33rd International Conference on Conceptual Modeling

27-29 October 2014
Atlanta Buckhead Marriott Hotel and Conference Center
http://2014.erconference.org

Proceedings by Springer
Lecture Notes in Computer Science. Volumes 8823 and 8824
The International Conference on Conceptual Modeling is the leading international forum for presenting and discussing current research on conceptual modeling for computer-supported and networked applications. The topics of interest span the entire spectrum of conceptual modeling including research and practice in areas such as: theories of concepts underlying conceptual modeling, methods and tools for developing and communicating conceptual models, techniques for transforming conceptual models into effective implementations, and the impact of conceptual modeling techniques on databases, business strategies and information systems development. We solicit submission of original research, as well as experience and vision papers, from both researchers and practitioners, welcoming any topic where conceptual modeling is a major theme.

We specifically encourage submissions on the application and role of conceptual modeling techniques in new and emerging areas such as large data repositories for business intelligence, cloud computing and NoSQL databases. ER 2015 will be held in a modern academic environment in Kista, a suburb of Stockholm. With its 750 year history and rich cultural life, Stockholm offers a wide selection of world-class museums and attractions. Most of the city's attractions can be reached on foot, and there is a good chance of experiencing a lot of things in a short time. Stockholm is built on 14 islands connected by 57 bridges. The beautiful buildings, the greenery, the fresh air and the proximity to the water are distinctive traits of this city.

Important Dates

- Workshop proposals: 10 Jan 2015
- Paper submission: 10 March 2015
- PhD symposium submission: 5 April 2015
- Tutorials, panels, demos proposals: 1 May 2015
- Camera ready paper submission: 1 June 2015
- Author registration deadline: 15 June 2015

General Chairs
- Paul Johannesson, Sweden; Andreas Opdahl, Norway

Program Chairs
- Mong Li Lee, Singapore; Stephen W. Liddle, USA; Oscar Pastor, Spain

http://er2015.dsv.su.se/
Welcome by General Chair

On behalf of the organizing committee, Welcome to the 33rd ER Conference!

We are a third of the way into a century of research on conceptual modeling. Atlanta is a wonderful city not only because of its location, what it offers, and the weather but also because it happens to be the city that the Chair of the very First ER conference calls home.

It is impossible to thank everyone who has contributed to this conference. I want to especially recognize these individuals: Il-Yeol Song who invited me to this task, Peter Chen who played a mentor to perfection, Richard Welke without whom the local arrangements would not have been possible, and Greg O’Dillon who was tireless in his help. Eric Yu, Matthias Jarke and Gill Dobbie handled the technical program for the main program capably; and Marta Indulska oversaw the workshops. The tutorials were coordinated by Cecil Chua, the Demos by Akhilesh Bajaj, the doctoral consortium by Carson Woo, and the educational symposium by Lois Delcambre. And there was sustained support from the Steering Committee.

I would also like to thank our sponsors, Penn State University, Georgia State University, Singapore Management University, The Center for Process Innovation at Georgia State University, Brigham Young University, Aalto University, Queensland University of Technology, and Zim Software. Springer continues to support the conference sponsoring the Best Paper awards and by being the publishing venue.

We have assembled a conference with a strong set of technical papers, multiple workshops dealing with contemporary issues, several panels, two tutorials, luncheon events, an educational symposium, a doctoral consortium, and a research demonstrations. The sessions are organized to allow easy circulation across rooms, and there are plenty of places to carry out conversations, in case none of the sessions during a time slot meets your fancy. The action-packed three days will be punctuated by a welcome reception on the evening of the first day, and a banquet dinner on the evening of the second.

I wish you a fun and productive conference. Reconnect with old friends and colleagues who share your passion about research. Make new friends and acquaintances with whom to pursue new research directions.

Welcome!

Sandeep Purao, Penn State University
Welcome Message

Foreword by Program Chairs

The ER Conference is the leading international forum for presenting research results and discussing future trends in conceptual modeling. ER 2014 is the 33rd meeting and will take place in Atlanta, GA, USA.

Conceptual modeling consists of the creation of foundational elements of intended information systems and applications that can serve as communication vehicles among stakeholders, blueprints for developers, as well as long-term preservation of designer intent. This foundational role of conceptual models was evident in this year’s program, which included research papers addressing many contemporary topics such as big data, city informatics, policy compliance, enterprise architecture, data-intensive ecosystems, and open source software strategies. In addition, the research community continues to investigate fundamental concerns of conceptual modeling such as pragmatics, deployment paths, and modeling primitives.

The international research community responded by submitting a total of 123 abstracts, which resulted in 80 full paper submissions. Each paper was reviewed by at least three reviewers. On the basis of these reviews, we selected 23 submissions as full papers (an acceptance rate of 28.75%). The authors of a further 15 papers were invited to present their papers based on the contemporary nature of these research efforts and the promise for future impact.

The scientific program includes three keynote talks by Vasant Dhar, Antonio Furtado and Giancarlo Guizzardi. The conference also includes panels, symposia, and workshops. We are very grateful to the authors for submitting their work, and the program committee members for participating in the review and selection process.

Eric Yu, University of Toronto, Toronto, Canada
Gill Dobbie, University of Auckland, Auckland, New Zealand
Matthias Jarke, RWTH Aachen University, Aachen, Germany
Keynotes

Monday, 27 October, 8:30am
Data Science and Prediction

Vasant Dhar
Professor and Director, Center for Business Analytics, Stern School of Management, New York University, USA.

Vasant Dhar is a data scientist known for his work in machine-learning-based predictive analytics such as the prediction of returns in financial markets, prediction of demand in economic networks, and prediction of outcomes in healthcare. He also researches IT-driven industry transformation, such as the one that is under way in higher education. He writes regularly in the research literature as well as mainstream media including the Financial Times, Wall Street Journal, Forbes, and Wired Magazine. He is editor-in-chief of the Big Data Journal.

Abstract. Data Science is the study of the generalizable extraction of knowledge from data. A common epistemic requirement in assessing whether new knowledge is actionable for decision making is its predictive power, not just its ability to explain the past. The heterogeneity and scale of data and diversity of analytical methods require data scientists have an integrated skill set, as well as a deep understanding of the craft of problem formulation and the science required to engineer effective solutions. I shall talk about the key issues that arise in industrial strength predictive modeling, including implications for education in this fast emerging field.

Tuesday, 28 October, 8:30am
A Semiotic Approach to Conceptual Modelling. Peter Chen Award Winner

Antonio Furtado
Departamento de Informática, Pontifícia Universidade Católica do Rio de Janeiro, Brazil

Antonio L. Furtado is Professor Emeritus at the Departamento de Informática of the Pontifícia Universidade Católica do Rio de Janeiro (PUC-Rio). He obtained his Ph.D. degree in Computer Science from the University of Toronto in 1974. His main areas of interest are Conceptual Modelling of Information Systems, Logic Programming, and Digital Storytelling. Together with Clesio Saraiva dos Santos (Universidade Federal do Rio Grande do Sul) and Erich J. Neuhold (Darmstadt University of Technology), he participated in the very first Entity-Relationship conference (ER 1979, Los Angeles, California). Since then, he has been publishing his work in journals and technical events, including several participations in ER conferences. In co-authorship with Erich J. Neuhold and with the collaboration of his colleagues Marco A. Casanova and Paulo A. S. Veloso, he wrote the book Formal Techniques for Data Base Design, Berlin: Springer-Verlag, 1986. He also does research on Medieval Literature, having contributed, among other studies, the chapter “The Crusaders’ Grail” to the book The Grail, the Quest and the World of Arthur, organized by Norris J. Lacy (Pennsylvania State University), Cambridge: D.
S. Brewer, 2008. With respect to Conceptual Modelling, he has been investigating, together with colleagues and students, a multi-disciplinary approach that encompasses static, dynamic and behavioural aspects of Information Systems. This approach borrows plan-generation and plan-recognition methods from Artificial Intelligence, as well as several notions from Literary Theory, Linguistics and Semiotics, such as narrative plots, rhetorical tropes and analogy. Besides its application to business domains, it has been used to characterize narrative genres, as part of a Digital Storytelling project.

