing mobile environments such as private environments (e.g. at home), and public environments (e.g. shopping or exploring a city). The results also outline how intuitive a specific modality combination is to use, how

onlookers can affect a modality's use in public environments, and the differences that exist between genders.

M3i Mobile ShopAssist is being carried out as a part of the Demonstration Center for Speech and Language Technology under the COLLATE II – Computational Linguistics and Language Technology for Real Life Applications project. It is funded by the Federal Ministry of Education and Research (BMBF) with the goal of bringing cutting edge language technologies closer to the average person.

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GEFÖRDERT VOM
 Bundesministerium für Bildung und Forschung

Language Technology World – Virtual Information Center for Language Technology



LT World is the most comprehensive WWW information service for the fast growing field of Language Technology. It is a rich source of knowledge for all aspects of this multidimensional technology area: research, products, companies, organisations, experts, resources, patents, conferences, terminology, news, and background knowledge.

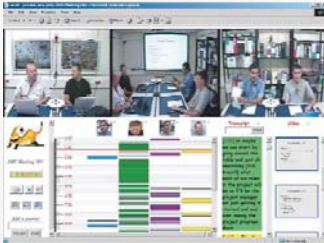
The ontology-based Web portal LT World (www.lt-world.org) and its semantic structure demonstrate latest methods for interconnecting knowledge and capturing the dynamics of knowledge in a complex and fast growing field. In LT World, projects are connected with technologies and organisations, these again with people, products, patents and so on. Single information units appear in the context of their activity and facilitate efficient navigation. Moreover, the modularity of the single information units ensure a scalability of the knowledge base in the long term. This new kind of knowledge organisation based on semantics can basically be ported to other areas and is being successfully applied to additional information technology areas in the European project IST World (www.ist-world.org).

LT World will be carried out in the BMBF-Project COLLATE as a part of the Competence Center for Speech and Language Technology

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GEFÖRDERT VOM
 Bundesministerium für Bildung und Forschung

▶ AMI – Augmented Multi-party Interaction



The research project AMI develops technology to support human interaction in meetings, through meeting browsers and online meeting assistants for multimodal meeting recordings.

The multiparty interactions are captured with video cameras and microphones and analyzed in several subsequent steps. Finally, the meetings can be viewed using a standard internet browser. The browsing is supported by automatically generated summaries. During online usage, the technology supports the recognition of gestures, key word spotting and the identification of speakers.

AMI Technologies are presented live in an instrumented mobile meeting room at the special BMBF exhibit: visitors can watch and even participate in a meeting. A 360-degree camera captures up to four participants discussing a slide presentation. A microphone array identifies the current speaker, and on-line keyword spotting will raise an alarm when predefined keywords are detected. Heads and hands of the participants are tracked automatically and all data is shown on an extra screen.

A meeting browser allows to watch, browse and search with new methods in a recorded meeting. A keyword search presents the results in their specific context. The browser shows multiple views of the meeting, the slides and even a transcript of what was said.

AMI is a research project funded within the 6th Framework Programme of the EU.

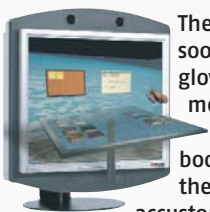
Project Participants at CeBIT:
 Brno University of Technology (BUT)
 DFKI
 IDIAP Research Institute
 Philips Consumer Electronics BV
 University of Twente

Additional information
www.amiproject.org

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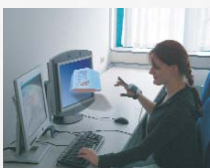
DFKI-NEWS

▶ @VISOR – Intelligent Visualization Facilitates Human-Computer Communications



The modern computer work station may soon look like this: The user has a data glove on and is sitting before a 3-D monitor that has displayed personal documents, photos, videos, or books. These objects are arranged in the virtual room just as the user is accustomed to seeing in a traditional office.

Now, with the gloved hand, the user is selecting a document and then reaching for it; pages are turned, just as they have always been; the user can file them, stack them, or toss them into the trash can.



The goal of the research efforts in @VISOR is the creation of a customizable virtual world, one which addresses the human perceptive abilities and breaks down the barriers between human work activity and computer applications.

The project draws on the know-how of the DFKI research departments Intelligent Visualization and

Simulation, as well as Knowledge Management. The initial results from @VISOR have already been integrated into a prototype in the form of a demonstrator.

DFKI-Kaiserslautern recently hosted a workshop under the framework of @VISOR. Attended by leading experts in the fields of visualization and Human-Computer Interaction from all over the world, discussions focused on new approaches and on ways to continue the research work of @VISOR even after the project ends in December 2006.

Additional information
www.dfki.de/ivs

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Groundbreaking Ceremony in Kaiserslautern



Mayor Bernhard Deubig; Prof. Andreas Dengel; Minister Jürgen Zöllner; Dr. Walter Olthoff and Prof. Helmut J. Schmidt, President TU Kaiserslautern

DFKI, with the financial support of the government of Rheinland-Pfalz, the European Union, and the City of Kaiserslautern, has awarded the contract to build a new building in the PRE-Uni-Park, Kaiserslautern.

In early February 2006, Science Minister Zöllner of the State Rheinland-Pfalz laid the foundation stone for the new building in a ceremony together with DFKI Directors Wahlster and Olthoff, as well as site representative, Prof. Dengel. Mr. Zöllner categorized the construction as a proper and necessary step to improve the employment opportunities of the research facility and highlighted

the importance of DFKI in the IT strategy of the state of Rheinland-Pfalz: "Our technology policies support the transfer of research results into commercial products and processes. DFKI has successfully demonstrated in Rheinland-Pfalz how to balance the interests of basic research and application research, the interests between science and business."

