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## Editorial

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### Kamel Barkaoui\*

CNAM, Cedric,  
292, Rue St-Martin case 422,  
75141 Paris Cedex 03, France  
E-mail: [kamel.barkaoui@cnam.fr](mailto:kamel.barkaoui@cnam.fr)  
\*Corresponding author

### Bruno Monsuez

ENSTA Paris Tech.,  
Unité d'Electronique et d'Informatique,  
32 Boulevard Victor, 75739 Paris Cedex 15, France  
E-mail: [bruno.monsuez@ensta-paristech.fr](mailto:bruno.monsuez@ensta-paristech.fr)

### Denis Poitrenaud

UPMC – LIP6,  
4, Place Jussieu, 75005 Paris, France  
E-mail: [denis.poitrenaud@lip6.fr](mailto:denis.poitrenaud@lip6.fr)

**Biographical notes:** Kamel Barkaoui received his PhD in Computer Science from the Université Pierre et Marie Curie (UPMC) in 1988. He is currently a Professor at the Conservatoire National des Arts et Métiers (CNAM). His research interests include verification and performance evaluation of concurrent and distributed systems. He received the Outstanding Paper Award of 1995 IEEE Int. Conf. on System Man and Cybernetics. He served on PCs and as PC Chair for numerous international workshops and conferences. He was the Guest Editor of *Journal of Systems and Software (JSS)* and of *Formal Aspects of Computing (FACJ)*. He is the Steering Committee Chair of the Int. Workshop on Verification and Evaluation of Computer and Communication Systems (VECoS).

Bruno Monsuez graduated in 1989 from Ecole Polytechnique. He received his PhD in Computer Science from the Ecole Polytechnique in 1994. He is now the Director of the Electronics and Computer Engineering Department at ENSTA ParisTech. His current research interests are focused on developing and enhancing hierarchical compositional mathematical models that can be used to represent hardware and software components of complex embedded systems as well as formal verification techniques that allow a co-jointly verification functional and non-functional properties of the software as well as the hardware on which the software is expected to run. He served on PCs and as PC chair for numerous international workshops and conferences. He is the Steering Committee Co-Chair of the Int. Workshop on Verification and Evaluation of Computer and Communication Systems (VECoS).

Denis Poitrenaud received his PhD in Computer Science from the Université Pierre et Marie Curie (UPMC) in 1996. He is currently an Assistant Professor at the Université Paris Descartes and a member of the Laboratoire d'Informatique de Paris 6 (LIP6). His research interests include modelling and the verification of concurrent and distributed systems. He served on PCs and as PC chair for international conferences and is a Steering Committee Member of the International Workshop on Verification and Evaluation of Computer and Communication Systems (VECoS).

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This issue is devoted to extended versions of selected contributions from the technical sessions of the last four editions of International Workshop on Verification and Evaluation of Computer and Communication Systems (VECoS) held in 2007 in Algiers, 2008 in Leeds, 2009 in Rabat, and 2010 in Paris.

VECoS was created in 2006 by a euro-maghrebian network of researchers in computer science. The aim of this workshop is to bring together researchers and practitioners to present their results, exchange experience, ideas, and solutions for their problems in the areas of verification, control, performance and dependability evaluation; to discuss the state of the art for solving the challenges facing us today in various modern computer and communication systems where functional and extra functional properties are strongly interrelated and thirdly to encourage the cross-fertilisation between formal verification and evaluation approaches, methods and techniques especially those based on the specification formalisms for concurrent and distributed soft/hard systems.

Beyond its technical and scientific goals, another main purpose of VECoS is to promote collaboration in research and education between participants and their institutions, from developing and industrial countries in the area of computer science and engineering.

The programme committees included researchers from 15 countries and more than 40 laboratories. Each of the 122 submitted papers was evaluated by at least three reviewers. Afterwards, reports were returned to the programme committee for discussion and resolution of conflicts. Based on their recommendations, we selected 49 papers. The proceedings including these accepted papers were published by the eWiC series of the British Computer Society. After VECoS'2010, we invited 19 authors to submit extended versions of their papers. After additional refereeing and further revisions, we were able to accept 14 papers for inclusion in this special issue. Part 2 comprises the following papers:

- 'MDG-SAT: an automated methodology for efficient safety checking'

Khaza Anuarul Hoque, Otmane Ait Mohamed, Sa'ed Abed and Mounir Boukadoum propose a new design verification methodology integrating MDG and SAT for efficient safety checking. They use a SAT solver to search for paths starting from the initial states to a bad state violating the property under certain encoding constraints. In addition, they introduce a complementary automated conversion-verification methodology for DF to CNF conversion. The verification of this conversion is conducted within the HOL theorem prover.

- ‘A formal framework for black-box conformance testing of distributed real-time systems’

Moez Krichen presents a formal framework for black-box conformance testing for distributed real-time systems. This framework is based on the model of partially-observable, non-deterministic timed automata, and algorithms for generation of analogue or digital clock tests are provided.

- ‘Distributed model-checking and counterexample search for CTL logic’

Mohand Cherif Boukala and Laure Petrucci present a distributed algorithm for CTL model-checking in order to cope with the state space explosion problem. A cluster of workstations performs collaborative verification over a partitioned state space and a counterexample search consists in a distributed construction of the tree-like corresponding to the failure executions.

- ‘SystemC waiting state automata’

Nesrine Harrath and Bruno Monsuez present a formalism allowing a formal representation of SystemC designs at the delta-cycle level. This model supports compositionality. Besides, this model allow to capture both functional and non-functional aspects of SystemsC designs, it is amenable for adding more constraints about system behaviour such as time properties and counters.

- ‘Structured performance analysis for component-based systems’

Nabila Salmi, Patrice Moreaux and Malika Ioualalen present a compositional method for modelling component-based systems. The model is derived from system architecture description and components behaviour in terms of stochastic well-formed nets and permits an efficient structured performance analysis by reducing computation time and memory costs.

- ‘Computing transitive closures of hedge transformations’

Tayssir Touili deals with the framework of regular hedge model checking. The hedge automata allows the representation of procedure calls, dynamic creation of new threads, synchronisation between parallel processes, some parameterised protocols or XML documents and their transformations by XSLT. The author proposes a *semi-algorithm* that computes, in case of termination, an over-approximation of this reachability set and shows that, for many practical applications, this over-approximation is sufficient to decide important properties.

We are grateful to all members of the programme and organising committees and to all referees of the proceedings and of this special issue for their hard work. The support and encouragement of the steering committee were invaluable assets. Finally, we would like to thank all the authors of the invited and submitted papers and all the participants of the workshop.