

Information Systems



Staff

- **Professors**

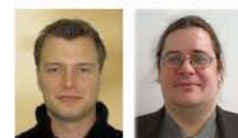
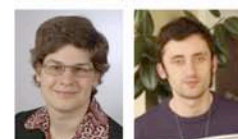
Prof. Dr. rer. pol. Matthias Jarke
Prof. Gerhard Lakemeyer, Ph.D.
Prof. Dr. rer. nat. Thomas Berlage
Prof. Wolfgang Prinz, Ph.D.
Prof. Dr. rer. nat. Thomas Rose

- **Secretaries**

Gabriele Hoepfermanns
Daniele Glöckner
Tel: (0241) 80-21501; Fax: (0241) 80-22321
E-mail: sekris@dbis.rwth-aachen.de
WWW: <http://dbis.rwth-aachen.de>

- **Researchers**

Yiwei Cao
Muzzamil Aziz Chaudhary (since 1.01.2011)
Dr. Michael Derntl (since 1.03.2011)
Dr. Vito Evola
Sandra Geisler
Sukeshini Grandhi Ph.D.
Anna Hannemann
Matthias Häusler (until 31.07.2011)
Jessica Huster
Fisnik Kastrati
Dr. David Kensche (until 31.12.2010)
PD Dr. Ralf Klamma
Dejan Kovachev
Dr. Milos Kravcik
Dr. Karl-Heinz Krempels
Xiang Li
Dr. Andreas Lorenz (until 14.03.2011)
Jan Robert Menzel (until 31.10.2010)
Zinayida Petrushyna
Manh Cuong Pham
Dr. Christoph Quix
Dr. Jürgen Rapp
Khaled Rashed
Dominik Renzel
Dr. Dominik Schmitz (until 30.09.2011)
Christoph Terwelp
Yao Wang (until 31.07.2011)
Dietlind Zühlke (until 31.07.2011)



- **Technical Staff**

Tatiana Liberzon
 Reinhard Linde
 Alexander von Wirth (since 1.09.2011)



- **Student Researchers**

Gökhan Aksakalli, Cihan Aydinoglu, Tobias Baumgartner, Malte Behrendt, Amith Belur Nagabushana, Evaline Claßen, Lucas Dohmen, Ana-Maria Dragomir, Darko Dugosija, Masrur Doostdar Sanaje, Maja Grintal, Michael Hackstein, Christian Hocken, Klesti Hoxha, Erika Jongiran, Eleonora Khabirova, Thilo Kochniss, Jinhui Li, Michael Lottko, Ghislain Manib Mbogos, Bahram Maleki Fard, Petru Nicolaescu, Tim Niemüller, Mohammad Ashif Peach, Daniel Plötzer, Pratanu Roy, Ammar Sahib, Christian Samsel, Patrick Selders, Patrick Schlebusch, Christoph Schwering, Anisa Stefi, Minh Quan Tran, Sven Weber, Stefan Wüller, Tian Yu, Yang Zhang



- **Cooperation Partners**

aiXtrusion GmbH, Bombardier AG, Carl Zeiss MicroImaging GmbH, CL CargoLifter KGaA, Daimler AG, Deutsche Bahn AG, Deutsche Zeppelin-Reederei, Ericsson Eurolabs, European Microsoft Innovation Center Aachen, European Schoolnet, European Philips Research, Feuerwehr Düsseldorf, Hacon GmbH, imc AG, IBM Germany GmbH, IBM Zurich Labs, IKV Aachen, Inform GmbH, InnoZ GmbH, Metro Cash & Carry Germany GmbH, Microsoft Deutschland GmbH, Qiagen GmbH, SAP AG, Software AG, Thinking Networks AG, T-Systems GEI Aachen, PLT, Technion Haifa, WZL, WiTec GmbH, Universitätsklinikum Hamburg-Eppendorf, Universitätsklinikum Düsseldorf, ZLT Zeppelin Luftschifftechnik GmbH & Co KG, ZLW/IMA Aachen



Overview

Today, the field of Information Systems includes not just structured databases, but at least equally important the semi-structured and unstructured data in the World Wide Web. The Chair Informatik 5 addresses both domains, with the management of so-called metadata (data about data) in the kernel of its research interests. Current major themes include mobile web services and applications including logistics applications, metadata model management, and technology enhanced learning.

In the academic year 2010-2011, the group enjoyed once again a significant growth of third-party funding and reached close to 3 m€ in 2010. Large newly acquired projects include the European Network of Excellence GALA, the Gaming and Learning Alliance; and recently the eConnect project by the German Ministry of Economy (BMWi) in which from Jan. 2012 the ICT infrastructure for smart grids in eMobility will be explored with a consortium of regional energy providers.

Members of the group took leading roles in the organization and program chairing of international conferences, including the ICWL '11 conference in Hong Kong, and several summer schools and workshops in ontology matching, technology-enhanced learning, multimedia metadata, and cloud computing. An i5 team led by Dr. Krempels also organized the 2011 Informatics Summer party, and the i5 Soccer Team led by Dr. Quix won the Computer Science-internal championship InfoCup for the second time in a row.

The total personnel at Informatik 5 grew to over 40 researchers and administrative personnel, plus over 35 student assistants. The team represents almost 20 different nationalities. Doctoral theses were defended by David Kensche and Dominik Schmitz. David Kensche received the 2011 Friedrich-Wilhelm Prize for Best PhD Thesis in the Faculty of Mathematics, Informatics, and Natural Sciences, which comprises about 130 professorships; he joined the Aachen-based data warehouse enterprise Thinking Networks AG as Senior Systems Architect while Dominik Schmitz now serves as IT Director of the Central Library of RWTH Aachen University.

The cooperation with the Fraunhofer Institute for Applied Information Technology FIT continued in 2010, in research through many joint projects and personnel exchanges, in teaching through the Bonn-Aachen International Center for Information Technology (B-IT) and the B-IT Research School for Doctoral Training. Both the International Master Programs of B-IT and the B-IT Research School successfully passed extensive evaluations in 2011, which had to be prepared and coordinated by Informatik 5. For the first time, the new European accreditation agency EQANIE was active in Germany as part of this process, so that our master programs were the first computer science programs in Europe accredited both nationally and with the EuroInf label. The B-IT Research School now supports 32 scholarships, and a former RWTH library has been remodeled under our direction to improve the research training facilities. Another exciting highlight of the cooperation i5-FIT: Our 2010 Master Graduate in Software Systems Engineering, Georg Hackenberg (first ever to achieve a distinction ("Auszeichnung" in this degree) won the first prize of the Hugo-Geiger Award with which the Fraunhofer Society annually honors the best master thesis among its roughly 4.000 research students. Hackenberg, a former student researcher at UMIC, wrote his award-winning master thesis on marker-free gesture recognition at Fraunhofer FIT under the direction of Prof. Prinz and Prof. Broll (now TU Ilmenau). Last not least, Prof. Jarke, executive director of FIT, was appointed as Chairman of the Fraunhofer ICT Group, with 4.500 employees the largest ICT research organization in Europe, for the period 2010-2012; in this role, he is also member of the Fraunhofer Presidency.

Research Projects

Research projects at Informatik 5 are organized according to the groups of mobile applications and services, technology enhanced learning and communities, model and data management. Much of our work is linked to the Excellence Cluster “Ultra High-Speed Mobile Information and Communication (UMIC)” under the German Excellence Initiative. UMIC is the only Excellence Cluster fully dedicated to the field of information and communication technology approved in the first excellence competition in 2006. More than 20 institutions at RWTH Aachen participate in UMIC, aiming at interdisciplinary design of ultra high-speed mobile information and communication systems. Concepts and demonstrators for smart, mobile, broadband, low-cost systems will be developed to support the demanding applications of the next-decade mobile Internet. Informatik 5 works closely together with many institutes of electrical engineering, mechanical engineering, architecture, and computer science in two subprojects in the research area of “Mobile Applications and Services”.

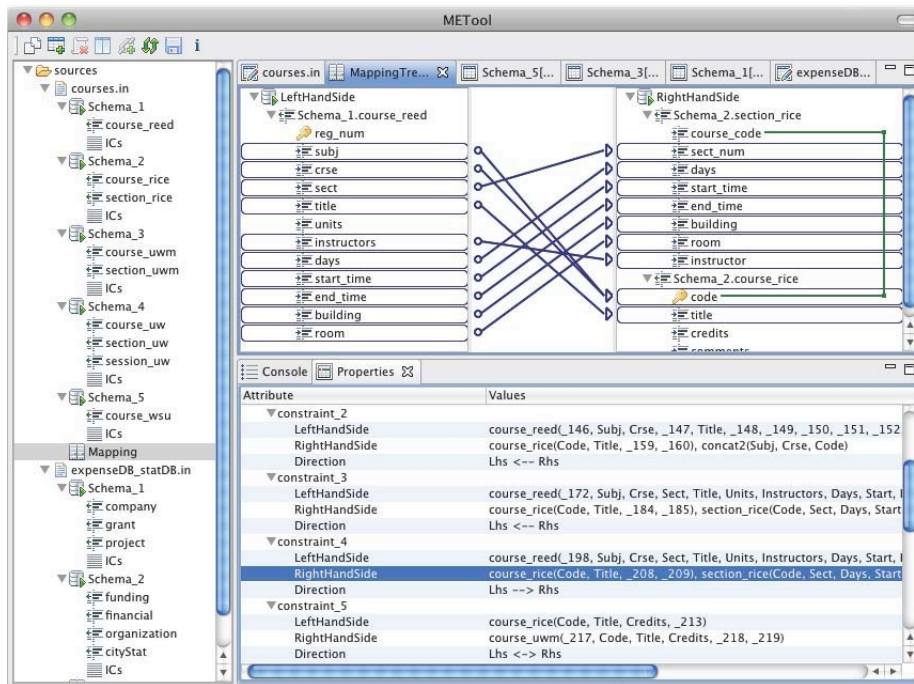
Model Management and Data Integration Research

Model Management

*M. Jarke, C. Quix, S. Geisler, F. Kastrati, D. Kensch, X. Li, L. Guo,
M. Khelgati, J. Li, P. Roy*

Research in model management, funded in part by Excellence Cluster UMIC, focuses on the formal definition of structures and operators for the management of complex data models to support applications dealing with the integration, maintenance, and evolution of data models. Based on our generic role-based meta model *GeRoMe*, the group developed the generic model management *GeRoMeSuite* which includes support for model management operations such as schema matching, composition of mappings, schema integration, and model transformation.

In 2011, the group worked on schema merging and schema matching. The schema matching framework has been extended to include background knowledge from structured and unstructured sources in the matching process. The methods for schema merging focus on a logical level, i.e., schemas have instance level semantics whereas the interrelationship among schemas are expressed in a fragment of first order logic. The goal is to investigate various fundamental aspects of schema merging including semantics, functional/operational properties, algorithmic, and expressiveness and efficiency, including the important aspect of minimizing the resulting integrated schema. The team developed a prototype capable of integrating relational schemas using a rather expressive language of relational data dependencies. A demo was shown at ICDE 2011 in Hannover to illustrate the feasibility in a data integration scenario, including query rewriting and query answering capabilities.



Screenshot of the prototype for schema merging

Furthermore, a novel Dataspace framework aims at integrating heterogeneous disparate sources that do not necessarily conform to a specific schema. In order to tackle the complexity that arises when managing heterogeneous sources, the group has developed a novel search method by extracting semantic associations among entities contained in a dataspace. This enables a domain-independent semantic search over heterogeneous sources, utilizing an open-source knowledge base for extracting semantic classes for the entities. The goal is to provide relaxed search services, enabling users to fulfill their information need even in scenarios when they have little or no knowledge about the underlying sources.