The State of Rheinland-Pfalz contributes more than half of the total cost, an amount of 7.6 million €. The Science Ministry is contributing more than € 1.8 million while the Ministry of Economics funds € 1.0 million, and the Ministry of the Interior provides € 900,000. The City of Kaiserslautern adds another € 100,000.

With almost 4,200 sqm of floor space, the building will provide offices for 100 scientific researchers and approximately 50 student staff assistants. The new building is being constructed adjacent to the new Fraunhofer Center and the Institute for Surface and Coating Analysis while, on the opposite side, the new neighbor will be the Max-Planck Institute for Software Technology, also with locations in Kaiserslautern and Saarbrücken.

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DFKI Interview: Dr. Norbert Reithinger



Dr. Norbert Reithinger is a Principal Researcher und Research Fellow and, since 1993, has worked at the DFKI Research Department for Intelligent User Interfaces. The focus of his research is in the field of multimodal user interfaces.

What do you see as the application potential of your research?

All of my work is based on one simple goal: How can a user interact with the application most naturally? There are already smartphones on the market that offer the technical opportunities to implement innovative applications that function, easily and naturally, over a multimodal interface.

When did your interest in artificial intelligence begin and how have AI processes changed since that time?

My studies at the University of Erlangen-Nürnberg during the late 70's gave me the chance to contribute to the development of the first German language dialog system. Today, we have an established, standard approach to the field of language recognition and processing.

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

The modification of multimodal interactive systems for new domains is still our greatest problem. The challenge in the coming years will be the development of a tool with which to customize this process.

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

My hobbies include listening to classical music, playing the piano, and reading. I enjoy walking and paragliding - but only as a passenger because my eyesight is a bit too weak to fly alone.

Are there parallels there to your professional life?

My guiding principal is "Keep it simple and stupid!" Complexity will creep in all by itself. Think of the paraglider, with common materials intelligently combined so that it can fly. That is how our systems must be developed - with simple and easily understood basics.

What are your current projects?

I am currently staying busy with two BMBF projects: SmartWeb (p. 14) and VirtualHuman (p.15).

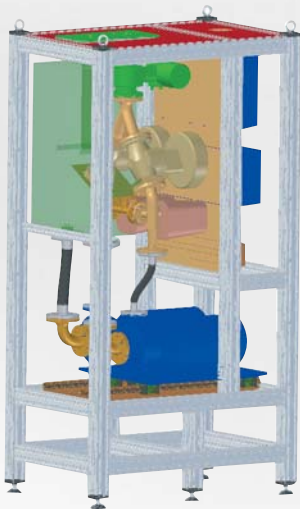
► **SmartFactory^{KL} at the Hannover Messe Industry Expo (HMI) 2006**

smartFactory^{KL}

The technology-initiative SmartFactory^{KL} is a non-profit organization, established for the purposes of promoting the development, use, and dissemination of innovative plant technologies in a variety of industries and providing the appropriate scientific and practical foundations. The SmartFactory^{KL} provides a platform for interested partners to examine relevant problems.

VISION

The common vision developed by the partners is one of an intelligent factory of the future, featuring flexibility, networking, self-organization, and focused on the operators. Flexibility here includes component structures that can be rapidly modified and expanded. Open communications-interfaces support a generic manufacturer's network of multiple plant components. Components, in turn, can recognize their tasks autonomously through self-organizing within their situational environment and coordinating among themselves on how to accomplish the job. User friendliness is the critical factor for the operators of technical systems and this can be achieved by customizable operating systems.



MAJOR FOCUS OF RESEARCH

Detailed discussions and workshops among industrial companies and research institutes have taken this vision and derived important fields of research into the areas of in-house locating systems, universal interface systems, web based interactive systems, and the virtual digital factory.

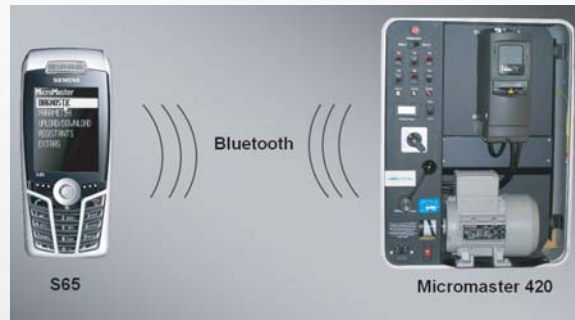
SMART SOLUTIONS FOR PRACTICAL OPERATIONS

In this respect, the SmartFactory^{KL} is the first industry-neutral, European demonstration and development center, where priority is placed on the development of relevant operational solutions. Two exhibits based on the results of preliminary work in the areas "process automation" and "mobile applications" will be shown at the Hannover Messe Industry Expo.

EXHIBIT

The Pump Unit is a joint development by KSB and Samson and supplies definable volume flows and pressures. The components supplied by each partner -

pumps and nozzles - are combined and operated using integrated controls. This means the control effort can be reduced to just a few correcting variables in the event of a higher order wait override.



