# Newsletter 2/2004

German Research Center for Artificial Intelligence

Photo: Andrea Bienert, Bundesbildstelle

## DFKI is a Partner for Innovation

Ideen erfolgreich machen
Partner für Innovation

14

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# First German Spin-off Prize Goes to DFKI

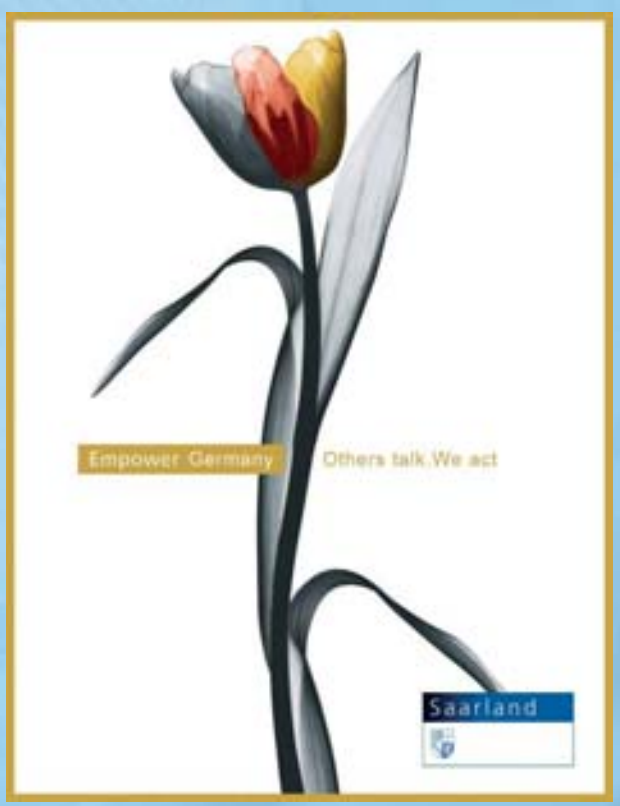



The DFKI and the research group FORGIS received the first prize ever awarded in Germany to recognize the contributions of research institutes and academic departments in the category, "Highest number of spin-off companies and number of jobs created". The Minister President of the State of Saarland, Peter Müller, initiated the prize which was announced on June 30, 2004 at the conference, „Empower Germany – Others talk. We act“ (www.empower-deutschland.de). Since 1995, the DFKI, with an average staff numbering 140, has helped to create 28 spin-offs and more than 650 jobs. Attributed to the Institute for Information Systems at DFKI, directed by Professor August-Wilhelm Scheer, are 12 of the 28 spin-offs encompassing 350 positions. An excerpt from the official government text read at the awards ceremony in June states, "This prize focuses attention on the special contribution made by DFKI towards a positive entrepreneurial climate." Mr. Jürgen Schreier, State Minister for Education, Culture and Science, made the presentation at the Saarbrücken Convention Center.

Prof. Wahlster; Minister President Müller; Prof. Seibert, FORGIS

“The aim of DFKI is to create at least three high value jobs for every researcher within a ten year period and this goal was achieved", according to Professor Wolfgang Wahlster, Director of DFKI and member of the German Chancellor's initiative "Partners for Innovation". DFKI also boasts an impressive record of success in the development of promising young talent and technology transfer: 38 former employees are now professors and an equal number have moved on to take leadership positions in industry. Professor Wahlster said, "The competitive nature of our research, which is organized along the successful model of the medium sized company, is very dynamic and can react quickly to change - like a racing yacht when compared to a large, research tanker ship. While such a foundation is essential, flexibility is required to stay ahead of the rapid pace being set in the field of application development."

The very successful, award winning strategy of DFKI is the result of a forward looking research organization and confirms the concept of public-private partnership as a winning combination for government, business, and science. In 1998, DFKI established special guidance for a systematic approach to support the spin-off and founding of new companies and to help motivate employees to take the first steps towards becoming independent business entrepreneurs. Advice is one part of the equation and firm actions are the other part in encouraging and supporting an innovative spirit. The management of DFKI discusses the business idea and a funding plan with the initiators, accompanies them in the search for interesting partners, and even implements personnel actions that assure the founders a smooth start. DFKI enthusiastically encourages employees, through such options as leaves of absence and pre-approved rehiring agreements, to develop their business ideas from a rough plan to start up. The manager of a




DFKI spin-off is given an opportunity to arrange a part time employment contract for up to three years - actively participating on DFKI projects while, at the same time, attending to the constant demands of building a new company. Of course, a general performance agreement is necessary to account for the special requirements of knowledge transfer from research to commercial use. DFKI, currently with 175 highly qualified researchers, stands as a type of catalyst for talented scientists to pursue careers as business entrepreneurs, industrial researchers, or graduate level educators.

# Human-Computer Interaction from DFKI to the Chancellor's Ideas Park

At the "Government Open House" held at the Office of the Federal Chancellor on August 21-22, 2004, DFKI was invited to present Human-Computer Innovations in the areas of mobile broadband communication and speech technology.

The Office of the Federal Chancellor became an "Ideas Park". More then 30,000 visitors enjoyed the weekend in the Chancellor's garden and discovered how ideas grow into product innovations that change the shape of our living and working worlds.


As a "Partner for Innovation" (a program initiated by the Chancellor last January) - DFKI presented innovative live-demonstrations that combined speech technology with intelligent, mobile broadband communications.

Chancellor Gerhard Schröder stopped by to get a personal impression of the "Partners for Innovation" exhibit area. In addition to the areas of "live+work", and "learn+discover" , he was

also interested in the soccer playing robots from the Robo-Cup Team of Humboldt-University and the DFKI exhibit in the theme park "think+explore". The Chancellor was impressed by the innovative application scenarios in which UMTS technology, digital recording, and speech technology were integrated. For example, he was shown how a networked, home entertainment center can be remotely controlled from another location: The UMTS device becomes a mobile remote control with a mini-monitor for the home hard drive recorder.

These and other developments from the UMTS Doit Demonstration and Evaluation Center at DFKI (www.umts-doit.de) were very popular with the Chancellor and many other visitors. He was able to watch the Robo-Cup game that was running in parallel at the Chancellor's garden live on a UMTS end device and even select the camera angles himself. A movable webcam broadcast the match in real-time on the cell phone display.

The commercial opportunities for intelligent broadband applications are found not only in the entertainment sector. For example, components of the electronic cottage, such as appliances, lights, and shutters can be monitored and controlled from any location per voice command. A camera follows the activity at the location and sends a streamingvideo to the UMTS cell phone, which lets the user see how his commands are carried out.