Mobile and Wearable P2P Information Management in Health Net Applications

M. Jarke, A. Lorenz, C. Quix, S. Geisler, D. Kensche, X. Li, M. Grintal, M. Khelgati, S. Weber, T. Yu, S. Kim (MedIT), M. Hassani (Informatik 9), T. Quadflieg (ITA), U. Meyer, J. Barnickel (IT Security)

In this subproject of the UMIC Excellence Cluster, Informatik 5 cooperates with the institute for textile technology (ITA), the Philips Chair for Medical Information Technology (MedIT), Informatik 9 (Data Management and Exploration) and the UMIC research group IT Security. The aim is to develop a P2P network in which patients, doctors, nursing staff, and emergency services have full access to information and services in their mobile work environment. Data about the health status of a patient is collected by a network of sensors integrated in the textile clothes. The data can be reviewed by doctors to consult the patients online, or by the emergency service to improve the diagnosis in an emergency situation.

The prototype was successfully demonstrated at the Lousberglauf 2011, an annual running event in Aachen with more than 2000 participants. Participants from the UMIC team were

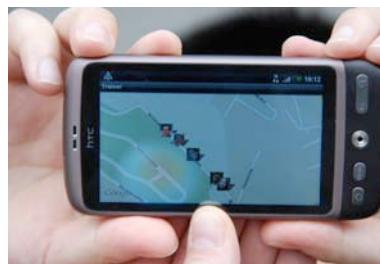
equipped with a body sensor shirt for measuring vital parameters and a mobile device for data integration and analysis. The data collected on the mobile device was sent to other peers in the network. A trainer can thereby monitor the state of a running team on a mobile device. More complex data analysis can be performed on a server and other peers in the network can be notified if a critical situation is detected.



ECG Sensor

 A screenshot of a mobile application titled "Trainer" displaying a table of "Runners Data". The table lists several runners with their respective vital statistics.

	Humidity	Pulse	Temp	Distance	Speed	Remaining Time
christoph	34.87	71.99	28.44	3	3.15	
marwan	57.09	91.09	25.95	2	4.01	
xiang	20.42	96.29	30.14	2	0.8	
saim	61.66	118.46	28.5	3	1.36	
sandra	24.55	101.23	31.23	2	2.32	



Trainer application on mobile phone

Informatik 5 develops the software on the mobile device for data integration, data exchange and data visualization, on the Android platform. The work on data integration and data exchange applies the basic research results of the model management project.

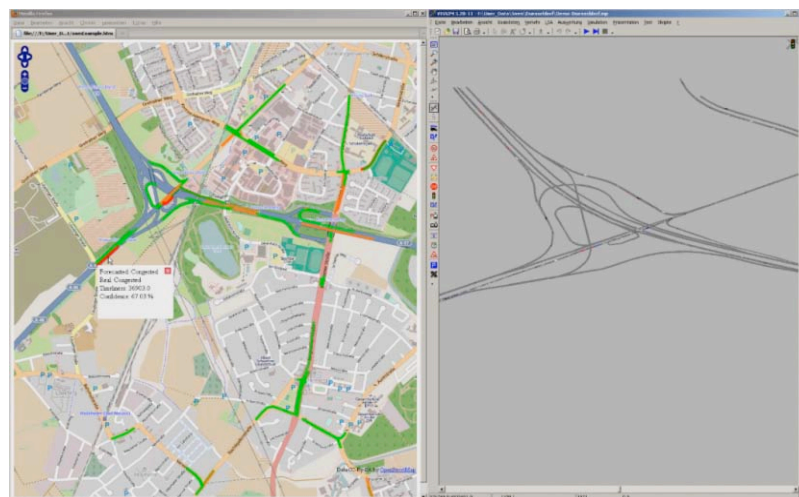
Furthermore, Informatik 5 organized the International Workshop on Managing Health Information in Mobile Applications (HIMoA) at the International Conference on Mobile Data Management (MDM) in Luleå, Sweden. Eight researchers from five countries presented their research results in the workshop. A highlight was the keynote talk by Prof. Upkar Varshney from Georgia State University, Atlanta, which gave a detailed insight into mobile and pervasive healthcare with its challenges and upcoming directions.

Cooperative Cars – CoCarX

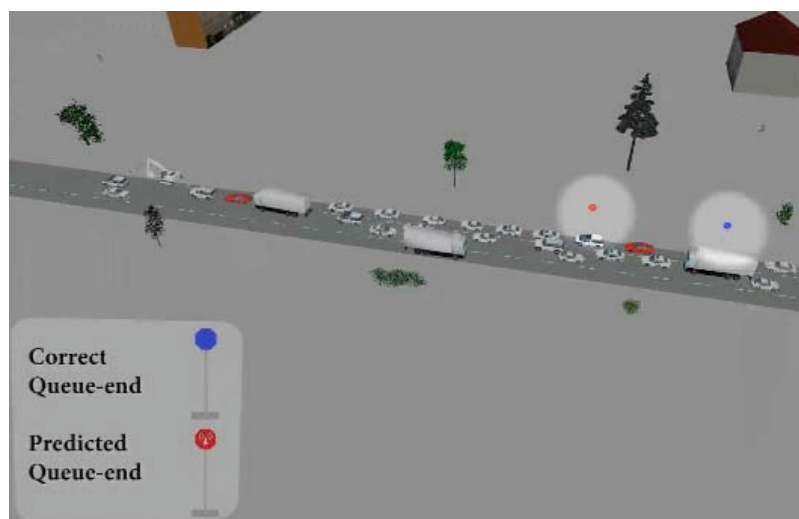
M. Jarke, C. Quix, S. Geisler, S. Schiffer (Knowledge-based Systems Group), R. Rembarz (Ericsson GmbH Eurolab), Gordian Jodlauk (Ericsson GmbH Eurolab), M. Grintal, P. Roy, S. Weber

The Cooperative Cars (CoCar) project tested the suitability of UMTS technologies and their foreseeable extensions (such as LTE) for direct, targeted transmission of traffic data arising from both stationary and vehicle-based sensors. The CoCar project was a part of the research initiative Adaptive and Cooperative Technologies for the Intelligent Traffic (aktiv) led by the German automotive industry.

Informatik 5 cooperated with Ericsson in Aachen and Fraunhofer FIT and developed data models, algorithms and systems for data stream management systems as the core component for data processing in traffic information systems to realize multiple traffic applications. Furthermore, the project studied data (stream) mining algorithms for traffic applications. Based on a quality- and priority-based traffic information fusion architecture, Informatik 5 developed a simulation testbed to identify the properties of roadway networks and system design parameters which have a significant impact on the quality of the traffic applications. The simulation framework has been applied to the queue-end detection problem: Based on messages sent by CoCars (e.g., emergency braking or warning flashers) the system has to identify the location of the queue end. This is an important application as many accidents are caused by drivers not realizing a queue-end in front of them. In a second case study, the framework was used for traffic state estimation and the effect of multiple mining algorithms was investigated. A map visualization was implemented, and the data stream-based evaluation framework has been extended by a data quality component which provides a reliability measure to the information provided by the system.



Visualization of traffic state estimation results (left) and the corresponding traffic simulation delivering the data (right)



Screenshot from the traffic simulation showing real and forecasted queue end

ConceptBase - A deductive object manager for meta databases

M. Jarke, C. Quix, D. Kensch, S. Geisler, X. Li, M.A. Jeusfeld (Uni Tilburg, NL)

ConceptBase is a multi-user deductive object manager mainly intended for conceptual modelling, metadata management and model management. The system implements the knowledge representation language *Telos* which amalgamates properties of deductive and object-oriented languages. Since summer 2009, ConceptBase is available as an open-source system under FreeBSD license on SourceForge. In the academic year 2010/11, the group focused on continuous improvement of the system and removed several bugs.

Mobile Community Information Systems Research

Future Mobile Internet Services: Virtual Campfire

M. Jarke, R. Klamma, Y. Cao, D. Kovachev, M. Jansen (Sbg), G. Toubekis (Sbg), G. Aksakalli, A. Belur, M. Hackstein, S. Javaid, M. Lottko, G.M. Mbogos, P. Nicolaescu

Within Excellence Cluster UMIC, Virtual Campfire aims to provide professional communities an advanced framework to create, search, and share multimedia artifacts with context awareness easily and fast. Advanced multimedia storytelling approaches are based on metadata standards and Community of Practice concept. Requirements from professional communities are analyzed based on real research scenarios in cultural heritage management in Afghanistan together with the Aachen Center for Documentation and Conservation.

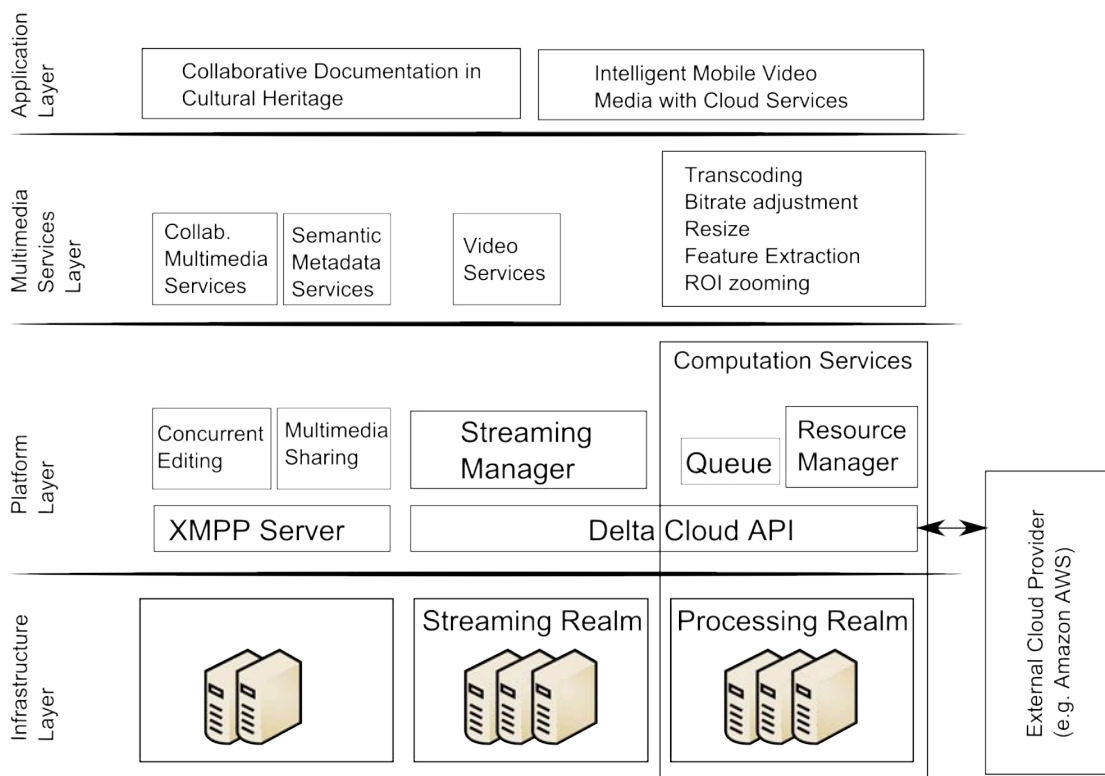
In 2011, we investigated three major themes: 1) a framework and infrastructure for mobile cloud computing (see below), 2) social network analysis methods for mobile communities, and 3) embedded research for professional communities in cultural heritage management in Afghanistan and Oman. Enhanced mobile user multimedia experience were studied on heterogeneous platforms (iPhone, Android), cloud-based media storage and intelligent processing. Social network analysis methods are applied to discover and support the development of mobile communities. The UMIC funding was complemented by doctoral student scholarships from several different sources.