A second exhibit demonstrates the wireless parameterization of industrial machines from mobile systems. This involves the setup of a Bluetooth connection between a mobile phone and an electromotor to call up and set the parameter data needed for the desired configurations. Want to learn more about SmartFactory^{KL}? Just visit us at HMI 2006 from April 24-28, at the Hannover Fair Grounds in Hall 15, E20. That is where SmartFactory^{KL} will be presenting some exciting exhibits in the area of "Factory Automation". Our staff will be standing by to provide you with information.



Additional information
www.smartfactory-kl.de

We are looking forward to your visit.



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

I. Albrecht; M. Schröder; J. Haber; H.-P. Seidel
Mixed Feelings: Expression of Non-basic Emotions in a Muscle-based Talking Head. In: *Virtual Reality*, Vol. 8, No. 4, Pages 201-212, 2005.

A. Alkassar; R. Krimmer; M. Volkamer
Online-Wahlen für Gremien: Wahlen in Gremien als Einsatzgebiet für Wahlen ohne vertrauenswürdige Instanz. In: *Datenschutz und Datensicherheit*, Ausg. 8/2005, Pages 480-483, Vieweg, 2005.

I. Aslan; F. Xu; J. Steffen; H. Uszkoreit; A. Krüger
COMPASS2008: The Smart Dining Service. In: M. Maybury; O. Stock; W. Wahlster (Eds.), *Intelligent Technologies for Interactive Entertainment*. Proceedings of the 1st International Conference (INTEAIN-2005), November 30 - December 2, Madonna di Campiglio, Italy, Pages 299-302, LNAI 3814, Springer, 2005.

I. Aslan; F. Xu; H. Uszkoreit; A. Krüger; J. Steffen
COMPASS2008: Multimodal, Multilingual and Crosslingual Interaction for Mobile Tourist Guide Applications. In: M. Maybury; O. Stock; W. Wahlster (Eds.), *Intelligent Technologies for Interactive Entertainment*. Proceedings of the 1st International Conference (INTEAIN-2005), November 30 - December 2, Madonna di Campiglio, Italy, Pages 3-12, LNAI 3814, Springer, 2005.

S. Autexier
On the Dynamic Increase of Multiplicities in Matrix Proof Methods for Classical Higher-Order Logic. In: *Automated Reasoning with Analytic Tableaux and Related Methods*. International Conference (TABLEAUX-2005), September 14-17, Koblenz, Germany, Pages 48-62, LNAI 3702, Springer, 2005.

S. Autexier; A. Fiedler
Textbook Proofs Meet Formal Logic - The Problem of Underspecification and Granularity. In: M. Kohlhasse (Ed.), *Proceedings of the 4th International Conference of Mathematical Knowledge Management (MKM-2005)*, July 15-17, 2005, Bremen, Germany, Revised Selected Papers, Pages 96-110, LNAI 3863, Springer, 2006.

S. Autexier; C. Benzmüller; D. Dietrich; A. Meier; C.-P. Wirth
A Generic Modular Data Structure for Proof Attempts Alternating on Ideas and Granularity. In: M. Kohlhasse (Ed.), *Proceedings of the 4th International Conference of Mathematical Knowledge Management (MKM-2005)*, July 15-17, 2005, Bremen, Germany, Revised Selected Papers, Pages 126-142, LNAI 3863, Springer, 2006.

H. Barthel; T. Bierz; P. Dannenmann
Haptic Interaction with Computer-Animated Cognitive Characters in Virtual Environments. In: *Proceedings of the 5th IASTED International Conference on Visualization, Imaging, and Image Processing (VIIP-2005)*, September 7-9, Benidorm, Spain, Pages 709-714, ACTA Press, 2005.

B. Blankenburg; M. Klusch
BSCA-F: Efficient Fuzzy Valued Stable Coalition Forming Among Agents. In: *Proceedings of the IEEE/WIC/ACM Conference on Intelligent Agent Technology (IAT-2005)*, September 19-22, Compiegne, France, Pages 732-738, IEEE Computer Society Press, 2005.

B. Blankenburg; M. Klusch
BSCA-P: Privacy-Preserving Coalition Formation. In: T. Eymann; F. Klügl; W. Lamersdorf; M. Klusch; M. N. Huhns (Eds.), *Multiagent System Technologies*. Proceedings of the 3rd German Conference (MATES-2005), September 11-13, Koblenz, Germany, Pages 47-58, LNAI 3550, Springer, 2005.

B. Blankenburg; M. Klusch
Privacy Preserving Coalition Forming Between Rational Service Agents. In: *KI - Künstliche Intelligenz*, Jg. 20, Heft 1/2006, Pages 19-25, Böttcher IT Verlag, 2006.

A. Bödcher; M. Ehrmann
Usability-Test Versus Useware-Engineering. In: *atp - Automatisierungstechnische Praxis*, Vol. 47, No. 10, Pages 51-55, Oldenbourg Industrieverlag, 2005.

A. Bödcher; K. Mukasa; D. Zühlke
Capturing Common and Variable Design Aspects for Ubiquitous Computing with MB-UID. In: *Proceedings of the Workshop on Model Driven Development of Advanced User Interfaces (MDDAUI-2005)* (at MODLS-2005), October 2, Montego Bay, Jamaica, 2005. <http://sunsite.informatik.wth-aachen.de/Publications/CEUR-WVS/Vol-159/papen.pdf>

P. Buitelaar; M. Sintek; M. Kiesel
Feature Representation for Cross-Lingual, Cross-Media Semantic Web Applications. In: T. Decker; S. Handschuh (Eds.), *Proceedings of the 5th International Workshop on Knowledge Markup and Semantic Annotation (SemAnnot-2005)* (at ISWC-2005), November 7, Galway, Ireland, 2005.