**Abstract.** The work on Conceptual Modelling performed by our group at PUC-Rio is surveyed, covering four mutually dependent research topics. Regarding databases as a component of information systems, we extended the scope of the Entity-Relationship model, so as to encompass facts, events and agents in a three-schemata specification method employing a logic programming formalism. Next we proceeded to render the specifications executable, by utilizing backward-chaining planners to satisfy the agents’ goals through sequences of fact-modification events. Thanks to the adoption of this plan-recognition / plan-generation paradigm, it became possible to treat both business-oriented and fictional narrative genres. To guide our conceptual modelling approach, we identified four semiotic relations, associated with the four master tropes that have been claimed to provide a system to fully grasp the world conceptually.

**Wednesday, 29 October, 8:30am**

**Ontological Patterns, Anti-Patterns and Pattern Languages for Next-Generation Conceptual Modeling**

**Giancarlo Guizzardi**

Ontology and Conceptual Modeling Research Group, UFES Brazil and University of Trento, Italy

Giancarlo Guizzardi obtained a PhD (with the highest distinction) from the University of Twente, in The Netherlands. He is currently a visiting professor at the University of Trento (Italy) and an associate researcher at the Laboratory of Applied Ontology (LOA), Institute of Cognitive Sciences and Technology (ISTC), also located in Trento. He is on an extended sabbatical leave from the Computer Science Department of the Federal University of Espirito Santo (UFES), where he leads the Ontology and Conceptual Modeling Research Group (NEMO). He has been working for the past 18 years in the areas of Ontology and Conceptual Modeling. He is the author of nearly 160 publications in these areas, including recipients of best paper awards at conferences such as CAISE and EDOC. He is a former member of the Executive Council and currently a member of the Advisory Board of the International Association for Ontologies and its Applications (IAOA). Over the years, he has been involved in the editorial board of several journals (including Applied Ontology, Semantic Web, Requirements Engineering) and played active roles (PC Chair, General Organizational Chair, Program Board Member) in several international conferences (CAISE, FOIS, EDOC). Finally, his
experience in ontology-driven conceptual modeling has also been acquired in a number of industrial projects in domains such as off-shore software development, petroleum and gas, digital journalism, government, telecommunications, product recommendation, and complex media management.

**Abstract.** In his ACM Turing Award Lecture entitled “The Humble Programmer”, E. W. Dijkstra discusses the sheer complexity one has to deal with when programming large computer systems. His article represented an open call for an acknowledgement of the complexity at hand and for the need of more sophisticated techniques to master this complexity. This talk advocates the view that we are now in an analogous situation with respect to conceptual modeling. We will experience an increasing demand for building Reference Conceptual Models in subject domains in reality, as well as employing them to address classes of problems, for which sophisticated ontological distinctions are demanded. One of these key problems is Semantic Interoperability. Effective semantic interoperability requires an alignment between worldviews or, to put it more accurately, it requires the precise understanding of the relation between the (inevitable) ontological commitments assumed by different conceptual models and the systems based on them (including sociotechnical systems). This talk advocates the view that an approach that neglects true ontological distinctions (i.e., Ontology in the philosophical sense) cannot meet these requirements. The talk discusses the importance of foundational axiomatic theories and principles in the design of conceptual modeling languages and models. Moreover, it discusses the role played by three types of complexity management tools: Ontological Design Patterns (ODPs) as methodological mechanisms for encoding these ontological theories; Ontology Pattern Languages (OPLs) as systems of representation that take ODPs as higher-granularity modeling primitives; and Ontological Anti-Patterns (OAPs) as structures that can be used to systematically identify possible deviations between the set of valid state of affairs admitted by a model (the actual ontological commitment) and the set of state of affairs actually intended by the stakeholders (the intended ontological commitment). Finally, the talk elaborates on the need for proper computational tools to support a process of pattern-based conceptual model creation, analysis, transformation and validation (via model simulation).
Luncheon Events

Monday, 27 Oct. Lunch

Grand Challenges for ER: Then and Now

Participants/Debaters

**Stuart Madnick**, John Norris Maguire Professor of Information Technologies, Sloan School of Management & Professor of Engineering Systems, School of Engineering, Massachusetts Institute of Technology

**Ephraim McLean**, Regents’ Professor, George E. Smith Eminent Scholar’s Chair in IS Director, Center for Research in Information Systems Director, Center for Health Information Technology Robinson College of Business, Georgia State University

**Peter Chen**, Distinguished Career Scientist and Faculty Member Software Engineering Institute, Carnegie Mellon University

A research community needs Grand Challenges. A research community thrives on Grand Challenges. A research community is galvanized by Grand Challenges. What were the Grand Challenges that galvanized the ER Research Community? How has the Community addressed these Challenges over the last third of the century? What are the Challenges that the Community should look forward to in the future?

We will hear from a young upstart who came up with the very idea of ER. We will hear from a researcher/practitioner who applied and extended ER. We will hear from the mentor who took the risk to support the upstart and host the first ER.

**Referee**: Sandeep Purao, Professor of IST, Penn State University.
Tuesday, 28 Oct. Lunch
Enterprise Architecture: State of the Art

Samuel B. Holcman is the Chairman of the Pinnacle Business Group, Inc., the Managing Director of the Enterprise Architecture Center Of Excellence (EACOE), and the Business Architecture Center Of Excellence (BACOE), and the President and Co-Founder of the Zachman Institute for Framework Advancement (ZIFA). He is considered the practitioners' practitioner in Enterprise Architecture and Business Architecture, and has contributed his expertise related to Enterprise and Business Architecture methodologies and techniques in several organizations. A strategic planning process he developed is in use at many Fortune 500 companies. He has also developed an innovative approach to Business Process Re-Engineering known as Business Process Visualization TM and Organization Network Analysis TM. He has also developed the Intellectual Capital Maturity Model TM and an Enterprise Architecture Maturity Model. His other contributions include works on Cooperatively Optimized Relationships (COR) for next generation CRM. Sam has a Bachelor’s degree in Bioengineering and Master’s Degree in Electrical Engineering from Wayne State University in Detroit, Michigan, and a Master’s in Business Administration from the University of Michigan, Ann Arbor. He has been elected to Eta Kappa Nu (electrical engineering honors society), and Tau Beta Pi (engineering honors society), and is a member of numerous societies and professional organizations.

Abstract: In the last few years, there has been an explosion in experience and understanding of how business-driven modeling methods can identify high reusability opportunities, in a rapidly changing, highly interconnected, technology-dependent business environment, address complexity, analyze uncertainty and change. These approaches should be referred to as Enterprise Architecture. Numerous individuals and organizations look at Enterprise Architecture as information technology planning – far from a full picture of the strengths of Enterprise Architecture – techniques that now have a more than four decade proven track record. Enterprise Architecture allows both business management and technical staffs to "see" the dependence of certain conditions (either to achieve business value or avoid suboptimal results) to create the right portfolio of models, allowing management to see what cannot be seen in hundreds of pages of text. This presentation will provide an overview of the state of the practice in Enterprise Architecture drawing on my continued engagement with several large companies in a number of sectors such as health, entertainment and software. I will share with the researchers gathered at the conference my reflections and anecdotes about how Enterprise Architecture is practiced so that they may find interesting pointers to pursue new research directions in conceptual models and modeling for Enterprise Architecture.
Conceptual Modeling: Future Evolution and Revolution

Chair: Keng Siau, Missouri University of Science and Technology

Panelists:
Tok Wang Ling, National University of Singapore, Singapore
Jeffrey Parsons, Memorial University of Newfoundland, Canada
Sudha Ram, University of Arizona, USA

What are the future research directions for conceptual modeling? What are the likely evolutions and revolutions for conceptual modeling techniques and tools? What new techniques and tools need to be developed? How is mainstream database research different from conceptual modeling research? How to effectively and efficiently use conceptual modeling to support emerging areas such as big data, business analytics, data science, cybersecurity, supply chain, health informatics, etc.? What are the challenges for conceptual modeling for emerging areas of data use? How can conceptual models represent patterns extracted from various types of emerging datasets?

