2005 Summer Simulation Multiconference
July 24–28, 2005
Cherry Hill, New Jersey, USA

International Symposium on Performance Evaluation of Computer and Telecommunication Systems

General Chair:
Mohammad S. Obaidat
Monmouth University

Summer Computer Simulation Conference

General Chair:
Agostino G. Bruzzone
University of Genoa

Sponsored By the Society For Modeling and Simulation International
http://www.scs.org
SummerSim ’05 Registration Desk
The registration desk is located in the Crystal foyer and will be open during the following days and times:
- Sunday 12:00–5:00 p.m.
- Monday 7:00 a.m.–5:00 p.m.
- Tuesday 7:00 a.m.–5:00 p.m.
- Wednesday 7:00 a.m.–3:30 p.m.

SummerSim ’05 Speakers’ Breakfast
Mon—Wed 7:00–8:00 a.m.
Room: Riverside
SCSC/SPECTS 2005 presenters are invited to enjoy breakfast and the company of co-presenters on the morning of their presentations.

SummerSim ’05 Exhibit Area Hours
- Monday Grand Ballroom C 10:00 a.m.–7:30 p.m.
- Tuesday Grand Ballroom C 10:00 a.m.–7:30 p.m.
- Wednesday Grand Ballroom C 10:00 a.m.–12:00 p.m.
Coffee breaks are held daily at 10:00 a.m. and 3:00 p.m. in the Exhibit Area.

SummerSim ’05 Exhibitor Reception
Monday 6:00–7:30 p.m.
Room: Grand Ballroom C

SummerSim ’05 General Session and Keynote Address
Monday—Wednesday 8:30–10:00 a.m.
Room: Grand Ballroom A/B
- Monday
  Bernard Zeigler, University of Arizona, USA
- Tuesday
  Prof. Shivendra Singh Panwar, Polytechnic University, USA
- Wednesday
  Sumit Ghosh, Stevens Institute of Technology, USA

SummerSim ’05 2005 Luncheon and Address
Wednesday 12:00–1:30 p.m.
Room: Riverside
Nabil R. Adam, Director, The Center for Information Management, Integration and Connectivity (CIMIC) Rutgers, The State University of New Jersey, USA
SCS Executive Committee Meeting
Saturday, July 23  
Room: Plaza I  
Francois Cellier, SCS President
The Executive Committee conducts administrative reviews of the affairs of the Society. All members of the Executive committee are expected to attend. Members of the Board of Directors are welcome to observe.

SCS Executive Committee Meeting
Sunday, July 24  
Room: Plaza VI  
Francois Cellier, SCS President
The Executive Committee conducts administrative reviews of the affairs of the Society. All members of the Executive committee are expected to attend. Members of the Board of Directors are welcome to observe.

MISS Annual Meeting
Sunday, July 24  
Room: Plaza VII  
Agostino Bruzzone, Coordinating Director
Directors and representatives of centers of the McLeod Institute of Simulation Sciences review and plan activities of the Institute.

M&SNet Annual Meeting
Sunday, July 24  
Room: Plaza VII  
Tuncer Ören, Coordinating Director
On behalf of the organizers of the workshop we hereby announce the second official meeting of the new M&SNet will take place at the 2005 Summer Simulation Multiconference, on Sunday, July 24. The McLeod Modeling and Simulation Network (M&SNet) is a consortium of co-operating independent organizations active in professionalism, research, education, and knowledge dissemination in the modeling and simulation (M&S) domain. It was established in 2003 by the Society for Modeling and Simulation International (SCS). The M&SNet aims to provide an organizational structure that will serve to integrate and enrich, within its organizations, modeling and simulation activities throughout the world. The M&SNet provides a framework within which organizations interested in M&S can interact, share expertise, and work on problems of common interest.

SPECTS 2005 Pre-conference Briefing
Sunday, July 24  
Room: Crystal I  
Mohammad Obaidat, SPECTS General Chair
All with an organizing role in this year’s Symposium on Performance Evaluation of Computer and Telecommunication Systems meet to coordinate the week’s activities.

SCSC 2005 Pre-conference Briefing
Sunday, July 24  
Room: Crystal I  
Agostino Bruzzone, SCSC General Chair
All with an organizing role in this year's Summer Computer Simulation Conference meet to coordinate the week’s activities.
All tutorials are half-day tutorials, scheduled for 3 hours plus 30 minutes coffee break in the middle. Please see registration desk for availability.

**MORNING SESSION**
Sunday 9:00 a.m.–12:30 p.m.

**Tutorial #1**  
(Room: Plaza IV)  
Using the Innovative NCTUns 2.0 Network Simulator and Emulator to Facilitate Network Researches  
Shie-Yuan Wang, National Chiao Tung University, Taiwan  
The purpose of doing this tutorial is to introduce a new and useful network simulator/emulator (the NCTUns 2.0, http://NSL.csie.nctu.edu.tw/nctuns.html) to the networking research community. Using a novel simulation methodology, the NCTUns 2.0 provides several unique advantages that cannot be easily achieved by traditional network simulators such as ns-2 and OPNET Modeler.

