

# CAiSE'11

London, United Kingdom

20<sup>th</sup> – 24<sup>th</sup> June 2011

University of East London

## Detailed Programme



# Welcome to CAiSE'11

A warm welcome to the 23rd International Conference on Advanced Information Systems Engineering (CAiSE 2011)! CAiSE 2011 received 320 submissions, the largest number ever received in the CAiSE conference series. Following an extensive review process, which included a Programme Committee/ Programme Board meeting on the 13th and 14th of February 2011 in London, 42 submissions were accepted as full papers and 5 as short papers. Accepted papers addressed a large variety of issues related to the conference and were organised into ten themes: Requirements, Adaptation and Evolution, Model Transformation, Conceptual Design, Domain Specific Languages, Case Studies and Experiences, Mining and Matching, Service and Management, Validation and Quality, Business Process Modelling. The programme of the conference is also supplemented by 11 workshops, a Doctoral Consortium, the CAiSE Forum, two working conferences and a panel on Green and Sustainable Information Systems.

We are pleased to have two keynote speeches by Mr. Dimitris Beis on Information Systems for the Olympic Games and by Prof. Anthony Finkelstein on Open Challenges at the Boundaries of Software Engineering & Information Systems.

Paris / London May 2011

Colette Rolland / Haralambos Mouratidis (CAiSE'11 PC Co-Chairs)



# CAiSE'11 programme at a glance

## Satellite Events

**Monday 20/06/2011**

Time	Activity	Events (Rooms)
08:30 - 09:30	Registration	(EB.G.16)
09:30 - 11:00	Session 1 (AM)	EMMSAD (EB.1.41), BPMDS (WB.2.01), BUSITAL (EB.1.42), ODISE (WB.2.03), DSE (WB.2.07), CMM (WB.2.04), EOMAS (WB.2.02)
11:00 - 11:30	Coffee Break	(EB.G.16 / EB.G.14)
11:30 - 13:00	Session 2 (AM)	EMMSAD, BPMDS, BUSITAL, ODISE, DSE, CMM, EOMAS
13:00 - 14:30	Lunch	(EB.G.16 / EB.G.14)
14:30 - 16:00	Session 3 (PM)	EMMSAD, BPMDS, BUSITAL, ODISE, SSW (WB.2.07), CMM, EOMAS
16:00 - 16:30	Coffee Break	(EB.G.16 / EB.G.14)
16:30 - 18:00	Session 4 (PM)	EMMSAD, BPMDS, BUSITAL, ODISE, SSW, CMM, EOMAS
19:30	Workshop Dinner	

**Tuesday 21/06/2011**

Time	Activity	Events (Rooms)
08:30 - 09:30	Registration	(EB.G.16)
09:30 - 11:00	Session 1 (AM)	EMMSAD (EB.1.41), BPMDS (WB.2.01), IWWSA (WB.2.04), GRCIS (WB.2.05), ONTOSE (WB.2.06), INISET (WB.2.07), WISSE (EB.1.42), Doctoral Consortium (WB.2.03), EOMAS (WB.2.02)
11:00 - 11:30	Coffee Break	(EB.G.16 / EB.G.14)
11:30 - 13:00	Session 2 (AM)	EMMSAD, BPMDS, IWWSA, GRCIS, ONTOSE, INISET, WISSE, Doctoral Consortium, EOMAS
13:00 - 14:30	Lunch	(EB.G.16 / EB.G.14)
14:30 - 16:00	Session 3 (PM)	EMMSAD, BPMDS, IWWSA, GRCIS, ONTOSE, INISET, WISSE, Doctoral Consortium, EOMAS
16:00 - 16:30	Coffee Break	(EB.G.16 / EB.G.14)
16:30 - 18:00	Session 4 (PM)	EMMSAD, BPMDS, IWWSA, GRCIS, ONTOSE, INISET, WISSE, Doctoral Consortium, EOMAS