Further potential benefits of speech technology were illustrated by research results and commercial products from the German Demonstration Center for Speech and Language Technology at DFKI (www.lt-demo.org) which is funded by the Federal Ministry of Education and Research (BMBF). Telephone dialog systems that accept verbal queries; databases that find information, for example, about stock prices, weather, or the national soccer league, deliver the desired answers telephonically to the user. Voice controlled systems and voice-browsing components allow direct interaction with the computer. Virtual emotional presentation agents answer with artificial voices.

"The Human-Computer Innovation from DFKI serves as an example of the entire process of innovation, from basic research to marketable products. Only when we succeed in integrating all the steps in this process all the way through to commercial success, have we achieved the desired value creation and with it, new jobs," said Professor Wahlster. "Our DFKI model for success - a public-private partnership for innovation-oriented research - was recently selected as the recipient of the first ever award of the German Spin-Off Prize, because we succeeded in creating three new skilled jobs for each scientific research position with the founding of 37 successful entrepreneurial businesses."

**Additional information is available at**
www.umts-doit.de
www.lt-demo.org

# Mission Statement for „Partners for Innovation“ 5

Ideen erfolgreich machen
Partner für Innovation

## Our Initiative

We are an initiative jointly set up by Germany's government and business sectors, the scientific community, and trade unions.

The power to innovate has always been one of Germany's strengths. And yet, our country must become even more innovative if it intends to retain its globally leading position. Pessimism and an over-inflated fear of risk are paralyzing the German economy and impeding the conversion of ideas into marketable technologies. We need more openness to change and new concepts, more optimism, bold entrepreneurial thinking, and a climate conducive to growth. That is why we are “taking the initiative.”

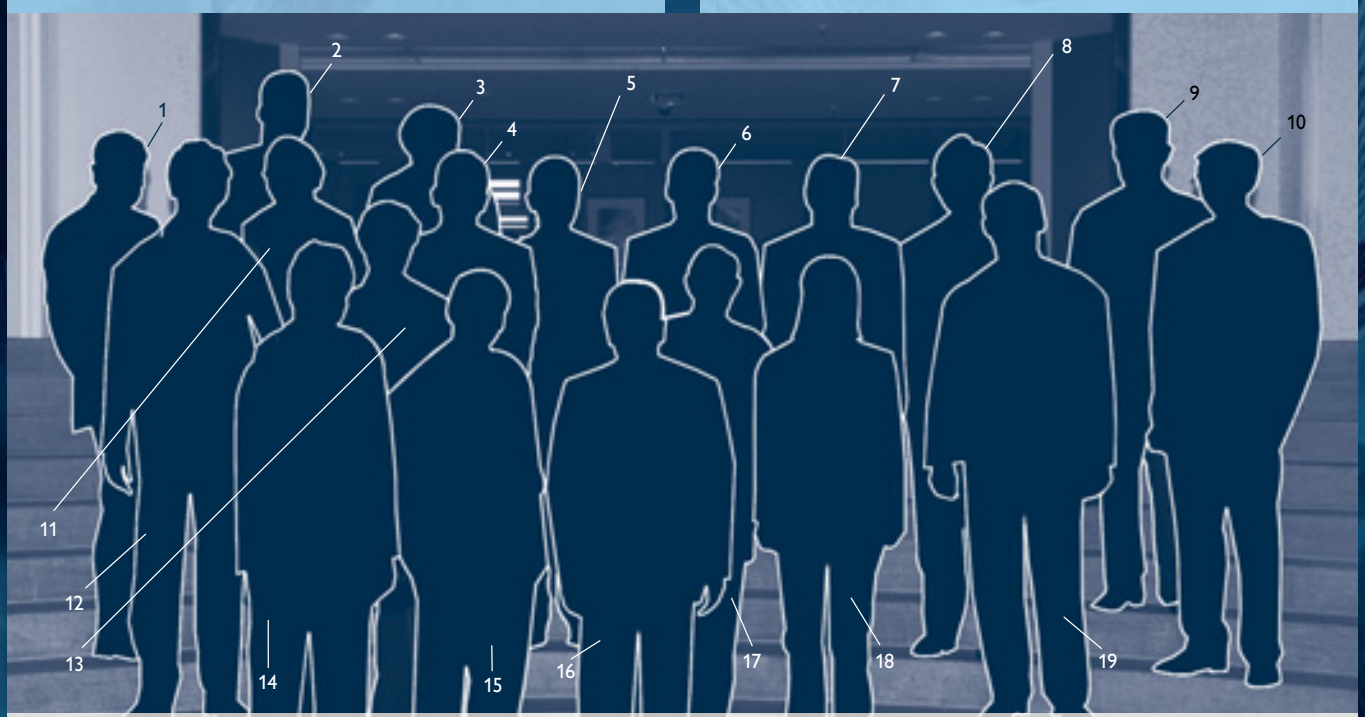
## Our Goals

We want to get people in Germany excited about innovative ideas and inventions. We will boost people's confidence in their individual skills and abilities, encourage change, and enliven creative impulses. We strive to improve the conditions that foster innovation in Germany, as we point the way to an innovation-friendly competitive environment and work to diminish bureaucratic obstacles. We seek to encourage and support the implementation of innovative concepts in a variety of important areas - from human knowledge capital to mobility in the global society; from networked environments to service providing. We present promising projects, recommend courses of action, and initiate pioneering projects.

## Our Vision

Germany is a knowledge society and a global leader in the development and application of new technologies. At all levels of our society, this is a culture rich in ideas, where motivated and highly educated individuals actively reshape and pursue new paths. Germany is fully utilizing its potential. Innovation systematically leads to investment, success in global markets, and new jobs. Realizing this innovation safeguards prosperity and social security - for us and for future generations.

