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On the Move to Meaningful Internet Systems: OTM 2014 Conferences

Confederated International Conferences:
CoopIS and ODBASE 2014
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Proceedings

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General Co-Chairs' Message for OnTheMove 2014

The OnTheMove 2014 event held during October 27–31 in Amantea, Italy, further consolidated the importance of the series of annual conferences that was started in 2002 in Irvine, California. It then moved to Catania, Sicily in 2003, to Cyprus in 2004 and 2005, Montpellier in 2006, Vilamoura in 2007 and 2009, in 2008 to Monterrey, Mexico, to Heraklion, Crete in 2010 and 2011, to Rome 2012, and to Graz in 2013. This prime event continues to attract a diverse and relevant selection of today's research worldwide on the scientific concepts underlying new computing paradigms, which of necessity must be distributed, heterogeneous, and supporting an environment of resources that are autonomous yet must meaningfully cooperate. Indeed, as such large, complex, and networked intelligent information systems become the focus and norm for computing, there continues to be an acute and even increasing need to address the implied software, system, and enterprise issues and discuss them face to face in an integrated forum that covers methodological, semantic, theoretical, and application issues as well. As we all realize, email, the Internet, and even video conferences on their own are not optimal nor even sufficient for effective and efficient scientific exchange.

The OnTheMove (OTM) Federated Conference series has been created precisely to cover the scientific exchange needs of the communities that work in the broad yet closely connected fundamental technological spectrum of Web-based distributed computing. The OTM program every year covers data and Web semantics, distributed objects, Web services, databases, information systems, enterprise workflow and collaboration, ubiquity, interoperability, mobility, grid, and high-performance computing.

OnTheMove does *not* consider itself a so-called multi-conference event but instead is proud to give meaning to the "federated" aspect in its full title[1]: It aspires to be a primary scientific meeting place where all aspects of research and development of Internet- and intranet-based systems in organizations and for e-business are discussed in a scientifically motivated way, in a forum of loosely interconnected workshops and conferences. This year's 11th edition of the OTM Federated Conferences event therefore once more provided an opportunity for researchers and practitioners to understand, discuss, and publish these developments within the broader context of distributed, ubiquitous computing. To further promote synergy and coherence, the main conferences of OTM 2014 were conceived against a background of three interlocking global themes:

[1] On The Move Towards Meaningful Internet Systems and Ubiquitous Computing– Federated Conferences and Workshops

- Trusted Cloud Computing Infrastructures Emphasizing Security and Privacy
- Technology and Methodology for Data and Knowledge Resources on the (Semantic) Web
- Deployment of Collaborative and Social Computing for and in an Enterprise Context

Originally the federative structure of OTM was formed by the co-location of three related, complementary, and successful main conference series: DOA (Distributed Objects and Applications, held since 1999), covering the relevant infrastructure-enabling technologies, ODBASE (Ontologies, DataBases and Applications of SEmantics, since 2002) covering Web semantics, XML databases and ontologies, and of course CoopIS (Cooperative Information Systems, held since 1993), which studies the application of these technologies in an enterprise context through, e.g., workflow systems and knowledge management. In the 2011 edition of DOA security aspects, originally started as topics of the IS workshop in OTM 2006, became its focus as secure virtual infrastructures. Subsequently these further broadened to include Cloud-based systems emphasizing aspects of trust and privacy. As these latter aspects came to dominate agendas in its own and overlapping research communities, we decided for 2014 to rename the event as the Cloud and Trusted Computing (C&TC) conference, and to organize and launch it in a workshop format to define future editions.

Both main conferences specifically seek high-quality contributions of a more mature nature and encourage researchers to treat their respective topics within a framework that simultaneously incorporates (a) theory, (b) conceptual design and development, (c) methodology and pragmatics, and (d) application in particular case studies and industrial solutions.