# Main Conference

## Wednesday 22/06/2011

Time	Activity	Event (Room)
08:30 - 09:30	Registration	(EB.G.16)
09:30 - 10:00	Session 1 (AM)	Opening Ceremony (EB.2.44)
10:00-11:00	Session 2 (AM)	Keynote (EB.2.44)
11:00 - 11:30	Coffee Break	(EB.G.16 / EB.G.14)
11:30 - 13:00	Session 3 (AM)	Theme 1 (Requirements) (EB.2.43)   Theme 2 (adaptation and Evolution) (EB.2.44)   Panel (Green and Sustainable IS)(EB.G.11)
13:00 - 14:30	Lunch	(EB.G.16 / EB.G.14)
14:30 - 16:00	Session 4 (PM)	Theme 3 (Model Transformation 1)(EB.2.43)   Theme 4 (Conceptual Design 1) (EB.2.44)
16:00 - 16:30	Coffee Break	(EB.G.16 / EB.G.14)
16:30 - 18:15	Session 5 (PM)	Theme 5 (Conceptual Design 2)(EB.2.43)   Theme 6 (Domain Specific Languages) (EB.2.44)
19:00	Reception	(UEL Campus)

## Thursday 23/06/2011

Time	Activity	Event
08:30 - 09:30	Registration	(EB.G.16)
09:30 -10:30	Session 1 (AM)	Keynote (EB.2.44)
10:30-11:00	Coffee Break	(EB.G.16 / EB.G.14)
11:00-12:45	Session 2 (AM)	Theme 7 (Case Studies and Experiences) (EB.2.43)   Theme 8 (Model Transformation 2) (EB.2.44)
12:45-14:00	Lunch	(EB.G.16 / EB.G.14)
14:00-16:00	Session 3 (PM)	Theme 9 (Mining and Matching) (EB.2.43)   Theme 10 (Business Process Modelling) (EB.2.44)
16:00-16:30	Coffee Break	(EB.G.16 / EB.G.14)
16:30-18:00	Session 4 (PM)	Forum (EB.G.16 / EB.G.14)   Theme 11 (Validation and Quality) (EB.2.43)
20:00	Conference Banquet	(Painted Hall Greenwich)

## Friday 24/06/2011

<b>Time</b>	<b>Activity</b>	<b>Event (Rooms)</b>
08:30 - 09:00	Registration	(EB.G.16)
09:00 - 11:00	Session 1 (AM)	Theme 12 ( Service and Management 1) (EB.2.43)
11:00 - 11:30	Coffee Break	(EB.G16 / EB.G.14)
11:30 - 13:15	Session 2 (AM)	Theme 13 (Service and Management 2) (EB.2.43)
13:20 - 13:40	Closing Ceremony	(EB.2.43)
13:40	Lunch	(EB.G16 / EB.G.14)

# Main Conference Detailed Scientific Programme

## Wednesday 22/06/2011

Time	Activity	Event	Room
08:30 - 09:30	Registration		EB.G.16
09:30 - 10:00	Session 1 (AM)	<b>Opening Ceremony</b> Pericles Loucopoulos (CAiSE'11 General Chair); John Joughin (Deputy Vice-Chancellor of UEL); Colette Rolland / Haris Mouratidis (CAiSE'11 PC Co-Chairs); Elias Pimenidis (CAiSE'11 Local Committee Chair)	EB.2.44
10:00-11:00	Session 2 (AM)	<b>Keynote</b> <b>Chair: Colette Rolland</b> <b>Dimitris A. Beis: <i>Total Integration - The Case of Information Systems for Olympic Games</i></b>	EB.2.44
11:00 - 11:30	Coffee Break		EB.G.16 / EB.G.14
11:30 - 13:00	Session 3 (AM)		
11:30 - 13:00		<b>Theme 1: Requirements</b> <b>Chair: Jaelson Castro</b>	EB.2.43
11:30 -12:00		<i>Requirements Management with Semantic Technology - An empirical study on automated requirements categorization and conflict</i> Thomas Moser, Dietmar Winkler, Matthias Heindl, Stefan Biffel	
12:00 - 12:30		<i>S3C: Using Service Discovery to Support Requirements Elicitation in the ERP Domain</i> Markus Noebauer, Norbert Seyff, Neil Maiden, Konstantinos Zachos	
12:30 - 13:00		<i>Requirements Engineering for Self-Adaptive Systems: Core Ontology and Problem Statement</i> Nauman A. Qureshi, Ivan J. Jureta, Anna Perini	
11:30 - 13:00		<b>Theme 2: Adaptation and Evolution</b> <b>Chair: Hans Weignad</b>	EB.2.44
11:30 - 12:00		<i>A Fuzzy Service Adaptation based on QoS Satisfaction</i> Seyed Hossein Siadat, Barbara Pernici	
12:00 - 12:30		<i>Dealing with Known Unknowns: Towards a Game-Theoretic Foundation for Software Requirement Evolution</i> Le Minh Sang Tran, Fabio Massacci	