**Additional information is available at**
www.dfki.de/partner_fuer_innovation




1. Wolfgang Clement, Federal Minister of Economics and Labour; 2. Prof. Utz Claassen, CEO EnBW Energie Baden-Württemberg AG; 3. Michael Sommer, President DGB; 4. Kai-Uwe Ricke, CEO Deutsche Telekom AG; 5. Heinz Putzhammer, VP DGB; 6. Heinrich von Pierer, CEO Siemens AG; 7. Walter Steinmeier, Federal Chancellery Chief-of-Staff; 8. Eggert Voscherau, Vice Chairman of the Board of Executive Directors BASF; 9. Prof. Hans-Jörg Bullinger, President of Fraunhofer-Gesellschaft; 10. Prof. Joachim Milberg, President Acatech - Chairman of the Supervisory Board BMW; 11. Prof. Roland Berger, Chairman of the Supervisory Board Roland Berger Strategy Consultants; 12. Wolfgang Mayrhuber, CEO Deutsche Lufthansa AG; 13. Hubertus Erlen, CEO Schering AG; 14. Walter Raizner, CEO IBM Deutschland GmbH; 15. Dr. Gunter Thielen, CEO Bertelsmann AG; 16. Gerhard Schröder, Chancellor; 17. Prof. Jürgen Mlynek, President of Humboldt University, Berlin; 18. Edelgard Bulmahn, Federal Minister of Education and Research; 19. Prof. Wolfgang Wahlster, CEO DFKI.

# @VISOR

## Adaptive Dynamic Visual Semantic Organizing

Most of the approaches today in the field of Man-Machine Interface or Human Computer Interaction (HCI), focus the research effort into those areas where computers can perform better than humans. This generally means the user must adjust to the interface and not the other way around. Such approaches do not consider the fact that while computers may operate very efficiently in such tasks as searching and structuring large volumes of data, the human brain, because of its visual and tactile abilities, tends to organize data visually and is thus able to quickly and easily recognize relationships between different data - the so-called meta-data.

**@VISOR** is an interdisciplinary cooperation between the following DFKI research departments: Intelligent Visualization and Simulation (Head: Professor Hans Hagen), Knowledge Management (Head: Professor Andreas Dengel) and Image Understanding and Pattern Recognition (Head: Professor Thomas Breuel).

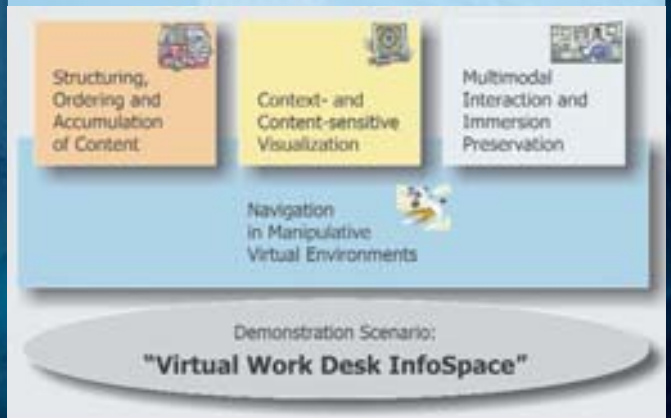
The vision for the research effort of **@VISOR** is the creation of a customizable virtual world, one which addresses these perceptive abilities and breaks down the barriers between human activity and its technical replication. The term, immersion - a synonym for uninterrupted and smooth flowing work processes based on elements of multimodal interaction and navigation - is of central importance here.

Two central questions in this context are:

- Where are human abilities superior to those of computers and vice versa?
- How can the advantages of each be combined to minimize the respective disadvantages or even neutralize them?

Because the sheer volume of general information would exceed the scope of the project, the research effort is concentrated on a single, virtual, and document-based information room. The size of this information room is sufficiently large to circumscribe all objectives and to evaluate respective research results. For example, research includes efficient searches through documents and document batches, organization and classification of documents, and interactive changes in priorities linked to the reorganization of the respective document room. The demonstrator for **@VISOR** is the virtual desk which models a virtual and document based 3D-information room and provides innovative support when processing documents.

The connection of knowledge structures and their visualization is a central aim of **@VISOR**. The work contributes to the current topic of business process optimization in that more goals may be attempted with fewer resources.

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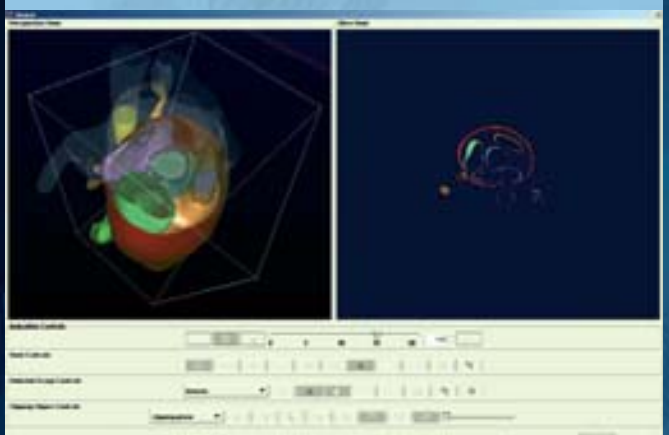
# Virtual Echocardiography

## An intelligent tutoring system for medical training



The echocardiography is an image producing, ultrasound procedure which displays the heart and surrounding vessels in cross sectional format. Ultrasound is a mature, cost effective and non-invasive diagnostic tool that is now considered routine when performing examinations for heart disease. The pace of routine operations at the clinics severely limits the time available to the medical staff for training students. As a rule, after the first year of medical school, students have only diagnosed 80% of the most common clinical cases. For these reasons, virtual training and practice will play an increasingly important role in the formal study of medicine in the future.