**Tutorial #2**  
(Room: Plaza V)  
Sensor Networks – Applications, Technologies and Protocols  
Anura P. Jayasumana, Colorado State University, Fort Collins, CO, USA.  
This tutorial will review the emerging world of sensor networks, and look at the fundamental issues in designing and analyzing sensor networks. Emerging and potential applications will be considered together with the associated sensors. Localization and tracking will be used as examples to expose the scalability constraints in these sensor networks. Emerging technology and standards will be covered, including sensor hardware, networking, OS support, algorithms, and scalability. Also covered will be querying, routing, and network self-organization.

**AFTERNOON SESSION**
Sunday 1:30–5:00 p.m.

**Tutorial #3**  
(Room: Plaza IV)  
Web Caching, its Application and Performance Aspects  
Rachid El Abdouni Khayari, University of Armed Forces Munich, Germany  
Today, the largest share of traffic in the Internet originates from WWW requests. The increasing use of WWW-based services has not only led to high frequented web servers but also to heavily-used components of the Internet. Fortunately, it is well known that there are popular and frequently requested sites, so that object caching can be employed to reduce Internet network traffic and to decrease the perceived end-to-end delays. Caching has been recognized as one of the most important techniques to reduce Internet bandwidth consumption caused by the tremendous growth of the WWW. The tutorial purpose is also to give an aid in understanding the latest developments in web caching.

**Tutorial #4**  
(Room: Plaza V)  
Integration Toward Future Heterogeneous Wireless Networks  
Dharma Agrawal, University of Cincinnati, USA  
Dave Cavalcanti, Philips Research, USA  
This tutorial provides an overview of different wireless networking technologies and discusses the main research challenges in supporting integration of Heterogeneous Wireless Networks (HWN) to build a totally pervasive computing environment where the users can have “always the best connectivity” and access information anytime, everywhere and with any device. Such integrated environments have been usually referred as Beyond 3G (B3G) or 4G systems. The tutorial addresses the state of the art research topics related to the integration architectures for cellular systems, WLANs and MANETs; radio spectrum utilization; mobility and connection management; and QoS support across heterogeneous networks. Integration of HWNs is an important research topic, since interoperability between different technologies is a must for successful evolution of communication systems.
**MORNING SESSION**  
Sunday  
9:00 a.m.–12:30 p.m.

**Tutorial #1**  
**Room: Plaza I**  
Deterministic Analysis of Discrete Stochastic Models: Proxel-Based Simulation  
Sanja Lazarova-Molnar, University of Magdeburg, Germany

The proxel-based method was recently developed for simulation of discrete stochastic models. The method approaches the problem in a very intuitive manner and it works by exploring all of the possible behaviours of the model. The proxel simulation can be also interpreted as solving a specific Markov chain, creating the probabilities for the state changes on-the-fly. We believe that besides the fact that the method can be competitive for certain classes of models, that it is especially useful for the purpose of learning how discrete stochastic models behave and the way the probability flows.

**Tutorial #3**  
**Room: Plaza II**  
Design of Experiments for Simulation Projects  
Edward Williams, PMCorp, USA  
Enrico Bocca, Liophant Simulation, Italy

This tutorial is devoted to using DOE (Design of Experiments) in Simulation projects for completing experimental analysis of results; the course include ANOVA analysis applied to Stochastic Discrete Event Simulation as well as Factorial and Composite Designed for Sensitivity Analysis and Meta-modeling. Critical Issues on DOE applied to simulation are highlighted and a detailed overview of techniques and real examples is provided to the attendees. The different approaches provided by the experts of DOE are proposed as well as considerations to be used with Industrial Simulators (i.e. Discrete Variables, Optimization Critical Issues and Performance Limits). The attendees are expected to have some basic background in statistics.

**Tutorial #5**  
**Room: Plaza III**  
Ethics in Simulation (SimEthics)  
Tuncer Ören, MISS - Ottawa Center, Canada

The importance and the scope of application areas of modelling and simulation are growing. This obliges us, i.e., simulation professionals, to re-examine our field and reflect upon whether or not those who are involved in any aspect of it have any responsibility. Professional ethics consists of the rules or standards governing the conduct of a person or the members of a profession. SCS (Society for Modeling and Simulation International) has adopted, effective January 1, 2004, a Code of Professional Ethics for Simulationists. The code is already adopted by other organizations affecting 1000s of individuals and this number is increasing.