12:30 - 13:00		<i>Goal-based Behavioral Customization of Information Systems</i> Sotirios Liaskos, Marin Litoiu, Marina Daoud Jungblut, John Mylopoulos	
11:30 - 13:00		<b>Panel: Green and Sustainable Information Systems</b> <b>Chair: Barbara Pernici</b> <b>Panelists:</b> Marco Aiello, Jan vom Brocke, Brian Donnellan, Erol Gelenbe, Mike Kretsis	EB.G.11
13:00 - 14:30	Lunch		EBG.16 / EBG.14
14:30 - 16:00	Session 4 (PM)		
14:30 - 16:00		<b>Theme 3: Model Transformation 1</b> <b>Chair: Arnon Sturm</b>	EB.2.43
14:30-15:00		<i>From Requirements to Models: Feedback Generation as a Result of Formalization</i> Leonid Kof, Birgit Penzenstadler	
15:00-15:30		<i>A Web Usability Evaluation Process for Model-Driven Web Development</i> Adrian Fernandez, Silvia Abrahao, Emilio Insfran	
15:30-16:00		<i>A Trace Metamodel Proposal based on the Model Driven Architecture Framework for the Traceability of User Requirements in Data Warehouses</i> Alejandro Mate, Juan Trujillo	
14:30 - 16:00		<b>Theme 4: Conceptual Design 1</b> <b>Chair: Terry Halpin</b>	EB.2.44
14:30-15:00		<i>Ontological Foundations for Conceptual Part-Whole Relations: The Case of Collectives and their Parts</i> Giancarlo Guizzardi	
15:00-15:30		<i>Product-based Workflow Design for Monitoring of Collaborative Business Processes</i> Marco Comuzzi, Irene T.P. Vanderfeesten	
15:30-16:00		<i>Modeling Design Patterns with Description Logics: A Case Study</i> Yudistira Asnar, Elda Paja, John Mylopoulos	
16:00 - 16:30	Coffee Break		EBG.16 / EBG.14
16:30 - 18:15	Session 5 (PM)		
16:30 - 18:15		<b>Theme 5: Conceptual Design 2</b> <b>Chair: Camille Salinesi</b>	EB.2.43
16:30-17:00		<i>Interactively Eliciting Database Constraints and Dependencies</i> Ravi Ramdoyal, Jean-Luc Hainaut	

17:00-17:30		<i>A Conceptual Model for Integrated Governance, Risk and Compliance</i> Pedro Vicente, Miguel Mira da Silva	
17:30-18:00		<i>Using Synchronised Tag Clouds for Browsing Data Collections</i> Alexandre De Spindler, Stefania Leone, Michael Nebeling, Matthias Geel, Moira Norrie	
18:00 - 18:15		<i>Revisiting Naur's Programming as Theory Building for Enterprise Architecture Modelling</i> Balbir S Barn, Tony Clark	
16:30 – 18:00		<b>Theme 6: Domain Specific Languages</b> <b>Chair: Iris Reinhartz-Berger</b>	EB.2.44
16:30-17:00		<i>A DSL for Corporate Wiki Initialization</i> Oscar Diaz, Gorka Puente	
17:00-17:30		<i>The REA-DSL: A Domain Specific Modeling Language for Business Models</i> Christian Sonnenberg, Christian Huemer, Birgit Hofreiter, Dieter Mayrhofer, Alessio Braccini	
17:30-18:00		<i>A Foundational Approach for Managing Process Variability</i> Matthias Weidlich, Jan Mendling, Mathias Weske	
19:00	CAiSE Reception		UEL Campus

