1st Workshop on View-Oriented Software Engineering (VoSE)

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Foreword

Modern software systems are often so complex that a comprehensive description of their functionality lies beyond the representative capabilities of a single paradigm or software description format (i.e. type of model). Therefore, a growing variety of heterogeneous representations (e.g. specifications, models, programs etc.) are typically used in the various phases of software development to describe different aspects of a system's behaviour. These essentially represent different conceptual views of a software system, and usually present overlapping information that needs to be kept consistent.

Traditional software engineering environments have implicitly adopted a synthesis-based approach to views in which the different representations of software systems are treated as separate, sovereign artefacts. The properties of the system under development are then inferred by synthesising the information spread over the different views, and the overall coherence of the information is ensured by maintaining a large number of pairwise correspondences between the separate artefacts.

Although this worked in the early years of software engineering, synthesis-based approaches are not easy to scale up to today's systems. As well as the problems created by the sheer number of correspondence relationships (cf. traceability) that need to be maintained (which grows with the square of the number of views), the step-wise refinement principle underpinning synthesis-based methods does not suit the continuous-evolution style in which software is typically developed today.

Attention is therefore turning to alternative projective approaches to software engineering in which views are projected (i.e. transformed) on demand from a Single Underlying Model (SUM) which contains a comprehensive, coherent description of the system. This dramatically decreases the number of inter-view coherence relationships that need to be maintained and thus the scalability of multi-view approaches. However, it raises many new challenges such as how views are kept consistent with the SUM, how the SUM is created and structured internally, how new viewpoints and view types are defined, how they are embedded in an existing SUM, how (bidirectional) transformations in view-based environments are applied, how inconsistencies, overlaps and redundancies between views are dealt with, what roles are involved in view definition and usage etc.

The goal of the VoSE workshop is to illuminate these issues and shed light on the pros and cons of different approaches. The workshop was therefore interested in submissions on all aspects of view-based software systems engineering especially those describing SUM-based approaches and comparing projective versus synthetic strategies for modeling software and systems. In total, five paper were selected for presentation:

1) Meta model application for consistency management of models for avionic systems design, by J. Stegen, S. Dutre, J. Zhensheng Guo, M. Zeller and S. Rothbauer,
2) Commonalities for Preserving Consistency of Multiple Models, by H. Klare and J. Gleitze,
3) A Generic Language for Query and Viewtype Generation By-Example, by C. Werner, M. Wimmer and U. Assmann,
4) Towards Modular Combination and Reuse ofLanguages with Perspectives, by H. Ali, G. Mussbacher and J. Kienzle,
5) Intensional View Definition with Constrained Incremental Transformation Rules, by T. Le Calvar, F. Jouault, F. Chhel, F. Saubion and M. Clavreul.

We express our gratitude to the organizers of Models 2019 for accepting our workshop. We would also like to thank the authors who submitted their ideas and results to VOSE 2019 and to the reviewers for providing valuable feedback in a short space of time. Finally, we hope you enjoy the workshop and find the workshop proceedings enriching, stimulating and a source of fruitful new insights.