B. Crysmann
Relative Clause Extraposition in German: An Efficient and Portable Implementation. In: *Research on Language and Computation*, Vol. 3, No. 1, Pages 61-82, Springer, 2005.

B. Crysmann
Syncretism in German: A Unified Approach to Underspecification, Indeterminacy, and Likeness of Case. In: S. Müller (Ed.), *Proceedings of the 12th International Conference on Head-Driven Phrase Structure Grammar (HPSG-2005)*, August 23-24, Lisbon, Portugal, Pages 91-107, CSLI Publications, 2005.

P. Dannenmann; H. Barthel; R. Ganser; G. Steinebach
Assessment of Town Planning Decisions as a Novel Application Field for Virtual Characters. In: J.J. Villanueva (Ed.), *Proceedings of the 5th IASTED International Conference on Visualization, Imaging, and Image Processing (VIIP-2005)*, September 7-9, Benidorm, Spain, Pages 697-702, ACTA Press, 2005.

W. Drożdżyński; H.-U. Krieger; J. Piskorski; U. Schäfer
SPROUT - A General-Purpose NLP Framework Integrating Finite-State and Unification-based Grammar Formalisms. In: *Proceedings of the 5th International Workshop on Finite-State Methods and Natural Language Processing (FSMNL-2005)*, September 1-2, Helsinki, Finland, Pages 44-45, 2005.

M. Ehrmann; J. Schlick; M. Seckner; D. Zühlke
PRIMOS - A Novel Concept to Program Complex Assembly Processes. In: J. Filipe; J. Andrade-Cetto; J.-L. Ferrer (Eds.), *2nd International Conference on Informatics in Control, Automation and Robotics (ICINCO-2005)*, September 14-17, Barcelona, Spain, Pages 107-112 (Part 3), 2005.

M. Ehrmann; M. Seckner; J. Schlick; D. Zühlke; M. Mellado
A New Concept for Programming Intelligent Microassembly Processes. In: *Proceedings of the 36th International Symposium on Robotics (ISR-2005)*, November 29 - December 1, Tokyo, Japan, CD-ROM, 2005.

G. Erbach; M. Jermol; B. Jörg; H. Uszkoreit; M. Grobelnik
Network Approaches to Current Research Information Systems. In: P. Cunningham; M. Cunningham (Eds.), *Innovation and the Knowledge Economy: Issues, Applications, Case Studies*, IOS Press, 2005.

T. Eymann; F. Klügl; W. Lamersdorf; M. Klusch; M. N. Huhns (Eds.)
Multiagent System Technologies. Proceedings of the 3rd German Conference (MATES-2005), September 11-13, Koblenz, Germany, LNAI 3550, Springer, 2005.

K. Fischer; M. Florian; T. Malsch (Eds.)
Socionics. Scalability of Complex Social Systems. State-of-the-Art-Survey, LNAI 3413, Springer, 2005.

G. Gogvadze; A. González Palomo; E. Melis
Interactivity of Exercises in ActiveMath. In: C.-K. Looi; D. Jonassen; M. Ikeda (Eds.), *Towards Sustainable and Scalable Educational Innovations Informed by the Learning Sciences Sharing Good Practices of Research, Experimentation and Innovation*. *Frontiers in Artificial Intelligence and Applications*, Vol. 133, IOS Press, 2005.

D. Hausmann; T. Mossakowski; L. Schröder
A Coalgebraic Approach to the Semantics of the Ambient Calculus. In: J.L. Fiadeiro; N. Harman; M. Roggenbach; J. Rutten (Eds.), *Algebra and Coalgebra in Computer Science*. 1st International Conference (CALCO-2005), September 3-6, Swansea, UK, Pages 23-46, LNCS 3629, Springer, 2005.

D. Heckmann
Distributed User Modeling for Situated Interaction. In: A. B. Cremers; R. Manthey; P. Martini; V. Steinhage (Eds.), *INFORMATIK 2005 - Informatik LIVE! Band 1, Beiträge der 35. Jahrestagung der Gesellschaft für Informatik e.V. (GI)*, September 19-22, Bonn, Germany, Pages 266-270, Lecture Notes in Informatics (LNI), Volume P-67, GI-Edition, 2005.

H. Holz; H. Maus; A. Bernardi; O. Rostanin
From Lightweight, Proactive Information Delivery to Business Process-Oriented Knowledge Management. In: *Journal of Universal Knowledge Management (JUUKM)* (Special Issue on Knowledge Infrastructures for the Support of Knowledge Intensive Business Processes), Vol. 0, No. 2, Pages 101-127, Know-Center, 2005.

M. Homik; E. Melis
ePortfolios in ActiveMath. In: *Proceedings of ePortfolio 2005*, October 26-28, Cambridge, UK, Pages 213-222, Eifel, 2005.

B. Kempe; N. Pfeifer; M. Löckelt
Generating Verbal and Nonverbal Utterances for Virtual Characters. In: *Proceedings of the 3rd International Conference on Virtual Storytelling (ICVS-2005)*, November 30 - December 2, Strasbourg, France, Pages 73-76, LNCS 3805, Springer, 2005.

D. Keyser; T. M. Breuel
Optimal Line and Arc Detection on Run-Length Representations. In: *Proceedings of the 6th IAPR International Workshop on Graphics Recognition (GREC-2005)*, August 25-26, Hong Kong, China, Pages 17-23, 2005.