Virtual Campfire prototypes were demonstrated at the annual UMIC Day 2010 and other academic events. Moreover, several academic events were organized to discuss emerging research questions in mobile multimedia management: The First IEEE PerCom Workshop on Pervasive Communities and Service Clouds (PerCoSC'11) -- organized by Informatik 5 (Yiwei Cao, Ralf Klamma, Dejan Kovachev) and Aarhus University (Christian Jensen) -- was successfully held in conjunction with IEEE International Conference on Pervasive Computing and Communications, March 21-25, 2011, Seattle, USA, and the Third International Workshop on Story-Telling and Educational Games in conjunction with ICWL 2010 (STEG 2010) continued the success of the first two workshops. The workshop proceedings are published in Springer's LNCS series.

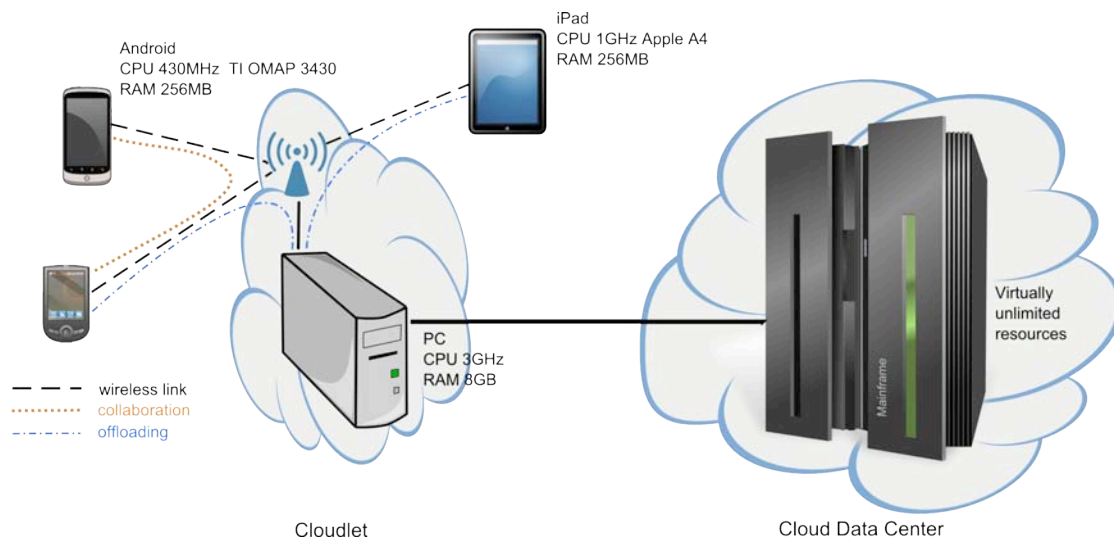
Multimedia Cloud Computing

M. Jarke, R. Klamma, D. Kovachev, G. Aksakalli

Cloud computing envisions the notion of delivering software services and customizable hardware configurations to public access, similar how public utilities (electricity, water, etc.) are available to the common man. The cloud abstracts infrastructure complexities of servers, applications, data, and heterogeneous platforms, enabling users to plug-in at anytime from anywhere and utilizes storage and computing services as needed at the moment. The goal of our mobile multimedia cloud (i5Cloud) is to provide infrastructure as a service (IaaS) and platform as a service (PaaS) for diverse services and applications in the domain of (mobile) multimedia and large-scale social network analysis.



A dissertation project by D. Kovachev investigates possibilities to augment the capabilities of weak mobile devices and develop middleware that can seamlessly offload the computing and storage of mobile applications into the cloud. Cloud computing technologies have been emerging recently as a solution to scalable on-demand computing storage resources that can be accessed via the Internet. The never ending strive for increasing mobile processing power and more data, clouds can be the best possible solution to augment the mobile execution platform. Furthermore, due to changing conditions in the mobile environments, context-awareness can play crucial role in delivering mobile services with best performance. This work is supported in part by the B-IT Research School.



B-IT Research School: Mobile to Mobile (M2M) multimedia service provisioning in future mobile networks

M. Jarke, A. C. Muzzamil

With the increasing number of mobile devices, mobile software has become a huge business industry providing vast technology and use case-driven consumer applications. Requirements for integrating diverse vendor-specific and legacy mobile applications have pushed the adoption of service-oriented computing principles in the mobile domain. Thus, mobile devices are now able to provide and consume Mobile Web Services (MobWS) simultaneously. Following several earlier Ph.D. theses in this area, a new PhD project in the context of the B-IT Research School tries to convert these server architectures into a fundamental platform for IP-based high-quality multimedia service delivery. The mobile applications are planned to be developed for the future IP networks, such as the IP Multimedia Subsystem (IMS), which is now seen as an application/service layer in the Long Term Evolution (LTE) and 4G cellular networks. The goal of the research is to efficiently combine existing and new communication standards to guarantee QoS delivery of multimedia services over mobile networks. Additionally, traffic performance of different ISO/OSI layers has to be analyzed in order to understand the overhead of enhanced server architecture and better use of future networks.

DAAD Project: Community-centered Semantics for the Detection of Faked Multimedia

M. Jarke, R. Klamma, K.A.N. Rashed, M. Lux (U. Klagenfurt), H. Kosch (U. Passau)

This DAAD-funded dissertation project investigates the possibility of combining the capabilities of content-based similarity search and retrieval with the power of Web 2.0

techniques and community approaches to facilitate fake multimedia detection by means of providing semantics for faked multimedia search and retrieval. To realize these objectives, a study of the social aspect by means of trust built-up over time is coupled to concepts such as incentives engineering and collective intelligence to facilitate fake detection. Gaming with a purpose is used to overcome the cold-start problem. A trust-aware media quality profile is proposed to provide helpful metadata for classifying the media. The combination of content based multimedia and social interaction (trust, rates, and multimedia reputation) can be used as service to provide metadata able to infer semantics of multimedia in term of forgery. Social network analysis is used to rank experts, attacks are modeled to construct countermeasures to prevent attacks and developed robust expert ranking algorithm.

BIT Research School: Knowledge Discovery in Digital Libraries

M. Jarke, R. Klamma, M.C. Pham

Another ongoing Ph.D. project linked to UMIC within the B-IT Research School investigates aspects of Social Network Community Analysis. It aims to represent and analyze scientific knowledge in the field of Computer Science and develop recommendation techniques that support researchers to find conferences, journals and publications, to search for interesting research communities and potential collaborators. Social Network Analysis (SNA) is applied to discover the pattern of interaction between researchers, in Web 2.0 environment. Visualization techniques are used to represent and identify research communities and their evolution in term of knowledge diffusion and research collaboration.

In 2010-2011, we investigated the dynamics of computer science knowledge and research communities. A new model characterizes the development pattern of research communities of conferences and journals, and thus allows comparison of the development pattern of different communities in the same sub-discipline or in different research areas. Based on the data from two large digital libraries - DBLP and CiteSeerX, we performed time series analysis on social network analysis measures to qualify the development stages of a particular community in term of collaboration (co-authorship) and topical (citation) development. The result is useful for conference/journal organizers and stakeholders as well as community members to have an overview of their community, to identify potential problems and the solutions. The result was presented in ICALT 2011 and ECTEL 2011, and received great interest from conference organizers and participants.

DFG CONTici: Context Adaptive Interaction in Cooperative Knowledge Processes

M. Jarke, R. Klamma, A. Hannemann, C. Terwelp, M. Hackstein

The aim of this DFG-funded cluster project of four NRW universities is context adaptive systems for knowledge processes. The Informatik 5 subproject “Traceable Cooperative Requirements Engineering for Communities-of-practice” extends earlier context, process or

cooperation models by comprehensible evolution histories, thus leading towards a cycle of comprehensible information collection, processing and employment for learning and re-engineering. In 2010, a model for requirements engineering for communities of practice was formalized and published ("Bazaar der Anforderungen", Informatik Spektrum). In order to apply the proposed model previously developed services were extended and some other were additionally designed. The Bubble Annotation Tool service was integrated in our UMIC storytelling requirement engineering environment YouTell for story viewing and collaborative annotation. The service was extended to allow end-users to negotiate about the use case story elements remotely in form of a virtual RE workshop. A new Community Aware Interactive Narration Environment (CAINE) service realizes the community tagging of all the community generated elements and all executed actions by the community members within YouTell. Additionally, a service for monitoring user actions was integrated. Hence the requirements engineering process combines the analysis of social state of a community, the community generated content and the activities of the community members and thus implements the proposed model for requirements engineering for communities of practice.

DAAD IKYDA: Non-linear Digital Storytelling for the Battleship "G. Averof"

*M. Jarke, R. Klamma, Y. Cao, A. Hannemann, D. Kovachev,
E. Stefanakis (Harokopio University, Greece), G. Kritikos (Harokopio University, Greece),
E. Gadoulou (Harokopio University, Greece), H. Papadaki (Harokopio University, Greece)*

This project complements the empirical UMIC work by another case study in cultural heritage. Non-linear digital storytelling is an interdisciplinary research project with Harokopio University, Athens, starting in 2009 within the Greek-German IKYDA program of the DAAD. The battleship "G. Averof" is the world's only surviving heavily armored cruiser of the early 20th century and serves as a museum operated by the Greek Navy today. This research project aims at the promotion and enrichment of the museum archives for cultural heritage management. We seek to share knowledge on advanced storytelling platforms and services for the battleship "G. Averof" with advanced 3D scanners, helicopter cameras to capture objects on the battleship. The project was finished successfully in December 2010. Thirteen research assistants and students from both partners paid seven research visits to each other. Two Workshops on Storytelling and Educational Games (STEG'09 and STEG'10) were coorganized with the project partner. Two master theses on storytelling have been finalized, and five joint papers were published at conferences on information systems and GIS.

Research in Technology-Enhanced Learning

EU Integrating Project ROLE: Responsive Open Learning Environments

M. Jarke, R. Klamma, M. Kravcik, Z. Petrushyna, D. Renzel, D. Dugosija, F. Linke, P. Schlebusch, D. Sosnitza

ROLE is an EU-funded large-scale integrating project within the 7th Framework Program in the domain of technology enhanced learning (TEL). The project aims at delivering and testing prototypes of highly responsive TEL environments, offering breakthrough levels of effectiveness, flexibility, user-control and mass-individualization, thereby advancing the state-of-the-art in human resource management, self-regulated and social learning, psycho-pedagogical theories of adaptive education and educational psychology, service composition and orchestration, and finally the use of ICT in lifelong learning. ROLE offers adaptivity and personalization in terms of content respectively navigation and the entire learning environment and its functionalities. This approach permits individualization of the components, tools, and functionalities of a learning environment, and their adjustment or replacement by existing web-based software tools. Learning environment elements can be combined to generate (or mashup) new components and functionalities, which can be adapted by collaborating learners to meet their needs and to enhance the effectiveness of their learning. Informatik 5 is the vice-coordinator of the project, acting as technical leader and community facilitator.

