

3rd Workshop on Flexible Model Driven Engineering (FlexMDE 2017)

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Abstract—FlexMDE 2017 was the 3rd edition of the workshop on Flexible Model Driven Engineering, held on September 18th, 2017 as a satellite event of the ACM/IEEE 20th International Conference on Model Driven Engineering Languages & Systems (MODELS), Austin, Texas (USA). The goal of this workshop was to bring together researchers and practitioners in order to exchange innovative technical ideas and experiences related to flexibility in modeling. The 3rd edition of the FlexMDE workshop provided a forum to discuss successful applications of agile processes and model-driven engineering techniques and to gain insights into challenges related to the flexible adoption of model-driven techniques and tools.

I. INTRODUCTION

Over the last years, several modeling platforms have been developed to simplify and automate many steps of Model Driven Engineering (MDE) processes. However, still several challenges have to be solved for enabling a wider adoption of MDE. One of the most important impediments in adopting MDE tools is related to the reduced flexibility of existing modeling platforms that do not permit to relax or enforce their rigidity depending on the stages of the applied development process. For instance, EMF does not permit to enter models which are not conforming to a metamodel. On one hand this allows only valid models to be defined, but on the other, it makes the corresponding pragmatics more difficult. Thus, there is an increasing need for techniques supporting flexibility in a wide range of modeling activities, including metamodel, model, and model transformation development and reuse.

In order to tackle these challenges, the FlexMDE series of workshops started in 2012 under the name of XM (“eXtreme Modelling”). XM was held for three editions, which in 2015 continued under the name of FlexMDE. All editions have been held as satellite events of the MODELS conference. More information about the workshop series can be found at <http://www.di.univaq.it/flexmde/>. Along these 6 years, we have published special issues associated with the workshop on the Journal of Object Technology [1] and the Computer Languages Systems & Structures Journal (Elsevier) [2].

The primary goal of the workshop is to identify the difficulties in the current practice of MDE related to the lack of flexibility. FlexMDE encourages contributions of ideas, concepts, and techniques also from other areas of software development which could be useful to revise certain MDE fundamental typing concepts, and to define agile model sketching techniques.

In the 3rd edition, FlexMDE received 11 submissions, of which 9 papers were accepted for publication and presentation during the workshop. The workshop hosted Benoit Combemale as invited speaker and overall, 25 participants attended the workshop, resulting in a lively, highly interactive event.

The workshop’s program comprised of one full day of activities which were split into 3 sessions, summarized below.

II. SESSION 1: FLEXIBLE MODELLING I

The first session of the workshop hosted an invited talk given by Prof. Benoit Combemale from University of Toulouse (France), titled *Sound Yet Flexible Modeling: A Language Engineering Point of View*. During the talk, Benoit presented a sound yet flexible model type system to support various scenarios of flexible modeling, mostly in connection with reusability. Different existing approaches were outlined with the aim of showing how they provide flexibility to language users. The Concern-Oriented Language Development (COLD) initiative was also presented as a full-fledged unifying approach for language reuse.

After the invited speaker, the session had the first paper presentation of the event given by Nicolas Hili, entitled *The Conformance Relation Challenge: A Guideline for Building Flexible Modelling Frameworks*. Nicholas presented an attempt to give a unified view of flexibility in MDE. In particular, he focused on the conformance flexibility (related to the abstract syntax) in terms of two orthogonal and complementary dimensions i.e., specificity of semantics, and time/phase of flexibility.

III. SESSION 2: FLEXIBLE MODELLING II

The second session hosted 4 paper presentations as summarized in the following.

Yentl Van Tendeloo presented the work titled *Explicitly Modelling the Type/Instance Relation* consisting of an approach enabling meta-meta-models and semantics to be added and manipulated at runtime with the aim of solving the growing important problem of tool interoperability.

The second presentation of the session was given by Alfonso Pierantonio about *Enhancing Flexibility in User Interaction Modeling by Adding Design Uncertainty to IFML*. Alfonso presented an approach to enable the compact specification of design alternatives by adopting a model for uncertainty, integrated with a model for the user interaction design. The

approach permits modelers to resolve uncertainty by integrating the results of user behavior analysis. Overall, the proposed approach permits developers to reduce the costs of the user interaction optimization.

Alfa Yohannis presented the third paper of the session titled *Turning Models Inside Out*. The presentation was about an approach for change-based model persistence as opposed to state-based one. The strengths and the limitations of the tool were discussed by showing also the currently available implementation of the approach, which is on top of the Eclipse Modelling Framework.

The last presentation of the session was given by Hessa Alfraihi about *Agile model-driven engineering of financial applications*. The presentation was about the adoption of Microsoft Excel as a Model Driven Development front-end for the specification and development of financial applications in a rigorous manner.

IV. SESSION 3: AGILE PROCESSES

Four paper presentations were hosted in the third and last session of the workshop as described in the following.

The first presentation was titled *Practical Aspects of The Integration of Agile Development and Model-Driven Development: An Exploratory Study* and was given by Hessa Alfraihi. The presenter discussed the outcomes of a study done by the authors to investigate the state of practice of integrating Agile development methods and Model Driven Development. The study found that although both approaches gained considerable attentions by practitioners, the state of practice is not yet mature.

Hans Vangheluwe presented the work titled *Towards Agile Model-Based Systems Engineering* to discuss the adoption of

agile methods to develop Cyber-Physical Systems. In particular, the presenter shown initial results of the study that the authors did to identify the challenges faced when adopting an agile process to design CPS.

The third presentation of the session was titled *A Process for Integrating Agile Software Development and Model-Driven Development* and given by Hessa Alfraihi, who proposed a comprehensive process integrating Agile development and Model Driven Development. A case study to evaluate the application of the proposed process was also reported.

The last presentation of the session and of the event was given by Levi Lucio and titled *Process-Aware Model-Driven Development Environments*. The presenter shown how Model Driven Development environments can become process-aware, to assist the user when building a model by means of the adopted domain specific languages.

V. ACKNOWLEDGEMENTS

We thank the many people who contributed to the success of FlexMDE'17: the authors and the attendees, the invited speakers, and the program committee. We hope to be able to come together for FlexMDE'18 in Copenhagen, Denmark.

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