**AFTERNOON SESSION**  
Sunday  
1:30–5:00 p.m.

**Tutorial #2**  
**Room: Plaza I**  
Web Based Multi-Paradigm Simulation  
Bipin Chadha, Coensys, Inc., USA

This half day tutorial will provide a quick overview of discrete event, system dynamics, and agent based simulation techniques. The tutorial compares the three simulation paradigms and their relative strengths and weaknesses. We then provide an overview of emerging requirements of complex systems and architectures and the need for multi-paradigm simulations. The tutorial then provides an overview of multi-paradigm / hybrid modeling and simulation for complex systems. The tutorial then goes into development of an example multi-paradigm simulation, using AnyLogic, illustrating the concepts from different paradigms and benefits of using a hybrid approach. The tutorial ends by demonstrating how a web-based simulation is created from the hybrid model.

**Tutorial #4**  
**Room: Plaza II**  
Simulation for Time Series Analysis and Forecasts  
Roberto Mosca, DIPTEM, Italy  
Enrico Briano, Liophant Simulation, Italy

This tutorial focuses an providing an overview about benefits of using the Simulation for Time Series Analysis and forecasts. The tutorial include an overview about the methodologies to model these phenomena and far analyzing data; the tutorial includes applicative introduction to both Time Series Analysis, Moving Average and Exponential Smoothing, ARIMA and ARIMA, the tutorial proceeds in presenting simulation as support for estimating effectiveness of different techniques in forecasting considering stochastic nature of processes to be investigated, cluster analysis and constraints influence. Indeed the tutorial discusses fundamentals about the common use forecast models and time series analysis in different applications: demand analysis, logistics, planning, etc.
SCS Membership Board
Monday, July 25  10:30 a.m.–12:00 p.m.
Plaza VI
Mohammad Obaidat, SCS Vice President of Membership
Membership associate vice presidents meet with the vice president of membership to discuss activities and plans for membership services, especially including development of Technical Councils and Chapters. All current and prospective members are encouraged to attend and participate.

SCSC 2006 Planning
Tuesday, July 26  12:00–1:30 p.m.
Plaza I
Agostino Bruzzone, SCSC General Chair
Summer Computer Simulation Conference organizers critique this year’s program, plan for next year, and suggest future sites for conference board consideration. All interested in participating in an organizing role are welcome.

SPECTS 2006 Planning
Tuesday, July 26  12:00–1:30 p.m.
Plaza II
Mohammad Obiadat, SPECTS General Chair
All interested in an organizing role for next year’s Symposium on Performance Evaluation of Computer and Telecommunication Systems should attend.

SCS Publications Board
Monday, July 25  1:30–3:00 p.m.
Plaza VI
SCS Vice President of Publications
Editors of Society publications meet with the vice president of publications and production staff to deal with publications issues.

M&S Workforce Development I
Tuesday  10:30–12:00 p.m.
Plaza VII
Chair: Bill Waite, Aegis Technologies Group, USA

SCS Bylaws, Policies, and Procedures
Tuesday, July 26  10:30 a.m.–12:00 p.m.
Plaza VI
SCS Senior VP
This committee considers proposed changes to SCS Bylaws and maintains our Policies and Procedures. Members willing to assist are welcome.

SCS European Operations
Tuesday, July 26  1:30–3:00 p.m.
Plaza VI
Francois Cellier, SCS President
Leading European members meet with officers of the Society to discuss administration of SCS activities in Europe.
SCS Board of Directors Budget Caucus  
**Tuesday, July 26  3:30–5:00 p.m.  Plaza VI**  
S. Narayanan, *SCS Treasurer*  
Members of the board of directors review the finances of the Society, especially the proposed budget, in preparation for the board meeting on Thursday.

Nominating Committee  
**Wednesday, July 27  10:30 a.m.–12:00 p.m.  Plaza VI**  
Bernard Zeigler, *SCS Immediate Past President*  
Executive committee and council-appointed members of the nominating committee establish credentials for seating members of the board of directors and proceed with selection of candidates for next year’s election.

SCS Conference Board  
**Wednesday, July 27  1:30–3:00 p.m.  Plaza VI**  
Joe Gauthier, *SCS Vice President of Conferences*  
Representatives of each international conference, the vice president, and office staff discuss issues, review recent conferences, and select future sites and topics.

SCS Senior Vice President’s Board  
**Wednesday, July 27  3:30–5:00 p.m.  Plaza VI**  
François Cellier, *SCS Senior Vice President*  
This meeting includes reports and discussions of strategic planning, bylaws, changes to policies and procedures, simulation standards, and affiliations with other societies.

Board of Directors Operation Caucus (evening)  
**Wednesday, July 27  5:00–7:00 p.m.  Plaza VI**  
S. Narayanan, *SCS Treasurer*  
A meeting of the SCS Executive Committee and Board of Directors representatives to review the operational plans of SCS in preparation for approval of the 2005-06 annual budget. All interested BOD representatives are invited to attend.