D. Keyser; C. H. Lampert; T. M. Breuel
Color Image Dequantization by Constrained Diffusion. In: R. Eschbach; G. G. Marcu (Eds.), *Color Imaging XI: Processing, Hardcopy, and Applications*. Proceedings of the IS&T / SPIE 18th Annual Symposium on Electronic Imaging (SPIE-EI-2006), January 15-19, San Jose, CA, USA, Pages 6058.03.01-6058.03.10, Vol. 6058, SPIE, 2006.

M. Klusch; A. Gerber; M. Schmidt
Semantic Web Service Composition Planning with OWLS-Xplan. In: *Proceedings of the 1st International AAAI Fall Symposium on Agents and the Semantic Web (AAAI-FSS05)*, November 4-6, Arlington VA, USA, Pages 55-62, 2005.

R. Krimmer; M. Volkamer
Bits or Paper? Comparing Remote Electronic Voting to Postal Voting. In: *Electronic Government - Workshop and Poster Proceedings of the 4th International EG0V Conference (EG0V-2005)* (Workshops and Posters), August 22-26, Copenhagen, Denmark, Pages 225-232, Trauner Verlag, 2005.

G.-J. M. Kruijff
Dependency Grammar. In: K. Brown (Ed.), *The Encyclopedia of Language and Linguistics*, 2nd Edition, Elsevier Publishers, 2005.

M. Kruppa; I. Aslan
Parallel Presentations for Heterogenous User Groups - An Initial User Study. In: M. Maybury; O. Stock; W. Wahlster (Eds.), *Intelligent Technologies for Interactive Entertainment*. Proceedings of the 1st International Conference (INTEAIN-2005), November 30 - December 2, Madonna di Campiglio, Italy, Pages 54-63, LNAI 3814, Springer, 2005.

F. Kupsch; D. Werth
Integrating Business Processes with Peer-to-Peer Technology. In: D. Konstantas; J.P. Bourrières; M. Léonard; N. Boudjlida (Eds.), *Interoperability of Enterprise Software and Applications*. Proceedings of the 1st International Conference (INTEROP-ESA-2005), February 23-25, 2005, Geneva, Switzerland, Pages 277-288, Springer, 2006.

C. H. Lampert; T. Braun; A. Ulges; D. Keyser; T. M. Breuel
Oblivious Document Capture and Real-Time Retrieval. In: *Proceedings of the 1st International Workshop on Camera Based Document Analysis and Recognition (CBDAR-2005)*, August 29, Seoul, South Korea, Pages 79-86, 2005.

M. Löckelt
Action Planning for Virtual Human Performances. In: *Proceedings of the 3rd International Conference on Virtual Storytelling (ICVS-2005)*, November 30 - December 02, Strasbourg, France, Pages 53-62, LNCS 3805, Springer, 2005.

M. Löckelt; E. Pecourt; N. Pfeifer
Balancing Narrative Control and Autonomy for Virtual Characters in a Game Scenario. In: M. Maybury; O. Stock; W. Wahlster (Eds.), *Intelligent Technologies for Interactive Entertainment*. Proceedings of the 1st International Conference (INTEAIN-2005), November 30 - December 2, Madonna di Campiglio, Italy, Pages 251-255, LNAI 3814, Springer, 2005.

S. Manzoor; P. Libbrecht; C. Ullrich; E. Melis
Authoring Presentation for OpenMath. In: M. Kohlhasse (Ed.), *Proceedings of the 4th International Conference on Mathematical Knowledge Management (MKM-2005)*, Revised Selected Papers, July 15-17, Bremen, Germany, Pages 33-48, LNAI 3863, Springer, 2006.

T. Matheis; D. Werth
Konzeption und Potenzial eines kollaborativen Data-Warehouse-Systems. In: A.-W. Scheer (Ed.), *Veröffentlichungen des Instituts für Wirtschaftsinformatik*, Heft 185, 2005.

M. Maybury; O. Stock; W. Wahlster (Eds.)
Intelligent Technologies for Interactive Entertainment. In: M. Maybury; O. Stock; W. Wahlster (Eds.), *Intelligent Technologies for Interactive Entertainment*. Proceedings of the 1st International Conference (INTEAIN-2005), November 30 - December 2, Madonna di Campiglio, Italy, LNAI 3814, Springer, 2005.