## Thursday 23/06/2011

Time	Activity	Event	Room
08:30 - 09:30	Registration		EB.G.16
09:30 - 10:30	Session 1 (AM)	<b>Keynote</b> <b>Chair: Haris Mouratidis</b> <b>Anthony Finkelstein: Ten Open Challenges at the Boundaries Software Engineering &amp; Information Systems</b>	EB.2.44
10:30 - 11:00	Coffee Break		EB.G.16 / EB.G.14
11:00 - 12:45	Session 2 (AM)		
11:00 - 12:45		<b>Theme 7: Case Studies and Experiences</b> <b>Chair: Marco Bajec</b>	EB.2.43
11:00 - 11:30		<i>Tangible Media in Process Modeling - A Controlled Experiment</i> Alexander Luebbe, Mathias Weske	
11:30 - 12:00		<i>Experiences of Using Different Communication Styles in Business Process Support Systems with the Shared Spaces Architecture</i> Ilia Bider, Paul Johannesson, Rainer Schmidt	
12:00 - 12:30		<i>What Methodology Attributes are Critical for Potential Users? Understanding the Effect of Human Needs</i> Kunal Mohan, Frederik Ahlemann	
12:30 - 12:45		<i>Exploratory Case Study Research on SOA Investment Decision Processes in Austria</i> Lukas Auer, Eugene Belov, Natalia Kryvinska, Christine Strauss	
11:00 - 12:45		<b>Theme 8: Model Transformation 2</b> <b>Chair: Christos Kalloniatis</b>	EB.2.44
11:00 - 11:30		<i>A Metamodelling Approach for i* Model Translations</i> Carlos Cares, Xavier Franch	
11:30 - 12:00		<i>Automatic Generation of a Data-Centered View of Business Processes</i> Cristina Cabanillas, Manuel Resinas, Antonio Ruiz-Cortes, Ahmed Awad	
12:00 - 12:30		<i>Connecting Security Requirements Analysis and Secure Design Using Patterns and UMLsec</i> Holger Schmidt, Jan Jurjens	
12:30 - 12:45		<i>Transforming Enterprise Architecture Models: An Artificial Ontology View</i> Sandeep Puroo, Richard Martin, Edward Robertson	
12:45 - 14:00	Lunch		EB.G.16 / EB.G.14
14:00 - 16:00	Session 3 (PM)		

14:00 - 16:00		<b>Theme 9: Mining and Matching</b> <b>Chair: Jan Medling</b>	EB.2.43
14:00 - 14:30		<i>Handling Concept Drift in Process Mining</i> Jagadeesh Chandra Bose R. P., Wil M.P. van der Aalst, Indre Zliobaite, Mykola Pechenizkiy	
14:30 - 15:00		<i>An Iterative Approach for Business Process Template Synthesis from Compliance Rules</i> Ahmed Awad, Rajeev Gore, James Thomson, Matthias Weidlich	
15:00 - 15:30		<i>A Design of Business-Technology Alignment Consulting Framework</i> Kecheng Liu, Lily Sun, Dian Jambari, Vaughan Michell, Sam Chong	
15:30 - 16:00		<i>ONTECTAS: Bridging the Gap Between Collaborative Tagging Systems and Structured Data</i> Ali Moosavi, Tianyu Li, Laks V.S. Lakshmanan, Rachel Pottinger	
14:00 - 16:15		<b>Theme 10: Business Process Modelling</b> <b>Chair: Matthias Jarke</b>	EB.2.44
14:00 - 14:30		<i>Cognitive Complexity in Business Process Modeling</i> Kathrin Figl, Ralf Laue	
14:30 - 15:00		<i>Human-Centered Process Engineering based on Content Analysis and Process View Aggregation</i> Sonja Kabicher, Stefanie Rinderle-Ma	
15:00 - 15:30		<i>Process Model Generation from Natural Language Text</i> Fabian Friedrich, Jan Mendling, Frank Puhmann	
15:30 - 16:00		<i>A Semantic Approach for Business Process Model Abstraction</i> Sergey Smirnov, Hajo A. Reijers, Mathias Weske	
16:00 - 16:15		<i>On the Automatic Labeling of Process Models</i> Henrik Leopold, Jan Mendling, Hajo A. Reijers	
16:00 - 16:30	Coffee Break		EB.G.16 / EB.G.14
16:30 - 18:00	Session 4 (PM)		
16:30 - 18:00		<b>Theme 11: Validation and Quality</b> <b>Chair: Yannis Vassiliou</b>	EB.2.43
16:30-17:00		<i>Pattern-Based Modeling and Formalizing of Business Process Quality Constraints</i> Lial Khaluf, Christian Gerth, Gregor Engels	
17:00-17:30		<i>Quality Evaluation and Improvement Framework for Database Schemas - Using Defect Taxonomies</i> Jonathan Lemaitre, Jean-Luc Hainaut	