Board of Directors Annual Meeting  
**Thursday, July 29  8:00–5:00 p.m.  Grand Ballroom A**  
François Cellier, *SCS President*  
The board meets to hear reports, review operations of the Society, and steer the course of the Society for the next fiscal year and beyond. All members of the SCS board and officers of the Society are expected to attend and participate. All SCS members are welcome to observe.
Welcome to the 2005 Summer Simulation Multiconference (SummerSim'05). This year’s conference marks the 37th anniversary of the SummerSim. The first conference, named “Conference on Applications of Continuous System Languages,” was held in the summer of 1969. In 2002 we renamed the conference the Summer Simulation Multiconference to reflect its multiconference nature and our restructuring efforts. SummerSim'05 includes two well-known conferences: the 2005 International Symposium on Performance Evaluation of Computer and Telecommunication Systems (SPECTS'05) and the 2005 Summer Computer Simulation Conference (SCSC'05). This year’s SPECTS also includes the very successful workshop we initiated last year, the 2005 Workshop on Performance of Wireless Networks and Communication Systems (WiNCS'05).

Since July 2002, SCS conferences have undergone major restructuring in order to best serve the profession, participants, and society members. We have two major goals from this restructuring: short-term and long-term goals. Initial results from the restructuring are very promising and encouraging.

This multiconference provides a unique opportunity for an author to submit papers to two different conferences that convene in the same place and during the same period. In addition to offering a stimulating environment, our multiconference saves a lot of expenses for the participants, presenters, exhibitors, and the organizers.

SummerSim'05 offers a unique forum for researchers and practitioners from academia, industry, business, and government to share their expert results and research findings in all areas of modeling and simulation, and performance evaluation of computer, telecommunications, and wireless systems.

This year’s multiconference includes a superb technical program, four outstanding distinguished keynote speakers, insightful tutorials, and an exhibit. We have chosen the Hilton Philadelphia/Cherry Hill Hotel as the site for our conference. The hotel provides excellent meeting facilities and will be a comfortable setting for our multiconference. The conference site is very close to the city of Philadelphia, with its historical attractions and proximity to many exciting spots in New Jersey and New York City.

Organizing an international conference of this caliber requires the dedication and hard work of many individuals. My sincere appreciation goes to all authors, including those whose papers were not included in the program. Many thanks go to the technical program committee members and their reviewers, session chairs, and the dedicated efforts of the SummerSim executive and steering committees. Special thanks go to Professor Agostino Bruzzone, general chair of SCSC’05 and Professor Franco Davoli, vice general chair of SPECTS’05. Many thanks to Professors Mario Marchese and Jose Marzo, program chairs of SPECTS’05; Professor Edward Williams, program chair of SCSC’05; and Ms. Marina Massei for their superb work. Many thanks go to Professors Vojislav Misic and Jelena Misic for their outstanding work on WiNCS’05 Workshop. Thanks to Professor Abbas Jamalpour for putting together an excellent tutorial program. Special thanks go to Mike Chinni, SummerSim’05 webmaster, for his outstanding work and timely response. Many thanks to vice chairs, tutorial chairs, track chairs, special sessions’ organizers, exhibit chair, and publicity committee. Thanks are also due to the staff of the Society for Modeling and Simulation International (SCS) for their fine support.

Finally, on behalf of the executive and steering committees of SummerSim’05 and SCS I invite all of you to enjoy the program and your stay in Philadelphia/Cherry Hill.

Mohammad S. Obaidat, Steering Committee Chair, SummerSim’05
“Performance evaluation is crucial for proper design, operation, and planning”

Welcome to the 2005 International Symposium on Performance Evaluation of Computer and Telecommunication Systems, SPECTS’05. This year’s conference marks the 8th anniversary of SPECTS, which is progressing at an impressive rate both in terms of quality and quantity.

SPECTS’05 offers a unique forum for researchers and practitioners from academia, industry, business, and government to share their expert results and research findings in all areas of performance evaluation of computer, telecommunications, and wireless systems including modeling, simulation, and measurement/testing of such systems.

This year’s SPECTS includes an outstanding technical program, four distinguished keynote speakers, insightful tutorials, and an exhibit. We have chosen the Hilton Philadelphia/Cherry Hill Hotel as the site for our conference. The hotel provides excellent meeting facilities and will be a comfortable setting for our multiconference. Its proximity to the city of Philadelphia gives a golden opportunity for locals to participate in the conference without much hassle. It also gives participants from outside the area and their companions the opportunity to enjoy the many attractions and historical sites in Philadelphia and the surrounding areas. The conference site is also close to many museums, shopping areas, and historical sites in New Jersey and New York City. The theme of this year’s conference, “Performance evaluation is crucial for proper design, operation, and planning,” reflects the vital role this technology is playing in the new economy and information society, where computer and telecommunication systems, both wired and wireless, are widely used and spread all over sectors, countries, and continents.