The panelists will present their viewpoints on some of the issues listed above and engage the audience in discussing and formulating directions for future research.

Conceptual Modeling and Extreme Events (Disaster Planning, Mitigation and Response)

Chair: Raj Sharman, SUNY Buffalo

More Information about the Panel will be available at the Conference
Octavian Panel
Old Wine and New Blood - Perspectives on Conceptual Modeling from New Entrants to the Field

Chair: Jeff Parsons, Memorial University

The ER conference has an established tradition and a core set of themes and research topics that have adapted to changes in the information technology field. However, many new conferences focus on issues relevant to conceptual modeling and may be drawing interest away from core conceptual modeling research and this conference. This Octavian panel will focus on the perspective of new entrants to the field, including doctoral students and recent PhDs. The initial discussion will center around topics of interest to new entrants, the extent to which the ER conference meets the needs of new entrants, and opportunities for building interest in the conference among younger researchers.

• What is an Octavian Panel?

The panel format will be as follows. After a brief introduction by the moderator, each panelist will have up to three minutes to make a point or raise an issue. Only members of the panel may speak to an issue. After the first round, a panelist may leave at any time and be replaced by a member of the audience. The initial composition of the panel will consist of a mix of young and established researchers.
Educational Symposium / Research Demos

Educational Symposium

Chair and Moderator: Lois Delcambre, Portland State University

Panelists:
Karen Davis, University of Cincinnati, USA
Giancarlo Guizzardi, Universidade Federal do Espirito Santo, Brazil
Nenad Jukic, Loyola University, USA
Sham Navathe, Georgia Institute of Technology, USA

Do you:
• teach conceptual modeling?
• have tips or strategies for teaching conceptual modeling?
• have war stories (of things that didn’t work out) from teaching conceptual modeling?

We invite you to participate in the “open microphone” portion of the panel.

The panel will consider these questions:
• Who do we teach conceptual modeling to? Which program, level of student?
• What do we teach? What knowledge/skills/abilities should your students gain?
• Why do we teach those things (to that audience)? How do you assess your students?
• How do we teach? Are there educational strategies such as active, peer-led, problem-based, … learning that work well or do NOT work well for teaching conceptual modeling?

To keep things interactive, keep your remarks brief. There is no need to submit your idea ahead of time; we encourage you to attend and participate!

Research Software Demonstrations

1. Personal eHealth Knowledge Spaces though Models, Agents and Semantics

Haridimos Kondylakis, Institute of Computer Science, FORTH, Greece
Dimitris Plexousakis, Institute of Computer Science, FORTH, Greece
Vedran Hrgovcic, BOC Asset Management GmbH, Austria
Robert Woitsch, , BOC Asset Management GmbH, Austria
Marc Premm, Universität Hohenheim, Information Systems, Germany
Michael Schuele, Universität Hohenheim, Information Systems, Germany

We present a web-based platform that generates a Personal eHealth Knowledge Space as an aggregation of several knowledge sources relevant for the provision of
individualized personal services. To this end, novel technologies are exploited and demonstrated, such as knowledge on demand to lower the information overload for the end-users, agent-based communication and reasoning to support cooperation and decision making, and semantic integration to provide uniform access to heterogeneous information. All three technologies are combined to create a novel web-based platform allowing seamless user interaction through a portal that supports personalized, granular and secure access to relevant information. We demonstrate the portal and then the aforementioned technologies using real medical scenarios.

2. SQTime: Time-enhanced Social Search Querying

Panagiotis Lionakis, Computer Science, University of Crete, Greece  
Kostas Stefanidis, Institute of Computer Science, FORTH, Heraklion, Greece  
Georgia Koloniari, Applied Informatics, University of Macedonia, Greece

We present SQTime, a system for social search queries that exploit temporal information available in social networks. Specifically, SQTime introduces different types of queries aiming at satisfying information needs from different perspectives. SQTime is built upon a social graph and query model both augmented with time, and develops methods for query processing and time-dependent ranking.

3. Lightweight semantic prototyper for conceptual modeling

Gayane Sedrakyan, Katholieke Universiteit Leuven, Belgium  
Monique Snoeck, Katholieke Universiteit Leuven, Belgium

While much research work was devoted to conceptual model quality validation techniques, most of the existing tools in this domain focus on syntactic quality. Tool support for checking semantic quality (correspondence between the conceptual model and requirements of a domain to be engineered) is largely lacking. This work introduces a lightweight model-driven semantic prototyper to test/validate conceptual models. The goal of the tool is twofold: (1) to assist business analysts in validating semantic quality of conceptual business specifications using a fast prototyper to communicate with domain experts; (2) to support the learning perspective of conceptual modeling for less experienced modelers (such as students or novice analysts in their early career) to facilitate their progression to advanced level of expertise. The learning perspective is supported by providing automated feedback that visually links the test results to their causes in the model’s design. The effectiveness of the tool has been confirmed by means of empirical experimental studies.
Doctoral Consortium

Chair: Carson Woo, University of British Columbia

Session 1

1. Invited Talk:
   Il-Yeol Song, Drexel University, USA
   Tips for Developing your Brand and Research Career,
2. Panel:
   Stephen Liddle, Brigham Young University, USA
   Shamkant B. Navathe, Georgia Institute Of Technology, USA
   Sudha Ram, University of Arizona, USA
   Il-Yeol Song, Drexel University, USA
3. Guangxuan Zhang, Ph.D. Candidate, Pennsylvania State University.
   Conflict Management in Organizations: A Conceptual Model

Session 2

1. Michael Verdonck, Ph.D. Candidate, Ghent University, Germany
   Providing Guidance for Conceptual Modelling Using Core Ontologies
2. Dippy Aggarwal, Ph.D. Candidate, University of Cincinnati
   Building Metadata Bridges from the Enterprise World to the Cloud Platforms
3. Kunal Malhotra, Ph.D. Candidate, Georgia Institute of Technology
   A Personalized Decision Support System for Medical Treatment Planning
**Conference Program. Day 1. 27 October 2014**