- A. Meier; E. Melis
Impasse-Driven Reasoning in Proof Planning. In: M. Kohlhase (Ed.). Proceedings of the 4th International Conference on Mathematical Knowledge Management (MKM-2005). Revised Selected Papers, July 15-17, Bremen, Germany, Pages 143-158, LNAI 3863, Springer, 2006.
- E. Melis; P. Kärgel; M. Hornik
Interactive Concept Mapping in ActiveMath (iCMap). In: J.M. Haake; U. Lucke; D. Tavangarian (Eds.). Proceedings der 3. Deutschen eLearning Fachtagung Informatik (DeLFI-2005), September 13-16, Rostock, Germany, Pages 247-258, Vol. 66, Logos Verlag, 2005.
- E. Melis; J. Siekmann
e-Learning Logic and Mathematics: What We Have and What We Still Need. In: S. Artémov; H. Barringer; A.S. d'Avila Garcez; L.C. Lamb; J. Woods (Eds.). We will Show Them! Essays in Honor of Dov Gabbay on his 60. Birthday. Vol. 2, Pages 639-662, College Publications, 2005.
- M. Memmel
Adaptivity with Multidimensional Learning Objects. In: Proceedings of the World Conference on E-Learning in Corporate, Government, Healthcare, & Higher Education (E-Learn-2005), October 25-28, Vancouver, Canada, Pages 2221-2230, 2005.
- J. Mendling; J. Ziemann
EPK-Visualisierung von BPEL4WS Prozessdefinitionen. In: 7. Workshop Software-Reengineering (WSR-2005), Mai 2-4, Bad Honnef, Germany, Softwaretechnik-Trends, Bd. 25, Heft 2, GI, 2005.
http://pi.informatik.uni-siegen.de/st/25_2WSR05/PDF/mendingZiemann.pdf
- J. Mendling; J. Ziemann
Transformation of BPEL Processes to EPCs. In: Proceedings des 4. Workshops der GI zum Geschäftsprozessmanagement mit Ereignisgesteuerten Prozessketten (EPK-2005), December 8-9, Hamburg, Germany, Pages 41-53, 2005.
- M. Mühlbrock; O. Scheuer
Using Action Analysis in ActiveMath to Estimate Student Motivation. In: A. Jedlitschka; B. Brandherm (Eds.). Proceedings of the 13th Annual Workshop of the SIG Adaptivity and User Modeling in Interactive Systems (ABIS-2005), October 10-12, Saarbrücken, Germany, Pages 56-60, 2005.
- C. Müller
Estimating the Acoustic Context to Improve Speaker Classification. In: Presented as Poster at the 5th International and Interdisciplinary Conference on Modeling and Using Context (CONTEXT-2005), July 5-8, Paris, France, 2005.
- C. Müller
Zweistufige kontextsensitive Sprecherklassifikation am Beispiel von Alter und Geschlecht. Dissertation, Universität des Saarlandes, 2005.
- A. Ndaiye; P. Gebhard; M. Kipp; M. Klesen; M. Schneider; W. Wahlster
Ambient Intelligence in Eduainment: Tangible Interaction with Life-Like Exhibit Guides. In: M. Maybury; D. Stock; W. Wahlster (Eds.). Intelligent Technologies for Interactive Entertainment. Proceedings of the 1st International Conference (INTETAIN-2005), November 30 - December 2, Madonna di Campiglio, Italy, Pages 104-113, LNAI 3814, Springer, 2005.
- G. Neumann; B. Sacaleanu
DFKI's IT-lab at the CLEF 2005 Multiple Language Question Answering Track. In: Working Notes for the CLEF 2005 Workshop (CLEF-2005), September 21-23, Vienna, Austria, Pages 1-8, DELOS, 2005.
- N. Pfeleger; M. Löckelt
Synchronizing Dialogue Contributions of Human Users and Virtual Characters in a Virtual Reality Environment. In: Proceedings of 9th European Conference on Speech Communication and Technology (INTERSPEECH-2005), September 4-8, Lisbon, Portugal, Pages 2773-2776, 2005.
- J. Piskorski
On Compact Storage Models for Gazetteers. In: Proceedings of the 5th International Workshop on Finite-State Methods and Natural Language Processing (FSM/NLP-2005), September 1-2, Helsinki, Finland, Preproceedings, CD-ROM, 2005.
- E.G. Pohlmann; A. Bödder; D. Zühlke
SmartFactory-KL - Informationstechnik für die Fabrik der Zukunft. In: atp - Automatisierungstechnische Praxis, Vol. 47, No. 12, Pages 48-52, Oldenbourg Industrieverlag, 2005.
- E. Ras; M. Memmel; S. Weibelzahl
Integration of E-Learning and Knowledge Management - Barriers, Solutions and Future Issues. In: Professional Knowledge Management. Proceedings of the 3rd Biennial Conference (WM-2005), April 10-13, Kaiserslautern, Germany, Pages 15-164, LNAI 3782, Springer, 2005.
- G. Reis
Hardware Accelerated Bézier Patch Renderer. In: J.J. Villanueva (Ed.). Proceedings of the 5th IASTED International Conference on Visualization, Imaging, and Image Processing (VIIP-2005), September 7-9, Benidorm, Spain, Pages 622-627, ACTA Press, 2005.
- N. Reithinger; S. Bergweiler; R. Engel; G. Herzog; N. Pfeleger; M. Romanelli; D. Sonntag
A Look Under the Hood: Design and Development of the First SmartWeb System Demonstrator. In: Proceedings of the 7th International Conference on Multimodal Interfaces (ICMI-2005), October 3-6, Trento, Italy, Pages 159-166, ACM Press, 2005.
- N. Reithinger; D. Fedeler; A. Kumar; C. Lauer; E. Pecourt; L. Romary
MIAMM: A Multimodal Dialogue System Using Haptics. In: J. van Kuppevelt; L. Dybkjaer; N.O. Bersens (Eds.). Advances in Natural Multimodal Dialogue Systems. Text, Speech and Technology Series, Vol. 30, Pages 307-332, Springer, 2005.
- N. Reithinger; E. Pecourt; M. Nikolova
Meta-Data for Interactive Storytelling. In: Proceedings of the 3rd International Conference on Virtual Storytelling (ICVS-2005), November 30 - December 02, Strasbourg, France, Pages 172-175, Springer, 2005.
- U.V. Riss; A. Rickayzen; H. Maus; W.M.P. van der Aalst
Challenges for Business Process and Task Management. In: Journal of Universal Knowledge Management (J.UKM), Vol. 0, No. 2, Pages 77-100, Know-Center, 2005.
http://www.jukm.org/jukm_0_2/risr
- T. Röfer
From Perception to Action in the Sony Four-Legged Robot League. In: R. Rojas (Ed.). It - Information Technology. Special Issue on Autonomous Robotic Soccer, Vol. 47, No. 5, Pages 266-273, Oldenbourg Wissenschaftsverlag, 2005.