This year’s technical program consists of several parallel tracks every day for three days. Each track consists of several sessions of top-quality papers. The topics covered in the program include wireless communication and networks, security and reliability, high speed networks, mobile and ad hoc networks, wireless LANs, Quality of Service (QoS), Internet computing, web server performance, high performance computing/computers, switching and routing, parallel and distributed systems, computer architecture, queuing, TCP/IP performance and analysis, fault-tolerant systems, parallel and distributed simulation, flow and congestion control, client–server systems, load balancing, multimedia, resource management, tuning, measurement, and Internet web-based applications and services, among others. This year we received a large number of high-quality papers. We accepted only very high-quality papers.

Many individuals have contributed to the success of this high-caliber international conference. My sincere appreciation goes to all authors including those whose papers were not accepted in the program. Special thanks to Professor Franco Davoli, vice general chair, for his exceptional continuous support over the years. Many thanks to program chairs of SPECTS’05 Professors Mario Marchese and Jose Marzo, as well as to the WiNCS 2005 program chairs, Professors Vojislav Misic and Jelena Misic, for their outstanding work on the technical program. Thanks to Professor Abbas Jamalpour, tutorial chair of SPECTS’05, for putting together the excellent tutorial program. Special thanks goes to the Webmaster Mr. Mike Chinni, for his outstanding work and timely response. Special thanks to Dr. Guoping Zeng, publicity chair, for his great efforts at publicizing the conference. Thanks also to other members of the publicity committee, especially Prof. Martin Kappes, Dr. Weiguang Shi, and Prof. Antonio Pescapè. Many thanks to vice chairs, tutorial chairs, track chairs, special sessions’ organizers, and the exhibit chair. Thanks also are due to the staff of the Society for Modeling and Simulation International (SCS) for their fine support.

Finally, on behalf of the executive and steering committees of the 2005 International Symposium on Performance Evaluation of Computer and Telecommunications Systems, and the Society for Modeling and Simulation International, I invite all of you to join us in July at SPECTS’05.

Mohammad S. Obaidat, SPECTS’05 General Chair
Welcome to the 2005 Summer Computer Simulation Conference. This event has a long-standing tradition in the Modeling & Simulation community as it is probably one of the earliest forums for scientists, researchers and professionals in the Sixties. Today, the Summer Computer Simulation Conference is continuing its role as a leading reference for promoting innovation in Simulation Technologies.

Recently, "Simulation" has become a very popular subject due to the impact of the latest changes in infrastructures and technologies. Today, in fact, data and communication infrastructures allow simulation to be used in new sectors, making on-line, real-time support available for running and experiencing scenarios in a direct link with the ongoing reality. At the same time, simulation techniques and methodologies have evolved to become extremely reliable and effective also with limited investments in terms of time, resources and money, thus extending their use into new application areas.

While the simulation world benefits from such aspects, the demand for this technology is growing owing to today's complex and dynamic environment based on a rapidly evolving global market. Within such a framework the need to reorganize planning and organizations and to identify new and rapid solutions to very difficult problems provides new challenges to simulation.

Therefore, this year's Summer Computer Simulation Conference once again provides innovative contributions in different areas, while presenting examples in which M&S (Modeling and Simulation) was successfully implemented, completing validation and verification of up-to-date technologies in this field. In 2005, the Summer Computer Simulation Conference is being held again on the East Coast, a very active area for M&S research and a very important region that provides challenges with regard to transportation, market analysis, environment, logistics, security, etc.

This year's Summer Computer Simulation Conference also includes several tracks to cover various aspects. Special attention has been focused on guaranteeing the quality of the contributions. To ensure such quality, the paper must undergo an extensive review process not only dedicated to selecting the manuscripts but also to providing comments and instructions to the authors about improving their contribution. It is based on such an approach that the International Program Committee (IPC) guaranteed the Conference's high profile and made it possible to select the best papers to be awarded and published in a special issue of the "International Journal of Simulation Modelling", scheduled for early 2006. As usual, special sessions of the conference are devoted to organizing Technical Council Meetings (i.e. Simulation Applications in Management, Planning and Forecasting) and tutorials, while top quality networks can benefit from the Summer Computer Simulation Conference as an opportunity to promote their activities, such as the McLeod Institute of Simulation Science, MS_Net, Liophant Simulation and SimSummit.

In addition, as the General Chair, I'm very proud of the SCSC2005 Student Workshop tradition that was established in 2003: this year as well students will be able to attend this workshop and to submit their contributions that are subject to the same rigorous review process established for regular papers. These contributions are included in the Conference Proceedings CD and guarantee full access to the event with a very special registration fee ($55 USD plus Student ID and Professor Check), while the best student papers will be awarded, as in the past, with a money check as recognition of their efforts.


