

2017 ACM/IEEE 20th International Conference on Model Driven Engineering Languages and Systems (MODELS 2017)

**Austin, Texas, USA
17 – 22 September 2017**



**IEEE Catalog Number: CFP17UML-POD
ISBN: 978-1-5386-3493-6**

**Copyright © 2017 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP17UML-POD
ISBN (Print-On-Demand):	978-1-5386-3493-6
ISBN (Online):	978-1-5386-3492-9

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

2017 ACM/IEEE 20th International Conference on Model Driven Engineering Languages and Systems

MODELS 2017

Table of Contents

Preface	ix
Organization	xii
Keynotes	xvii

Model Transformation

Bidirectional Transformations in the Large	1
<i>Perdita Stevens</i>	
Translating Target to Source Constraints in Model-to-Model Transformations	12
<i>Jesús Sánchez Cuadrado, Esther Guerra, Juan de Lara, Robert Clarisó, and Jordi Cabot</i>	
On Additivity in Transformation Languages	23
<i>Sochiro Hidaka, Frédéric Jouault, and Massimo Tisi</i>	

Language Engineering

How is ATL Really Used? Language Feature Use in the ATL Zoo	34
<i>Gehan M. K. Selim, James R. Cordy, and Juergen Dingel</i>	
Language Design with Intent	45
<i>Vadim Zaytsev</i>	
Lessons Learned from Developing mbeddr: A Case Study in Language Engineering with MPS	N/A
<i>Markus Voelter, Bernd Kolb, Tamás Szabó, Daniel Ratiu, and Arie van Deursen</i>	

MDE-I

SQL-PL4OCL: An Automatic Code Generator from OCL to SQL Procedural Language	54
<i>Marina Egea and Carolina Dania</i>	
A Fuzzy Logic Based Approach for Model-Based Regression Test Selection	55
<i>Mohammed Al-Refai, Walter Cazzola, and Sudipto Ghosh</i>	
Partial Evaluation of OCL Expressions	63
<i>Bastian Ulke, Friedrich Steimann, and Ralf Lämmel</i>	

DSLs

Reusable Specification Templates for Defining Dynamic Semantics of DSLs	74
<i>Ulyana Tikhonova</i>	
Active Domain-Specific Languages: Making Every Mobile User a Modeller	75
<i>Diego Vaquero-Melchor, Javier Palomares, Esther Guerra, and Juan de Lara</i>	
Experiences with Teaching MPS in Industry: Towards Bringing Domain Specific Languages Closer to Practitioners	83
<i>Daniel Ratiu, Vaclav Pech, and Kolja Dummman</i>	

Product Lines

Software Product Lines with Design Choices: Reasoning about Variability and Design Uncertainty	93
<i>Michalis Famelis, Julia Rubin, Krzysztof Czarnecki, Rick Salay, and Marsha Chechik</i>	
Transformations of Software Product Lines: A Generalizing Framework Based on Category Theory	101
<i>Gabriele Taentzer, Rick Salay, Daniel Strüber, and Marsha Chechik</i>	
Revisiting Visitors for Modular Extension of Executable DSMLs	112
<i>Manuel Leduc, Thomas Degueule, Benoit Combemale, Tijs van der Storm, and Olivier Barais</i>	

Validation & Verification

From Secure Business Process Modeling to Design-Level Security Verification	123
<i>Qusai Ramadan, Mattia Salnitri, Daniel Strüber, Jan Jürjens, and Paolo Giorgini</i>	
Why is My Component and Connector Views Specification Unsatisfiable?	134
<i>Shahar Maoz, Nitzan Pomerantz, Jan Oliver Ringert, and Rafi Shalom</i>	
Tool Support for Live Formal Verification	145
<i>Vincent Aravantinos and Sudeep Kanav</i>	