Building on earlier results and ongoing efforts we further elaborated the idea of Social Requirements Engineering and the ROLE Requirements Bazaar, resulting in an initial journal publication for Informatik-Spektrum. Another focus was on real-time communication and collaboration in widget-based web applications using the XMPP protocol. As technical coordinator, we hosted and maintained crucial parts of the development infrastructure and released two versions of the ROLE Software Development Kit. To disseminate and exploit the ROLE vision and outcomes we coordinate the internal Enchantment project, aiming at demonstrations of ROLE results for different stakeholder groups, namely business, academics, and developers. These initiatives included co-organization of two workshops at the ICALT and UMAP conferences, focusing on self-regulated learning and personalization approaches in responsive open learning environments. We also initiated the 2nd ROLE Widget Enchantment Competition and co-organized the 3rd ROLE Developer Camp. To facilitate knowledge transfer to industry we were active in organizing ROLE events at the I-KNOW 2011 in Graz, Austria, the Professional Training Facts 2011 in Stuttgart, Germany and the Online Educa Berlin 2011, Germany.

EU Network of Excellence GALA: Gaming and Learning Alliance

M. Jarke, R. Klamma, M. Derntl, M. Kravcik, A. Hannemann

GaLA gathers the cutting-the-edge European Research & Development organizations on Serious Games, involving 31 partners from 14 countries. Partnership involves universities, research centers, and developer and education industries. The GaLA motivation stems from the acknowledgment of the potentiality of Serious Games (SGs) for education and training and the need to address the challenges of the main stakeholders of the SGs European landscape (users, researchers, developers/industry, educators). GALA aims to shape the scientific community and build a European Virtual Research Centre aimed at gathering, integrating, harmonizing and coordinating research on SGs and disseminating knowledge, best practices and tools as a reference point at an international level. The other key focuses of the project are: the support to deployment in the actual educational and training settings; the fostering of innovation and knowledge transfer through research-business dialogue; the development high-quality didactics on SG by promoting and supporting courses at Master and PhD level.

In the first year, i5 has contributed expertise in several GaLA special interest groups (SIG) and technical committees (TC). These include the SIGs on Humanities and Heritage as well as on Personal and Social Learning & Ethics; additionally i5 has contributed to research field reports for the TC on Personalization & Artificial Intelligence, the TC on Interoperability, as well as the TCs on Psychology and Neuroscience. In June 2011, i5 had a successful week at the 1st GaLA Alignment School which was held in Edinburgh, UK. We presented results of several previous i5 projects of relevance to GaLA, giving lectures on Interactive Storytelling for Web 2.0 and Serious Games, and on Social Network Analysis and Serious Games. Additionally we demonstrated the YouTell interactive Web 2.0 storytelling platform that was developed at i5.



Dr. Derntl demonstrating the YouTell collaborative storytelling platform at the GALA Alignment School in Edinburgh, UK.

LD-Grid: Learning Design Grid

M. Derntl

Learning Design Grid (LD-Grid) is a team of individual researchers from all over Europe, whose work is funded by the EU network of excellence STELLAR. LD-Grid aims to produce a concise, comprehensive and accessible set of resources which will empower educators and learners to participate in design discourse and practices in technology enhanced learning (TEL). These resources will enable learners and educators to collaboratively reflect on their goals and constraints, characterise contexts of learning, and devise viable means of achieving their goals within these contexts and in light of the constraints.

The outputs of this effort will include (1) an annotated mapping of representations of design knowledge in TEL (such as narratives, patterns and principles, scripts, scenarios, and sequences); (2) a review of existing banks of design resources and tools; and (3) an articulation of effective and accessible practices and methodologies for use of the above representations, resources and tools in collaborative reflection on learning design.

EU Support Action TEL-MAP: Future gazing Technology Enhanced Learning - The Roadmap for the unknown Learning Landscape

M. Jarke, R. Klamma, M. Derntl, M. Kravcik, K. Hoxha, L. Dohmen, A. Peash

TEL-MAP focuses on roadmapping for fundamentally new forms of learning to support take-up of those new forms, via ‘awareness building and knowledge management on the results of EU RTD projects in TEL’ and ‘socio-economic evaluations in education and for SMEs’. We gather information on the current, desired and emerging position of TEL, and on awareness and appropriation (by educators and SMEs) of RTD results in TEL. We codify that information using state-of-the-art knowledge management methods, at three levels of scale: 1) macro (political, economic, social, technological, legal, and environmental), 2) meso (organisation of education and training systems and institutions), and 3) micro (enacted paradigms of learning and teaching). Cutting across these levels of scale is the categorisation of changes as exogenous or endogenous relative to forms of learning and to the TEL community. This provides direct input to TEL-relevant decisions at all three levels, including economic, political, and research discussions.

With a 10-year horizon, we co-develop a portfolio of stakeholder-specific roadmaps and influence maps, to gain insights into fundamentally new forms of Learning, Education and Training activities (LET) and into what makes for effective transfer and scalability. Our collaborative development approach leads to a Multi-perspective Dynamic Roadmap to track, anticipate and manage knowledge about new forms of LET and their impact on TEL. This extends established TEL Roadmapping methods in novel, powerful and cost-effective ways, with high potential for sustainability and for targeting each stakeholder’s goals. Outcomes include well-grounded recommendations on TEL and LET innovations, plus a platform and a

sustainable dynamic process that will foster collaboration and consensus-building across specialized communities and stakeholder groups.

In the first year of the project, i5 has produced several key contributions to the project. We hosted and developed services for the project's service portal for the European Commission at www.learningfrontiers.eu. We extended the Mediabase, which was established by i5 in the FP6 project PROLEARN, with new information on collaboration networks in EU funded projects, as well as with publications related to TEL, thus supporting TEL-MAP in achieving its mapping and roadmapping objectives. We were able to achieve synergies within i5 by (1) adopting and adapting cutting-edge widget developments from the ROLE project and by (2) adopting the established academic event recommender system (AERCS) developed at i5. In 2011, i5 has represented and disseminated TEL-MAP results in several project deliverables, at IEEE ICALT in Georgia, US, as well as at ADVTEL and EC-TEL in Palermo, Italy.

EU Life Long Learning Program TeLLNet: Teachers' Lifelong Learning Networks

*M. Jarke, R. Klamma, Y. Cao, Z. Kensche, M. C. Pham, R. Vuorikari (European Schoolnet),
A. Sahib, T. Duong*

The new EU Life Long Learning Project TeLLNet supports the development of European Schoolnet (www.etwinning.net) in cooperation with the European Schoolnet, Open University the Netherlands, and Institute for Prospective Technological Studies (IPTS) as one of European Commission Joint Research Centers. Social Network Analysis (SNA) applies graph theories, network analysis methodologies and approaches on social networks to analyze patterns of human communication, cooperation, and other kinds of interaction taking place in business, organizations and the World Wide Web. SNA provides a useful approach to identifying social capital and social structure. Small world effect and scale-free networks are observed and analyzed. This research work is based on both theoretical research and practices.

In 2011, we have finished the first project deliverable with the following two foci. One is modeling and establishment of a data warehouse for the large scale eTwinning data set. The other is application of SNA as a meta-competence to describe, represent and evaluate social and professional competence for teachers' lifelong learning. The prototype Cafe has been presented and evaluated at several European Schoolnet workshops in Karlsruhe and Bonn, and has received positive feedback from the attendant teachers.

Since then, we have been continuing with time-series network data analysis. Dynamic social network analysis methods are applied to observe the development of the European teachers' network over years. Papers of the research results have been / will be presented to the technology-enhanced learning communities at EC-TEL'11 and ICWL'11.

Life Science Informatics

ExPrimage

T. Berlage, D. Zühlke, M. Häusler, Y. Wang, E. Khabvirova

The project in collaboration with the University Hospital Hamburg Eppendorf, Carl Zeiss MicroImaging and Qiagen was funded by the Federal Ministry of Education and Research (BMBF)

In the remaining period, the project mainly focussed on the unsupervised regional and structural analysis of breast cancer tissue samples using a number of different functional and structural labels scanned under an automated microscope. We analyzed the distribution patterns of hormone receptors by quantitative statistics of islands of hormone receptor activity. These could be related to patient outcome at least for a reasonable prediction of healthy patients, but due to the low number of available samples, no valid prognosis of severance could be made.

The set of tools that has been developed in the project will be very useful for the future analysis of pathology images. These tools include image registration, supervised and unsupervised classification, and a database and user interface for metadata annotation and visualization of results. The resulting data are stored on a 150 TeraByte database server

Toponomics in Cholestatic Liver Diseases

T. Berlage, O. Domanova

Transporter protein topology influences numerous cellular processes. Internalisation of transporter proteins into the cells or their directed placement into the cellular membrane regulates flow of substances and, if altered, causes diseases. As a part of the Clinical Research Group 217 "Hepatobiliary Transport and Liver Diseases (Speaker: Prof. Dr. D. Häussinger, niversity Düsseldorf) a workflow for an automatic data analysis was developed.

In the reporting period, we could finish the evaluation of canalicular transport and also complete the workflow for basolateral transport. A fully automated imaging method was established for nuclear translocation. We also analysed the properties of confocal vs. non-confocal imaging and the resulting information in the z-axis. The results are now going to be integrated into routine high-throughput workflows for clinical research.

Other Research Projects

HumTec Project “Natural Media and Engineering”

M. Jarke, V. Evola, S. Grandhi, I. Mittelberg (HumTec)

This interdisciplinary project on natural human media (multimodal interaction) between linguistics (Prof. Jäger), informatics (Prof. Jarke), psychology (Prof. Koch, Prof. Willmes, Prof. Huber) and psychiatry (Prof. Schneider, Prof. Mathiak) is funded within the Human Technology (HumTec) initiative of the Future Concept RWTH-2020. A team of three international Junior Professors and Postdocs has been formed under the direction of Prof. Irene Mittelberg; the main research attention is directed to the analysis of gestures in conjunction with other “natural media” of the human. The intended long-term practical impact is improved human-machine interaction design based on a deeper understanding of the media. Dr. Sukeshini Grandhi represents information systems in this project, focusing on the different roles of computer games in the Natural Media context. She brings to this work extensive experience in mobile technology design, especially from her Ph.D. thesis work on Interruption Management in Mobile Telephony at the New Jersey Institute of Technology.

In the reporting period, the group conducted several successful experiments within its new gesture lab (co-funded by HumTec and Informatik 5). Dr. Grandhi published a number of papers in prestigious outlets such as the International Journal of Human-Computer Studies, the ACM-CHI 2011 and ICIS 2010 conferences. It also presented its work to the German Wissenschaftsrat as part of its visit to the RWTH Aachen Future Concept in early 2011.

Overcoming barriers in the innovation process

M. Jarke, R. Klamma, D. Schmitz, F. Piller (TIM), M. Brettel (WIN), I. Koch (Lehrstuhl f. Psychologie), K. Henning (IMA)

The IMP Boost project “Overcoming Barriers in the Innovation Process” investigates “effectuation”, a new approach to explain the success or failure of entrepreneurs. In contrast to traditional “causation” approaches the entrepreneur is not considered to be driven by a concrete goal and to choose between different alternatives in regard to how well they help to achieve this goal. Instead the entrepreneur evaluates the alternatives, in particular the choice of strategic partners, in regard to their potential for future success. The goals are adapted to the choices and in particular the needs of the strategic partners. The aim of the IMP Boost project is to compare the two approaches, “effectuation” and “causation” by running simulations. Based on theoretical research neither of these two approaches is to be favoured in general. Accordingly, we need to identify the settings, conditions, and constraints that put either of these approaches in front. From first modelling experiences and basic considerations, agent-based approaches towards simulation seem well suited as a means for investigation. Due to the high importance of networking, approaches from social network analysis as well as actor-network theory are expected to become relevant as well. The work is carried out in tight

collaboration with our partners from the economics. The project was successfully finished in 2011 and will be continued and extended as a center for multi-agent simulation together with colleagues from the institute of sociology.