I'm also pleased to acknowledge the efforts of M. Chinni for the SCSC2005 Web and to submit their contributions that are subject to the same rigorous review process established for regular papers. These contributions are included in the Conference Proceedings CD and guarantee full access to the event with a very special registration fee ($55 USD plus Student ID and Professor Check), while the best student papers will be awarded, as in the past, with a money check as recognition of their efforts.


I'm also pleased to acknowledge the efforts of M. Chinni for the SCSC2005 Web work and the SCS International Office for their valuable contributions, and namely: Steve Branch, Amy Shapiro and Mark Yen.

So I look forward to seeing you at the Summer Computer Simulation Conference within the wonderful setting of Philadelphia.

Agostino G. Bruzzone, SCSC2005 General Chair
**SummerSim Keynote Speakers**

**Monday**
8:30–10:30 a.m.

**Grand Ballroom A/B**

Keynote Address #1
“How DEVS Theory Impacts M&S Practice in a Net-Centric World”
Presented by Bernard Zeigler, University of Arizona, USA

**Tuesday**
8:30–10:30 a.m.

**Grand Ballroom A/B**

Keynote Address #2
Some Unsolved Problems in High Speed Packet Switching
Presented by Prof. Shivendra Singh Panwar, Polytechnic University, NYC, USA

**Wednesday**
8:30–10:30 a.m.

**Grand Ballroom A/B**

Keynote Address #3
Modeling and Simulation in an Unprecedented Role in Business: Enabling a New Technical Stock Market Index
Presented by Sumit Ghosh, Stevens Institute of Technology, USA

**Wednesday**
12:00–1:30 p.m.

**Riverside Pavilion**

Keynote Address #4
Incident Management System: Some Research Challenges
Presented by: Nabil R. Adam, Director, The Center for Information Management, Integration and Connectivity (CIMIC) Rutgers, The State University of New Jersey, USA

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**SPECTS 2005**

**Summer Simulation Multiconference**

**July 24–28, 2005**

General Chair
Mohammad S. Obaidat
Monmouth University

Vice General Chair
Franco Davoli
DIST-University of Genoa

Program Chairs
Mario Marchese
CNIT - Italian National Consortium for Telecommunications
University of Genoa Research Unit, Italy

Jose L Marzo
University of Girona, Spain

Vice Program & Special Sessions Chair
Imad Mahgoub
Florida Atlantic University, USA

Tutorials Chair
Abbas Jamalipour
University of Sydney, Australia

Vice Program Chair
Pascal Lorenz
University of Haute Alsace, France

Technical program co-sponsored by IEEE Systems, Man, and Cybernetics (SMC) Society

Monday July 25

Monday 8:30–8:40 a.m.
Opening Session

Monday 8:40–10:00 a.m.
Keynote Speaker 1: All Tracks
Session 1: Satellite Communications I
Monday 10:30 a.m.–12:00 p.m.
Room: Crystal I
Chair: Anca Vermesan, Nera Broadband Satellite AS - Research and Development, Norway

Scalable QoS Management in Next Generation GEO-Satellite Networks
Salvatore Marano, Floriano De Rango, Valeria Loscrí, Peppino Fazio, Mauro Tropea
University of Calabria, Rende, Cosenza, Italy

Ant Routing Algorithms For Irregular Satellite Constellations
Laura Rosati, Matteo Berioli
German Aerospace Center (DLR), Germany
Gianluca Reali, University of Perugia, Italy

Adaptive Rate Control For QoS Mapping At Satellite Independent Service Access Points
Mario Marchese, Maurizio Mongelli, University of Genoa, Italy

Session 2: Satellite Communications II
Monday 1:30–3:00 p.m.
Room: Crystal I
Chair: Krishna Kant, Intel Corporation, USA

The Implementation of Erasure Coding Schemes in CCSDS File Delivery Protocol for Reliable Communications in Hazardous Satellite Environments
Tomaso De Cola, Mario Marchese, University of Genoa, Italy
Harald Ernst, German Aerospace Center (DLR), Germany

The Study on Providing Hierarchical Satellite Broadcasting Scheme using DVB-S2 Transmission Structure
Min-Su Shin, Dae-Ig Chang, Deock-Gil Chang, Ho-Jin Lee
Electronics and Telecommunications Research Institute, Korea

Introducing P2EP: the Fusion between Peer-to-Peer Architectures and Performance Enhancing Proxies
Luca Caviglione, Franco Davoli, University of Genoa, Italy

Performance and Design Considerations for Efficient Integration of VoIP into DVB-RCS Broadband Satellite Networks
Anca Vermesan, Nera Broadband Satellite AS - Research and Development, Norway

July 24–28, 2005
Session 3: Transport Layer  
Monday 3:30–5:00 p.m.  
Room: Crystal I  
Chair: Helen Karatza, Aristotle University of Thessaloniki, Greece