<table>
<thead>
<tr>
<th>Time</th>
<th>Track 1 (Heritage A)</th>
<th>Track 2 (Suwanee)</th>
<th>Track 3 (Heritage C)</th>
<th>Track 4 (Augusta)</th>
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<tbody>
<tr>
<td>7:00-8:00</td>
<td>Breakfast in the area next to Buckhead Reception Desk in front of Buckhead B</td>
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<tr>
<td>8:00</td>
<td>Conference Welcome S. Purao (general chair); R. Welke (local organizing chair); E. Yu (program co-chair)</td>
<td>Heritage Room Welcome: B. Ramesh; Welcome to the 33rd Edition; A. Olive and V. C. Storey (SC)</td>
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<td>8:30</td>
<td>Plenary Session - Keynote (Heritage Room) Data Science and Prediction by Vasant Dhar, introduction by Matthias Jarke</td>
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<td>9:30-9:45</td>
<td>15-Minute Break</td>
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<td>9:45</td>
<td>Software Engineering (SCBC Workshop, SEI Track) Chair: Peter Chen</td>
<td>ER Session 1 Data on the Web Chair: Sebastian Link</td>
<td>ER Session 2 Unstructured Data Chair: Xavier Franch</td>
<td>Tutorial: Meta Models and Meta Execution Models K. Karlapalem (ET) and R. Pisipati (Infosys)</td>
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<td>11:30</td>
<td>Cyber and Big Data (SCBC Workshop, SEI Track) Chair: Peter Chen</td>
<td>ENNO Session 1 Invited Talks William McCarthy Gancarlo Guizzardi</td>
<td>SeCoGIS Session 1 Invited Talk Subhraraj Guhathakurta</td>
<td>Tutorial (continued) - Meta Models and Meta Execution Models</td>
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<td>12:45</td>
<td>Lunch Buckhead Ballroom Grand Challenges for ER: Then and Now</td>
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<td>5:15</td>
<td>ER Session 3 Sponsor: SMU City and Urban Informatics Chair: TBD</td>
<td>ER Panel : Conceptual Modeling for Extreme Events Chair: Raj Sharma</td>
<td>ER Session 4 Database Design Chair: Veda Storey</td>
<td>Doctoral Symposium Session 2 Chair: Carson Woo</td>
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<td>5:15-5:30</td>
<td>30-minute Break</td>
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<td>5:45</td>
<td>Welcome Reception</td>
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Conference Program

Tuesday, 28 October

7:30-8:30  Breakfast in Break Area next to Buckhead; Registration Desk in front of Heritage C

8:30  Plenary Session - Peter Chen Award Ceremony and Keynote (Heritage Room)
      A Semiotic Approach to Conceptual Modeling by Antonio Furtado
      Introduction by A. Olive, S. Liddle, S. Abbott (Elsevier), and P. Chen

9:30-9:45  ER Session 5
          Graphs and Networks
          Chair: Mengchi Liu

9:45  15-Minute Break

11:15  ER Session 6
      Data Management for Enterprise Architecture
      Chair: Colette Rolland

11:15-11:30  15-Minute Break

11:30  Research Software Demos
       Set up on both sides of Registration desk

12:45  Lunch
       Buckhead Ballroom

12:00  Luncheon Speaker: Sam Holcman, Pinnacle Systems
       Introduction by: Colette Rolland

2:00  ER Session 7
     New Modeling Languages - I
     Chair: Carson Woo

2:00  Tutorial: How to make
      Requirements Modeling Languages
      Ivan Jureta (FNRS, Brussels)

3:30  Break

3:45  ER Session 8
     New Modeling Languages - II
     Chair: Heinrich C. Mayr

3:45  Tutorial (continued)
     How to make Requirements Modeling Languages

4:15  ER Panel: Conceptual Modeling Evolution and Revolution
     Chair: Keng Siou

4:15-5:30  45 minutes Break

5:15  45 minutes Break

5:30-6:00  ER Fellows Awards, Antoni Olive and Steve Liddle

6:00 to  Buses leave at 6pm sharp to the Banquet at 103 West

9:30  Buses return to the hotel about 930pm

Banquet with Jazz Music Accompaniment
Conference Program. Day 3. 29 October 2014

Wednesday, 29 October

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<td>Ontological Patterns, Anti-Patterns and Pattern Languages for Next-Generation Conceptual Modeling by Giancarlo Guizziardi, Introduction by Eric Yu</td>
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<td>9:45-11:00</td>
<td>ER Session 9</td>
<td>MoBID</td>
<td>ER Session 10</td>
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<td>Uncertain and Incomplete Data</td>
<td>Session 1</td>
<td>New Modeling Languages - III</td>
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<td>Chair: John Mylopoulos</td>
<td>Big Data Challenges</td>
<td>Chair: Panos Vassiliadis</td>
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<td>11:30-11:45</td>
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<td>Session 1</td>
<td>Session 2</td>
<td>Octavian Panel</td>
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<td>Invited Talk: W. Robinson</td>
<td>Big Data Applications</td>
<td>Perspectives on Conceptual Modeling from New Entrants</td>
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<tr>
<td>12:45</td>
<td>Lunch</td>
<td>Doctoral Consortium Update by Carson Woo</td>
<td>Chair: Jeff Parsons</td>
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<td></td>
<td>Buckhead Ballroom</td>
<td>Best Paper and Best Student Paper Awards</td>
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<td>Recognizing ER 2014 Organizers</td>
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<tr>
<td>2:00-2:15</td>
<td>MReBA</td>
<td>WISM</td>
<td>ER Session 11</td>
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<td>Session 2</td>
<td>Session 1</td>
<td>Patterns and Narratives</td>
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<td>Chair: Eric Yu</td>
<td>Linked Data</td>
<td>Chair: Lois Delcambre</td>
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<tr>
<td>3:30-3:45</td>
<td>15-Minute Break</td>
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<td>3:45-4:00</td>
<td>MReBA</td>
<td>WISM</td>
<td>ER Session 12</td>
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<td>Session 3</td>
<td>Session 2</td>
<td>Applying Conceptual Modeling</td>
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<td>Chair: Renata Guizzardi</td>
<td>Domain Ontologies and Web Services</td>
<td>Chair: Juan Trujillo</td>
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<td>Chair: Claudia Jimenez-Guarin</td>
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<td>5:15-5:30</td>
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End of Conference
### Detailed Conference Program

**Monday, 27 October**

<table>
<thead>
<tr>
<th>Time</th>
<th>Location</th>
<th>Session/Event</th>
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<tbody>
<tr>
<td>8:00am - 8:30am</td>
<td>Heritage Room</td>
<td>Plenary: Conference Welcome.</td>
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<tr>
<td>8:30am - 9:30am</td>
<td>Heritage Room</td>
<td>Plenary. Vasant Dhar. Data Science and Prediction</td>
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<tr>
<td>9:45am - 11:15am</td>
<td>Heritage A.</td>
<td>SCBC Session 1. Software Models &amp; Knowledge Representations</td>
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<td>Chair: Peter Chen</td>
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<tr>
<td></td>
<td></td>
<td>1. B. Minnery, Knowledge Representation in Neural Systems</td>
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<td>2. P. Ng, Software Engineering Models</td>
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<td>3. C. Woody, Security Engineering Risk Analysis (SERA) Overview</td>
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<td>4. D. Smith, Testing Pitfalls &amp; OPEN Modeling Languages</td>
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<td>5. H. C. Mayr, Generating domain specific modeling languages based on a metamodeling platform</td>
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<tr>
<td>9:45am - 11:15am</td>
<td>Suwanee.</td>
<td>ER Session 1. Data on the Web.</td>
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<td>Chair: Sebastian Link</td>
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<td>3. S. Li, J. Wang and X. Wang, Ontology-Based Spelling Suggestion for RDF Keyword Search</td>
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<tr>
<td>9:45am - 11:15am</td>
<td>Heritage C.</td>
<td>ER Session 2. Unstructured Data.</td>
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<td>Chair: Xavier Franch</td>
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<td>1. T. N. Le, Z. Bao and T. W. Ling, Schema-Independence in XML Keyword Search</td>
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<td>2. P. Janga and K. Davis, Mapping Heterogeneous XML Document Collections to Relational Databases</td>
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<td>3. E. G. Barros, A. Laender, M. M. Moro and A. S. Da Silva, MKStream: An Efficient Algorithm for Processing Multiple Keyword Queries over XML Streams</td>
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<tr>
<td>9:45am - 11:15am</td>
<td>Augusta.</td>
<td>Tutorial: K. Karlapalem and R. Pisipati, Meta-models and Meta-execution Models (continues at 11:30am)</td>
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<td>11:30am - 12:45pm</td>
<td>Heritage A.</td>
<td>SCBC Session 2. Cyber and Big Data.</td>
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<td>Chair: Peter Chen</td>
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<td>1. M. Hsu, Advanced visual analytics interfaces for adverse event detection</td>
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<td>2. J. McCurley, Quantifying Uncertainty in Early Lifecycle Cost Estimation (QUELCE)</td>
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<td>3. I. Gorton, QuABase: A Dynamic Software Engineering Knowledgebase for Building Big Data Systems</td>
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<td>4. H. Yasar, High-Volume Data Collection and Real-Time Analytics Using Redis</td>
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<td>5. E. Triantaphyllou, Topic to be decided. (Tentative)</td>
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<tr>
<td>11:30am - 12:45pm</td>
<td>Suwanee.</td>
<td>ENMO. Session 1. Invited Talks</td>
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<td>1. W. E. McCarthy, ER or ERP, Which came first?</td>
</tr>
</tbody>
</table>
Detailed Conference Program

