



## Simula Research Laboratory

invites you to attend a seminar on

# Model-Driven Software Engineering

**Bran Selic:**  
**Model-Based Software Engineering:  
Expected and Unexpected Challenges**

**Lionel Briand:**  
**Test Automation: Why Model-Based  
Testing is the Most Likely Successful  
Strategy**

Seminar will be held at  
Simula Research Laboratory,  
Martin Linges vei 17, Fornebu

**February 12th, 10:00-12:00**

Register with [razielh@simula.no](mailto:razielh@simula.no). The seminar is free.

[ simula . research laboratory ] - by thinking constantly about it

## Test Automation: Why Model-Based Testing is the Most Likely Successful Strategy

### Lionel Briand

Professor, IEEE Fellow, Simula Research Laboratory, Oslo, Norway

#### Abstract

Model-based testing involves, in its most common form, the testing software systems using various models of its behavior to generate test cases and verdicts (oracles). The fundamental ideas of model-based testing have been floating around for at least two decades. Several successful experiences have been reported by companies in various application domains such as Motorola, Nokia, or BMW. However, model-based testing is still far to be a common practice. Evidence of its cost-effectiveness or even simple practice is still scant. And far more research is needed, especially for addressing the non-functional aspects of testing. This talk will introduce the basic principles of model-based testing and develop an argument demonstrating why there is no other option for effective test automation. It will also show why new modeling technologies are making it easier to develop specifically tailored model-based testing tools within software development organizations. Actual examples, from both research and practice, will highlight the technologies involved, the challenges to be expected, and the potential benefits.

#### Bio of Lionel Briand

Lionel Briand is a group leader at the Simula Research laboratory and a professor at the University of Oslo (Norway), leading projects on model-driven software engineering and software verification and validation in collaboration with industry. Before that, he was on the faculty of the department of Systems and Computer Engineering, Carleton University, Ottawa, Canada, where he was full professor and held the Canada Research Chair (Tier I) in Software Quality Engineering. He has also been the software quality engineering department head at the Fraunhofer Institute for Experimental Software Engineering, Germany, and worked as a research scientist for the Software Engineering Laboratory, a consortium of the NASA Goddard Space Flight Center, CSC, and the University of Maryland, USA.

Lionel has been on the program, steering, or organization committees of many international, IEEE and ACM conferences. He is the coeditor-in-chief of Empirical Software Engineering (Springer) and is a member of the editorial boards of Systems and Software Modeling (Springer) and Software Testing, Verification, and Reliability (Wiley). He was on the board of IEEE Transactions on Software Engineering from 2000 to 2004.

Lionel is an IEEE Fellow and a registered Canadian engineer (Ontario).

## Model-Based Software Engineering: Expected and Unexpected Challenges

### Bran Selic

President and Founder, *Malina Software Corp.* Nepean, Ontario, Canada

#### Abstract

Model-based software engineering (MBSE) is a generic term for a category of approaches to software development that are characterized by higher levels of abstraction and increased use of automation compared to more traditional development methods. Although there are numerous examples of successful industrial projects that used MBSE, it is still far from being widely accepted and applied in practice.

In this talk, we first identify the key features of MBSE and explain why they have the potential to dramatically increase productivity and quality. Next, we review the state of the art as well as the state of the practice of MBSE, and then analyze the principal technical and non-technical challenges that stand in the way of its broader application. Based on this analysis, key short- and long-term research challenges related to MBSE are then identified. Finally, we conclude with an outline of a comprehensive research programme into MBSE.

#### Bio of Bran Selic

Bran Selic is currently President of Malina Software Corp., a Canadian company that provides consulting services to Fortune 100 clients and government institutions worldwide. In 2007, Bran retired from IBM Canada, where he was an IBM Distinguished Engineer responsible for setting the strategic direction for software development tools for the technical systems space. In addition, he is an adjunct professor of computer science at the University of Toronto and at Carleton University (Ottawa, Canada), as well as a visiting lecturer and researcher at the University of Sydney (Australia) and at INSA (Lyon, France). With close to 40 years of practical experience in designing and implementing large-scale industrial software systems, Bran has pioneered the application of model-driven development methods in real-time and embedded applications. In this domain, he has led numerous research projects, authored and edited several textbooks and numerous technical papers and chaired major conferences dedicated to these problems. In addition, he was one of the principal contributors to several technical standards related to OMG's Model-Driven Architecture initiative, including the widely adopted UML standards.

Bran received his Dipl.Ing degree in 1972 and his Mag.Ing degree in 1974, both from the University of Belgrade in Yugoslavia.