

Preface

MULTI 2015 was the second installment of the MULTI workshop series focusing on multi-level modeling. It was held as a satellite event of the ACM/IEEE sponsored conference MODELS 2015, in Ottawa (Canada). The goal of this workshop was to continue the community building initiated in the first edition held in conjunction with MODELS 2014 in Valencia (Spain). In order to increase the level of dissemination of work in multi-level modeling and to provide more opportunities for plenary discussions and/or group work, MULTI 2015 was organized as a two-day workshop rather than the typical one-day workshop.

The aim of the first day of the workshop was to set the scene for discussions by means of paper presentations that included an invited paper and two regular paper sessions. The invited paper by Professor Martin Gogolla of the University of Bremen, entitled “Experimenting with Multi-Level Models in a Two-Level Modeling Tool”, explored the extent to which multi-level models can be simulated in two-level modeling environments by explicitly modeling different underlying linguistic (meta) models at the class level, and simulating ontological classification relationships at the instance level in the form of links.

The first paper in the first regular paper session by Colin Atkinson and Ralph Gerbig, entitled “Aspect-oriented Concrete Syntax Definition for Deep Modeling Languages”, described how to support a deep, context sensitive visualization of multi-level models using concepts from aspect-orientation to merge concrete syntax elements across instantiation chains. The second paper by Iris Reinhartz-Berger, Arnon Sturm and Tony Clark, entitled “Exploring Multi-Level Modeling Relations Using Variability Mechanisms”, explored the relationship between the instantiation forms found in multi-level modelling and those used in product line engineering.

The first paper of the afternoon session by Vadim Zaytsev, entitled “Multi-Language Modelling with Second Order Intensions”, proposed the use of second-order intensions and extensions to more closely model linguistic and ontological conformance. The second paper by Kosaku Kimura, Yoshihide Nomura, Yuka Tanaka, Hidetoshi Kurihara and Rieko Yamamoto, entitled “Practical Multi-level Modeling on MOF-compliant Modeling Frameworks” explored how multi-level modeling can be supported using existing modeling frameworks based on the MOF. The third paper by Zoltan Theisz and Gergely Mezei, entitled “An algebraic instantiation technique illustrated by multilevel design patterns” proposed a new algebraic instantiation approach aiming to provide a solid, algebraic foundation for multi-level meta-modelling which is easily customizable. The first day concluded with a plenary session that allowed participants to discuss issues raised in the presentations and find consensus on how to best structure the second afternoon.

The morning of the second day of the workshop was devoted to providing an insight into the range of tools currently available to support multi-level modeling. Six different tools with various kinds of multi-level modeling capabilities were demonstrated over two sessions: the DPF workbench from Bergen University College, Norway (presented by Xiaoliang Wang and Yngve Lamo), WebDPF from Bergen University College, Norway (presented by Fazle Rabbi and Yngve Lamo, Melanee – The Deep Modeling Domain-specific Language Workbench from the University of Mannheim, Germany (presented by Ralph Gerbig), MetaDepth – a tool for multi-level model-driven engineering, from the Universidad Autnoma de Madrid, Spain (presented by Juan de Lara and Esther Guerra), a tool for Multilevel Modelling and Reasoning with FOML from Ben-Gurion University, Israel and SUNY Stony Brook, USA (presented by Mira Balaban, Igal Khitron and Michael Kifer), and TouchCORE from McGill University, Montreal (presented by Jörg Kienzle).

The final afternoon of the workshop was structured by two plenary sessions discussing the state of multi-level modelling technology and identifying areas where further clarification would be helpful to the community. The debate included arguments on the nature of the distinction between linguistic and ontological classification and the roles these different forms of classification should play within classification architectures. One of the intensely discussed questions was whether ontological classification relationships should require certain syntactic conformance rules in addition to being based on (either explicitly or implicitly represented) mappings to the meaning of the related elements. Due to a lack of time, the idea of agreeing on a definition of “multi-level modeling” could only be partially pursued by collecting a set of candidate definitions. Likewise, a concrete identification of use cases, scenarios, reference architectures, etc. had to be deferred.

In order to further support the dissemination of new information and provide a common repository for definitions, tool descriptions, modeling artifacts, etc., the participants agreed to establish a forum for online interaction for the multi-level modelling community in the form of a wiki web. The respective wiki can be found at:

<http://homepages.ecs.vuw.ac.nz/Groups/MultiLevelModeling/> and everyone is invited to update contents. The website devoted to the MULTI workshop series is still hosted at: <http://www.miso.es/multi/>.

We are grateful to all authors of submitted papers, to the reviewers for their constructive criticism, to all participants of the workshop for the interesting and lively discussions, and to the organizers of MODELS 2015 for their support.

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