SunSITE Central Europe (<http://sunsite.informatik.rwth-aachen.de>)

M. Jarke, R. Klamma, R. Linde

Since 1995, Informatik 5 is active in the field of internet-based community support, both in terms of research on community and web service tools and in terms of providing infrastructures for scientific communities worldwide. For example, Informatik 5 hosted the first website for the city of Aachen in 1995 and, since the same year, manages one of the most successful public-domain Internet servers in the German science net, SunSITE Central Europe. Supported by Sun Microsystems with powerful hardware and base software, SunSITE Central Europe focuses on scientific community support, including mirrors of some of the most important research literature indexes, workspaces for Internet cooperation, and about 3 TB of open source software. Typically, the SunSITE enjoys around 23 million ftp and http accesses per month. Recently, the section of open access publishing has been extended extensively by a cooperation with the Schloss Dagstuhl – Leibniz Center for Informatics.

i* Wiki (<http://istar.rwth-aachen.de>)

M. Jarke, G. Lakemeyer, R. Klamma, D. Schmitz, D. Renzel

Since September 2005, Informatik 5 is hosting the i* Wiki, a platform for researchers and users to foster investigation, collaboration, and evaluation in the context of the i* modeling language. In 2011, the wiki has been moved to the SunSITE serve for better services to the scientific community. After the leave of Dr. Schmitz, D. Renzel took over responsibilities.

BMBF Project SurgeryTube: Web 2.0 technologies in the training of surgeons

W. Prinz, N. Jeners, S. Franken

SurgeryNet offers an innovative Web 2.0 training platform surgeons, with a key focus on minimally invasive surgery. The central idea is the combination of daily work processes and the collection of learning content, through a time- and location-independent provision of the latest know-how. SurgeryNet simplifies the creation of case-related online content into the daily work processes and enables the users to share current knowledge.

The online content in terms of videos, 3D-models, pictures, and slideshows can be stored by all users to document their own work, or to serve education and training of surgeons. Thus, the problem of increasing time pressure in the operating room can be mitigated by the training of surgeons with the content of SurgeryNet. Users can comment and discuss the existing content to ask questions and bring in their knowledge.

The popular BSCW platform is utilized to build the basis of the SurgeryNet platform. BSCW provides general purpose document management functions with an HTML interface. During the project, a new interface and new functions will be developed and integrated in the BSCW to create the SurgeryNet platform. SurgeryNet will provide functions of a social community, like a profile and communication features and also picture and video sharing functions.

CAIRO - context aware intermodal routing

K.-H. Krempels, C. Terwelp

Goal of the CAIRO project is to offer a navigation and assistance system for the public transport on mobile devices (mobile or smart phones), which links static data (e.g. railway stations, time schedules) with dynamic data (train delays, route changes for busses) into an intermodal routing service. With help of this system an user can get individual information depending on her current situation. For example, in case of missed connecting trains on long distance travels alternative routes can be determined. CAIRO achieves this by considering intermodal offers (e.g. trains, busses, car or bicycle sharing) and real time information of the public transport systems. Thus for the first time an intermodal, dynamic routing is realized which takes into account the current location of the user and real time data of the public transport system. CAIRO is a joint project in cooperation with Deutsche Bahn AG, HaCon GmbH, InnoZ GmbH, and VBB Verkehrsverbund Berlin-Brandenburg GmbH.

Other Activities

Service

Matthias Jarke's major service activities in 2010-2011 include

- Deputy coordinator, UMIC Excellence Cluster on Mobile Information and Communication, RWTH Aachen University
- Executive Director, Fraunhofer FIT, Birlinghoven
- Chairman, Fraunhofer Information and Communication Technology group, and Member of Presidential Board, Fraunhofer Society
- Founding Director, Bonn-Aachen International Center for Information Technology(B-IT), and Coordinator, B-IT Research School
- Inaugural Dean, Applied Information Technology, German University of Technology in Oman (GUtech)
- Past President, GI German Informatics Society; also Chair, GI Fellow selection commission
- Vice President, European Research Consortium for Informatics and Mathematics (ERCIM), (until December 2010)
- Scientific advisory board, Faculty of Informatics, University of Vienna, Austria
- Scientific advisory board, Learning Lab Lower Saxony (L3S), Hannover
- Chair, Scientific advisory board, OFFIS e.V., Oldenburg
- Advisory board, Large Scale Complex IT Systems Initiative (LSCITS), UK
- Hochschulrat, FH Köln
- Member of Program Board, LOEWE Excellence Initiative Hestia
- Curatory board and scientific advisory board, IBFI, Schloss Dagstuhl (until June 2011)
- Jury, Wissenschaftspreis Stifterverband der Deutschen Wirtschaft
- Chairman, ASIIN review group for University of Potsdam and Hasso-Plattner-Institute
- Co-advisor or second reader on Ph.D. dissertations at RWTH Aachen, Tel Aviv University, and University of Potsdam;
- reviewer for tenure committees and search committees at TU Munich, University of Stuttgart, University of Washington and others
- Within the RWTH Future Concept "RWTH-2020", Prof. Jarke is responsible for the activity "International Recruiting". In cooperation with Prof. Hornke (Psychology), Z. Petrushyna, V. Busch (International Office), A. Schulz (RWTH International Academy), and representatives of four pilot departments, the team analyzed the present situation, the departmental requirements, and future strategies for the recruiting of more top international faculty and top international graduate students. Since the start of RWTH-2020, the share of international hires at the professorial levels has increased by almost 50%, and very significant quality improvements in international master student recruiting can be observed in several study programs.

Thomas Berlage served as a reviewer for the french Agence Nationale de Recherche for their excellence initiative "investissements d'avenir" in the 2010 Bioinformatics call.

Yiwei Cao is member of DIN NI-32 "Data Management and Data Exchange".

Ralf Klamma is technical leader & community facilitator of the EU IP ROLE, senior researcher in the EU projects TELLNET, TELMAP, and the Network of Excellence in Serious Gaming GALA as well in the DFG project CONTICI. He is standing expert of the W3C in the Media Annotations Working Group and founding member of the European Association on Technology Enhanced Learning (EATEL).

D. Kovachev is member of the BITKOM Working Group "Cloud Computing and Outsourcing" and member of the RWTH Industry Working Group "Cloud Computing".

Milos Kravcik is executive peer-reviewer of the Journal of Educational Technology & Society and reviewer of the Serious Games for Healthcare book, the Journal of Computer Assisted Learning, the IEEE Transactions on Learning Technologies journal, the Educational Technology Research and Development journal, the 11th IEEE International Conference on Advanced Learning Technologies (ICALT 2011), and the 1st European Workshop on Awareness and Reflection in Learning and Networks (ARNets11) at EC-TEL 2011.

Christoph Quix maintains the interactive map and database for erlebe-it.de, a project by BITKOM (Federal Association for Information Technology, Telecommunications and New Media).

Dominik Renzel is a manager of the *i** Wiki.

Thomas Rose served the European Commission as evaluation expert for EU Project Proposals on "ICT for Energy and Water Efficiency in Public Housing" (27. – 30.6.2011). He also acted as reviewer for running EU projects on "ICT for Energy and Water Efficiency".

Editorial Boards

Matthias Jarke serves on the editorial boards of the following journals: ACM Transactions on Management Information Systems (ACM-TMIS), Decision Support Systems, Group Decision and Negotiation, Information Systems Modeling and Design, Wirtschaftsinformatik/ Business Information Systems Engineering, Journal of Intelligent Information Systems, Cooperative Information Systems, Requirements Engineering Journal, Journal of Universal Computer Science (J. UCS), VLDB Journal Track, Information & Management. He also served as reviewer for several journals including Communications of the ACM. Michael Derntl served on the Editorial Board of the Informatics in Education Journal and as an executive reviewer for the following journals: Educational Technology & Society, IEEE Transactions on Learning Technologies, Educational Technology Research & Development.

Michael Derntl served on the Editorial Board of the Informatics in Education Journal and as an executive reviewer for the following journals: Educational Technology & Society, IEEE Transactions on Learning Technologies, Educational Technology Research & Development.

Sandra Geisler became member of the editorial board of the International Journal of e-Healthcare Information Systems (IJe-HIS).

David Kensche served as a reviewer for the International Journal on Information Sciences.

Ralf Klamma serves as associate editor for IEEE Transactions on Learning Technologies (TLT), Springer Journal on Social Network Analysis and Mining (SNAM), IJASS, IJTEL, and IJHSC. He is section editor for the forthcoming Springer Encyclopaedia of Social Network Analysis and Mining (ESNAM) and editor for the IEEE Special Technical

Committee on Social Networks (STCSN). In the moment he is editing a special issue “Multimedia on the Web” for Springer Multimedia Tools and Applications (MTAP). He is editor-in-chief for the SunSITE CEUR and several community information systems like the PROLEARN Academy (www.prolearn-academy.org), the Multimedia Metadata Community (www.multimedia-metadata.info) and the Bamiyan Development Community (www.bamiyan-development.org). He also served as reviewer for Communications on the ACM, ACM Computing Surveys (CSUR), ACM Transactions on Intelligent Systems and Technologies (TIST), World Wide Web Journal (WWWJ), IEEE Transactions on Learning Technologies (TLT), IEEE Multimedia, International Journal for Artificial Intelligence in Education (IJAIE), International Journal of Family Medicine (IFM), Computers & Security (COSE), International Journal on Knowledge and Learning (IJKL), it – Information & Technology, Multimedia Tools and Applications (MTAP), and Journal of Networks and Applications (JNCA).

Milos Kravcik is executive peer-reviewer of the Journal of Educational Technology & Society and reviewer of the Serious Games for Healthcare book, the Journal of Computer Assisted Learning, the IEEE Transactions on Learning Technologies journal, the Educational Technology Research and Development journal, He serves on the editorial board of the International Journal of Technology Enhanced Learning.

Christoph Quix served as a reviewer for ACM Transactions on Management Information Systems, Data & Knowledge Engineering, Information Systems, and the Journal of Web Semantics.

Dominik Renzel was reviewer for the International Journal on Multimedia Tools and Applications.

Thomas Rose has been Programme Committee member of the workshop for "IT-support of rescue forces", GI conference 2011, Berlin

Conference Organization

Matthias Jarke served as Theme Track Chair “Gateway to the Future” at the International Conference on Information Systems (ICIS 2010) in St. Louis, Missouri, Dec. 13-14, and as program committee member of the following conferences: Software Engineering 2011 (SE 2011), 23rd CAiSE 2011 (London), 17th REFSQ ’11 (Essen), SSDBM 2011 (Portland, Or), 30th Intl. Conf. Conceptual Modelling (ER-2011, Brussels), 21. Intl. Workshop on Information Technologies and Systems in connection with ICIS 2011 (WITS 2011, Shanghai). He also serves on the Advisory Board of the CIO Colloquium, a network and conferences series of the Chief Information Officers in German industry. In spring 2011, he was elected as one of the two representatives of science in the CeBIT-Messeausschuss, an advisory board consisting mostly of the CEO’s of large international enterprises exhibiting at the world’s largest IT Fair.