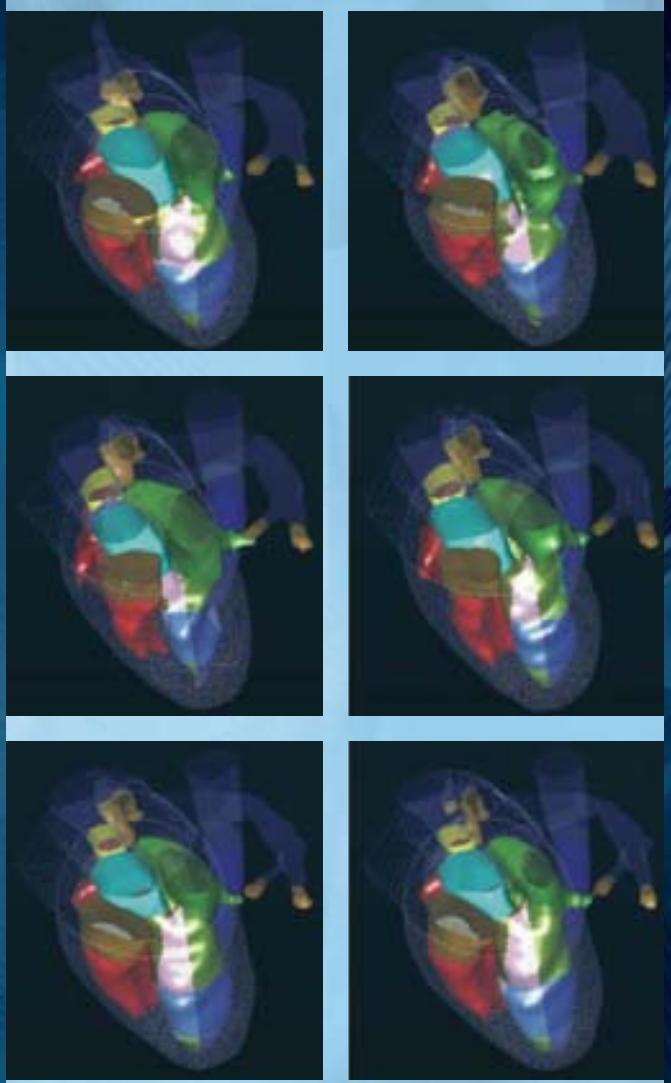


A dynamic 3D model of the human heart is automatically generated based on the electronic findings of the echo cardiograph and the ontology. Right: Using a clippling-section, a partially transparent model of the heart can be displayed."

The Intelligent Visualization and Simulation department at DFKI is working on new applications and technical solutions for a virtual examination environment for training in echo-cardiography techniques. Currently, there is a prototype under development for an intelligent educational system which consists of several different components.

At the core of the system is the medical ontology of the human heart which is used to create the correctly timed animations of a virtual heart that has geometrical representations of all individual anatomical structures. In the field of artificial intelligence, ontology refers to a formally defined system of things or concepts and the relationships among them. A supplemental ontology of medical findings describes all data that could possibly be detected by an echo cardiograph examination. Based on this data ontology, the EchoFindingModule was developed that permits the entry of standard cardiological findings.

In the virtual training scenario, the tutor is able to select a cardiological finding from the EchoFindingModule. A dynamic, 3D-model including the pathological structures associated with the condition is automatically prepared with the aid of the ontology of the heart. This model is then presented to the student in a virtual environment. Students are able to diagnose the virtual heart in a spatial representation and enter their findings into the EchoFindingModule. In the basic variant of the system, the tutor will compare the entered report with the original finding he selected. A more advanced version will automatically make the comparison and, in combination with the positioning data from the ultrasound, draw a conclusion about the level of training of the student.



**Additional information is available at**
www.dfki.de/ivs

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# Camera-Based Document Capture

Under the motto of "camera-based document capture" or "Oblivious Document Capture", ODC for short, innovative methods to digitalize documents are being developed in the Image Understanding and Pattern Recognition research group at the DFKI.

One of the systems developed works in stereo mode with two cameras, which are fixed above the user's desk. Combining both pictures, a 3-D model of the captured pages is generated which, using intelligent software, is then converted into a normal picture file. This 3-dimensional modeling is able to recognize and compensate for the curvature of the book surface.Thus the pictures supplied are not distorted, and unwanted relicts from scanning or photocopying bound books are avoided.

A further advantage of ODC over conventional scanners or photocopiers is that the work process at the desk is not interrupted: While the user continues reading, the scanning process carries on in the background. As this process works without direct contact, it is, moreover, highly suitable for digitalizing valuable, fragile or damaged books.

With similar objectives an "intelligent desk" is presently being developed in the group. The PC of the user analyses in real time the processes and gestures of the user while he or she is working. As soon as it detects a document on the desk, a second camera takes a high-resolution picture of the object. Distortion in perspective is also eliminated here using specially developed software. All in all a completely automized process results which demands no interaction whatsoever from the user.

Both options for the digital capturing of documents in use open up vast prospects for workflow and document management without spending any additional time: Documents on the desk can be automatically archived or during a video conference, for example, be transferred directly.

**Additional information is available at**
www.iupr.org

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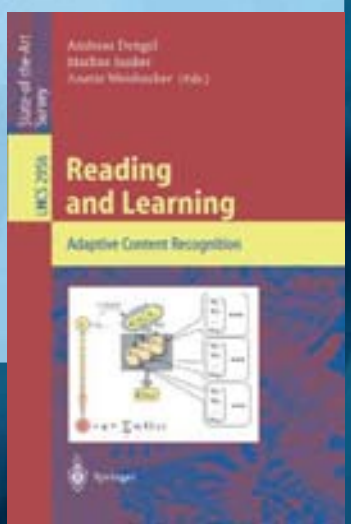
# Book presents important results of Adaptive READ Project

The book is called "Reading and Learning - Adaptive Content Recognition", and is published by Springer Verlag. It presents the most important results of the Adaptive READ Project. The book focuses on concept development to better meet the needs of the user and the implementation of prototypes in the area of document recognition systems. Further, the authors not only introduce the latest technical systems for reading and creating documents, but also some innovative educational techniques in the area of intelligent information retrieval.

The Adaptive READ motto: "Reading and learning - from document to knowledge" brings together leading businessmen and researchers from across the nation to cooperate in the area of document analysis. Adaptive READ is considered to be one of the most successful IT-projects in Germany and is funded by the Federal Ministry of Education and Research (BMBF). According to Professor Andreas Dengel, Project Coordinator, there have been 20 spin-off products and 20 inventor, patent, and trademark protection applications - to include new format readers and new post-automation systems - in areas where German companies are the global leaders.




The book is available for 49.00 € from:

Springer-Verlag

Series: Lecture Notes in Computer Science,
Vol. 2956

Dengel, Andreas R.; Junker, Markus; Weisbecker, Anette (Eds.)

2004, XII, 355 p., Softcover

ISBN: 3-540-21904-8

# Project MedCIRCLE Wins Janssen – Cilag Future Award 2004

The EU funded project, MedCIRCLE has been selected as one of the winners of the Janssen-Cilag Future Award 2004. Frequently referred to as the "Nobel Prize for Health", the award honors organizations or institutions for their innovative work in improving the health industry.

Dr. Thomas Roth-Berghofer, Prof. Gunther Eysenbach, Dr. Christian Thomeczek, Dr. Guido Noelle

The technical management of the project is the responsibility of Dr. Thomas Roth-Berghofer of DFKI-Kaiserslautern who, together with project leader, Professor Gunther Eysenbach, formerly with University Clinic Heidelberg, now at the Centre for Global Health Innovation at Toronto General Hospital, Canada, and Dr. Christian Thomeczek, deputy director of the "Ärztliches Zentrum für Qualität in der Medizin" (ÄZQ), accepted the prize on behalf of the other partners as well (the Centre Hospitalier Universitaire de Rouen (CISMEF), France, and Colegio Oficial de Médicos de Barcelona (COMB), Spain.