As in previous years we again solicited and selected additional quality workshop proposals to complement the more mature and "archival" nature of the main conferences. Our workshops are intended to serve as "incubators" for emergent research results in selected areas related, or becoming related, to the general domain of Web-based distributed computing. This year this difficult and time-consuming job of selecting and coordinating the workshops was brought to a successful end by Yan Tang, and we were very glad to see that some of our earlier successful workshops (EI2N, META4eS, ISDE, INBAST, OntoContent) re-appeared in 2014, in some cases with a sixth or even eighth edition, and often in alliance with other older or newly emerging workshops. The new MSC workshop is an initiative of the same proposers of the erstwhile SOMOCO workshop. The Industry Case Studies Program, started in 2011 under the leadership of Hervé Panetto and OMG's Richard Mark Soley, further gained momentum and visibility in its fourth edition this year.

The OTM registration format ("one workshop buys all") actively intends to stimulate workshop audiences to productively mingle with each other and, optionally, with those of the main conferences. In particular EI2N continues to so create and exploit a visible synergy with CoopIS.

We were most happy to see that in 2014 the number of quality submissions for the OnTheMove Academy (OTMA) increased for the third consecutive year.

OTMA implements our unique, actively coached, formula to bring PhD students together, and aims to carry our "vision for the future" in research in the areas covered by OTM. Its 2014 edition was managed by a dedicated team of collaborators led by Peter Spyns and Maria-Esther Vidal, and of course inspired by the OTMA Dean, Erich Neuhold. In the OTM Academy, PhD research proposals are submitted by students for peer review; selected submissions and their approaches are to be presented by the students in front of a wider audience at the conference, and are independently and extensively analyzed and discussed in front of this audience by a panel of senior professors. One will readily appreciate the effort invested in this by the OTMA Faculty.

As the main conferences and the associated workshops all share the distributed aspects of modern computing systems, they experience the application pull created by the Internet and by the so-called Semantic Web. For ODBASE 2014, the focus continues to be the knowledge bases and methods required for enabling the use of formal semantics in Web-based databases and information systems. For CoopIS 2014, the focus as before was on the interaction of such technologies and methods with business process issues, such as occur in networked organizations and enterprises. These subject areas overlap in a scientifically natural fashion and many submissions in fact also treated an envisaged mutual impact among them. For our new core event C&TC 2014, the primary emphasis was now squarely put on the virtual and security aspects of Web-based computing in the broadest sense. As with the earlier OnTheMove editions, the organizers wanted to stimulate this cross-pollination by a program of famous keynote speakers around the chosen themes and shared by all OTM component events. We were proud to announce for this year:

- Domenico Saccà
- Ernesto Damiani
- Henk Sol
- Johann Eder

The general downturn in submissions observed in recent years for almost all conferences in computer science and IT this year finally also affected OnTheMove, but we were still fortunate to receive a total of 126 submissions for the three main conferences and 85 submissions in total for the workshops. Not only may we indeed again claim success in attracting a representative volume of scientific papers, many from the USA and Asia, but these numbers of course allow the respective Program Committees to again compose a high-quality cross-section of current research in the areas covered by OTM. Acceptance rates vary but the aim was to stay consistently at about one accepted paper for every two to three submitted, yet as always the rates are subordinated to professional peer assessment of proper scientific quality. As usual we have separated the proceedings into two volumes with their own titles, one for the main conferences and one for the workshops and posters, and we are again most grateful to the Springer LNCS team in Heidelberg for their professional support, suggestions, and meticulous collaboration in producing the files and indexes ready for downloading on the USB sticks.

The reviewing process by the respective OTM Program Committees was performed to professional quality standards: Each paper in the main conferences was reviewed by at least three referees (four for most ODBASE papers), with arbitrated e-mail discussions in the case of strongly diverging evaluations. It may be worthwhile to emphasize once more that it is an explicit OnTheMove policy that all conference Program Committees and chairs make their selections in a completely sovereign manner, autonomous and independent from any OTM organizational considerations. As in recent years, proceedings in paper form are now only available to be ordered separately.