2. G. Guizzardi, *What’s in a Service?: An Ontological Perspective*

**11:30 - 12:45. Heritage C.**
SeCoGIS. **Session 1.** Invited Talk. S. Guhathakurta. *Leveraging GeoSpatial Technologies in Planning for Sustainable Urban Futures.*

**11:30am - 12:45pm. Augusta.**
**Tutorial:** K. Karlapalem and R. Pisipati. *Meta-models and Meta-execution Models* (continued from the previous session)

**12:45pm - 2:00pm. Plenary. Buckhead Ballroom**
**Plenary: Luncheon Debate.** Grand Challenges for ER: Then and Now. Ephraim McLean, Stuart Madnick and Peter Chen. (Referee: Sandeep Purao)

2:00pm - 3:30pm. Heritage A.
SCBC Session 3. **Cyber Security.** Chair: Peter Chen
2. J. Haller, *Resilience Models in Cybersecurity and Critical Infrastructure Protection*
4. T.C. Ting, *Representing semantics of Cyber Security policies by ER Models*

2:00pm - 3:30pm. **Suwanee.**
ENMO. **Session 2.** Chair: Sergio de Cesare and Guido Geerts
1. V. Kulkarni, T. Clark, S. Barat and B. Barn, *Model Based Enterprise Simulation and Analysis: A pragmatic approach reducing the burden on experts*
2. M. Verdonck, F. Gailly and G. Poels, *3D vs. 4D ontologies in Enterprise Modeling*
3. V. A. Pinto, C. L. de Rezende Rohlf's and F. S. Parreiras, *Applications of Ontologies in Enterprise Modelling: A Systematic Mapping Study*

2:00pm - 3:30pm. **Heritage C.**
Educational Symposium. **Session 1.** Chair: Lois Delcambre
Participants/ Panelists:
Karen Davis, Giancarlo Guizzardi, Nenad Jukic, Shamkant Navathe

2:00pm - 3:30pm. **Augusta.**
Doctoral Consortium **Session 1.** Chair: Carson Woo
1. Invited Talk: I.Y. Song, *Tips for Developing your Brand and Research Career*
2. Panel: Stephen Liddle, Shamkant Navathe, Sudha Ram, Il-Yeol Song
3. G. Zhang, Ph.D. Candidate, Penn State University. *Conflict Management in Organizations: A Conceptual Model*

3:45pm - 5:15pm. **Heritage A.**
ER Session 3. **City & Urban Informatics.**
(Sponsored by Singapore Management University)
1. K. Fleming and K. Weldemariam, *From Needs to Services: Delivering Personalized Water Assurance Services in Urban Africa*
3:45pm - 5:15pm. Suwanee.
Panel. Conceptual Modeling for Extreme Events. Chair: Raj Sharman

3:45pm - 5:15pm. Heritage C.
ER Session 4. Database Design. Chair: Veda Storey
1. J. Hu and M. Liu, A New Approach for N-ary Relationships in Object Databases
2. F. Bugiotti, L. Cabibbo, P. Atzeni and R. Torlone, Database Design for NoSQL Systems
3. X. Oriol, E. Teniente and A. Tort, Fixing up Non-executable Operations in UML/OCL Conceptual Schemas

3:45pm - 5:15pm. Augusta.
Doctoral Consortium Session 2.
2. Dippy Aggarwal, Ph.D. Candidate, University of Cincinnati. Building Metadata Bridges from the Enterprise World to the Cloud Platforms
3. Kunal Malhotra, Ph.D. Candidate, Georgia Institute of Technology. A Personalized Decision Support System for Medical Treatment Planning

Tuesday, 28 October

8:30am - 9:30am. Plenary. Heritage Room

9:45am -11:15am. Heritage A.
ER Session 5. Graphs and Networks. Chair: Mengchi Liu
1. Q. Wang, Analytical ER Model: Towards a Conceptual View of Network Analysis
2. R. De Virgilio, A. Maccioni and R. Torlone, Model-driven design of graph databases
3. S. Britell, L. Delcambre and P. Atzeni, Generic Data Manipulation in a Mixed Global/Local Conceptual Model

9:45am - 11:15am. Suwanee.
SeCoGIS. Session 2. Chair: Andrea Ballatore
1. J. Wu, C. Claramunt and M. Deng, Towards a Qualitative Representation of Movement
2. V. M.V. Gunturi and S. Shekhar, Lagrangian Xgraphs: A logical data-model for Spatio-temporal Network Data: A Summary

9:45am - 11:15am. Heritage C.
ER Session 6. Data Management for Enterprise Architecture
**Educational Symposium**

Chair and Moderator: Lois Delcambre, Portland State University

Panelists: Karen Davis, University of Cincinnati, USA; Giancarlo Guizzardi, Universidade Federal do Espirito Santo, Brazil; Nenad Jukic, Loyola University, USA; Sham Navathe, Georgia Institute of Technology, USA

Do you:

- teach conceptual modeling?
- have tips or strategies for teaching conceptual modeling?
- have war stories (of things that didn’t work out) from teaching conceptual modeling?

We invite you to participate in the “open microphone” portion of the panel.

The panel will consider these questions:

- Who do we teach conceptual modeling to? Which program, level of student?
- What do we teach? What knowledge/skills/abilities should your students gain?
- Why do we teach those things (to that audience)? How do you assess your students?
- How do we teach? Are there educational strategies such as active, peer-led, problem-based, … learning that work well or do NOT work well for teaching conceptual modeling?

To keep things interactive, keep your remarks brief. There is no need to submit your idea ahead of time; we encourage you to attend and participate!

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**Research Software Demonstrations**

1. **Personal eHealth Knowledge Spaces through Models, Agents and Semantics**
   - Haridimos Kondylakis, Institute of Computer Science, FORTH, Greece
   - Dimitris Plexousakis, Institute of Computer Science, FORTH, Greece
   - Vedran Hrgovcic, BOC Asset Management GmbH, Austria
   - Robert Woitsch, BOC Asset Management GmbH, Austria
   - Marc Premm, Universität Hohenheim, Information Systems, Germany
   - Michael Schuele, Universität Hohenheim, Information Systems, Germany

   We present a web-based platform that generates a Personal eHealth Knowledge Space as an aggregation of several knowledge sources relevant for the provision of detailed conference program. (This was an issue in the original text, it seems there might have been a typo or a missing word. Assuming it should be “as an aggregation of several knowledge sources relevant for the provision of detailed conference program.”)