Dr. Christian Thomeczek, Dr. Thomas Roth-Berghofer, Bodo H. Hauser, Prof. Gunther Eysenbach, Dr. Guido Noelle, Dr. Marcel Mangen

Professor Eysenbach said of MedCIRCLE, "The aim of the project is to lead consumers to high quality health information websites. Three international project partners have employed the HIDDEL vocabulary, developed in the forerunner project MedCERTAIN, to place quality information into health related websites in a machine readable interface."

DFKI developed the MedCIRCLE Infobar to facilitate consumer access to this reliable information. It assists the end user in his search for top quality health information. The user can specify preferences in English, Spanish, French, or German. When visiting a website, the Infobar first searches for appropriate markings, compares these to the user preferences, and then calculates the trustworthiness factor for the health website and its vendor. The consumer can then decide whether to retrieve detailed information about the website and may even elect to contact the authors of the annotated comments to learn more about their opinion of the site.

Dr. Thomas Roth-Berghofer, DFKI said, "We are very proud that a project under our technical supervision has been selected for such a prestigious prize. This is another confirmation of the excellent research conducted by DFKI."

Following the expiration of EU funding, the project will be transferred to the "MedCIRCLE Collaboration", a non-profit organization of various health portals and virtual libraries that annotate health websites.

The Janssen-Cilag Future Award was initiated in 1997 and awards 15,000 each year to three projects that have the potential to reshape the future of the health industry. A seven member panel of experts from business, medicine, and media evaluates all contributions submitted and selects three projects that demonstrate the potential to give a new impulse to the health industry through novel ideas and significant achievement. The emphasis is not on product discoveries or inventor's patents, rather on social imagination by individuals, organizations and institutions that leads to socially effective innovation that improves the health care of the general population in Germany.


**Additional information is available at**
www.medcircle.org
www.janssen-cilag.de

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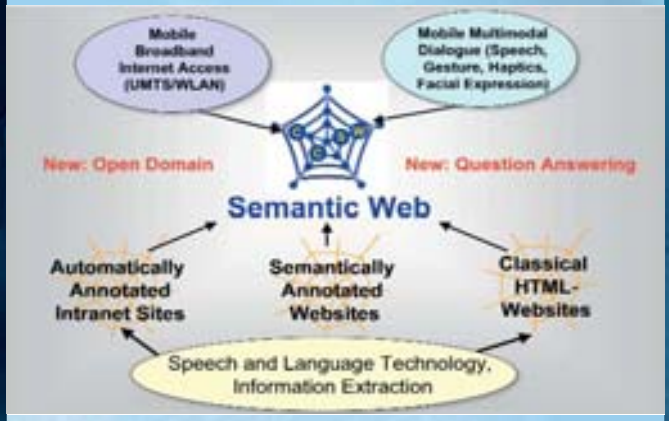
# SmartWeb: A research project that teaches the Internet to think and speak

Research over the Internet will be significantly simpler and more effective in the future. Under the management of DFKI, 14 commercial and scientific partners are working together to develop a software that will enable the Web to understand the content of the queries entered. The joint research project SmartWeb is funded by the Federal Ministry of Education and Research (BMBF) with a 13.7 million research grant for three years.

The combination of several research disciplines, such as communication technology, speech and knowledge processing, and intelligent user interfaces should produce a significant step forward in the implementation of the Semantic Web. For example, to the query, "Who holds the record for most games played as a member of the German national soccer team," the user will no longer be presented a list of pages where the terms, "record, national, team" appear, but rather, the answer: "Lothar Matthäus with 150 games played".




The Semantic Web is based on descriptions of the content of digital documents using standardized terminology that has semantics that can be understood by a machine. This will complete the transformation from a network of simple link structures to a net based on interconnected content structures. This opens up a totally new dimension in the area of Internet services, information retrieval, mobile computing, e-commerce, and e-work.

SmartWeb provides an important step in the implementation of the next generation Internet, one that will offer mobile and individualized, broadband multimedia services. Brand new services will appear and with them valuable new jobs as the restructure toward a networked society continues. However, this can only be achieved if developments in these innovative technologies gain broad acceptance by the users in both business and leisure situations. An essential prerequisite here is to have intuitive access to the Semantic Web and its services via intelligent user interfaces from a mobile, multimodal dialog. The semantic web makes it possible to present information to the most varied types of platforms and permits mobile access to the Internet independent of the end device being used. Content is displayed on PDA's, Smartphones, or even on the built-in driver assistance systems found in cars and motorcycles. Technical developments in the area of end user devices are making mobile broadband access possible, for example, via UMTS, from any location at any time. The first application of this new technology is planned in connection with the FIFA World Cup Germany 2006. SmartWeb will be able to deliver service information about the individual games and also answer visitor travel questions. SmartWeb is the second project in the BMBF's Future-Vision, "Living in the Networked World: Individual and Secure" and is a lead innovation in the grant program "IT 2006". The presentation of basic research results attracted 35,000 visitors to the Human Computer Interaction exhibit at CeBit 2004.


AIFB – Institute of Applied Informatics and Formal Description Methods, University of Karlsruhe(TH)

BMW Research and Technology Ltd.

DaimlerChrysler AG – Research and Technology

DFKI – German Research Center for Artificial Intelligence

Deutsche Telekom AG

European Media Laboratory GmbH

FAU – Friedrich-Alexander University of Erlangen-Nuremberg

Fraunhofer Institute for Computer Architecture and Software Engineering

ICSI – International Computer Science Institute

IMS – Institute for Machine Speech Processing, University of Stuttgart

LMU – Ludwig-Maximilian University of Munich – Institute for Phonetic and Linguistic Communication

ontoprise GmbH

Siemens AG Corporate Technology

Sympalog GmbH

**Additional information is available at**
www.smartweb-project.org

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# SmartKom – Foundations of Multimodal Dialogue Systems


The results of the SmartKom Project have been consolidated in a new publication titled, "SmartKom - Foundations of Multimodal Dialogue Systems". The book by Professor Wolfgang Wahlster will be released after publication by Springer Verlag at the end of 2004.