Issues in Performance Evaluation of New TCP Stacks in High Speed Networks  
Francesco Vacirca, University of Rome, La Sapienza, Italy  
Saverio Mascolo, Politecnico di Bari, Italy

TCP Performance Evaluation: Methodologies and Applications  
Carlo Caini, Rosario Firrincieli, Daniele Lacamera  
University of Bologna, Italy

SCTP Performance in Data Center Environments  
Nrupal Jani, Krishna Kant, Intel Corporation, USA

Analytical Approximations of the TCP Throughput and Packet Loss Probability in Multi-Service Communication Networks  
Igor Bisio, Mario Marchese, University of Genoa, Italy

TRACK 2

Session 1: Resource Management I  
Monday 10:30 a.m.–12:00 p.m.  
Room: Crystal II  
Chair: Carlos Belo, Instituto Superior Tecnico, Lisbon, Portugal

Coexistence of Deterministic and Probabilistic QoS Guarantees for Real-Time Traffics  
Pascale Minet, INRIA, France  
Leila Saidane Azouz, ENSI – CRISTAL, Tunis, Tunisia  
Steven Martin, University of Paris, France

A Proposal of Efficient Multicast Distribution Scheme Using Erasure Codes and its Evaluation  
Jun Takahashi, Hideki Tode, Koso Muratami  
Osaka University, Japan

Coupled-Layer Type Waveband Path Design Considering Dynamic Traffic Changes  
Hideki Tode, Shinji Takayama, Koso Murakami  
Osaka University, Japan
A Dynamic Round-Robin Architecture for a Call-Based Load Balancer, an Analytical and Simulative Study
Sergio Montagna, Riccardo Gemelli, Italtel SpA, Italy

Session 2: Resource Management II
Monday 1:30–3:00 p.m.
Room: Crystal II
Chair: Rachid El Abdouni Khayari
University of the Armed Forces, Munich, Germany

Scaling Analysis on Delay Propagation Properties
Takuo Nakashima, Kyushu Tokai University, Japan

Performance Enhancement by Segregation and Hybrid Integration in General Queueing Networks
Mostafa Dahshan, Pramode Verma, University of Oklahoma, USA

Dynamic Resource Reservation and QoS Management in IEEE 802.11e Networks
Jürgen Wolf, Stephan Heckmüller, Bernd Wolfinger
University of Hamburg, Germany

Session 3: Resource Management III
Monday 3:30–5:00 p.m.
Room: Crystal II
Chair: Hideki Tode, Osaka University, Japan

Control Theoretic Adaptive Admission Control in WCDMA Networks
Priyan De Alwis, Harsha Sirisena, Krzysztof Pawlikowski
University of Canterbury, New Zealand

On the Finite Queueing System M/M/L/m/c
Yi Su, Masergy Communications, Inc, USA
Guoping Zeng, Imrich Chlamtac
The University of Texas at Dallas, USA

Analysis and Implementation of a Stateless Congestion Control Algorithm
Antonio Almeida, Carlos Belo
Instituto Superior Tecnico, Lisbon, Portugal

Heuristic and Optimal Techniques for Light-trail Assignment in Optical Ring WDM Networks
Ashwin Gumaste, Paparao Palacharla
Fujitsu Laboratories of America, USA
Session 1: WiNCS I  
Monday 10:30 a.m.–12:00 p.m.  
Room: Crystal III  
Chair: Y. Ellen Liu, University of Manitoba, Canada

A Novel Scheme for Integrating WLANs and WPANs Using UMTS-TDD  
F. Zarai, Noureddine Boudriga, University of Carthage, Tunisia  
Mohammed S. Obaidat, Monmouth University, USA

Modeling and Characterization of Traffic in Public Safety Wireless Networks  
Nikola Cackov, Bozidar Vujicic, Svetlana Vujicic  
Ljiljana Trajkovic, Simon Fraser University, Vancouver, Canada

Adaptive Resource Allocation Schemes for Next Generation Multimedia Cellular Mobile Networks  
Glaucio H. S. Carvalho, Carlos R. L. Frances, Joao C. W. A. Costa  
Universidade Federal do Para, Brazil  
Solon V. Carvalho, Rita C. M. Rodrigues  
Pesquisas Espaciais Sao Jos dos Campos, Brazil

Session 2: WiNCS II  
Monday 1:30–3:00 p.m.  
Room: Crystal III  
Chair: Ljiljana Trajkovic, Simon Fraser University, Vancouver, Canada

Performance Analysis of a Mobile Cell Station in a Wireless Network with Realistic Handoff Calls  
Jingxiang Luo, Attahiru S. Alfa  
University of Manitoba, Winnipeg, Canada

A Realistic Mobility Model for Simulation-Based Study of Wireless Cellular Networks  
Subrata Nandi, Abhik Banerjee, Ashwin Divedi, Debraj Dhar  
National Institute of Technology, Durgapur, India

