COMMitMDE 2017 - 2nd International Workshop on Collaborative Modelling in MDE

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Abstract—**Collaborative modeling is gaining a growing interest in both academia and industry. However, several research challenges remain open, including scalability, support for multi-user modeling environments, model versioning, migration, comparison, merging and conflict management. Recently, scientific research contributions related to collaborative model-driven software engineering (MDSE) are emerging, each of them focusing on different and specific aspects of collaboration and modelling. Still, many of these studies are scattered across multiple research areas such as software engineering, model-driven engineering, model integrated computing, etc.**

COMMitMDE 2017 has brought together researchers and practitioners to explore (i) the impact of collaborative SE methods and principles on MDE practices and (ii) how MDE methods and techniques can support collaborative software engineering activities. Also, the workshop aimed at assessing the state of the research and practice on Collaborative MDE, creating new synergies between tool vendors, researchers, and practitioners, informing the community about the new means for collaborative MDE, and identifying needs and research gaps in the collaborative MDE area.

Index Terms—**MDE, collaboration, collaborative MDE**

I. Introduction

A *collaborative* Model-Driven Engineering approach [1], [2] is a method or technique in which: (i) models are first-class artefacts that drive both the software development activities and the other model-based tasks in the context of a software engineering process; (ii) at least one repository exists for managing the persistence of the models; (iii) at least one modelling tool [3] exists for allowing each stakeholder involved in the modelling activities to create, edit, and delete models; (iv) at least one communication means exists for allowing involved stakeholders to be aware of what the other stakeholders collaborating with them are doing (e.g., chat, social network, wiki, asynchronous messaging system, issue tracker); (v) at least one collaboration means exists for allowing involved stakeholders to work on the modelling artifacts collaboratively (e.g., model versioning systems, model merging mechanisms, systems for model conflict management and visualization).

The COMMitMDE workshop had the dual role of investigating the potential impact of collaborative SE methods and principles [4] into MDE practices, as well as MDE support to collaborative SE. More specifically, the objective of this workshop was to bring together experts in model-driven and collaborative software engineering in order to give evidence on the ongoing research and development on this topic. Such a high-level objective can be decomposed into the following details action points:
▷ Report on the state of research and practice on collaborative MDE;
▷ Create links among tool vendors, researchers, and practitioners;
▷ Identify needs and gaps in the collaborative MDE community;
▷ Inform the community about new means for collaborative MDE.

The topics proposed for discussion during the 2nd COMMitMDE workshop are: collaborative MDE design; requirements engineering with collaborative MDE; metamodel-level collaboration; multi-view collaborative MDE; the role of off-the-shelf VCS/forges in MDE; web-based model editing; collaborative MDE practices; academic and industrial needs in collaborative MDE; case studies and experience reports; scalable repositories for collaborative modeling; multi-user modeling environments; synchronization mechanisms like models migration and merging; conflicts management; models versioning and model comparison support.

COMMitMDE 2017 solicited *regular research papers* with a maximum length of 10 pages proposing and discussing research results or industrial experiences related to collaborative MDSE, as well as *tool demonstration papers* with a maximum length of 4 pages presenting interesting tools supporting collaborative MDSE. In its second edition the COMMitMDE workshop received six submissions, of which five papers were accepted for publication and presentation during the workshop. Articles from COMMitMDE 2017 and

ME 2017 (Workshop on Models and Evolution) have been presented in a joint programme. The COMMitMDE 2017 website is available on-line[1].

The program of the workshop comprised a full day of activities, which were split into two sessions, summarized below.

II. Session on Collaborative Modeling

The first session comprised three talks.

In their paper, titled *Towards Efficient Evaluation of Rule-based Permissions for Fine-grained Access Control in Collaborative Modeling*, Gabor Bergman, Csaba Debreceni, Istvan Rath and Daniel Varro presented their work related to access control in collaborative modeling environments. A rule-based approach is used to define fine grained policies. Differently from previous work, the permission rules evaluation and reprocessing (in case of changes) is done incrementally, therefore scaling to very large models.

In the second paper, titled *Feature Model for Collaborative Modeling Environments*, Constantin Masson, Jonathan Corley and Eugene Syriani presented a feature model for collaborative systems. Features and key concepts related to collaborative modeling are collected and organizeding through an informal analysis of the state of the art. Each concept is discussed in detail, describing related challenges, issues and relations among them.

In the last article in the session, titled *Supporting Consensus-based Software Development: A Vision Paper*, Mathieu Lavalle, Guillaume Beaulieu and Michalis Famelis presented the notion of consensus-based software development identifying all the dimensions and implication of consensus in group decision making, as well as required activities and roles, and challenges of implementing them in practice. Tool support is also analyzed and mapped to existing requirements.

III. Session on Consistency Management

The second session comprised three talks. Two of them are part of the COMMitMDE 2017 programme and are summarized below.

In the first paper, titled *Modeling and Enactment Support for Early Detection of Inconsistencies in Engineering Processes*, István Dávid, Bart Meyers, Ken Vanherpen, Yentl Van Tendeloo, Kristof Berx and Hans Vangheluwe, presented their methodology to support the early detection of model inconsistencies. Constraints (i.e., rules encoding inconsistency definitions) are specified and evaluated at run-time. Inconsistencies are caused by attribute values modifications that bring to violation to rules. Errors are raised in case of inconsistencies.

The second paper, titled *Towards Collaborative Modeling Using a Concern-Driven Version Control System*, Omar Alam, Vasco Sousa and Eugene Syriani presented an extension to the CORE (Concern-Oriented REuse) paradigm to support collaboration through a version control system. CORE is

extended to cover concepts such as timeline, branches, forks, merges, commets and releases. Special attention is given to a merge conflict where two branches introduce the same transition. A running example on a drone system is developed all along the paper.

References

[1] M. Franzago, D. Di Ruscio, I. Malavolta, and H. Muccini, "Collaborative Model-Driven Software Engineering: a Classification Framework and a Research Map", IEEE Transactions on Software Engineering, 10.1109/TSE.2017.2755039, 2017.

[2] D. Di Ruscio, M. Franzago, H. Muccini, and I. Malavolta, "Envisioning the future of collaborative model-driven software engineering". In Proceedings of the 39th International Conference on Software Engineering Companion (pp. 219-221). IEEE Press, 2017.

[3] M. Brambilla, J. Cabot, and M.Wimmer, "Model-driven software engineering in practice", Morgan & Claypool Publishers, 2012.

[4] I. Mistrk, J. Grundy, A. v. Hoek, and J. Whitehead, "Collaborative Software Engineering", Springer Berlin Heidelberg.

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[1] http://cs.gssi.it/commitmde2017/