17:30-18:00		<i>Validation of Families of Business Processes</i> Gerd Groener, Christian Wende, Marko Boskovic, Fernando Silva Parreiras, Tobias Walter, Florian Heidenreich, Dragan Gasevic, Steffen Staab	
16:30 - 18:00		<b>CAiSE Forum</b> <b>Chair: Selmin Nurcan</b>	EB.G.16 / EB.G.14
20:00	Conference Banquet		Painted Hall Greenwich

## Friday 24/06/2011

Time	Activity	Event	Room
08:30 - 09:00	Registration		EB.G.16
09:00 - 11:00	Session 1 (AM)		
09:00 - 11:00		<b>Theme 12: Service and Management 1</b> <b>Chair: Stephan Rieff Marjaniec</b>	EB.2.43
09:00-09:30		<i>Using SOA Governance Design Methodologies to Augment Enterprise Service Descriptions</i> Marcus Roy, Basem Suleiman, Dennis Schmidt, Ingo Weber, Boualem Benatallah	
09:30-10:00		<i>Management services - a framework for design</i> Hans Weigand, Paul Johannesson, Birger Andersson, Jeewanie Jayasinghe Arachchige, Maria Bergholtz	
10:00 - 10:30		<i>Bottom-Up Fault Management in Composite Web Services</i> Brahim Medjahed, Zaki Malik	
10:30 - 11:00		<i>Understanding the Diversity of Services Based on Users' Identities</i> Junjun Sun, Feng Liu, He Zhang, Lin Liu, Eric Yu	
11:00 - 11:30	Coffee Break		EB.G.16 / EB.G.14
11:30 - 13:15	Session 2 (AM)		
11:30 - 13:15		<b>Theme 13: Service and Management 2</b> <b>Chair: Stephan Rieff Marjaniec</b>	EB.2.43
11:30 -12:00		<i>Request/Response Aspects for Web Service</i> Ernst Juhnke, Dominik Seiler, Ralph Ewerth, Matthew Smith, Bernd Freisleben	
12:00 - 12:30		<i>Using Graph Aggregation for Service Interaction Message Correlation</i> Adnene Guabtini, Hamid Reza Motahari-Nezhad, Boualem Benatallah	
12:30 - 13:00		<i>Supporting dynamic, people-driven Processes through Self-learning of Message Flows</i> Christoph Dorn, Schahram Dustdar	
13:00 - 13:15		<i>Business Process Service Oriented Methodology (BPSOM) with Service generation in SoaML</i> Andrea Delgado, Francisco Ruiz, Ignacio Garcia-Rodriguez de Guzman, Mario Piattini	
13:20 - 13:40	Closing Ceremony	CAiSE'11 Organising Committee CAiSE'12 Organising Committee	EB.2.43
13:40 - 14:30	Lunch		EB.G.16 / EB.G.14

# Keynotes

## **Dimitris A. Beis: Total Integration - The Case of Information Systems for Olympic Games**

The Olympic Games, the most demanding Sports Mega Event, have evolved through the years to complexity levels unparalleled in any man designed process. Information Systems play the key role both as an enabler and critical performer for an Olympic Event if not surpassing at least in equal terms with the stars of the Games, the Athletes. Just data registering of records and performance of sports and athletes is not a viable option today for the Olympic Games. The total integration of all functions that make the 15 dream days of the Olympics is the target. Olympic family services, spectator services, cultural integration, media and broadcasting services, world participation and host city performance in transportation, crowd regulation and security must be supported in a first time easy to use, reliable and sub second response performance with 100% availability of all systems. The IS implemented in support of the last three Olympiads in Sydney, Athens and Beijing will be presented, critical issues of success factors analysed and expected developments projected.

### **Bio**



Scientific Secretary and Member of the Board of the Greek Energy Council until December 2009 responsible for the proposal to the government of the long term energy strategy for Greece. As Scientific Secretary he was responsible for recommending to the Board the yearly energy white paper as the head of the Secretariat of the Council.

Prior to this position D. A. Beis was General Manager for Technologies for the Athens 2004 Olympics Games Organising Committee. The field of responsibilities for the Athens 2004 Games included Information Technologies, Telecommunications, and Energy. During games time he was a member of the Olympic Games Operations Board that delivered the "DREAM GAMES" as acknowledged by the President of the International Olympic Committee. D. A. Beis is currently energy advisor to the International Olympic Committee.

