

# Component-Based Modeling and Simulation – Status and Perspectives

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## Abstract

Regarding permanently increasing complexity and connectivity of technical systems, decreasing innovation cycle times for the design and development, and increasing systems life time, the performance of model and simulation development and application becomes a real challenge. One conceptual approach to increase the efficiency and effectiveness of complex models is component-based model design, development and execution based on reusable model components in a distributed simulation environment.

This presentation will summarize state-of-the-art and midterm perspectives of component-based modeling and simulation (M&S), especially focusing on distributed simulation applications. Starting with a summary of current demands and expectations, this presentation will include methodological approaches for component-based M&S, formal and architectural requirements for its implementation, current status of its technical realization, and of expected benefits, as well. Finally, future demands for research and perspectives for wider application will be discussed.

**Prof. Dr. Axel Lehmann** received his University Diploma Degree in Electrical Engineering in 1973 and his doctoral degree (Dr.) in Informatics in 1982, both from the University of Karlsruhe, Germany. In 1987, he became a Full Professor (University Professor) for Informatics at the Universität der Bundeswehr München (Federal Armed Forces University), Germany. From 1995 through 1998, he was Dean of the Department of Informatics. Since 1996, he has been Chairman of the Institute for Technical Informatics, and Vice-Chair of the Institute for Intelligent Systems (ITIS e.V.) at that University.

Prof. Dr. Lehmann has been a member of the Society for Modeling and Simulation International (SCS) Board of Directors since 1990. From 1993 – 1998, he was Vice President of SCS, and President from 1998 – 2000.

His principal research topics include Modeling and Simulation Methodology (Discrete Event Systems), Performance and Reliability Analysis of Computer and Telecommunication Networks, Fault Diagnosis and Management of Networks, and Intelligent Tutoring Systems.