During the period 1999 to 2003, the SmartKom consortium, with membership from the scientific and business communities, worked to develop a system in which the natural communication tendencies of humans could be more widely applied in the area of Human Computer Interaction. The BMBF provided funding of 16.8 million for this lead project (Total volume 25.8 million).

The intuitive SmartKom user interface is achieved through the integrated processing of speech, gestures and facial expressions. SmartKom listens and understands, then looks and recognizes whether the user is angry or content. The system also responds to pointing gestures so there is no need for a mouse or a keyboard. SmartKom was well received at the CeBIT 2004, as part of a special Human Computer Interaction (HCI) exhibit in the Future Park. Three different applications, SmartKom Mobile, SmartKom Home and SmartKom Public were exhibited.

The SmartKom Project attained an unprecedented level of commercial success with 52 patents, 29 spin-off products, and 6 spin-off companies.

**Additional information about SmartKom**
www.smartkom.org


# Winners of the first German VOICE Awards

voice day 2004
Initiative Voice Business

The winners of the first VOICE Awards for innovative and successful speech technology applications were announced on October 19, 2004. The award is a new initiative of Voice Business, an association of various companies from the field of speech technology and under the patronage of Professor Wahlster since June 2004. The VOICE Award is intended to increase awareness and acceptance of interactive speech systems among the public and in business environments as well as to encourage advanced development by vendors.

A jury, chaired by Professor Wahlster, selected individual prize winners in 5 categories from among the more than 60 participants.

The first prize in the category Best Practice, awarded for the best German language application, went to the telephone banking system "CitiPhone Brokerage". This application enables customers to complete stock transactions in real time using spoken language.

The prize for the most innovative application was awarded to the information portal "Berti" by Sympalog Voice Solutions. Callers can obtain current information about game results, league standings, and game schedules in the First German National Soccer League. In the categories Best Voice User Interface, Best Industry Solution, and Best Business Model, the winners, respectively, were the dating platform "L.U.C.Y." from Com Vision, the telephone banking system of Spardabank Hamburg, and the speech portal "2300 InfoTalk" from T-Mobile.

The awards ceremony was part of the annual VOICE Day activities. Held for the first time this year, VOICE Day provides a top quality, cross-industry forum dedicated to the topic of speech automation.

**Additional information (German only) is available at**
www.voiceaward.de

# First German Summit for Speech and Language Technology at DFKI

An initiative of the Federal Ministry of Education and Research (BMBF) brought representatives of the German language technology community together for a summit meeting convened at DFKI in May 2004. By mutual invitation of the BMBF and the German Competence Center for Speech and Language Technology at DFKI, more than 100 experts from academia, research and business traveled to Saarbrücken to discuss the status of speech and language technology in Germany, and how to strengthen and improve its presentation in the international environment.

The German Competence Center for Speech and Language Technology was officially opened in October 2001 as part of the BMBF COLLATE Project (Computational Linguistics and Language Technology for Real Life Applications), which is jointly sponsored by DFKI and the University of Saarland. The aim of the competence center is to make German research and development internationally competitive and to speed the time from research laboratory to commercial development. Three organizations contribute to this aim: the Virtual Information Center, LT-World (www.lt-world.org), which offers a current and comprehensive information service for all aspects and sub-areas of language technology; an Evaluation Center, which is concerned with testing the speech and language technology applications in the context of their employment in realistic scenarios, and a Demonstration Center for speech technology software, which offers presentations of the most important speech technology systems and software solutions.


The Language Technology Summit was an opportunity to take inventory, to review the work of the Competence Center from the perspective of the scientists and vendors and to set new common goals and visions. These can be realized by the Competence Center in Phase 2 of COLLATE which runs at least to 2006.

The guest speakers were Dr. Steffen Lipperts of the Innovation Division of Deutsche Telekom, Dr. Bernd Reuse from the Federal Ministry of Education and Research, Professor Hans Uszkoreit, Head of the Language Technology research department at DFKI, and Professor Hans G. Tillmann from the Ludwig-Maximilian University, Munich. Together, they represented several of the most important players in German speech and language technology.

At the end of the day, Daniel Grasmick, Head of Multilingual Technology for SAP and Reimund Schmald, Sales Director for Scansoft, together with representatives of small and middle sized companies, discussed the opportunities and responsibilities of German speech and language technology in respect to international competition. Although it appears this technology is beginning to be recognized by decision makers as a significant value added product, certain reservations remain when it comes to the employment of speech and language technology applications in the company or even by the private end user. At the end of the closing discussion, the consensus was that there is still a huge market potential for these technologies and an essential way to tap that market is through joint projects between research institutes and businesses. Independent, comprehensive forums such as the German Competence Center for Speech and Language Technology perform an extremely valuable service towards this end.

**Additional information is available at**
www.lt-cc.org

# CASCOM – Context-Aware Business Application Service Coordination in Mobile Computing Environments

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The project will deliver a full proof-of-concept implementation of the generic CASCOM service coordination support infrastructure for mobile business application service coordination for mobile users and workers, and a field-trial CASCOM demonstrator for selected pervasive health care application services. For end users, the CASCOM framework provides more easy and seamless access to Semantic Web services anytime, anywhere, by using any mobile computing device. For service providers, CASCOM offers an innovative development platform for intelligent and mobile business application services in the Semantic Web.

This project, on which 8 European partners are collaborating, is funded under the 6th EU framework program for research for a period of three years.

**Project partners**

DFKI GmbH (project coordination)

TeliaSonera AB, Helsinki (technical coordination)

EPFL – Ecole Polytechnique Fédérale de Lausanne

ADETTI – Associação para o Desenvolvimento das Telecomunicações e Técnicas de Informática, Lissabon

URJC – Universidad Rey Juan Carlos, Madrid

EMA – Emergency Medical Assistance, Helsinki

UMIT – Private Universität für Gesundheitswissenschaften, Medizinische Informatik und Technik, Innsbruck

FRAMeTech S.R.L., Parma

The main objective of the project (CASCOM) is to implement, validate, and trial a value-added supportive infrastructure for Semantic Web based business application services across mobile and fixed networks. The main expected outcomes of the CASCOM coordination framework include

- innovative research results and techniques for context-aware, agent-based business application service coordination and secure provision in open Peer-to-Peer service environments,
- implemented context-aware agents using these techniques, and basic co-ordination infrastructure services,
- a prototypically implemented CASCOM service coordination demonstrator for a selected health care use case scenario.