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**Detailed Conference Program**

Chair: Colette Rolland

2. H. P. Sousa and J. C. S. Do Prado Leite, *Modeling Organizational Alignment*

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**11:30am - 12:45am. Outside Heritage.**

**Research Demos.**

1. H. Kondylakis, D. Plexousakis, V. Hrgovcic, R. Woitsch, M. Premm and M. Schuele, *Personal eHealth Knowledge Spaces through Models, Agents and Semantics*
2. P. Lionakis, K. Stefanidis and G. Koloniari, *SQTime: Time-enhanced Social Search Querying*
3. G. Sedrakyan, M. Snoeck, *Lightweight semantic prototyper for conceptual modeling*

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**11:30am - 12:45am. Suwanee.**

**SeCoGIS. Session 3.** Chair: Andrea Ballatore

1. L. E. O. Lizardo and C. A. Davis Jr., *OMT-G Designer: A web tool for modeling geographic databases in OMT-G*
2. A. T. Hlaing, H. Htoo and Y. Ohsawa, *Efficient Reverse kNN Query Algorithm on Road Network Distances Using Partitioned Subgraphs*
3. L. Maughan, M. Mckenney and Z. Benchley, *A Model of Aggregate Operations for Data Analytics over Spatiotemporal Objects*

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**11:30am - 12:45pm. Heritage C.**

**QoM&MoQ. Session 1. Modeling of Quality.** Chair: Samira Si-Said Cherfi

3. MoQ Research questions guided discussion

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**12:45pm - 2:00pm. Plenary.** Buckhead Ballroom

**Luncheon Speaker.** Sam Holcman. Enterprise Architecture: State of the Art.

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**2:00pm - 3:30pm. Heritage A.**

**ER Session 7 New Modeling Languages – I.** Chair: Carson Woo

1. J. Horkoff, F. B. Aydemir, F. Li, T. Li and J. Mylopoulos, *Evaluating Modeling Languages: An Example from the Requirements Domain*
2. S. Ingolfo, I. Jureta, A. Siena, A. Perini and A. Susi, *Nomos 3: A Language for Legal Compliance of Roles and Requirements*
3. B. Livieri, M. Bochicchio and M. Zappatore, *Towards an "XBRL Ontology" Extension for Management Accounting*
Panels

Octavian Panel

[509x476]Old Wine and New Blood - Perspectives on Conceptual Modeling from New Entrants to the Field

Chair: Jeff Parsons, Memorial University

The ER conference has an established tradition and a core set of themes and research topics that have adapted to changes in the information technology field. However, many new conferences focus on issues relevant to conceptual modeling and may be drawing interest away from core conceptual modeling research and this conference. This Octavian panel will focus on the perspective of new entrants to the field, including doctoral students and recent PhDs. The initial discussion will center around topics of interest to new entrants, the extent to which the ER conference meets the needs of new entrants, and opportunities for building interest in the conference among younger researchers.

•

What is an Octavian Panel?

The panel format will be as follows. After a brief introduction by the moderator, each panelist will have up to three minutes to make a point or raise an issue. Only members of the panel may speak to an issue. After the first round, a panelist may leave at any time and be replaced by a member of the audience. The initial composition of the panel will consist of a mix of young and established researchers.

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Details Conference Program

2:00pm - 3:30pm. Suwanee.
Tutorial. Session 1 of 2.
I. Jureta. How to make requirements modeling languages? (continues at 3:45pm)

2:00pm - 3:30pm. Heritage C.
QoM&MoQ. Session 2. Quality of Modeling. Chair: Oscar Pastor
2. A. Assila, K. M. De Oliveira and H. Ezzedine, Towards indicators for HCI quality evaluation support
3. QoM Research questions guided discussion

3:45pm -- 5:15pm. Heritage A.
ER Session 8 New Modeling Languages – II. Chair: Heinrich C. Mayr

3:45pm – 5:15pm. Suwanee.
Tutorial. Session 2 of 2.
I. Jureta. How to make requirements modeling languages? (continued from 230pm)

3:45pm – 5:15pm. Heritage C. Chair: Keng Siau
Panel: Conceptual Modeling: Future Evolution and Revolution
Panel: Tok Wang Ling, Jeffrey Parsons, Sudha Ram

Wednesday, 29 October

8:30am - 9:30am. Plenary. Heritage Room

9:45am - 11:15am. Heritage A.
ER Session 9. Uncertain and Incomplete Data. Chair: John Mylopoulos
1. H. Koehler and S. Link, Cardinality Constraints for Uncertain Data
2. C. Nieke, U. Guentzer and W. T. Balke, TopCrowd – Efficient Crowd-enabled Top-k Retrieval on Incomplete Data

9:45am - 11:15am. Suwanee.
MoBiD. Session 1. Big Data Values and Challenges.
1. Invited Talk: Sudha Ram, Extracting Value from Big Data
Panels 10
Conceptual Modeling: Future Evolution and Revolution
Chair: Keng Siau, Missouri University of Science and Technology
Panelists: Tok Wang Ling, National University of Singapore, Singapore
Jeffrey Parsons, Memorial University of Newfoundland, Canada
Sudha Ram, University of Arizona, USA
What are the future research directions for conceptual modeling? What are the likely evolutions and revolutions for conceptual modeling techniques and tools? What new techniques and tools need to be developed? How is mainstream database research different from conceptual modeling research? How to effectively and efficiently use conceptual modeling to support emerging areas such as big data, business analytics, data science, cybersecurity, supply chain, health informatics, etc.? What are the challenges for conceptual modeling for emerging areas of data use? How can conceptual models represent patterns extracted from various types of emerging datasets?
The panelists will present their viewpoints on some of the issues listed above and engage the audience in discussing and formulating directions for future research.

Conceptual Modeling and Extreme Events (Disaster Planning, Mitigation and Response)
Chair: Raj Sharman, SUNY Buffalo
More Information about the Panel will be available at the Conference

Detailed Conference Program

2. M. A. Aufaure and R. Chiky, From Business Intelligence to Semantic data stream management
3. O. Sangupampa-Mwilu, N. Prat and I. Comyn-Wattiau, Business Intelligence and Big Data in the Cloud: Opportunities for Design-Science Researchers

9:45am - 11:15am. Heritage C.
ER Session 10. New Modeling Languages – III. Chair: Panos Vassiliadis
2. M. Morandini, A. Siena and A. Susi, Modelling Risk Exposure in OSS Adoption

11:30am - 12:45pm. Heritage A.
MReBA. Session 1. Chair: Jennifer Horkoff
Invited Talk: Bill Robinson, Creating Process Models

11:30am - 12:45pm. Suwanee.
MoBiD. Session 2. Big Data Quality and Applications.
1. I. Caballero, M. Piattini and M. Serrano, A Quality in Use Model for Big Data
2. S. Hong, J. Lec, J. Chang and D. H. Choi, A Semi-Clustering Scheme for High Performance PageRank on Hadoop
3. J. Peral, A. Ferrández, R. Tardío, A. Maté and E. De Gregorio, Energy consumption prediction by using an integrated multidimensional modeling approach and data mining techniques with Big Data
4. K. K. Gadiraju, K. C. Davis, P. G. Talaga, Benchmarking Performance for Migrating a Relational Application to a Parallel Implementation

11:30am - 12:45pm. Heritage C. Chair: Jeff Parsons.
Octavian Panel. Old Wine and New Blood - Perspectives on Conceptual Modeling from New Entrants to the Field.