The general chairs are once more especially grateful to the many people directly or indirectly involved in the set-up of these federated conferences. Not everyone realizes the large number of persons that need to be involved, and the huge amount of work, commitment, and in the uncertain economic and funding climate of 2014 certainly also financial risk that is entailed by the organization of an event like OTM. Apart from the persons in their roles mentioned above, we therefore wish to thank in particular our main conference PC co-chairs:

- CoopIS 2014: Michele Missikoff, Lin Liu and Oscar Pastor
- ODBASE 2014: Alfredo Cuzzocrea and Timos Sellis
- C&TC 2014: Michele Bezzi and Henry Chan

And similarly we thank the 2014 OTMA and Workshops PC (co-)chairs (in order of appearance on the website): Alexis Aubry, Georg Weichhart, Ronald Giachetti, Michele Dassisti, Rafael Valencia García, Ricardo Colomo Palacios, Thomas Moser, Alok Mishra, Jürgen Münch, Deepti Mishra, Ioana Ciuciu, Anna Fensel, Fernando Ferri, Patrizia Grifoni, Arianna D'Ulizia, Maria Chiara Caschera, António Lucas Soares, Carla Sofia Pereira, Peter Spyns, Maria Esther Vidal, Anja Metzner, Erich J. Neuhold, and Alfred Holl.

All of them, together with their many PC members, performed a superb and professional job in managing the difficult yet essential process of peer review and selection of the best papers from the harvest of submissions. We all also owe our sincere gratitude to our supremely competent and experienced conference secretariat and technical support staff in Guadalajara and Brussels, respectively, Daniel Meersman and Jan Demey.

Two of the general co-chairs also thankfully acknowledge the academic freedom, logistic support, and facilities they enjoy from their respective institutions, Université de Lorraine CNRS, Nancy, France, and Latrobe University, Melbourne, Australia, without which such a project quite simply would not be feasible. We do hope that the results of this federated scientific enterprise contribute to your research and your place in the scientific network. We look forward to seeing you at next year's event!

September 2014

Robert Meersman
Hervé Panetto
Tharam Dillon

Organization

OTM (On The Move) is a federated event involving a series of major international conferences and workshops. These proceedings contain the papers presented at the OTM 2014 Federated conferences, consisting of CoopIS 2014 (Cooperative Information Systems) and ODBASE 2014 (Ontologies, Databases, and Applications of Semantics).

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OnTheMove 2014 Keynotes

Mining and Posting Big Data on the Web to Add Value to Information Contents

Domenico Saccà

University of Calabria, Italy

Short Bio

Domenico Saccà (http://sacca.deis.unical.it) is full professor of Computer Engineering at the University of Calabria since 1987 and he is presently chairing the School of Computer Engineering at that university.

Since 2009 he is also President of the Computing and Telecommunication Competence Center ICT-SUD, operating in five regions of Southern Italy: Calabria, Campania, Puglia, Sardegna and Sicilia.

From January 2002 to January 2009, he was Director of the CNR (the Italian National Research Council) Research Institute ICAR (Institute for High Performance Computing and Networking), located in Rende (CS) and branches in Naples and Palermo. Previously, from 1995 on, he was director of the CNR ISI (Institute on System and Computer Sciences).

In the past he was visiting scientist at IBM Laboratory of San Jose, at the Computer Science Department of UCLA and at the ICSI Institute of Berkeley; moreover, he was scientific consultant of MCC, Austin and manager of the Research Division of CRAI (a research institute in southern Italy).

His current research interests focus on advanced issues of databases such as: data and process mining, inverse data mining, data warehousing and OLAP on distributed platforms, compressed representation of datacubes, database query languages. Recently he has started some research activities on cyber security topics such as protection of systems, services and end users as well as on privacy issues.