Yiwei Cao co-organized and was chair of Third International Workshop on Story-Telling and Educational Games (STEG’10) at ICWL’11 and First IEEE PerCom Workshop on Pervasive Communities and Service Clouds (PerCoSC’11). She is program co-chair of Tenth International Conference on Web-based Learning (ICWL’11). She was program committee member of 7th International Workshop on MOBILE and NETworking Technologies for social applications (MONET’11), CONTENT’11, 13th Workshop of the Multimedia Metadata Community (MMWeb’11), International Symposium on Models and Modeling Methodologies in Science and Engineering (MMMse’11), First International Workshop on Technology-Enhanced Social Learning (TESL’11), CTUW’11, Dexa’11, IMCIC’11, 10th International Workshop on Web Semantics (WebS’11), Mobile Learning’11 (ML’11), the

FTRA International Workshop on Information Technology and Multimedia for Ubiquitous Environments (ITMUE 2011). Yiwei Cao was also reviewer for International Journal on Multimedia Tools and Applications (MTAP), CSCS Journal, Elsevier Journal of Pervasive and Mobile Computing (JPMC), Elsevier Journal of Systems and Software (JSS), ACM Intelligent Tutoring and Coaching Systems (TIST), and Elsevier Journal of Tourism Management (JTMA).

Michael Derntl co-chaired the International Workshop on Computational Design for Technology Enhanced Learning (CD4TEL 2011). He was programme committee member of the following conferences: 6th European Conference on Technology Enhanced Learning (EC-TEL 2011), 11th IEEE International Conference on Advanced Learning Technologies (ICALT 2011), 3rd IEEE International Conference on Technology for Education (T4E 2011). He co-organized a workshop at the JTEL Summer School 2011.

Sandra Geisler, Andreas Lorenz, and Christoph Quix organized the International Workshop on Managing Health Information in Mobile Applications (HIMoA) at the International Conference on Mobile Data Management (MDM) in Luleå, Sweden.

Christoph Quix was member of the organizing committee of the 6th International Workshop on Ontology Matching. He was member of the program committee of the 30th International Conference on Conceptual Modeling (ER 2011) and of the 28th International Conference on Data Engineering (ICDE).

Dejan Kovachev co-organized the 1st IEEE PerCom Workshop on Pervasive Communities and Service Clouds, held in conjunction with 9th Annual IEEE International Conference on Pervasive Computing and Communications 2011 (PerCom 2011).

Nils Jeners served on the program committee of Workshop “Interaktive Displays in der Kooperation – Herausforderung an Gestaltung und Praxis”, Workshop, M&C 2011” at Mensch & Computer 2011 in Chemnitz

Ralf Klamma is tutorial chair for the 2012 International Conference on Advances in Social Network Analysis and Mining (ASONAM 2012). He was also co-chair of the following events: 7th JTEL Summer School in Technology Enhanced Learning, Chania, Crete, Greece, June 2011, 1st International Workshop on Enhancing Learning with Ambient Displays and Visualization Techniques (ADVTEL'11), Palermo, Italy, September 2011, the 13th Workshop of the MPEG-7 Community on Multimedia Metadata (MMWeb'11), Graz, Austria, September, 2011, and PerCOSC'11 at the IEEE PerCom, Seattle, USA, March 2011. He was special track chair on competence management in personal learning environments at the Professional Training Facts 2011, Stuttgart, Germany, October 2011, and senior reviewer for the PLE'11, Barcelona, Spain, July 2011. He served as program committee member / reviewer for the following conferences: ACM CSCW'11, ACM Symposium on Applied Computing (SAC'11), 11th IEEE International Conference on Advanced Learning Technologies (ICALT'11), IEEE - Engineering Education (EDUCON'11), IEEE American Control Conference (ACC'11), 5th IEEE/FTRA International Conference on Multimedia and Ubiquitous Engineering (MUE'11), FTRA International Workshop on Multimedia and Semantic Technologies (MUST'11), Wirtschaftsinformatik'11, International Symposium on Collaborative Technologies and Systems (CTS'11), Communities & Technologies'11, ICWL'11, European Conference on Technology Enhanced Learning (EC-TEL'11), International Conference on Ambient Systems, Networks and Technologies (ANT'11), 50th IEEE Conference on Decision and Control and European Control Conference (IEEE CDC-ECC'11), IEEE international conference on Technology for Education (T4E'11), 6th International Conference on Embedded and Multimedia Computing (EMC'11) 7th International Conference on Signal Image Technology & Internet Based Systems (ACM/IEEE

SITIS'11), GI-Workshop Digital Social Networks (GI-DSN'11), International Conference on Social Computing and its Applications (SCA'11), Conference on Learning Analytics & Knowledge (LAK'11), Computer Science Education Research Conference (CSERC'11), 3rd International Workshop on Search and Mining User-generated Contents (SMUC'11), Workshop Business Process Management and Social Software (BPMS2'11), Interactive Computer Aided Learning (ICL'11), I-KNOW'11, Workshop Computer-based Knowledge & Skill Assessment and Feedback in Learning Settings (CAF'11), Workshop on Text Information Retrieval (TIR'11), Workshop on Personalization Approaches in Learning Environments (PALE'11), Workshop on Business Applications of Social Network Analysis (BASNA'11).

Dejan Kovachev co-organized the 1st IEEE PerCom Workshop on Pervasive Communities and Service Clouds, held in conjunction with 9th Annual IEEE International Conference on Pervasive Computing and Communications 2011 (PerCom 2011).

Milos Kravcik was co-chair of the International Workshop on Self-Regulated Learning in Responsive Open Learning Environments (SRL-ROLE) at the 11th IEEE International Conference on Advanced Learning Technologies (ICALT 2011) and of the International Workshop on Personalization Approaches in Learning Environments (PALE) at the 19th International Conference on User Modeling, Adaptation and Personalization (UMAP 2011). He co-organized the 7th JTEL Summer School 2011 and served as program committee member of the 6th European Conference on Technology Enhanced Learning (EC-TEL 2011), the Doctoral Consortium at ECTEL 2011, the Social Web and Web Science Track of the Extended Semantic Web Conference (ESWC 2011), the workshop on User Profile Data on the Social Semantic Web (UWeb) at ESWC 2011, the 3rd International Conference on Computer Supported Education (CSEDU 2011), the IADIS Internet Applications and Research Conference (IAR 2011), the International Workshop on Adaptive Support for Team Collaboration (ASTC) at UMAP 2011, the 4th International Workshop on Social and Personal Computing for Web-Supported Learning Communities (SPeL) at ICWL 2011, and the Software & Web Engineering Track of the 38th International Conference on Current Trends in Theory and Practice of Computer Science (SOFSEM 2012).

Dominik Renzel co-organized the workshop "Usage and Development of Responsive Open Personal Learning Environments" at the Joint European Summer School on Technology Enhanced Learning. He was member of the programme committee for the 12th and 13th Workshop of the Multimedia Metadata Community (SMDT 2011, MMWeb 2011).

Thomas Rose organized an expert workshop on critical infra-structures in cooperation with the Frankfurt School of Finance & Management in the context of the "Public Management Conference" in September 2011 in Frankfurt.

Software Demonstrations

Automatic Mediated Schema Generation Through Reasoning Over Data Dependencies. 27th International Conference on Data Engineering (ICDE 2011), Hannover, Germany, April 11-16, 2011

CAFe, meeting of ambassadors in Germany, European SchoolNet, March 11, 2011, Bonn, Germany

Cafe, eTwinning Teacher Workshop, March 11, 2010, Bonn, Germany

Cafe, eTwinning Teacher Workshop, November 17, 2010 Karlsruhe, Germany

CoCarX – Data Stream Management for Traffic Information Systems. Final Presentation of CoCarX project, Vodafone Test Center, Düsseldorf, May 25, 2011

HealthNet Project: P2P Information Management in Wearable Computing. UMIC Day, October 19, 2010 and UMIC Open Day, July 13, 2011

Rating Game for fake multimedia detection system, at the Workshop on Multimedia on the Web (MMWeb 2011) in conjunction with i-Know and i-Semantics 2011, 7–9 September 2011, Messe Congress Graz, Austria.

Virtual Campfire (SeViAnno in the Cloud), UMIC Day 2010, October 19, 2010, Aachen Germany

Virtual Campfire, STEG Workshop at ICWL'10, December 10, 2010, Shanghai, China

Virtual Campfire, UMIC Day 2010, Aachen, Germany, October 19, 2010

YouTell, 1st GaLA Alignment School, Edinburgh, UK, June 21, 2011

Talks and Publications

Talks

T. Berlage, Toponomic Analysis of Cellular Processes in Tissue Sections. Symposium "The ABC of Life Science Informatics," 17.12.2010, Bonn

T. Berlage, Advanced Toponomics. Screening Europe, 01.07.2011, Hamburg

Y. Cao & R. Klamma: Learning Analytics at Large: the Lifelong Learning Network of 160,000 European Teachers, EC-TEL 2011, Palermo, Italy, September 23, 2011

Y. Cao: Enhancing Personal Learning Environments by Context-aware Tagging. ICWL 2010, Shanghai, China, December 9, 2010.

M. Derntl: Collaborative Storytelling for Web 2.0 and Serious Games. 1st GaLA Alignment School, Edinburgh, UK, June 21, 2011

M. Derntl: Mapping the European TEL Project Landscape Using Social Network Analysis and Advanced Query Visualization. International Workshop on Enhancing Learning with Ambient Displays and Visualization Techniques, Palermo, Italy, September 20, 2011

M. Derntl: Promises and Prospects of Serious Games for Learning. Invited talk, 2011 Conference of the European Association of Distance Learning (EADL), Vienna, Austria, May 26, 2011

M. Derntl: Propelling Standards-based Sharing and Reuse in Instructional Modeling Communities: The Open Graphical Learning Modeler (OpenGLM). 11th IEEE International Conference on Advanced Learning Technologies, Athens, Georgia, USA, July 6, 2011

M. Derntl: The ICALT Author Community. Invited talk, 11th IEEE International Conference on Advanced Learning Technologies, Athens, Georgia, USA, July 8, 2011

S. Geisler: A Data Stream-based Evaluation Framework for Traffic Information Systems. UMIC Workshop, October 18, 2010.

S. Geisler: A Universal Tool for Mobile Long-Time Recording, Monitoring and Analysis of Bio-Signals. IEEE International Conference on Mobile Data Management, International Workshop on Managing Health Information in Mobile Applications (HIMoA), June 6-9, Luleå, Sweden.

S. Geisler: A data stream-based evaluation framework for traffic information systems. ACM SIGSPATIAL Intl. Workshop on GeoStreaming (IWGS), San José, USA, November 2010.

S. Geisler: Accuracy Assessment for Traffic Information Derived from Floating Phone Data. 17th World Congress on Intelligent Transportation Systems and Services (ITS), Busan, Korea, October 2010.

S. Geisler: Data Stream Management Systems and Query Languages. Advanced School on Data Exchange, Integration and Streams (DEIS'10), Schloss Dagstuhl, Wadern, November 9, 2010.

