

# Workshop on Modeling in Automotive Software Engineering (MASE'15)

URL: <http://t3-necsis.cs.uwaterloo.ca/mase15>

Ottawa, Canada

September 27, 2015

Co-located with MODELS'15

**Background and Motivation.** Automotive software was born less than 40 years ago. The first production automotive microcomputer ECU was a single-function controller used for electronic spark timing in the 1977 General Motors Oldsmobile Toronado. By 1981, GM was using microprocessor-based engine controls executing about 50,000 lines of code across its entire domestic passenger car production. Within just 40 years, the significance, size, and development costs of automotive software has grown to staggering levels: Modern cars can be shipped with as much as 1GB of software encompassing more than 100 million lines of code and experts estimate that more than 80% of automotive innovations now come from computer systems and that the cost of software and electronics can reach 40% of the cost of a car.

A consequence of this development is that the automotive industry is increasingly relying on and becoming a driver of advances in software development and engineering methods, techniques and tools to deal with the many unique challenges the automotive industry faces.

Significant advances have been made dealing with many of these challenges involving, for instance, variability modeling and software product lines, standardization, model-based development, cyber-physical systems, and systems engineering. However, the remaining challenges are compounded by future trends: According to an IBM report<sup>1</sup> released in January 2015, the traditional industry boundaries are starting to disappear and automotive companies must adapt not only to the increasing role of cognitive and adaptive technologies and social media, but also to an increasingly open and collaborative ecosystem of traditional and non-traditional industrial participants (such as car-sharing companies); 80% of the 175 industry executives questioned currently feel ill-prepared for these changes.

**Objectives and Topics.** Modeling and model-based approaches to software development already have a long tradition in the automotive industry due to, e.g., the high need for abstraction, standardization and interoperability. It is reasonable to believe that advances in modeling will be key to further advancing automotive software engineering as well.

A central objective of the workshop is to provide a forum for practitioners and researchers from industry and academia in which novel, innovative, model-based solutions to current and future challenges in automotive software development can be presented and discussed. Another important objective is the identification of new research problems arising from current trends.

MASE'15 encourages submissions presenting novel and insightful descriptions of applications of modeling techniques to problems arising in the context of automotive software engineering. More precisely, topics of interest include, but are not limited to,

- architectures and component-based development and relevant technologies such as AUTOSAR, EAST-ADL, and UML
- real-time systems and support for multi-core, mixed criticality and IP, and dynamic scheduling
- quality assurance and support for different quality attributes such as functional and non-functional correctness, interoperability, fault-tolerance, maintainability, and reusability
- safety and security and support for safety standards such as ISO 26262
- requirements and traceability
- variability and configuration management
- synthesis, transformation, iterative development, integration, and code generation

- deployment
- development processes and support for globally distributed development
- emerging technologies such as big data, mobile apps, social media, open source software, and vehicle networks

Moreover, we welcome experience reports describing insightful uses of modeling, and position papers on future challenges and open problems in the area.

All submissions are expected to argue the relevance of the described work to automotive software engineering clearly and convincingly.

**Intended Audience.** The intended audience consists of all people interested in MDE and automotive software engineering.

**Submissions, Guidelines, and Proceedings.** Authors are invited to submit **technical papers** relevant to the workshop topic. Also welcome are insightful **experience reports** describing the use of modeling in an automotive context or **position papers** on future research challenges and open problems.

All submissions must be written in English, adhere to the Springer LNCS formatting guidelines ([www.springer.com/computer/lncs?SGWID=0-164-6-793341-0](http://www.springer.com/computer/lncs?SGWID=0-164-6-793341-0)). Both, **short papers** (not more than **6 pages**, including references) and **full papers** (not more than **10 pages**) are welcome. Accepted papers will appear in workshop proceedings published in CEUR ([www.ceur-ws.org](http://www.ceur-ws.org)). Submissions will be handled using EasyChair ([www.easychair.org/conferences/?conf=mase2015](http://www.easychair.org/conferences/?conf=mase2015)) and reviewed by at least three PC members.

## Important Dates.

July 17, 2015	Submission deadline
August 21, 2015	Author notification
TBD	Final version due
September 27, 2015	Workshop

## Program Committee.

Michal Antkiewicz (co-chair)	University of Waterloo, Canada
Joanne Atlee (co-chair)	University of Waterloo, Canada
Robert Baillargeon	CloudOne, USA
Christian Berger	Chalmers University, Sweden
Betty Cheng	Michigan State University, USA
Rance Cleaveland	University of Maryland and Reactive Systems Inc, USA
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Nancy Day	University of Waterloo, Canada
Juergen Dingel (co-chair)	Queen's University, Canada
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Brenda Zhuang	MathWorks, USA

<sup>1</sup>Stanley and Gyimesi. Automotive 2025: Industry without Borders. IBM Institute for Business Value. January 2015