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Bill Opdyke
Douglas C. Schmidt
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Preface

MODELS 2007 was the tenth incarnation of the series of conferences on Model Driven Engineering Languages and Systems. The conference was held in Nashville (TN), USA, during the week of September 30 to October 5, 2007. The local arrangements were provided by the Department of Electrical Engineering and Computer Science of Vanderbilt University.

The program of the week comprised three keynote presentations, technical paper presentations, two panels, as well as several workshops and tutorials on key topics in the field. The invited keynote speakers were Mary Shaw (Carnegie Mellon University), Kevin Sullivan (University of Virginia), and Patrick Lardieri (Lockheed Martin Advanced Technology Lab).

This volume contains the final versions of the papers accepted for presentation at the conference. These papers cover topics from the field including meta-modeling, model transformations, model analysis, aspect-oriented modeling, and modeling process support.

We received 158 full paper submissions (including 18 experience reports) for review from 36 different countries. Of these, 31 papers were submitted with authors from more than one country. The top countries submitting papers were France (72), USA (64), and Germany (59). A total of 45 papers were accepted for inclusion in the proceedings, including five experience papers. The acceptance rate was therefore 28 %, which is comparable to those of previous MODELS conferences.

At least three Program Committee members reviewed each paper. Reviewing was thorough, and most authors received detailed comments on their submissions. Conflicts of interest were taken very seriously. No one participated in any way in the decision process of any paper where a conflict of interest was identified. In particular, PC members who submitted papers did not have access to information concerning the reviews of their papers.

We would like to thank everyone who submitted a paper or a proposal for a workshop or a tutorial. We would also like to thank the large number of volunteers who contributed to the success of the conference. Richard van de Stadt deserves special thanks for his prompt and gracious service in supporting special requests for CyberChairPRO, the conference management system used to manage papers submissions and the virtual PC meeting. Finally, we would like to thank our sponsors, ACM and IEEE Computer Society, for their support of the MODELS 2007 conference.

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Bidirectional Model Transformations in QVT: Semantic Issues and Open Questions

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Abstract. We consider the OMG's Queries, Views and Transformations (QVT) standard as applied to the specification of bidirectional transformations between models. We discuss what is meant by bidirectional transformations, and the model-driven development scenarios in which they are needed. We analyse the fundamental requirements on tools which support such transformations, and discuss some semantic issues which arise. We argue that a considerable amount of basic research is needed before suitable tools will be fully realisable, and suggest directions for this future research.

Keywords: bidirectional model transformation, QVT.

1 Introduction

The central idea of the OMG's Model Driven Architecture is that human intelligence should be used to develop models, not programs. Routine work should be, as far as possible, delegated to tools: the human developer's intelligence should be used to do what tools cannot. To this end, it is envisaged that a single platform independent model (PIM) might be created and transformed, automatically, into various platform specific models (PSMs) by the systematic application of understanding concerning how applications are best implemented on each specific platform. The OMG's Queries, Views and Transformations (QVT) standard [12] defines languages in which such transformations can be written.

In this paper we will discuss *bidirectional* transformations, focusing on basic requirements which such transformations should satisfy.

The structure of the paper is as follows. In the remainder of this section, we motivate bidirectional transformation, and especially, the need for non-bijective bidirectional transformations; we then discuss related work. Section 2 briefly summarises the most relevant aspects of the QVT standard. Section 3 discusses key semantic issues that arise. Section 4 proposes and motivates a framework and a definition of "coherent transformation". Finally Section 5 concludes.

In order to justify the considerable cost of developing a model transformation, it should ideally be reused; perhaps a vendor might sell the same transformation

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