The essential approach of CASCOM is the innovative inter-disciplinary combination of intelligent agent, Semantic Web, Peer-to-Peer, and mobile computing technology. Conventional Peer-to-Peer computing environments are extended with components for mobile and wireless communication. Semantic Web services are provided by peer software agents which exploit the CASCOM coordination infrastructure to efficiently operate in highly dynamic environments. The generic CASCOM coordination support infrastructure includes efficient communication means, support for context-aware adaptation techniques, as well as flexible, resource-efficient service discovery, execution, and composition planning.

**Additional information is available at**
www.ist-cascom.org

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# News in Brief

## Scientific Recognition for Professor Dengel

Professor Andreas Dengel has been named, within the framework of the August 2004 International Conference on Pattern Recognition (ICPR) in Cambridge, England, as a Fellow of the International Association for Pattern Recognition (IAPR).

The IAPR Fellowship is awarded in recognition of excellence in the service of science, accomplishment in the area of pattern recognition, and for personal engagement on behalf of the IAPR. Professor Dengel was previously honored with the Young Investigator Award in 1997 by the IAPR.

The Scientific Director and spokesperson for DFKI-Kaiserslautern is, at age 43, the youngest IAPR Fellow and with this award, joins a select group of scientists within Germany.

"I am very happy to receive this esteemed honor and see this recognition as confirmation of our work in the area of knowledge management and for the entire research performed at DFKI", said Dengel in his acceptance speech.

The IAPR is an international association of non-profit, scientific, and business interests that work on a broad range of issues in pattern recognition, "seeing" computers and image processing. The most significant event sponsored by the IAPR is the biennial conference on pattern recognition - the ICPR.

**Additional Information is available at** www.iapr.org

C. Ruß, Prof. J. Siekmann, A. Gerber

## DFKI Spin-Off X-aitment Wins Second Round

X-aitment, one of the most recent start-ups to emerge from the DFKI, has been selected as a winner of the second round of the "Successful Start-Up with Multimedia" competition. The event is sponsored three times per year by the Federal Ministry of Economics and Labour (BMWA).

The company was established in June 2004 by founders Andreas Gerber, Christian Ruß, Professor Siekmann, and Dr. Klaus Fischer. The business purpose of this young company is the development and sale of the X-ait engine, a software component that greatly simplifies the integration of the latest AI-technologies into interactive computer games. Other AI programming services offered in the area of games and simulation systems include: customized AI implementations, support during AI integration, consulting, and training.

**Additional information is available at**
www.gruenderwettbewerb.de
www.x-aitment.net

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## US Ambassador Daniel R. Coats visited DFKI

G. Pasi, D. R. Coats, W. Wahlster, D. Dengler

On September 7, 2004, the Honorable Daniel R. Coats, American Ambassador to Germany visited DFKI-Saarbrücken accompanied by the Deputy Principal Officer, Geeta Pasi. DFKI was selected as one of the stops on the introductory tour for the Ambassador upon assuming office.

In addition to the German-American cooperation in the area of DFKI research projects, emphasis was placed on the Smart Shopping Assistant, mobile broadband technology, and speech technology.

The personal shopping advisor or "Smart Shopping Assistant" is a personal computer that accompanies the shopper to the supermarket, where it makes suggestions and provides information with which to compare products. On the topic of mobility, the UMTS Demonstration and Evaluation Center presented some innovative scenarios, in which UMTS technology, digital recording, and speech technology can be integrated so as to permit the remote control of a networked, multimedia, home entertainment center from a distant location. The final item on the VIP agenda was a stop at the Demonstration Center for Speech and Language Technology, where the Ambassador received information about telephonic information systems and voice controlled devices.

In an interview with the Saarländischer Rundfunk at the completion of the visit, Mr. Coats expressed appreciation for the DFKI projects.

# News in Brief

## Professor Susanne Biundo and Professor Franz Baader honored as ECCAI Fellows

The European Coordinating Committee for Artificial Intelligence, (ECCAI) has announced fellowship recipients for 2004. The new ECCAI Fellows include Professor Susanne Biundo, Department of Artificial Intelligence at the University of Ulm, and Professor Franz Baader, Institute for Theoretical Informatics at the Technical University of Dresden.

Both of these new ECCAI Fellows are former employees of DFKI. Ms. Biundo worked from 1989 to 1998 on research in the research department Intelligent User Interfaces under Professor Wahlster; Franz Baader was on the DFKI staff from 1989 to 1993 in the Deduction and Multi-agent Systems research department under Professor Jörg Siekmann.

Professor Biundo and Professor Baader join a group of three other ECCAI Fellows from the ranks of the DFKI staff. Professors Wahlster and Siekmann, as well as Professor Bernhard Nebel, who was at the DFKI until 1993, have each been honored with this prestigious recognition in the past.

The European Coordinating Committee for Artificial Intelligence, founded in 1982, is an association of European AI scientists with the goal of supporting education, research, and artificial intelligence applications. Being honored as an ECCAI Fellow is one of the highest forms of recognition for an AI scientist in Europe. According to the organization's charter, only a maximum of 3% of all AI scientists living in Europe may receive this honor.

**Additional Information is available at** www.eccai.org

## Professor Wahlster honored as GI Fellow

On September 22, 2004 Professor Wahlster was officially honored as a Fellow of the Gesellschaft für Informatik (Society for Informatics - GI) at a ceremony held in Neu-Ulm as part of the 34th Annual Conference, "INFORMATICS 2004" .

This was the third time individuals have been recognized for personal achievement in the field of information technology by the Gesellschaft für Informatik (GI). GI Fellows distinguish themselves by exceptional technical-scientific contributions to the field of informatics. The honor may also be given to individuals that have performed an exceptional service for the GI or in the area of informatics in general. In making the selection of Professor Wahlster, the GI highlighted the national and international recognition Professor Wahlster has brought to the field of informatics through his scientific contributions and his service to the interdisciplinary study of informatics, linguistics, psychology, and AI. "Wolfgang Wahlster has established the German Research Center for Artificial Intelligence in Saarbrücken as one of the world's leading research and development laboratories", reads the GI award certificate.

Photo: Cornelia Winter, GI

Prof. Jarke, GI President and Prof. Wahlster

This was not the first time that the Society has honored a distinguished member of the DFKI: In 2002, Professor Jörg Siekmann, Head of the Deduction and Multi-agent Systems research department was also honored with a GI Fellowship.

The Gesellschaft für Informatik (GI) was established in Bonn in 1969 for the purpose of supporting informatics. It is a non-profit organization that works exclusively in the community interest. Membership in the Society represents scientific, business, academic and research communities. The society currently boasts 24,500 members and as such, is the largest association of informatics professionals in the German speaking world.