M. Jarke (Chair) et al.: Design Requirements – Challenges and Approaches. Panel at RE 2011, Trento, Italy, 2.9.2011

M. Jarke: Fraunhofer ICT Group -- Applied Research in Europe. AARIT OCG Konvent, Vienna 16.11.2010

M. Jarke: Report of the Scientific Directors. B-IT Scientific Advisory Board and B-IT Foundation Board Meetings, Bonn, 20.-21.11.2010

M. Jarke: Opening Adress on Occasion of Starting New Fraunhofer FIT Project Group at University of Augsburg. Augsburg 21.10.2011

R. Klamma Collaborative Storytelling on the Web 2.0, TERENCE Workshop, L3S, Hannover, Germany, March 2011

R. Klamma: ATLAS - Ein neuer Informationssystemansatz für Internet-Communities, Siegen, Germany, July 2011

R. Klamma: ATLAS Overview, Doctoral Seminar, Braunshausen, Gemany, September 2011

R. Klamma: Identification of Competences in Self-regulated Learning Processes, Professional Training Facts 2011, Stuttgart, Germany, October 2011

R. Klamma: Learning Analytics for the Lifelong Long Tail Learner, Open University of the Netherlands, Heerlen, The Netherlands, February 2011

R. Klamma: Learning Competences, International Workshop on Conference Management, Stuttgart, Germany, April 2011

R. Klamma: Network Flow and Network Formation: A Social Network Analysis Perspective, Ringvorlesung Research School Business & Economics (RSBE), Siegen, Germany, June 2011

R. Klamma: SocialMedia Analytics – Aktuelle Herausforderungen, Gesellschaft für Informatik Regionalgruppe Köln, July 2011

D. Kovachev: Augmenting Pervasive Environments with an XMPP-based Mobile Cloud Middleware, the International Workshop on Mobile Computing and Clouds (MobiCloud 2010) in conjunction with MobiCASE 2010, Santa Clara, CA, USA, October 28, 2010

D. Kovachev: Mobile Multimedia Cloud Computing and the Web, the IEEE Workshop on Multimedia on the Web (MMWeb2011) in conjunction with i-Know and i-Semantics 2011, Graz, Austria, September 8, 2011

M. Kravcik, R. Klamma: Usage and Development of Responsive Open (Personal) Learning Environments. JTEL Summer School, Chania, Greece, May 31, 2011.

M. Kravcik: How can Psychology inform the Design of Learning Experiences? ICALT Conference, Athens, Georgia, USA, July 7, 2011.

M. Kravcik: Identification of Learning Goals in Forum-based Communities. ICALT Conference, Athens, Georgia, USA, July 6, 2011.

M. Kravcik: Introduction of RWTH University Aachen. The GaLA Kick-Off Meeting, Genoa, Italy, October 11, 2010.

M. Kravcik: Learning Analytics for Communities of Lifelong Learners: a Forum Case. ICALT Conference, Athens, Georgia, USA, July 7, 2011.

M. Kravcik: On Psychological Aspects of Learning Environments Design. EC-TEL Conference, Palermo, Italy, September 23, 2011.

M. Kravcik: Personalized and Adaptive Learning. The IKYDA Project Meeting, Athens, Greece, December 9, 2010.

M. Kravcik: Psychology-informed Design of Responsive Open (Personal) Learning Environments. JTEL Summer School, Chania, Greece, May 31, 2011.

- M. Kravcik: Serious Game to Train Decision Making. GaLA Allignment School, Edinburgh, U.K., June 22, 2011.
- M. Kravcik: Social Network Analysis and Serious Games. GaLA Allignment School, Edinburgh, U.K., June 22, 2011.
- M. Kravcik: The MediaBase. The TEL-Map Project General Assembly, Brunel, U.K., March 21, 2011.
- K.-H. Krempels: Rule-based Orchestration of Agent-Societies. International Conference on Agents and Agent Technology 2011 (ICAART '11), Rome, Italy, 2011.
- K.-H. Krempels: A Generic Interface for Rule-based Engines. International Conference on Software and Data Technologies 2011 (ICSOFT '11), Sevilla, Spain, 2011.
- X. Li.: Automatic Schema Merging Using Mapping Constraints Among Incomplete Sources. 19th ACM International Conference on Information and Knowledge Management (CIKM 10), October 26-30, 2010, Toronto, ON, Canada.
- Z. Petrushyna: Pattern-Based Competence Management: On the Gap between Intentions and Reality. 11th IFIP WG 5.5 Working Conference on Virtual Enterprises, PRO-VE 2010, St. Etienne, France, October 11-13, 2010
- Z. Petrushyna: "Die Kompetenzen von eTwinners messen und analysieren". The meeting of ambassadors in Germany, European SchoolNet, March 11, 2011, Bonn, Germany
- Z. Petrushyna: Evaluation Of Recommender Technology using Multi-agent Simulation. CELSTEC Learning Plenary, March 22, 2011, Heerlen, the Netherlands
- M. C. Pham: Network Clustering for Recommender Systems: A Case Study with Academic Event Recommendation. Presentation at Meeting with Mendeley.com, Aachen, November 2010
- M. C. Pham: Social Network Analysis and Its Application to Digital Libraries, IKYDA project meeting, Athen, Greece, December 7, 2010
- C. Quix: An Integrated Matching System: GeRoMeSuite and SMB – results for OAEI 2010. 5th Intl. Workshop on Ontology Matching, Shanghai, China, November 8, 2010.
- C. Quix: Automated Selection of Background Knowledge for Ontology Matching. 3rd International Workshop on Semantic Web Information Management (SWIM 2011, in conjunction with ACM SIGMOD 2011), June 12, 2011, Athens, Greece. Publications
- C. Quix: Enabling Structured Queries over Unstructured Documents. International Workshop on Semantic based Opportunistic Data Management (SODM 2011), Lulea, Sweden, June 6, 2011.
- C. Quix: Simulation von Car2X-Kommunikation für die Evaluierung eines datenstrombasierten Verkehrsinformationssystems. Aachener Simulations-Symposium, RWTH Aachen University, February 23, 2011.
- K. Rashed: Trust-aware Media Quality Profiles in Fake Multimedia Detection. At the Workshop on Multimedia on the Web (MMWeb 2011) in conjunction with i-Know and i-Semantics 2011, 7–9 September 2011, Messe Congress Graz, Austria.
- D. Renzel: Collaborative Fake Media Detection in a Trust-Aware Real-Time Distribution Network, 12th International Workshop of the Multimedia Metadata Community, December, 2010

D. Renzel: Real-Time Widgets with XMPP PubSub, 2nd ROLE Developer Camp, August, 2011, Vienna, Austria.

D. Renzel: Usage and Development of Responsive Open (Personal) Learning Environments, Joint European Summerschool on Technology Enhanced Learning, May 31, 2011, Chania, Crete.

T. Rose has been a panelist in the expert meeting on power break-downs and their impacts on businesses and civil society in the context of “Public Management 2011”, Frankfurt, September 2011.

C. Terwelp: Evaluation of Temporal Reasoning Mechanisms in Rule-Based Systems. International Conference on Agents and Agent Technology 2011 (ICAART '11), Rome, Italy, 2011.

Publications

Books and Edited Volumes

David Kensche: Generic Modeling and Mapping Languages for Model Management. PhD. Thesis, RWTH Aachen University, 2010.

Xiangfeng Luo, Yiwei Cao, Bo Yang, Jianxun Liu, Feiyue Ye: New Horizons in Web-Based Learning - ICWL 2010 Workshops: STEG, CICW, WGLBWS, and IWKDEWL, Revised Selected Papers, Shanghai, China, December 7-11, 2010, Lecture Notes in Computer Science (LNCS), Springer, Vol. 6537, 2011

Diana Perez-Marin, Milos Kravcik, Olga C. Santos (Eds.): Proceedings of the International Workshop on Personalization Approaches in Learning Environments, held in conjunction with the 19th User Modeling, Adaptation and Personalization conference (UMAP 2011), Girona, Spain, July 15, 2011. CEUR Workshop Proceedings, ISSN 1613-0073, online CEUR-WS.org/Vol-732/

Journal Articles

Y. Cao, Ralf Klamma, Matthias Jake: The Hero's Journey - Template-Based Storytelling for Ubiquitous Multimedia Management, Special Issue on Journal of Multimedia (JMM): Advances in Interactive Media Technologies, Vol. 6, No. 2, 2011, pp. 156-169, Academy Publisher

Mohamed Chatti, M.R. Agustawan, Matthias Jarke, Markus Specht: Toward a Personal Learning Environment Framework. Intl. Journal Virtual and Personal Learning Environments 1, 4 (Oct. 2010): 71-82 (winner of “Fourth Annual Excellence in Research Journal Award”)

Mohamed Chatti, Matthias Jarke, Markus Specht, Ulrik Schroeder, Daniel Dahl: Model-driven mashup personal learning environments. Intl. Journal Technology-Enhanced Learning 3, 1 (2011): 21-39

Mohamed Chatti, Matthias Jarke, Markus Specht: The 3P Learning Model. Educational Technology & Society 13, 4 (2010): 74-85

Mohamed Chatti, Ulrik Schroeder, Matthias Jarke: LaaN – Convergence of Knowledge Management and Technology-Enhanced Learning. IEEE Transactions on Technology-Enhanced Learning, in print

M. Derntl, Rafael A. Calvo: E-Learning Frameworks: Facilitating the Implementation of Educational Design Patterns. International Journal of Technology Enhanced Learning 3(3): 284-296 (2011)

M. Derntl, Thorsten Hampel, Renate Motschnig-Pitrik, Tomás Pitner: Inclusive social tagging and its support in Web 2.0 services. *Computers in Human Behavior* 27(4): 1460-1466 (2011)

Domanova O., Borbe S., Mühlfeld S., Becker M., Kubitz R., Häussinger D., Berlage T.: Toponomics method for the automated quantification of membrane protein translocation. *BMC Bioinformatics*. 2011 Sep 19;12:370.

M. Friedrich, M. Wolpers, R. Shen, C. Ullrich, R. Klamma, D. Renzel, A. Richert, and B. von der Heiden: Early Results of Experiments with Responsive Open Learning Environments, *Journal of Universal Computer Science (j-jucs)*, 17(3):451-471, Springer, 2011.

Matthias Jarke, Pericles Loucopoulos, K. Lyytinen, J. Mylopoulos, W. Robinson: The brave new world of design requirements. *Information Systems* 36, 7 (2011): 992-1008 (Special Issue from Expanded Best Papers of CAiSE '10)

Jungmann, M., Kopal, M., Clauser, C., Berlage, T.: Multi-class supervised classification of electrical borehole wall images using texture features. *Computers & Geosciences* 37, 4, 2011, pp. 541-553.

R. Klamma, M. Jarke, A. Hannemann, and D. Renzel: Der Bazar der Anforderungen - Open Innovation in emergenten Communities, *Informatik-Spektrum* 34(2):178-191, Springer Berlin/Heidelberg. April, 2011.

Henning Mersch, Daniel Behnen, Dominik Schmitz, Ulrich Epple, Christian Brecher, Matthias Jarke: Gemeinsamkeiten und Unterschiede der Prozess- und Fertigungstechnik. *Interdisziplinäre Aspekte der Produktionsmodellierung. at - Automatisierungstechnik* 59, 1 (2011): 7-17

M. Cuong Pham, Ralf Klamma, Matthias Jarke: Development of Computer Science Disciplines – A Social Network Analysis Approach, *Springer Journal on Social Network Analysis and Mining (SNAM)*, 1(4): 321-340, 2011

M. Cuong Pham, Yiwei Cao, Ralf Klamma, Matthias Jarke: A Clustering Approach for Collaborative Filtering Recommendation Using Social Network Analysis. Published in *Journal of Universal Computer Science (j-jucs)*, Springer, 17(4):583-604, 2011

Scheede, S., Herpens, A., Burmeister, F., Oltrogge, B., Saenger, K., Schmidt-Rose, T., Schreiner, V., Wenck, H., Knieps, T., Berlage, T.: Qualification of a new and precise automatic tool for the assessment of hair diameters in phototrichograms. *Skin Research and Technology* 17, 2, 2011, pp. 186-195.

T. Vaegs, D. Dugosija, S. Hackenbracht, A. Hannemann: Learning by gaming: facts and myths. *International Journal of Technology Enhanced Learning (IJTEL)*. Vol. 2 No. 1/2., 2010, pp. 21-40

Conference, Book Contributions, Patents

Yiwei Cao, Dejan Kovachev, Ralf Klamma, Rynson Lau: Enhancing Personal Learning Environments by Context-Aware Tagging, *Proceedings of ICWL 2010 - Advances in Web-Based Learning, LNCS Vol. 6483*, 2010, pp.11-20, Springer.