Modeling in Industry

Model-Driven Development of Safety Architectures	156
<i>Ewen Denney, Ganesh Pai, and Iain Whiteside</i>	
Component and Connector Views in Practice: An Experience Report	167
<i>Vincent Bertram, Shahar Maoz, Jan Oliver Ringert, Bernhard Rumpe, and Michael von Wenckstern</i>	
Synthesis and Exploration of Multi-level, Multi-perspective Architectures of Automotive Embedded Systems (SoSYM Abstract)	178
<i>Jordan A. Ross, Alexandr Murashkin, Jia Hui Liang, Michal Antkiewicz, and Krzysztof Czarnecki</i>	

New Frontiers

Managing Design-Time Uncertainty	179
<i>Michalis Famelis and Marsha Chechik</i>	
The Next Evolution of MDE: A Seamless Integration of Machine Learning into Domain Modeling	180
<i>Thomas Hartmann, Assaad Moawad, Francois Fouquet, and Yves Le Traon</i>	
Raising Time Awareness in Model-Driven Engineering: Vision Paper	181
<i>Amine Benelallam, Thomas Hartmann, Ludovic Mouline, Francois Fouquet, Johann Bourcier, Olivier Barais, and Yves Le Traon</i>	

Co-Evolution & Collaboration

Co-Evolution of Meta-Modeling Syntax and Informal Semantics in Domain-Specific Modeling Environments — A Case Study of AUTOSAR	189
<i>Darko Durisic, Corrado Motta, Miroslaw Staron, and Matthias Tichy</i>	
Property-Based Locking in Collaborative Modeling	199
<i>Csaba Debreceni, Gábor Bergmann, István Ráth, and Varró Dániel</i>	
Heuristic-Based Recommendation for Metamodel — OCL Coevolution	210
<i>Edouard Batot, Wael Kessentini, Houari Sahraoui, and Michalis Famelis</i>	

Modeling Infrastructure

Ecoreification: Making Arbitrary Java Code Accessible to Metamodel-Based Tools	221
<i>Heiko Klare, Erik Burger, Max Kramer, Michael Langhammer, Timur Sağlam, and Ralf Reussner</i>	
User Experience for Model-Driven Engineering: Challenges and Future Directions	229
<i>Silvia Abrahão, Francis Bourdeleau, Betty Cheng, Sahar Kokaly, Richard Paige, Harald Stöerle, and Jon Whittle</i>	

Bridging Proprietary Modelling and Open-Source Model Management Tools: The Case of PTC Integrity Modeller and Epsilon	237
<i>Athanasios Zolotas, Horacio Hoyos Rodriguez, Dimitrios S. Kolovos, Richard F. Paige, and Stuart Hutchesson</i>	

Modeling & Systems Engineering

Ontology-Based Pattern for System Engineering	248
<i>Dominique Ernadote</i>	
DREAMS Toolchain: Model-Driven Engineering of Mixed-Criticality Systems	259
<i>Simon Barner, Alexander Diewald, Jörn Migge, Ali Syed, Gerhard Fohler, Madeleine Faugère, and Daniel Gracia Pérez</i>	
Bringing DSE to Life: Exploring the Design Space of an Industrial Automotive Use Case	270
<i>Johannes Eder, Sergey Zverlov, Sebastian Voss, Maged Khalil, and Alexandru Ipatiov</i>	

Empirical Studies

A Systematic Mapping Study on Modeling for Industry 4.0	281
<i>Andreas Wortmann, Benoît Combemale, and Olivier Barais</i>	
An Empirical Study on the Maturity of the Eclipse Modeling Ecosystem	292
<i>Javier Luis Cánovas Izquierdo, Valerio Cosentino, and Jordi Cabot</i>	
A Survey of Tool Use in Modeling Education	303
<i>Luciane T. W. Agner and Timothy C. Lethbridge</i>	

MDE - II

Symbolic Execution for Realizability-Checking of Scenario-Based Specifications	312
<i>Joel Greenyer and Timo Gutzjahr</i>	
A Model-Driven Approach to Trace Checking of Pattern-Based Temporal Properties	323
<i>Wei Dou, Domenico Bianculli, and Lionel Briand</i>	
Removal of Redundant Elements within UML Activity Diagrams	334
<i>Martin Beckmann, Vanessa N. Michalke, Aaron Schlutter, and Andreas Vogelsang</i>	
Author Index	344