

## ACM Transactions on Modeling and Computer Simulation

### Special Issue – Call for Papers: Modeling and Simulation of Cross-Layer Interactions in Communication Networks

**Guest Editors: Fabrizio Granelli (Univ. of Trento) and Michael Devetsikiotis (NC State Univ.)**

*Cross-layering represents an important emerging design approach to overcome limitations and lack of flexibility of the layering principle, which is the basis of today's communication networks. Indeed, in specific scenarios such as Quality-of-Service provisioning and wireless networks deeper integration and interaction among different layers is envisaged. Despite the wide-spread adoption of the general cross layer design principle, not much attention has been placed on solid, quantitative, systematic study of the system behaviour and interactions among different protocols at different layers. In fact, even if several cross-layering architectures are available in the literature, only a few works face the problem of providing frameworks for modeling cross-layering interactions and support the definition of cross-layering solutions. Quantitative cross-layer formulations and models are still needed to effectively provide guidelines on the impact of the design parameters in terms of overall system performance. Simulation based methods represent indispensable tools to provide further in-sight in this direction, given the analytical intractability of the complex cross layer system. Indeed, specific modeling techniques need to be at the top of the performance evaluation process for such systems, and properly studied using formal principles, with support from simulation analysis to capture the subtle interactions across the layers.*

*The special issue is aimed at gathering novel contributions in the development of models for cross-layering interactions and computational solutions. Prospective authors are invited to submit original contributions (not submitted for publication elsewhere) on the following topics:*

- modeling and simulation of cross-layering interactions
- modeling and simulation of cross-layering processes
- modeling and abstraction of cross-layer functionalities
- architectural models for cross-layering signalling
- sensitivity analysis, derivative approximation and simulation-based optimization
- model-based cross-layer system optimization
- cross layer simulation implementation issues
- simulation environments for analysis of cross-layer interactions
- verification of cross-layer models and simulations
- cross-layer systems experimental trials and testbeds

*Full papers that are associated with workshop presentations are eligible to be submitted to this special issue. Papers are to be submitted by May 30<sup>th</sup>, 2009, through the ACM TOMACS WWW site, <http://mc.manuscriptcentral.com/tomacs>.*

*For more information, please contact the Guest Editors **Fabrizio Granelli** ([granelli@disi.unitn.it](mailto:granelli@disi.unitn.it)) or **Michael Devetsikiotis** ([mdevets@ncsu.edu](mailto:mdevets@ncsu.edu)).*

#### **Relevant dates:**

Submission deadline: May 30<sup>th</sup>, 2009  
Notification of acceptance: July 31<sup>st</sup>, 2009  
Final paper due: September 15<sup>th</sup>, 2009  
Expected publication: April 2010 (vol. 20, no. 2)