- T. Röfer; O. von Stryk
Softwarearchitektur: ein Erfolgsfaktor beim Roboterfußball. In: OBJEKTSpektrum, Heft 4/2005, Pages 31-32, 2005.
- A.-W. Scheer; W. Jost; D. Werth; F. Erbach
Prozessmanagement durch Geschäftsregeln. In: Controlling, Nr. 8/9, Pages 459-466, 2005.
- A.-W. Scheer; D. Werth
Geschäftsprozessmanagement und Geschäftsregeln. In: A.-W. Scheer (Ed.). Veröffentlichungen des Instituts für Wirtschaftsinformatik, Saarbrücken, Nr.183, 2005.
- A. Schutz; P. Buitelaar
RelExt: A Tool for Relation Extraction from Text in Ontology Extension. In: Y. Gil; E. Motta; R. Benjamins; M.A. Musen (Eds.). The Semantic Web. Proceedings of the 4th International Semantic Web Conference (ISWC-2005), November 6-10, Galway, Ireland, Pages 593-606, LNCS 3729, Springer, 2005.
- D. Shen; D. Klakow; G.-J. M. Kruijff
Exploring Syntactic Relation Patterns for Question Answering. In: Proceedings of the 2nd International Symposium on Natural Language Processing (IJCNLP-2005), October 11-13, Jeju Island, South Korea, Pages 507-518, LNCS 3651, Springer, 2005.
- A. Soller; A. Martínez; P. Jermann; M. Mühlbrock
From Mirroring to Guiding: A Review of State of the Art Technology for Supporting Collaborative Learning. In: International Journal on Artificial Intelligence in Education (IJAIED), Vol. 15, No. 4, Pages 261-290, 2005.
- L. Spassova; R. Wasinger; J. Baus; A. Krüger
Product Associated Displays in a Shopping Scenario. In: Proceedings of the 4th IEEE and ACM International Symposium on Mixed and Augmented Reality (ISMAR-2005), October 5-8, Vrenna, Austria, Pages 210-211, IEEE Computer Society, 2005.
- K. Spreyer; A. Frank
The TIGER 700 RMRS Bank: RMRS Construction from Dependencies. In: Proceedings of the 6th International Workshop on Linguistically Interpreted Corpora (LINC-2005) (at IJCNLP-2005), October 15, Jeju Island, South Korea, Pages 1-10, 2005.
- A. Stahl
Learning Similarity Measures: A Formal View Based on a Generalized CBR Model. In: Proceedings of the 6th International Conference on Case-Based Reasoning (ICCBR-2005), August 23-26, Chicago, IL, USA, Pages 507-521, Springer, 2005.
- Q. Turk; M. Schröder; B. Bozkurt; L.M. Arslan
Voice Quality Interpolation for Emotional Text-to-Speech Synthesis. In: Proceedings of the 9th European Conference on Speech Communication and Technology (INTERSPEECH-2005), September 4-8, Lisbon, Portugal, Pages 797-800, 2005.
- A. Ulges; C.H. Lampert; T.M. Breuel
Document Image Dewatering Using Robust Estimation of Curled Text Lines. In: 8th International Conference on Document Analysis and Recognition (ICDAR-2005), August 29 - September 1, Seoul, South Korea, Pages 1001-1005, 2005.
- C. Ullrich
Course Generation Based on HTN Planning. In: A. Jedlitschka; B. Brandherm (Eds.). Proceedings of the 13th Annual Workshop of the SIG Adaptivity and User Modeling in Interactive Systems (ABIS-2005), October 10-12, Saarbrücken, Germany, Pages 74-79, 2005.
- D. Walter; L. Schröder; T. Mossakowski
Parameterized Exceptions. In: J.L. Fiadeiro; N. Harman; M. Roggenbach; J. Rutten (Eds.). Algebra and Coalgebra in Computer Science. 1st International Conference (CALCO-2005), September 3-6, Swansea, UK, Pages 424-438, LNCS 3629, Springer, 2005.
- R. Wasinger; A. Krüger
Modality Preferences in an Instrumented Environment. In: Proceedings of the 11th International Conference on Intelligent User Interfaces (IUI-2006), January 29 - February 1, 2006, Sydney, Australia, Pages 336-338, ACM Press, 2006.
- R. Wasinger; W. Wahlster
The Anthropomorphized Product Shelf: Symmetric Multimodal Interaction with Instrumented Environments. In: E. Aarts; J. L. Encarnação (Eds.). True Visions. The Emergence of Ambient Intelligence. Springer, 2006.
- D. Werth
E-Government Interoperability. In: M. Khosrow-Pour (Ed.). Encyclopedia of Information Science and Technology, Pages 985-989, Idea Group Reference, 2005.
- J. Wiese; A. Stahl; J. Hansen
Applying and Optimizing Case-based Reasoning for Wastewater Treatment Systems. In: AI Communications, Vol. 18, No. 4, Pages 269-279, IOS Press, 2005.
- M. von Wilamowitz-Moellendorf; C. Müller; A. Jameson; B. Brandherm; T. Schwartz
Recognition of Time Pressure via Physiological Sensors: Is the User's Motion a Help or a Hindrance? In: Proceedings of the Workshop on Adapting the Interaction Style to Affective Factors in Conjunction with the User Modeling Conference (UM-2005), July 24-25, Edinburgh, UK, Pages 43-48, 2005.
- O. Wlirjadi; T. M. Breuel
Approximate Separable 3D Anisotropic Gauss Filter. In: Proceedings of the IEEE International Conference on Image Processing 2005 (ICIP-2005), September 11-14, Genua, Italy, Pages 149-152, Vol. 2, IEEE, 2005.
- J. Ziemann; J. Mendling
Transformation of BPEL Processes to EPCs. In: R. Mosca; F. Tonelli; R. Melioli (Eds.). Proceedings of the 7th International Conference on the Modern Information Technology in the Innovation Processes of the Industrial Enterprises (MITIP-2005), September 8-9, Genua, Italy, 2005.
- J. Ziemann; J. Mendling
Transformation of BPEL Processes to EPCs. In: M. Nüttgens; F.J. Rump (Eds.). Proceedings. Geschäftsprozessmanagement mit Ereignisgesteuerten Prozessketten, 4. Workshop GI und Treffen Arbeitskreis Geschäftsprozessmanagement mit Ereignisgesteuerten Prozessketten (WI-EPK-2005), Dezember 8-9, Hamburg, Germany, Pages 41-53, 2005.
- D. Zühlke
Der Intelligente Versager. Das Mensch-Technik-Dilemma. Primus Verlag, 2005.
- D. Zühlke; A. Bödder
USEWARE-Engineering - Mensch-Maschine-Interaktion als Herausforderung zukünftiger Technikentwicklungen. In: Forum Ware, Vol. 33, No. 1-4, Pages 43-47, 2005.



