6th International Workshop on the Globalization of Modeling Languages (GEMOC)

Preface

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ABSTRACT

To cope with complexity, modern software-intensive systems are often split in different concerns to serve the needs of diverse stakeholders. These concerns are often associated with specialized description languages and technologies, which are based on concern-specific problems and solution concepts. Developers thus face the challenging task of integrating the different languages and associated technologies used to produce software artifacts in the different concern spaces. The workshop GEMOC 2018 is a full-day workshop bringing together researchers and practitioners in the modeling language community to discuss the challenges associated with integrating multiple, heterogeneous modeling languages. ***The workshop interests include techniques, frameworks, and environments to facilitate the creation, integration, and automated processing of heterogeneous modeling languages.*** Languages of interest range from requirements, to design and runtime languages, and include both general-purpose and domain-specific languages. Challenges related to engineering composable languages, well-formed semantic composition of languages and reasoning about systems described using heterogeneous languages are of particular interest. Following the five previous editions, the objective is to continue expanding a community focused on problems arising from the globalization of modeling languages; *i.e.*, the use of multiple DSLs to support coordinated development of diverse aspects of a system.

1 CONTEXT AND MOTIVATION

Software intensive systems are becoming more complex, driven by the need to integrate across multiple concerns. Consequently, the development of such systems requires the integration of different concerns and skills. These concerns are usually covered by different languages, with specific concepts, technologies and abstraction levels. This multiplication of languages eases the development related to one specific concern, but raises language and technology integration problems at the different stages of the software life cycle. In order to reason about the global system, it becomes necessary to describe explicitly the different kinds of relationships that exist between the different languages used in the development of a complex system. To support effective language integration, there is a pressing need to reify and classify these relationships, as well as the language interactions that the relationships enable.

The 2018 edition of the GEMOC workshop is a follow-up of the successful previous five editions: GEMOC at MODELS 2013 in Miami, USA, GEMOC at MODELS 2014 in Valencia, Spain, GEMOC at MODELS 2015 in Ottawa, Canada, GEMOC at MODELS 2016 in Saint-Malo, France, and GEMOC at MODELS 2017 in Austin, TX, USA. This edition helps to gather the state-of-the-art and practice recently initiated. It also strengthens the community that broadens the current domain-specific modeling language (DSML) research focus beyond the development of independent DSMLs to a research focus that provides support for globalized DSMLs.

GEMOC 2018 is supported by the GEMOC initiative and its associated Eclipse Research Consortium, which promotes research seeking to develop the necessary breakthroughs in software languages to support global software engineering, i.e., breakthroughs that lead to effective technologies supporting different forms of language integration, including language collaboration, interoperability and composability.

2 FORMAT

The format reflects the goals of the workshop: constructive feedback on accepted papers about the conjoint use of different modeling languages, collaborations, and community building. The format of the workshop is that of a working meeting. Hence, there is less focus on presentations and more focus on producing and documenting a research content that identifies challenges, different forms of language integration, and relates existing solutions.

The workshop starts with a keynote, followed by two sessions about short presentations of the accepted papers. A significant amount of time will be reserved for discussing each paper and their relations to each other. The last session is devoted to a working session dedicated to open discussions of the presented contributions and other topics suggested by the participants.

3 TOPICS

The topics of interest for GEMOC 2018 include tools and methods for engineering modeling languages, composability and interoperability of heterogeneous modeling languages, language integration challenges (from requirement to design) for analysis and simulation, model and metamodel composition, language interface and viewpoint, heterogeneous modeling and simulation, language-based socio-technical coordination, and multi-language or multi-disciplinary environment.

The workshop fosters discussions related to practical and industrial experience related to the use of heterogeneous modeling languages, particularly in the following application domains: Cyber-Physical Systems, System of Systems, Internet of Services, Internet of Things, Complex Adaptive Systems, Smart City, Smart Building, Home automation, Smart Grids, management of renewable and intermittent energy sources, Industry 4.0 and the smart factory of the future.

4 PROGRAM

GEMOC 2018 (cf. http://gemoc.org/events/gemoc2018.html) gathers practitioners and researchers together to exchanges case studies, solutions and challenges related to the globalization of the modeling languages.

This edition of the workshop features a keynote entitled "Model Driven Software Engineering creates tomorrow's legacy", given by Prof. Mark van den Brand from TU Eindhoven (NL). In his keynote, Prof. van den Brand raises the importance of Domain-Specific Languages and their current use in industry, and focuses on the challenge of co-evolving existing languages and conforming models as the knowledge on a given domain evolves.

The following two sessions are dedicated to the presentations of the accepted papers, including the paper "Model Consistency ensured by Metamodel Integration" by Johannes Meier and Andreas Winter; "A Common Integrated Framework for Heterogeneous Modeling Services" by Anastasia Mavridou, Tamas Kecskes, Qishen Zhang and Janos Sztipanovits; "Tool-Support of Socio-Technical Coordination in the Context of Heterogeneous Modeling" by Francis Bordeleau, Benoit Combemale, Romina Eramo, Mark van den Brand and Manuel Wimmer; "CPS simulation models categories in Extended Enterprises" by Renan Leroux, Marc Pantel, Ileana Ober and Jean-Michel Bruel; and "Adding a Henshin Engine to GEMOC Studio: An experience report" by Steffen Zschaler.

Finally, the workshop will end with a dedicated session for discussions about the presented contributions, the coming challenges, and possible future collaborations.

We hope you will enjoy the following proceedings, and feel free to join the GEMOC initiative at http://gemoc.org!

The GEMOC'18 Organizers,