**Additional Information is available at**
www.gi-ev.de

# Competence Center for Informatics and IT established at the University of Saarland

informatik saarland.

On July 19, 2004 opening ceremonies for the new Competence Center were presided over by Jürgen Schreier, State Minister of Science, Margret Wintermantel, University President, and Professor Philipp Slusallek representing the Competence Center.

The center is partially funded with state monies and is expected to coordinate and consolidate the competencies of Saarland in the area of informatics and, in addition, optimize the scientific and


Prof. Slusallek, Prof. Wintermantel, Minister Schreier

technological conditions required to attract research and commercial enterprises to the location. As the central node for informatics in Saarland, the Competence Center will serve as a forum for the exchange of information and contacts between industry,

Dr. Dengler, Prof. Slusallek, Prof. Wahlster

research, and education. Projects and activities are to be bundled, strategically planned, supported and advised. Topics like internationalization, encouragement of young talent, technology transfer, and a common presentation to the outside are of key importance.

Saarland is one of the leading addresses in Germany for informatics and is even recognized internationally for its excellence in informatics. In recent years, some of the most important awards and honors for scientific achievement have gone to Saarbrücken's informatics professionals. These include the German Future Prize, five Leibniz prizes and three Konrad-Zuse medals.

Prof. Lengauer, Prof. Wintermantel, Minister Schreier, State Secretary Schlegel-Friedrich

IT research in Saarland is not concentrated solely at the 30 University Department Chairs. Renowned research institutes lend a rich perspective to the interchange among complementary informatic competencies. Here, DFKI with the Institute for Information Systems (IWi) stands at the fore. There is also the International Research and Exchange Center for Informatics at Schloss Dagstuhl,

Prof. Slusallek, Spokesman of the Competence Centre for Informatics and IT

and of course, the Max-Planck Institute for Informatics (MPI). Further, there will soon be a second Max-Planck Institute for Informatics to focus solely on software systems. The effort of this institute will be divided equally between two branch locations to be established in Kaiserslautern and Saarbrücken.

The unique environment for informatics has spawned a whole series of successful new companies in the IT branch: from the DFKI and the Department of Informatics alone, there have been more than 44 spin-offs in the past few years.

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# Patented Intelligence

Xtramind supports its customers with a patented system that autonomously understands and reliably analyzes textual content. This successful spin-off of DFKI has been granted a patent by the German Federal Patent and Trademark Office for its method for automated e-mail classification.

Xtramind's technology is based on methods of artificial intelligence and language technology. This enables the sophisticated software solutions to process and disclose an unlimited volume of data in a fast, efficient, and precise manner. Xtramind provides its customers with a significant competitive advantage, especially in those areas with a high demand for information.

For example, in the customer-care sector, where the technology analyzes the content of the texts in incoming e-mails, assigns them to predefined categories, and forwards them automatically to the responsible staff member. Thus, processing time is reduced by up to 50% per inquiry.

A degree of precision never before attained in content analysis is attributed to the patented technology which mimics human reading comprehension. In contrast to other systems, which count only the occurrence rate of certain words appearing in a text, this process takes into account the context of the content. A variety of criteria, such as the function of the word, word stems, and synonyms are included in the analyses and even the relationships between individual words are considered.

"Our applications represent the latest research from the field of artificial intelligence with results put to direct, practical use for our customers", said Albert Denz, CEO of Xtramind. "The new patent underscores this unique competence of Xtramind."

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**About Xtramind**
Xtramind Technologies GmbH is the leading provider of self-learning software for communication and information management, based on language technology and artificial intelligence. This innovative company, based in Saarbrücken, has developed software solutions which can think ahead, their ability to comprehend the content of a text allows the processing of unstructured data to be automated and optimised. A company can, for example, respond to its customers' enquiries via e-mail, fax, post, Internet and SMS fast, efficiently and economically. Another possibility is for the company to stay a step ahead of their competitors' information with Xtramind's fully automated real-time market and competitive analysis. Founded as a spin-off of the German Research Center for Artificial Intelligence (DFKI) in 2003, the fast-growing company is now expanding into the international arena. National clients include 1&1 Internet AG, Blaupunkt, Bosch Communication Center, Deutsche Bahn Dialog, GMX, ProSiebenSat.1, Quelle and Ratiopharm.

# DFKI – Simply Innovation



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 Multi-agent Systems (Director: Professor Jörg Siekmann)
- Language Technologies (Director: Professor Hans Uszkoreit)
- Intelligent User Interfaces (Director: Professor Wolfgang Wahlster)

Since early 2002, the Institute for Information Systems (IWi) (Director: Professor August-Wilhelm Scheer) has also been integrated with DFKI. The purpose of the transfer centers listed below is to make the scientific results of DFKI research available to commercial applications: SISO – The path to software security, AICommerce – Intelligence in e-business.

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: E-Learning, Language Technologies, Semantic Web.

Currently, the DFKI GmbH employs 173 highly skilled people. They are supported on a part time basis by an additional 145 student research assistants. In fiscal year 2003, despite the prevailing troubled economic conditions, the research institute managed an overall budget of almost 15 million and achieved a positive net income for another consecutive year. The list of corporate partners in the DFKI includes DaimlerChrysler, Deutsche Telekom, SAP, IDS Scheer and Dresdner Bank, which is an indication of how much the performance achieved by DFKI is valued by industry.

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 59 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 like „SmartWeb“ substantial contracts from business enterprises could also be acquired in the years 2003/2004. The successful transfer of DFKI research results to functional products is continuing. The DFKI model of public-private-partnership was positively received at numerous presentations and is often referenced as the recommended structure. The next goal is to win the acceptance of this organizational form into the federal funding handbook. 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. The general aim of expanding the research and development activities is realistic and remains valid for 2004.

# INTELLIGENT SOLUTIONS FOR THE KNOWLEDGE SOCIETY

- Knowledge management
- Intelligent e-commerce solutions
- E-Learning and e-government
- Development of demonstrably correct software
- Information extraction
- Intelligent web-retrieval
- Multi-agent systems and agents-technology
- Multimodal user interfaces
- Intelligent visualization and digital simulation
- Image understanding and pattern recognition
- Document analysis
- Multimedia data bases
- Affective agents as internet guides and e-commerce assistants
- Intelligent product search
- Intelligent UMTS services and mobile business
- Organizational memory
- Semantic web
- E-Recruitment

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