For his work in the planning and design of the Athens 2004 Olympic Games and in particular the work undertaken in cooperation with the University of Manchester Institute of Science and Technology (UMIST) and the Athens Economics University for the work in applying Operations Research methodologies and developing the PLATO tool ( Process Logistics Advanced Technical

Optimiser), he was awarded, together with Professors P. Loucopoulos, C. Zografos and J. Pyrgiotis, the first prize in 2005 from the Operations Research Society in England and a commendation from the Edelman OR Society of the USA.

Prior to the appointment to the Athens Olympics, D.A.Beis occupied a variety of top management positions both in the private sector and the Greek Government. In brief from 1973 till 1988 he was responsible for the design and implementation of engineering projects including the design and construction of the Energy Control Centre for the Public Power Corporation. From 1989 till 1992 he was responsible for the introduction of advanced information systems for the Greek Government, while from 1993 till his appointment to the Olympics Committee he was responsible successively for the planning of energy production facilities and later for the privatisation of the electricity incumbent company.

D.A. Beis holds the degrees of BSc (Eng) from Aston University in England, Diploma of Technical Sciences of UMIST, MSc and DIC in Systems Analysis from Imperial College in London. From 1999 until 2004 Mr D. A. Beis was Visiting Professor at UMIST. Mr Beis hold at various times the following Membership of Professional Bodies: Technical Chamber of Greece, CIGRE, UNIPEDE (Informatics Committee), and Member of the Directing Committee of EURELECTRIC in Brussels.

## **Prof. Anthony Finkelstein: Ten Open Challenges at the Boundaries Software Engineering & Information Systems**

In this talk, intended to provoke discussion, Prof. Finkelstein will suggest 10 important open challenges at boundaries where Software Engineering & Information Systems meet. He will focus on challenges are both intellectually demanding and of industrial importance. He will suggest some approaches to meeting these challenges and will lay stress upon the interdisciplinary opportunities they give rise to.

### **Bio**



Anthony Finkelstein a graduate in systems engineering holding a BEng, MSc and PhD. He is Professor of Software Systems Engineering at University College London (UCL), a leading UK research university. He is a Visiting Professor at Imperial College London and at the National Institute for

Informatics, Tokyo, Japan. He is Dean of the Faculty of Engineering Science and was Head of the Department of Computer Science at UCL. He has published more than 220 scientific papers and secured more than £20m of research funding. He is a Fellow of both the Institution of Engineering & Technology (IET) and the British Computer Society (BCS) and has been active professionally in both, serving on numerous Boards and Committees.

Most recently he has been appointed Chair of the BCS Science & Engineering Engagement Committee and received a special 'Outstanding Contribution Award' from the International Conference on Software Engineering. In 2009 he received the Oliver Lodge Medal of the IET for achievement in Information Technology. He has been recognised for his contributions to the field of requirements engineering and for his professional service by the IEEE. He was a winner of the prestigious International Conference on Software Engineering 'most influential paper' prize for work on 'viewpoints' and a winner of the Requirements Engineering 'most influential paper' prize for work on traceability. He was a member of the winning team of the first Times Higher Education 'Research Project of the Year'.

He has served on numerous editorial boards including that of ACM TOSEM and IEEE TSE, and was founder editor of Automated Software Engineering. He also chaired numerous international meetings and was General Chair of the International Conference on Software Engineering. He was keynote speaker at Automated Software Engineering. He was the founder Chair of IFIP WG 2.9 (Software Requirements Engineering) an international research society and was keynote speaker at the International Conference on Requirements Engineering. He established a leading research group in software systems engineering at UCL and played a key role in the foundation of London Software Systems, a major new research institute. He served on the UK 2008 Research Assessment Exercise panel for Computer Science and Informatics and was a member of the Committee of Visitors for the US National Science Foundation. He has provided consultancy advice to a very large number of high profile companies and government organisations. He has acted as an expert in complex technology disputes and is highly experienced at technology due diligence on start-up companies. He was recently awarded the UCL 'Entrepreneurial Spirit' award, an institutional honour marking his contributions to knowledge transfer. He has established three successful 'spinout' companies providing respectively professional services, product software and an innovative software.