12:45pm - 2:00pm. Plenary. Buckhead Ballroom

2:00pm - 3:30pm. Heritage A.
MReBA Session 2. Chair: Eric Yu.
1. W. Engelsman and R. Wieringa, Understandability of Goal-Oriented Requirements Engineering Concepts by Requirements Engineering experts
2. C. Burnay, J. Gillain, I. Jureta and S. Faulkner, On the Definition of Self-Service Systems

2:00pm - 3:30pm. Suwanee.
WISM. Session 1. Chair: Damir Vandic.
Detailed Conference Program

2:00pm - 3:30pm. Heritage C.
ER Session 11. Patterns and Narratives. Chair: Samuel B. Holcman
1. Y. Luo, M. Van Den Brand, L. Engelen and M. Klabbers, From Conceptual Models to Safety Assurance
3. E. Kontogiannopoulou, P. Manousis and P. Vassiliadis, Visual Maps for Data-Intensive Ecosystems

3:45pm - 5:15pm. Heritage A.
MReBa Session 3. Chair: X. He
1. D. Suarez and C. Jimenez-Guarin, Natural Language Processing for Linking Online News and Open Government Data (invited talk)
2. V. A. Pinto and F. S. Parreiras, Enterprise Linked Data: A Systematic Mapping Study

3:45pm - 5:15pm. Heritage C.
ER Session 12. Applying Conceptual Models. Chair: Juan Trujillo
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3:45pm - 5:15pm. Heritage C.
WISM. Session 2. Domain Ontologies and Web Services.
Chair: Renata Guizzardi
1. S. Ingolfo, A. Siena and J. Mylopoulos, Modeling Regulatory Compliance in Requirements Engineering
2. J. Nwokeji, T. Clark, B. Barn and V. Kulkarni, Automated Completeness Check in KAOS
3. S. Sunkle, H. Rathod and V. Kulkarni, Practical Goal Modeling for Enterprise Change Context: A Problem Statement
4. Discussion and Interactive Session

3:45pm - 5:15pm. Suwanee.
WISM. Session 2. Domain Ontologies and Web Services.
Chair: Claudia Jimenez-Guarin
1. D. Vandic, L. Nederstigt and S. Aanen, Ontology Population from Web Product Information
2. G. Cao, Q. Tan, X. Xue, W. Zhou and Y. Dai, Service Adaptability Analysis across Semantics and Behavior Levels based on Model Transformation
3. H. Becha and S. Sellami, Prioritizing Consumer-Centric NFPs in Service Selection

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3. H. Becha and S. Sellami, Prioritizing Consumer-Centric NFPs in Service Selection
Tutorial: Meta Models and Meta Execution Models

Kamalakar Karlapalem, IIIT – Hyderabad, India

Radha Krishna Pisipati, Infosys Labs, India

The topic of meta modeling is important for many areas in information systems such as conceptual modeling, business processes and workflow management. Meta modeling conceptualizes data models and provides the functionality required for adapting a data model to new requirements. These meta models are useful for describing the data, relationships and the associated information such as rules and exceptions to model complex applications such as workflows, e-contracts and e-services. The supporting features for meta models help in modeling the complexities across many applications to instantiate appropriate (or customizable) model for a specific application.

The concept of meta-execution introduces an innovative aspect that facilitates flexible execution environment without much re-design of application engines such as workflow engine. Processes get executed by the execution model, which dictate how the models are executed, and the specification of this execution model as a process using the concepts of execution model is the meta execution model. Meta execution models are specific to conceptualizing and representing the execution logic for executing processes. For example, Meta Execution Workflows describe the execution logic of workflow management engine that drives specification and execution of workflows. Meta Model along with Meta Execution Model provides a powerful construct to manage the data and processing capabilities of changing reality in a seamless manner. Further, it helps connect conceptual layer to actual physical layer by using constructs, their implicit semantics and constraints to cater to dynamic and evolving reality. This kind of framework can seamlessly model data and processes.

This tutorial presents a class of meta models and meta execution models by promoting active conceptual modeling and meta execution models. In this tutorial, we introduce meta models and meta-execution models and show how they help in orchestrating the complex application design and development, and deployment. We present our concepts through a case study on e-contracts enactment and describe meta models and meta execution models (through meta-execution workflows) to support their enactment.
Tutorial: How to make Requirements Modelling Languages?

Ivan Jureta, University of Namur, Belgium

This is a tutorial on how to make Requirements Modelling Languages (RMLs), formalisms used to facilitate problem-solving in Requirements Engineering (RE).

RE focuses on how to elicit, model, and analyse the requirements and the environment of a system-to-be, in order to produce its specification. The tutorial shows how to make new RMLs, in a progression from simpler to more complicated ones, reviews and illustrates major topics and challenges in RML design, and discusses the designs of oft-cited RMLs in RE research.

This is a tutorial for professionals and researchers who need to select among existing, or make new rules for documenting the inputs, decisions, and outcomes of early phases of system design. The rules are usually made for interdisciplinary teams who do system design. Teams can include such disparate groups as investors in the system-to-be, product designers, future users, business analysts, domain experts, engineers from relevant fields (construction, software, hardware, and so on, depending on the purpose of the system-to-be), government representatives, legal professionals.

The rules are applied in order to facilitate problem-solving during design, by clearly representing the information relevant for design, the design options, relative merits of the options, and in order to produce documentation of the chosen design, which is used for, for example, selecting subcontractors, engineering and implementing the system, quality evaluation and assurance, evaluation of regulatory and standards compliance. The rules are applied in early phases of system design, in that they usually do not produce a system design specification which is sufficiently complete and detailed to serve as a blueprint to make the system. Instead, they result in a clear definition of the system’s purpose, of the main constraints it has to live with, and of (some) constraints on how it should achieve its purpose, all of which are inputs for engineers who are responsible for producing the specification of the system’s detailed design.

Participants do not need to have specific knowledge of RE.
Keynotes

S. Brewer, 2008. With respect to Conceptual Modelling, he has been investigating, together with colleagues and students, a multi-disciplinary approach that encompasses static, dynamic and behavioural aspects of Information Systems. This approach borrows plan-generation and plan-recognition methods from Artificial Intelligence, as well as several notions from Literary Theory, Linguistics and Semiotics, such as narrative plots, rhetorical tropes and analogy. Besides its application to business domains, it has been used to characterize narrative genres, as part of a Digital Storytelling project.

Abstract.

The work on Conceptual Modelling performed by our group at PUC-Rio is surveyed, covering four mutually dependent research topics. Regarding databases as a component of information systems, we extended the scope of the Entity-Relationship model, so as to encompass facts, events and agents in a three-schemata specification method employing a logic programming formalism. Next we proceeded to render the specifications executable, by utilizing backward-chaining planners to satisfy the agents' goals through sequences of fact-modification events. Thanks to the adoption of this plan-recognition / plan-generation paradigm, it became possible to treat both business-oriented and fictional narrative genres. To guide our conceptual modelling approach, we identified four semiotic relations, associated with the four master tropes that have been claimed to provide a system to fully grasp the world conceptually.

Social Events

Monday, 27 October, 5:45pm - 7:30pm
Welcome Reception

Outside Buckhead B on the Conference Floor

The ER Conference has a long-standing tradition of a simple welcome reception for conference attendees. This is an occasion to reconnect with old friends and make new friends. We will do this in what is called the “Pre-Function Area” outside Buckhead B on the Conference floor. Please come to the Reception as a precursor to any dinner plans you may have. We will have light hors d’oeuvres and a drink. You can also listen to Atlanta local, Katie Schladland and friends for wonderful music accompaniment. You can, of course, linger as you make new friends. Cash bar is available for those who would like to continue to mingle.

