

COMMitMDE 2018 - 3rd 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.

The workshop aims at assessing the state of the art 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.

COMMitMDE 2018 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.

Index Terms—MDE, collaboration, collaborative MDE

I. ABOUT COMMITMDE

A collaborative Model-Driven Engineering MDE approach is a method or technique in which: (i) models are first-class artifacts 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 models; (iii) at least one modelling tool [1] 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 stakeholders to work on the modelling artifacts collaboratively (e.g., model versioning systems, model merging mechanisms, systems for model conflict management and visualization) [2], [3].

The workshop was co-located with the ACM/IEEE 21th International Conference on Model Driven Engineering Languages & Systems (MODELS), and represented an active forum for practitioners and researchers. 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:

- Assess the state of the art and practice on Collaborative MDE;
- Create links between tool vendors, researchers, and practitioners;
- Inform the community about new means for collaborative MDE;
- Identify the needs and gaps in the Collaborative MDE community.

The topics proposed for discussion during the 3rd COMMitMDE workshop are the following: collaborative MDE design, requirements engineering with collaborative MDE, metamodel-level collaboration, multi-view collaborative MDE, the role of file repositories (e.g. Git, SVN) in collaborative modeling, 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, conflict management, model versioning and comparison, security and IP management.

COMMitMDE 2018 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 5 pages presenting interesting tools supporting collaborative MDSE. Four papers have been accepted for publication and presented during the workshop.

The COMMitMDE 2018 website is available on-line¹. The program of the workshop comprised a full day of activities.

II. RESEARCH CONTRIBUTIONS

In the following the main contributions of each papers presented at COMMitMDE 2018 are reported. The interested reader can refer to the official proceedings of the workshop for the full text of the presented papers.

In their paper, titled *Continuous integration support in modeling tools*, Robbert Jongeling, Jan Carlson, Antonio Cicchetti and Federico Cicozzi presented their study on the combination of Continuous Integration (CI) and Model-Based Development (MBD). The authors of the paper identified relevant aspects of modeling tools to support CI practices. Then, eight modeling tools have been evaluated in terms of their levels of support for each of the aspects. In the evaluated tools, different maturity levels of support for the considered aspects have been observed. Overall, some challenges, but no insurmountable impediments to introducing CI practices in MBD have been identified.

In the second paper, titled *Challenges for Reuse in Collaborative Modeling Environments*, Omar Alam, Jonathan Corley, Constantin Masson, and Eugene Syriani identified key challenges facing reuse in collaborative MDE environments and investigated the support provided by existing environments. This study focusses on the state of practice in existing environments and shows that their support for reuse is not sufficient. The identified challenges will help guide the development and improvement of modeling tools to provide better support for reuse.

In the third paper, titled *Handling Constraints in Model Versioning*, Alessandro Rossini, Adrian Rutle, Yngve Lamo, and Uwe Wolter proposed an approach to constraint-aware model versioning; the proposed approach handles constraints in model merging, conflict detection and conflict resolution; the approach is based on the Diagram Predicate Framework (DPF), which is based on category theory and graph transformation.

In the last paper, title *Delta-Driven Collaborative Modeling*, Maik Appeldorn, Dilshod Kuryazov and Andreas Winter present their application of a metamodel-generic, operation-based and textual difference language to UML Designer, an existing domain-specific modeling tool. Also, they demonstrate a collaborative modeling application. The proposed approach is validated in the context of UML activity diagrams.

A. Previous Editions

CoMMitMDE 2017 (<http://cs.gssi.it/commitmde2017/>) was co-located with MODELS 2017 in Austin. The presentations of CoMMitMDE were interwoven with those of ME (Models and Evolution - 4 papers) and the joint event was attended by 20-25 people. Accepted papers were published in the joint proceedings of MODELS 2017 Satellite Events (<http://ceur-ws.org/Vol-2019/>).

COMMitMDE 2016 (<http://cs.gssi.infn.it/commitmde2016/>) was co-located with MODELS 2016 in St. Malo. Four invited talks were also given during the workshop. In the first keynote presentation, Di Ruscio and Franzago reported on ongoing work that, by looking at the literature on Collaborative Software Engineering, creates a *taxonomy for Collaborative Model-driven Software Engineering*. Syriani in his keynote defined the requirements for *multi-view* collaborative modeling and reported on the AToMPM collaborative MDE framework. The keynote, titled *Scaling up MDE to support large geographically distributed teams - an experience report* and given by Vinay Kulkarni, reported on the author's experiences with applying model-driven engineering principles in Tata. In the fourth keynote speech, titled *MDE Collaboration: Temporality and Ergonomy in the Cloud, the GenMyModel Solution*, Aranega presented the principles and characteristics of the GenMyModel project. The workshop attracted 35-40 attendees and was one of the best attended satellite events of the conference. The proceedings of the workshop are available on-line through the CEUR Workshop Proceedings series (available at <http://ceur-ws.org/Vol-1717/>).

III. OUTLOOK

We consider COMMitMDE topics to be foundational to the MDE community, and orthogonal to most of the methods and techniques developed by the MODELS community. As briefly reported above, COMMitMDE looks at model editing, model merging, conflict management, repositories, multi-view, modeling and metamodeling from a collaborative perspective. For this reason, we are already planning for COMMitMDE 2019; it will be proposed as a co-located event of the MODELS conference, hoping to have the same success as the one achieved by this year's edition.

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REFERENCES

- [1] Marco Brambilla, Jordi Cabot, and Manuel Wimmer. *Model-driven software engineering in practice*, volume 1. Morgan & Claypool Publishers, 2012.
- [2] Mirco Franzago, Davide Di Ruscio, Ivano Malavolta, and Henry Muccini. Collaborative model-driven software engineering: a classification framework and a research map. *IEEE Transactions on Software Engineering*, PP(99):1–1, 2017.
- [3] Mirco Franzago, Ivano Malavolta, Davide Di Ruscio, and Henry Muccini. Collaborative model-driven software engineering: a classification framework and a research map [extended abstract]. In *Proceedings of the 40th International Conference on Software Engineering Companion, ICSE-C '18*, pages 535–535. IEEE Press, May 2018.
- [4] Ivan Mistrk, John Grundy, Andr Hoek, and Jim Whitehead, editors. *Collaborative Software Engineering*. Springer Berlin Heidelberg, 2010.

¹<http://cs.gssi.it/commitmde2018/>