GUEST EDITORIAL

Special section on ICMT at STAF 2018

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1 Introduction

Modelling is a key element in reducing the complexity of software systems during their development and maintenance. Model transformations are essential for elevating models from documentation elements to first-class artifacts. Transformations also play a key role in analysing models to reveal conceptual flaws or highlight quality bottlenecks and in integrating heterogeneous tools into unified tool chains.

Model transformation encompasses a variety of technical spaces, including modelware, grammarware, dataware, and ontoware, a variety of model representations, e.g. trees versus graphs, and a variety of transformation paradigms including rule-based transformations, term rewriting, and manipulations of objects in general-purpose programming languages. Moreover, in other fields like compiler construction, the use of transformations is essential. Identifying means to reuse and share knowledge between fields is also of interest for the model transformation community.

The study of model transformation includes foundations, structuring mechanisms, and properties, such as modularity and composability, transformation languages, techniques, and tools. An important goal of the field is the development of high-level model transformation languages, providing transformations that are amenable to higher-order model transformations or tailored to specific transformation problems. At the same time, usable and scalable verification techniques for model transformations are essential for the practical development of the field. The efficient execution of model queries and transformations by scalable transformation engines is also a key challenge. Novel algorithms as well as innovative (e.g. distributed) execution strategies and domain-specific optimizations are sought in this respect.

2 This special section

The *International Conference on Model Transformation* (ICMT) is the premier forum for researchers and practitioners from all areas of model transformation. For many years now, it has been organised as part of *Software Technologies: Applications and Foundations* (STAF), a federation of leading conferences on software technology. In this special section, we are proud to present extended versions of three of the best papers of ICMT 2018.

For the conference itself, all papers underwent rigorous peer reviewing by at least three experts, according to the high scientific standards set by STAF as well as Springer, resulting in an acceptance rate of roughly 35%. Subsequently, for the special section, each paper was revised and extended, and subsequently received three more thorough reviews.

The three papers of this special section address a diverse cross section of the topics of ICMT. We briefly discuss their contributions here.

Understanding MDE projects: megamodels to the rescue for architecture recovery [3] presents an experience report on applying recovery to MDE projects. It is a necessary contribution for the MDE community to show how megamodels, architecture recovery, and visualizations can work together in order to help in understanding systems. The article shows that the accidental complexity of MDE (profusion of models, metamodels and transformations) can be addressed by MDE solutions; it also shows an original approach to MDE artifacts mining.

CoqTL: A Coq DSL for Rule-Based Model Transformation [1] introduces a novel model transformation language called CoqTL, which is implemented as an internal DSL in Gallina (the specification language of Coq). The goal of CoqTL is to facilitate proving transformation properties expressed as pre-/postconditions, without having to translate the trans-

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formation into a different formal language. Thus, the paper brings Hoare-style verification to model transformation.

Comparing and Classifying Model Transformation Reuse Approaches across Metamodels [2] is a survey conducted by a large number of authors on the important topic of model transformation reuse. This paper is an important contribution to the MDE community, because of the fact that it gives insight into the use of model transformations by (academic) practitioners, and it presents a thorough classification of various types of model transformation reuse. The combination of the survey and the classification is novel and gives a useful cross-fertilisation. The results of the paper indicate that reuse approaches are still not ready for industrial usage; in particular, features like partial transformation reuse and discovering reusable transformations are requested.

References

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