Musical Accompaniment by Katie Schladland and Friends

Katie Schladland has performed in orchestral settings throughout the eastern United States as well as locations in China. In Georgia, she performs regularly with the Macon Symphony and holds the assistant principal position with the Albany Symphony Orchestra. Her other orchestral appearances in Georgia include the Valdosta Symphony and Rome Symphony.
**Tuesday 28 October, 6pm**
**Banquet Dinner and Jazz at 103 West**

On Tuesday evening, we will come together for an evening of dinner and music. 103 West is one of the Premier Venues for Private Dining in Atlanta. It has won a number of accolades including TripAdvisor’s “Certificate of Excellence” (2014), Atlanta Business Chronicle's Top 20 Caterers (2009, 2005), Jezebel's 100 Best Restaurants, Private Dining (2010), Where Atlanta Magazine's choice for Most Romantic, and finalist for Most Memorable Ambiance, Most Fine Dining Experience, Jezebel's choice for Top 20 Atlanta Restaurants (2001), Wine Spectator's Award of Excellence (2003, 2001), and Wine Spectator's Best Restaurant for Wine Lovers (2000).

**Executive Chef: Jeff Riedel**

Riedel was born and raised in Chicago, and studied at Joliet Junior College in Illinois with an emphasis in French cuisine. His mother, Linda Riedel, who worked under Chef Paul, Chef Gary, and Chef Hilary, was his source of inspiration to follow his dream of cooking. Riedel worked at Marriott International as Kitchen Supervisor, Food Production Manager and Sous Chef until 1997. After beginning at the Atlanta Fish Market, Riedel worked at Pano’s and Paul’s before coming to 103 West in 2003, where is dtering as a banquet chef, later becoming Sous Chef and then Chef de Cuisine.

**Musical Accompaniment by Joe Gransden**

At 42 Years old, Joe Gransden has already performed worldwide and released 14 CDs under his own name. Renowned first for the hard bop approach of his trumpet, Gransden’s singing voice has been compared to that of Chet Baker and Frank Sinatra. Like many developing jazzmen, Gransden’s early influences, which include Kenny Dorham and Miles Davis, were easily recognizable in his playing throughout his formative years. “Emulating the jazz greats is always the very first step,” says the historically-rooted Gransden. “But obviously, in order to be true to myself—who I am, what I believe in, my family background—I need to have a sound that’s my own. It’s taken me until recently to hone in on that voice and explore its potential. One of the truly enjoyable things about my career has been finding that my audience appreciates my individual talents.”
The ER Conference is the leading international forum for presenting research results and discussing future trends in conceptual modeling. ER 2014 is the 33rd meeting and will take place in Atlanta, GA, USA.

Conceptual modeling consists of the creation of foundational elements of intended information systems and applications that can serve as communication vehicles among stakeholders, blueprints for developers, as well as long-term preservation of designer intent. This foundational role of conceptual models was evident in this year's program, which included research papers addressing many contemporary topics such as big data, city informatics, policy compliance, enterprise architecture, data-intensive ecosystems, and open source software strategies. In addition, the research community continues to investigate fundamental concerns of conceptual modeling such as pragmatics, deployment paths, and modeling primitives.

The international research community responded by submitting a total of 123 abstracts, which resulted in 80 full paper submissions. Each paper was reviewed by at least three reviewers. On the basis of these reviews, we selected 23 submissions as full papers (an acceptance rate of 28.75%). The authors of a further 15 papers were invited to present their papers based on the contemporary nature of these research efforts and the promise for future impact.

The scientific program includes three keynote talks by Vasant Dhar, Antonio Furtado and Giancarlo Guizzardi. The conference also includes panels, symposia, and workshops. We are very grateful to the authors for submitting their work, and the program committee members for participating in the review and selection process.

Eric Yu, University of Toronto, Toronto, Canada
Gill Dobbie, University of Auckland, Auckland, New Zealand
Matthias Jarke, RWTH Aachen University, Aachen, Germany

Organizers

**Conference Organization**

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Gill Dobbie, University of Auckland, Auckland, New Zealand
Matthias Jarke, RWTH Aachen University, Aachen, Germany

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**Tutorial Chair:** Cecil Chua, Auckland University, Auckland, New Zealand

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Arun Aryal, Georgia State University

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**Conference Chair:**
Sandeep Purao, Penn State, State College, PA, USA
On behalf of the organizing committee, Welcome to the 33rd ER Conference!

We are a third of the way into a century of research on conceptual modeling. Atlanta is a wonderful city not only because of its location, what it offers, and the weather but also because it happens to be the city that the Chair of the very First ER conference calls home.

It is impossible to thank everyone who has contributed to this conference. I want to especially recognize these individuals: Il-Yeol Song who invited me to this task, Peter Chen who played a mentor to perfection, Richard Welke without whom the local arrangements would not have been possible, and Greg O’Dillon who was tireless in his help. Eric Yu, Matthias Jarke and Gill Dobbie handled the technical program for the main program capably; and Marta Indulska oversaw the workshops. The tutorials were coordinated by Cecil Chua, the Demos by Akhilesh Bajaj, the doctoral consortium by Carson Woo, and the educational symposium by Lois Delcambre. And there was sustained support from the Steering Committee.

I would also like to thank our sponsors, Penn State University, Georgia State University, Singapore Management University, The Center for Process Innovation at Georgia State University, Brigham Young University, Aalto University, Queensland University of Technology, and Zim Software. Springer continues to support the conference sponsoring the Best Paper awards and by being the publishing venue.

We have assembled a conference with a strong set of technical papers, multiple workshops dealing with contemporary issues, several panels, two tutorials, luncheon events, an educational symposium, a doctoral consortium, and a research demonstrations. The sessions are organized to allow easy circulation across rooms, and there are plenty of places to carry out conversations, in case none of the sessions during a time slot meets your fancy. The action-packed three days will be punctuated by a welcome reception on the evening of the first day, and a banquet dinner on the evening of the second.

I wish you a fun and productive conference. Reconnect with old friends and colleagues who share your passion about research. Make new friends and acquaintances with whom to pursue new research directions. Welcome!

Sandeep Purao, Penn State University

Getting Around in Atlanta

The Conference Hotel is within walking distance from both the Buckhead (Red Line) and Lenox (Yellow Line) MARTA Stations.

Atlanta Marriott Buckhead Hotel & Conference Center
3405 Lenox Road NE, Atlanta, GA 30326
ER 2015 Call for Papers

The International Conference on Conceptual Modeling is the leading international forum for presenting and discussing current research on conceptual modeling for computer-supported and networked applications. The topics of interest span the entire spectrum of conceptual modeling including research and practice in areas such as: theories of concepts underlying conceptual modeling, methods and tools for developing and communicating conceptual models, techniques for transforming conceptual models into effective implementations, and the impact of conceptual modeling techniques on databases, business strategies and information systems development. We solicit submission of original research, as well as experience and vision papers, from both researchers and practitioners, welcoming any topic where conceptual modeling is a major theme.

We specifically encourage submissions on the application and role of conceptual modeling techniques in new and emerging areas such as large data repositories for business intelligence, cloud computing and NoSQL databases. ER 2015 will be held in a modern academic environment in Kista, a suburb of Stockholm. With its 750 year history and rich cultural life, Stockholm offers a wide selection of world-class museums and attractions. Most of the city's attractions can be reached on foot, and there is a good chance of experiencing a lot of things in a short time. Stockholm is built on 14 islands connected by 57 bridges. The beautiful buildings, the greenery, the fresh air and the proximity to the water are distinctive traits of this city.

Important Dates
- Workshop proposals: 10 Jan 2015
- Paper submission: 10 March 2015
- PhD symposium submission: 5 April 2015
- Tutorials, panels, demos proposals: 1 May 2015
- Camera ready paper submission: 1 June 2015
- Author registration deadline: 15 June 2015

General Chairs
- Paul Johannesson, Sweden; Andreas Opdahl, Norway

Program Chairs
- Mong Li Lee, Singapore; Stephen W. Liddle, USA; Oscar Pastor, Spain

http://er2015.dsv.su.se/