Uta Christoph, Karl-Heinz Krempels, Christoph Terwelp, Janno von Stülpnagel: Context Detection on Mobile Devices. *Second Workshop on Context-Systems Design, Evaluation and Optimisation 2011 (CoSDEO '11)*, Como, Italy, 2011.

Uta Christoph, Karl-Heinz Krempels, Martin Krebs, Christoph Terwelp: Rule-based Orchestration of Agent-Societies. *International Conference on Agents and Agent Technology 2011 (ICAART '11)*, Rome, Italy, 2011.

Michael Derntl, Susanne Neumann, Petra Oberhuemer: Propelling Standards-based Sharing and Reuse in Instructional Modeling Communities: The Open Graphical Learning Modeler (OpenGLM). Proceedings of the 11th IEEE International Conference on Advanced Learning Technologies, ICALT 2011, Athens, Georgia, USA, 431-435.

Domanova O., Borbe S., Mühlfeld S., Becker M., Kubitz R., Häussinger D., Berlage T., Evaluating Descriptors for the Lateral Translocation of Membrane Proteins. In Proceedings EMBC 2011, Aug 30 - Sept 3, 2011, Boston, MA.

Domanova, O.; Borbe, S.; Mühlfeld, S.; Kubitz, R.; Häussinger, D.; Berlage, T., Protein translocation analysis by automated image processing. In Proceedings Biomedical Engineering, Biomed 2011 : February 16 - 18, 2011, Innsbruck, Austria, pp. 393-399.

Kathrin Figl, Michael Derntl: The Impact of Perceived Cognitive Effectiveness on Perceived Usefulness of Visual Conceptual Modeling Languages. 30th International Conference on Conceptual Modeling (ER 2011), Lecture Notes in Computer Science, vol. 6998, 78-91, Springer Verlag.

Sebastian Franken, Nils Jeners: Challenges of Social Software in Clinical Environments: In: Suppl. Proceedings of ECSCW 2011, Aarhus, Workshopband.

G. Gans, Matthias Jarke, Stefanie Kethers, Gerhard Lakemeyer, Dominik Schmitz: Requirements Engineering for Trust-Based Interorganizational Networks. E. Yu, P. Giorgini, N.M. Maiden, J. Mylopoulos (eds.): Social Modeling for Requirements Engineering. MIT Press 2011, pp. 187-218.

Sandra Geisler, Christoph Quix, A. Schmeink, David Kensche: Ontology-based Data Integration: A Case Study in Clinical Trials. In C. Plant, C. Böhm (eds.): Database Technology for Life Sciences and Medicine. World Scientific Publishing, 2010.

Sandra Geisler, Christoph Quix, Stefan Schiffer: A Data Stream-based Evaluation Framework for Traffic Information Systems. ACM SIGSPATIAL International Workshop on GeoStreaming (IWGS) 2010, November 2, 2010, San Jose, CA, USA.

Sandra Geisler, Sven Weber, Christoph Quix: Ontology-based Data Quality Framework for Data Stream Applications. 16th International Conference on Information Quality, ICIQ 2011.

Sandra Geisler, Yuan Chen, Christoph Quix, G. G. Gehlen: Accuracy Assessment for Traffic Information Derived from Floating Phone Data. 17th Intelligent Transportation Systems and Services World Congress, Busan, South Korea, 2010.

Grandhi, S.A., Joue, G., Mittelberg, I. (2011). Understanding Naturalness and Intuitiveness in Gesture Production: Insights for Touchless Gestural Interfaces. Proceedings of The ACM's 2011 Conference on Human Factors in Computing Systems (CHI), May 2011, Vancouver, BC.

Grandhi, S.A., Joue, G., Mittelberg, I., Jarke M. (2010). Designing Touchless Gesture-Based Interfaces for Human Computer Interaction: Insights from co-verbal gestures. Proc. International Conference on Information Systems (ICIS 2010) HCI Workshop, St.Louis, MO, USA.

Grandhi, S.A., Schuler, R. and Jones, Q. (2011). Telling Calls: Facilitating Mobile Phone Conversation Grounding and Management. In Proceedings of The ACM's 2011 Conference on Human Factors in Computing Systems (CHI). ACM Press.

Josef Hahn, Karl-Heinz Krempels, Christoph Terwelp: Extending the RETE Algorithm by Temporal Reasoning. International Conference on Agents and Agent Technology 2011 (ICAART '11), Rome, Italy, 2011.

Jessica Huster: Support for Ontology Evolution in the Trend Related Industry Sector Published in Lecture Notes in Business Information Processing (LNBIP), Vol. 73, Springer, Berlin, Heidelberg.

Fisnik Kastrati, Xiang Li, Christoph Quix, Mohammadreza Khelghati: Enabling Structured Queries over Unstructured Documents: International Workshop on Semantic based Opportunistic Data Management (SODM 2011), in conjunction with the 12th IEEE International Conference on Mobile Data Management (MDM 2011), Lulea, Sweden, 2011.

Ralf Klamma, Zinayida Petrushyna: Pattern-Based Competence Management: On the Gap between Intentions and Reality. In Proc. 11th IFIP WG 5.5 Working Conference on Virtual Enterprises, PRO-VE 2010, St. Etienne, France, October 11-13, 2010, pp. 364-371 Series: IFIP Advances in Information and Communication Technology, Vol. 336.

Sabine Kolvenbach, Nils Jeners: NETme – ein Social Surface Treffpunkt. In: Suppl. Proceedings of M&C 2011, Chemnitz, Workshopband.

D. Kovachev, Y. Cao, R. Klamma: Augmenting Pervasive Environments with an XMPP-based Mobile Cloud Middleware. Proceedings of the International Workshop on Mobile Computing and Clouds (MobiCloud 2010) in conjunction with MobiCASE 2010, Santa Clara, CA, USA, October 28, 2010.

D. Kovachev, Y. Cao, R. Klamma: Mobile Multimedia Cloud Computing and the Web. Proceedings of the IEEE Workshop on Multimedia on the Web (MMWeb2011) in conjunction with i-Know and i-Semantics 2011, Graz, Austria, September 8, 2011.

Milos Kravcik, Ralf Klamma, Zinayda Petrushyna: How Can Psychology Inform the Design of Learning Experiences? In Proc. of the 11th IEEE International Conference on Advanced Learning Technologies (ICALT), July 6-8, 2011, Athens, Georgia, USA, 300-301.

Milos Kravcik, Ralf Klamma: On Psychological Aspects of Learning Environments Design. In Proc. EC-TEL 2011, 6th European Conference on Technology Enhanced Learning, 20-23 September, Palermo, Italy, 436-441.

Karl-Heinz Krempels, Christoph Terwelp, Andreas Sonnenbichler: Context Aware Document Management System. Second Workshop on Context-Systems Design, Evaluation and Optimisation 2011 (CoSDEO '11), Como, Italy, 2011.

Karl-Heinz Krempels, Christoph Terwelp: A Generic API for the Integration of RBS in an ESB. International Conference on Software and Data Technologies 2011 (ICSOFT '11), Sevilla, Spain, 2011.

Julian Krengel, Zinayida Petrushyna, Milos Kravcik, Ralf Klamma: Identification of Learning Goals in Forum-based Communities. in Proc. ICALT 2011, 11th IEEE International Conference on Advanced Learning Technologies.

Rynson Lau, Ralf Klamma, Shu-Ching Chen, Benjamin Wah: Advances in ubiquitous media technologies and applications. World Wide Web (WWW), Springer 14(3):217-222, 2011.

Xiang Li, Christoph Quix: Merging Relational Views: A Minimization Approach. Proc. of the 30th Int. Conference on Conceptual Modeling (ER 2011), 2011.

Xiang Li, Christoph Quix, David Kensche, Sandra Geisler, Lisong Guo: Automatic Mediated Schema Generation Through Reasoning Over Data Dependencies. Proceedings of the 27th International Conference on Data Engineering, ICDE 2011, April 11-16, 2011, Hannover, Germany.

Xiang Li, Christoph Quix, David Kensche, Sandra Geisler: Automatic Schema Merging Using Mapping Constraints Among Incomplete Sources. Proceedings of the 19th ACM international conference on Information and knowledge management (CIKM'10), October 26-30, 2010, Toronto, ON, Canada.

Zinayda Petrushyna, Milos Kravcik, Ralf Klamma: Learning Analytics for Communities of Lifelong Learners: A Forum Case. In Proc. of the 11th IEEE International Conference on Advanced Learning Technologies (ICALT), July 6-8, 2011, Athens, Georgia, USA, 609-610.

Christoph Quix, Avigdor Gal, Tomer Sagi, David Kensche: An integrated matching system: GeRoMeSuite and SMB - Results for OAEI 2010. Fifth International Workshop on Ontology Matching (OM-2010), Shanghai, China, 2010.

Christoph Quix, Marko Pascan, Pratanu Roy, David Kensche: Semantic Matching of Ontologies. Published in Fifth International Workshop on Ontology Matching (OM-2010), Shanghai, China, 2010.

Christoph Quix, Pratanu Roy, David Kensche: Automatic Selection of Background Knowledge for Ontology Matching. 3rd International Workshop on Semantic Web Information Management (SWIM 2011, in conjunction with ACM SIGMOD 2011), June 12, 2011, Athens, Greece.

Khaled Rashed, Dominik Renzel, Ralf Klamma, Trust-aware Media Quality Profiles in Fake Multimedia Detection. Published in IEEE Proceedings of Workshop on Multimedia on the Web (MMWeb 2011) in conjunction with i-Know and i-Semantics 2011, 7-9 September 2011, Messe Congress Graz, Austria.

Dominik Renzel, Khaled Rashed, Ralf Klamma: Collaborative Fake Media Detection in a Trust-Aware Real-Time Distribution Network. Published in Proceedings of the 12th International Workshop of the Multimedia Metadata Community, the 2nd Workshop focusing on Semantic Multimedia Database Technologies 2010, collocated with the 5th International Conference on Semantic and Digital Media Technologies (SAMT2010), Saarbrücken, Germany, December 2, 2010, CEUR-WS.org Vol. 680, 17-28.

Jan Schlüter, Dominik Schmitz, Malte Brettel, Matthias Jarke, Ralf Klamma: Causal vs. Effectual Behavior - Support for Entrepreneurs. Proceedings of the 5th International i* Workshop 2011, Trento, Italy, August 28-29, 2011, CEUR Workshop Proceedings, Vol. 766, 126-131.

Ergang Song, Zinayida Petrushyna, Yiwei Cao, Ralf Klamma: Learning Analytics at Large: The Lifelong Learning Network of 160,000 European Teachers, Towards Ubiquitous Learning - Proceedings of 6th European Conference on Technology Enhanced Learning, EC-TEL 2011, Palermo, Italy, September 20-23, 2011, LNCS Vol. 6964, pp. 398-411, Springer.

Position Papers and Interviews (Selection)

A. Harand, G. Peinel, T. Rose: Process Structures in Crisis Management. 6th Future Security, Berlin, 2011, (Security Research Conference).

Sascha Ott: Der Maler und seine Maschinen. Zum 100. Geburtstag von Computer-Pionier Konrad Zuse. Interview mit Matthias Jarke, WDR 5 Leonardo – Wissenschaft und mehr, 18.6.2010.

Michael Werkle, Manuel Schmidt, Ralf Klamma: PLE meets LMS: Wie sieht die Lernumgebung der Zukunft aus? In B. Dworshak, A. Karapidis (eds.): Proceedings of Professional Training Facts 2009, Fraunhofer IAO, Stuttgart, Germany, 2010.