His list of publications contains more than 200 papers on journals (including Journal of the ACM, SIAM Journal on Computing, ACM Transactions on Database Systems, Theoretical Computer Science, IEEE Transactions on Software Engineering, IEEE Transactions on Knowledge and Data Engineering, VLDB Journal, Information Systems, ACM Transactions on Knowledge Discovery from Data) and on proceedings of international conferences.

He has been member of the program committees of several international conferences and director of international schools and seminars.

Talk

"Mining and Posting Big Data on the Web to add value to information contents"

A multi-dimensional view of WEB Search is first presented to substantiate the speaker's position: a powerful search needs enriched information, which is to be published with additional discovered attributes (hidden dimensions).

Some classical DB theory tools (e.g., Data exchange and DATALOG) can be re-considered as powerful frameworks for creating multi-dimensional views for their flexible search without having to fight with SQL syntax.

Data mining can be used not only for discovering knowledge from WEB data but also for adding value to data to be published on the WEB.

An ambitious goal is to combine the strengths of both SQL and NOSQL approaches: the structural approach of SQL to enrich documents and the "unstructured" approach of NOSQL to free the search from join harassment and to enable scalable performance.

Cloud Assurance: The Notion and the Issues

Ernesto Damiani

Università degli Studi di Milano, Italy

Short Bio

Ernesto Damiani is a full professor at the Computer Science Department of Università degli Studi di Milano, Italy, the director of Secure Servcie-oriented Architectures (SESAR) lab and the Head of the University's Ph.D. program in Computer Science. His areas of interest include Cloud and SOA security, semi-structured information processing, business process analysis and discovery. He has published several books and more than 300 papers and international patents. His work has appeared, among many others, in the IEEE Trans. on Knowledge and Data Engineering, the IEEE Trans. on Service Computing, the ACM Trans. on Information and System Security, the IEEE Trans. on Fuzzy Systems, the ACM Trans. on Information Systems and the ACM Trans. on Software Engineering and Methodology. He is a senior member of the IEEE and ACM Distinguished Scientist.

Ernesto Damiani leads/has led a number of international research projects: he was the Principal Investigator of the ASSERT4SOA project (STREP) on the security certification of SOA; has led the activity of SESAR research unit within SecureSCM (STREP), ARISTOTELE (IP), ASSERT4SOA (STREP), CUMULUS (STREP) and PRACTICE (IP) projects funded by the EC in the 7th Framework Program.

Ernesto has been an Associate Editor of the IEEE Trans. on Service-Oriented Computing since its inception, and is an Associate Editor of the IEEE Trans. on Fuzzy Systems. Also, Prof. Damiani is Editor in chief of the International Journal of Knowledge and Learning (Inderscience) and of the International Journal of Web Technology and Engineering (IJWTE).

Talk

"Cloud Assurance: The Notion and the Issues"

Generating and handling assurance information on the cloud is an open challenge, as conflicting requirements (e.g., transparency vs. privacy) are emerging and the size of data involved is huge. Still, managing assurance is of paramount importance for guaranteeing the desired security and dependability properties of cloud-based computations. In this talk, we first discuss the conceptual framework to represent monitoring and test-based assurance, grounding assurance-based service-level agreements (SLAs) and certification models for cloud-based services. Then, we focus on:

(i) the definition of security and dependability properties to be negotiated and certified on the cloud (ii) the types of evidence underlying them and the mechanisms for generating evidence (iii) the phases of the assurance artifacts life-cycle.

eHealtheNough or pHealth: Providing COLLAGEN for Ennovations

Henk G. Sol

University of Groningen/Delft University of Technology, The Netherlands

Short Bio

Prof. dr. Henk G. Sol is over 40 years a driver of engaged scholarship in the field of information systems and decision enhancement. With his school of nearly 80 completed PhD dissertations supervised and some 25 PhD dissertations under way, he is a major contributor to building the foundations of design science research in management and information systems.

In addition, he is responsible for the graduation of over 700 Engineering MSc and MBA students. All dissertations are based on theory development applied to tackle issues that matter in practice and are relevant to both developing and developed countries.