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Kaiserslautern Site

The German Research Center for Artificial Intelligence (DFKI GmbH), with facilities in Kaiserslautern and Saarbrücken, is the country's leading research center in the area of innovative software technology for commercial

application. In the international scientific community, DFKI is recognized as one of the most important "Centers of Excellence" in the world for its proven ability to rapidly bring leading edge research to commercially relevant application solutions.

DFKI was founded in 1988 as a nonprofit organization by several renowned German IT companies and the merger of two large, research facilities. Since then, DFKI GmbH has established a reputation for proactive and customer oriented work and is known both nationally and internationally as a competent and reliable partner for commercial innovation.

Because of the increasingly short cycles of innovation in the field of information technology, the lines between research, application related development, and conversion to products are becoming blurred. This is why DFKI projects typically include the entire spectrum from basic application-based research to market and customer oriented development of product functions.

DFKI GmbH is managed by Professor Wolfgang Wahlster (Chairman and CEO) and Dr. Walter G. Olthoff (CFO).

The projects at the DFKI are organized under one of the following six areas of research:

- ▶ Image Understanding and Pattern Recognition (Director: Professor Thomas Breuel)
- ▶ Knowledge Management (Director: Professor Andreas Dengel)
- ▶ Intelligent Visualization and Simulation Systems (Director: Professor Hans Hagen)
- ▶ Deduction and Multiagent Systems (Director: Professor Jörg Siekmann)
- ▶ Language Technologies (Director: Professor Hans Uszkoreit)
- ▶ Intelligent User Interfaces (Director: Professor Wolfgang Wahlster)

Also integrated within DFKI are the Institute for Information Systems (IWi) directed by Professor Peter Loos, and the Center for Human-Machine Interaction (ZMMI), under the leadership of Professor Detlef Zühlke. The DFKI-Lab under leadership of Professor Kirchner and Professor Krieg-Brückner is currently established in Bremen, Germany and will



DFKI-Lab Bremen

focus on the areas of robotics and safe and secure systems. The purpose of the transfer centers listed below is to make the scientific results of DFKI research available to commercial applications:

- ▶ AICommerce – Intelligence for eBusiness
- ▶ SISO – Towards Secure Software
- ▶ smartLab – Intelligent Assistance
- ▶ TransLect – Language Technology at Work

At the DFKI competence centers, there is a broad concentration of technological and technical know-how, and the purpose is the management of important scientific problems from the following subject areas:

- ▶ Computational Culture
- ▶ eLearning
- ▶ Language Technologies
- ▶ Semantic Web
- ▶ Virtual Office of the Future

In the fiscal year 2005, the research institute managed an overall budget of approximately € 19.0 million and achieved a positive net income for another consecutive year. In 2005, DFKI welcomed Bertelsmann and Microsoft to its list of corporate shareholders, which also includes DaimlerChrysler, Deutsche Telekom AG, SAP, and IDS Scheer.



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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 65 ongoing projects. Project progress is checked once a year by an independent, international group of respected experts. In addition to the BMBF grants for large, joint research projects substantial contracts from business enterprises could also be acquired in 2004. The successful transfer of DFKI research results to functional products is continuing. The DFKI model of 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. In December 2003, DFKI founded together with the Center for Scientific and Technological Research, ITC-irst, the Center for the Evaluation of Languages and Technologies (CELCT) in Trento. The company also holds shares in XtraMind Technologies GmbH.

Intelligent Solutions

for the

Knowledge Society

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- Multimodal user interfaces and language understanding
- Intelligent visualization and digital simulation
- Image understanding and pattern recognition
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- Safe and secure cognitive systems
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