Journal of Universal Computer Science, vol. 16, no. 20 (2010), 2902-2903
submitted: 4/10/10, accepted: 18/10/10, appeared: 1/11/10

Evolving Theories of Conceptual Modelling

J.UCS Special Issue

Markus Kirchberg
(Institute for Infocomm Research, A*STAR, Singapore
Markus.Kirchberg@ieee.org)

Klaus-Dieter Schewe
(Software Competence Center Hagenberg, Austria
kd.schewe@scch.at)

The aim of the first international workshop on "Evolving Theories of Conceptual Modelling" (ETheCoM), co-located with the 28^{th} International Conference on Conceptual Modeling (ER 2009) was to bring together researchers with an interest in theoretical foundations of conceptual modelling. The emphasis was on evolving theories that address mathematical and logical underpinnings of new developments in conceptual modelling, e.g. addressing service-oriented software systems, personalisation of Information Systems and services, network-centric and web-based applications, biomedical applications, games and entertainment, etc. We were interested in precise semantics, in particular with respect to constraints, and in the usage of such semantics for the reasoning and inferencing about model properties.

ETheCoM solicited submissions addressing theories of concepts, mathematical semantics of service-oriented systems, integrity constraints maintenance and dependency theory, theoretical foundations of personalisation of Information Systems and services, formal semantics of network-centric and web-based applications, formal methods for data and knowledge base design, reasoning about data and knowledge base dynamics, logical and mathematical models for novel application areas, adaptivity for personalised data and knowledge bases, formal information integration in data and knowledge bases, knowledge discovery in data and knowledge bases, formal linguistics for data and knowledge bases and others.

All authors of papers presented at the ETheCoM workshop including the two invited presentations were asked to submit a revised and significantly extended version to this special issue of the Journal of Universal Computer Science. In addition, an open call for submissions was launched. All submitted articles were carefully reviewed by three referees, and in several cases a second reviewing round for major revisions was needed. We are happy that finally nine high-quality articles came together for this special issue of the Journal of Universal

Computer Science, four of which are extended versions of papers accepted and presented at ETheCoM 2009:

– **Alessander Botti Benevides, Giancarlo Guizzardi, Bernardo F. B. Braga, João Paulo A. Almeida:** *Validating Modal Aspects of OntoUML Conceptual Models Using Automatically Generated Visual World Structures*

– **Flavio Antonio Ferrarotti, Alejandra Lorena Paoletti, José María Turull Torres:** *Redundant Relations in Relational Databases: A Model Theoretic Perspective*

– **Stephen J. Hegner:** *Internal Representation of Database Views*

– **Hui Ma:** *A Geometrically Enhanced Conceptual Model and Query Language*

– **Alexandre Rademaker, Edward Hermann Haeusler:** *Providing a Proof-Theoretical Basis for Explanation: A Case Study on UML and ALCQI Reasoning*

– **Klaus-Dieter Schewe, Qing Wang:** *XML Database Transformations*

– **James F. Terwilliger, Rafael J. Fernández-Moctezuma, Lois M. L. Delcambre, David Maier:** *Support for Schema Evolution in Data Stream Management Systems*

– **Bernhard Thalheim:** *Towards a Theory of Conceptual Modelling*

– **Antonio Villegas, Antoni Olivé:** *Extending the Methods for Computing the Importance of Entity Types in Large Conceptual Schemas*

We are grateful to all workshop participants and authors of journal articles in this issue, who contributed to a fine collection of research stretching from logical foundations of conceptual modelling to theoretical foundations for specific applications. We would also like to express our greatest thanks to all twenty-six reviewers, who put in a lot of time reading the articles and making substantial suggestions for improvement, which at the end led to the high quality. Last but not least, we like to thank Professor Maurer for the opportunity to publish this collection of research articles as a special issue of the Journal of Universal Computer Science, and Ms. Dana Kaiser for her timeless efforts polishing the final versions of all contributions.

Markus Kirchberg
Klaus-Dieter Schewe
(Singapore & Hagenberg, October 2010)