As founding dean he was responsible for the establishment of the Faculty of Technology, Policy and Management at Delft University of Technology and of the Faculty of Economics and Business at the University of Groningen, the Netherlands.

Prof. Sol has organized numerous international conferences and workshops, of which the conference series on CRIS and Dynamic Modeling have been seminal. He has published widely in renowned journals, edited many books, and given many keynote presentations all over the world. He acted as a consultant to many governments and organizations worldwide. He was founding father of IFIP TC8, 8.1 and 8.3, AIS and many (inter)national doctoral consortia.

Henk G. Sol serves currently in various academic and professional roles: President of the Supervisory Board of Groningen Airport Eelde NV, Eelde; Director of Sol Information Management BV, Haren; Chairperson of the Board of Trustees, Uganda Technology and Management University, Kampala; Chairperson of Stichting PAO Informatica; Consulting Professor of PBLQ, The Hague; and Member of the Board of Trustees of the International Institute for Communication and Development, the Hague.

Talk

"eHealtheNough or pHealth: Providing COLLAGEN for Ennovations"

Enhancing issues that matter is a major challenge in our ambient society, especially in the health domain: we have to navigate in the sea of information to deliver shared value. Agile, analytic, big, intelligent, smart, sustainable data describe the potential for decision enhancement. Processes have to be engineered accordingly to deliver shared value.

Many initiatives are taken around eHealth, but what is the impact of the many projects in terms of usefulness, usability and usage?

Studies on the effectiveness of eHealth may lead to the conclusion that eHealth is eNough. Many examples indicate that the patient is often neglected, that physical and decision processes are not looked into and that the technology is pushed, despite great development funds for e.g. eInclusion and Ambient Assisted Living.

Delivering shared value calls for: conversations to collectively identify locally relevant problems, governance to make political, administrative and business decisions about tackling such problems and engaged innovations to develop localized solutions.

The COLLAGEN (Collective Learning and Agile Governance Environment) approach provides a set of services for scoping, facilitation and enhancement of business processes, packed into decision apps and providing guidelines for conversational inquiry. The approach supports smart governance for business engineering and engaged innovations, and delivers shared value to resolve issues that matter in society, especially in health care and cure.

It is posited that innovations in health care demand pHealth for delivering shared value based on patient focus, personal intervention, process anchoring and participatory design.

Managing the Execution of Business Processes

Johann Eder

Alpen-Adria Universität Klagenfurt, Austria

Short Bio

Johann Eder is full professor for Information and Communication Systems in the Department of Informatics-Systems of the Alpen-Adria Universität Klagenfurt, Austria. From 2005-2013 he was Vice President of the Austrian Science Funds (FWF). He held positions at the Universities of Linz, Hamburg and Vienna and was visiting scholar at AT&T Shannon Labs.

The research interests of Johann Eder are databases, information systems and data management for medical research. He successfully directed many funded research projects on workflow management systems, temporal data warehousing, application interoperability, information systems modelling, information systems for medical research, etc.

Johann Eder has contributed to workflow systems and business process management for 2 decades, in particular in the area of workflow systems languages and architectures, exception handling, time management, and data management. His research led to the development of the commercial workflow management systems altavistaWorks and @enterprise.

He published more than 150 papers in international journals and conference proceedings. He served in numerous program committees for international conferences and as editor and referee for international journals. He acted as general chair and/or PC chair for CAiSE, ADBIS, BPM, CoopIS, and DAWAK conferences.

Talk

"Managing the Execution of Business Processes"

Managing the execution of business processes requires many decisions: whom to assign to a task, when to execute a task, how to deal with exceptions, etc. Some of these decisions can be automated according to some policies. Some cannot be automated but can be supported by process technologies.

In this talk we will analyze which decisions have to be taken at the run-time of business processes by process participants and by process managers and discuss how these decisions can be supported by components of workflow management systems, in particular time management systems, resource management systems, scheduling systems, exception handling systems, and process warehousing.

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