



Springer

## Call for Papers

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### Important Dates

Intent to submit 01 Jul 16  
Paper submission 15 Sep 16  
Notification 16 Dec 16

# Software and Systems Modeling



## Theme Issue: Model-Based Testing

Model-Based Testing (MBT) continues to be an important research area, where new approaches, methods and tools make MBT techniques more deployable and useful for industry than ever. Models and different abstractions can ease comprehension of a complex system and ease test generation and automation.

The execution of software using test cases or sequences derived in a manual or automatic manner from models, often referred to as MBT, is an encouraging scientific and industrial trend to cope with growing software system complexity. Modelling requires substantial investment, and MBT solutions can help leverage this investment. The testing models may have been adapted from system design models or might have been devised specifically to support MBT. Naturally, the greatest benefits are often obtained when test generation is automated, but practitioners report that the modelling process is also of value, often highlighting requirement issues.

The use of industrial scale software demands the model-based construction of software and systems as compositions of independent and reusable actors. In this engineering paradigm, complex system functionality arises out of the composition of many component services. For these systems, model-based testing may significantly improve component acceptance and move component integration testing towards a canonical validation and certification of complete systems.

Automation of software development and software testing on the basis of executable models and simulation promises significant reductions in fault-removal cost and development time. As a consequence of automating MBT, changes in requirements analysis, development and testing processes are needed that demand combined efforts from research and industry towards a broadly accepted solution.

The *[Journal of Software and Systems Modeling](#)* (SoSyM) invites original, high-quality submissions for its theme issue on “Model-Based Testing” focusing on topics related to MBT, including:

### MODELS

- Models for component, integration and system testing
- Product-line, variant-rich and highly configurable system models
- (Hybrid) embedded system models
- Systems-of-systems models
- Architectural models
- Models for orchestration and choreography of services
- Executable models, simulation and model transformations
- Environment and use models
- Non-functional models
- Cyber-Physical Systems Models

## General Author Information

## Making a submission

## Further information

### PROCESSES, METHODS AND TOOLS

- Model-based test generation algorithms
- Application of model checking techniques to model-based testing
- Model-based Mutation Testing
- Symbolic execution-based techniques
- Tracing from requirements model to test models
- Performance and predictability of model-driven development
- Test model evolution during the software life-cycle
- Risk-based approaches for MBT
- Generation of testing-infrastructures from models
- Combinatorial approaches for MBT
- Statistical testing

### EXPERIENCES AND EVALUATION

- Non-functional MBT
- Estimating dependability (e.g., security, safety, reliability) using MBT
- Coverage metrics and measurements for structural and non-functional models
- Cost of testing, economic impact of MBT
- Empirical validation, experiences, case studies using MBT

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- Papers must be written in a scientifically rigorous manner with adequate references to related work.
  - Submitted papers must not be simultaneously submitted in an extended form or in a shortened form to other journals or conferences. It is however possible to submit extended versions of previously published work if less than 75% of the content already appeared in a non-journal publication, or less than 40% in a journal publication. Please see the [SoSyM Policy Statement on Plagiarism](#) for further conditions.
  - Submitted papers do not need to adhere to a particular format or page limit, but should be prepared using font “Times New Roman” with a font size no smaller than 11 pt, and with 1.5 line spacing. Please consult the [SoSyM author information for submitting papers](#).
  - Each paper will be reviewed by at least three reviewers.

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- Communicate your intent to submit a paper by emailing the theme issue editors the following information before the Intent to Submit deadline: Title, Authors, and an Abstract.
  - Possible submission formats are:
    - Word (.doc, without macros)
    - Rich Text Format (.rtf)
    - PostScript (.ps, special fonts must be embedded)
    - PDF (saved as readable in version 5.0 or earlier)
  - Submit your work using the online submission system [manuscript central](#):
    - In step 1, select “Theme Section Paper” as the manuscript type.
    - In step 4, add “Mike Papadakis” (michail.papadakis@uni.lu) as an editor and choose “Designate as Preferred Editor”.
    - In step 5, make sure field “Cover Letter” includes the line: “Submission for Theme Issue on MBT”.

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If you have any questions or require additional information about this theme issue, please contact the editors.

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