Performance Evaluation and Improvement of Broadcasting Algorithms in Highly Mobile Ad Hoc Networks  
Hao Zhang, Zhong-Ping Jiang  
Polytechnic University, Brooklyn, USA
Session 3: WiNCS III  
**Monday 3:30–5:00 p.m.**  
**Room: Crystal III**  
**Chair: Hao Zhang, Polytechnic University, Brooklyn, USA**  

**MRMC: A Multi-Rate Multi-Channel MAC Protocol for Multi-Radio Wireless LANs**  
Tianbo Kuang, Qian Wu, Carey Williamson  
University of Calgary, Canada

**A Cell-based Call Admission Control and Bandwidth Reservation Scheme for QoS Support in Wireless Cellular Networks**  
Yanni Ellen Liu, Minki Han  
University of Manitoba, Canada

**Congestion Control through Activity Management in Bluetooth sensor Networks**  
Jelena Misic, Reddy Gonapati Rajashekar, Vojislav B. Misic  
University of Manitoba, Canada

**Energy Efficiency in Full Sensing Collision Resolution Protocols**  
Aran Bergman, Moshe Sidi  
Technion - Israel Institute of Technology, Israel

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Tuesday, July 26

**Tuesday 8:00–10:00 a.m.**  
**Keynote Speaker 2: All Tracks**

**TRACK 4**

**Session 1: Performance Evaluation Tools I**  
**Tuesday 10:30 a.m.–12:00 p.m.**  
**Room: Crystal I**  
**Chair: Carey Williamson, University of Calgary, Canada**

**Mixed-Mode Simulation for IEEE 802.11-operated WLANs: Achieving the Best of All Worlds Performance**  
Hwangnam Kim, Jennifer Hou  
University of Illinois at Urbana-Champaign, USA
Simulation and Verification of The Real-time System
Naibin Li, Chinese National Heavy Truck Corporation, China

UML-based Software Performance
Sakib Mondal, Robyn Panicker
Infosys Technologies Ltd, Bangalore, India

Simulation Evaluation of Call Dropping Policies for Stochastic Capacity Networks
Carey Williamson, Hongxia Sun
University of Calgary, Canada

Session 2: Resource Management IV
Tuesday 1:30–3:00 p.m.
Room: Crystal I
Chair: Guoping Zeng,
The University of Texas at Dallas, USA

Analytical/Simulation Optimization System for Access Control and Bandwidth Allocation in IP Networks with QoS
Roberto Bruschi, Raffaele Bolla, Franco Davoli, Matteo Repetto
University of Genoa, Italy

Can We Use Product Form Solution Techniques for Networks with Alternate Paths?
Essia Elhafsi, Mart Molle, University of California Riverside, USA
D. Manjunath, Indian Institute of Technology, Bombay, India

Internet Profile-Based Pricing: Simulation and Evaluation
Yousef Khene, Hafid Abdelhakim, University of Montreal, Canada
Nazim Agoulmine, University of Evry, France

Effective Fair Share Resource Management Algorithms in Support of Quality-of-Service
Chung-Horng Lung, Shikharesh Majumdar, Qi Wang
Carleton University, Ottawa, Canada
Session 3: Resource Management V
Tuesday 3:30–5:00 p.m.
Room: Crystal I
Chair: Tomaso De Cola
CNIT, University of Genoa, Italy

Buffer Space Tradeoffs for VoIP QoS in Detection Networks
Andre Muezerie, University of Sao Paulo, Brazil
Ioannis Nikolaidis, Pawel Gburzynski
University of Alberta, Canada

A Scheme for a Guaranteed Minimum Throughput Service Based on Packet Classes
Lluis Fabrega, Teodor Jové, Pere Vila, Jose Marzo
University of Girona, Spain

A Call Admission Control Strategy for Integrated Services Communication Systems
Dervis Deniz, Mohamed Nagla
Eastern Mediterranean University, Gazimagusa, Turkey

QoS in a Large-Scale IPv6 Network
Christos Bouras, Dimitris Primpas, Kostas Stamos
University of Patras, Greece.

TRACK 5

Session 1: Routing I
Tuesday, 10:30 a.m.–12:00 p.m.
Room: Crystal II
Chair: Ljiljana Trajkovic
Simon Fraser University, Vancouver, Canada

Minimum Interference Routing Adding Shared Segment Protection in GMPLS-based Networks
Anna Urra, Eusebi Calle, Jose Marzo, Pere Vila
University of Girona, Spain

Routing Survivable Light-paths in All-optical Networks with Wavelength Converters of Share-per-node Architecture
Shuguang Yan, Prairie View A&M University, USA
Maher Ali, University of Nebraska-Lincoln, USA
Zheng Dang, University of Houston, USA

A New Approach to Cluster-Based Multipath Routing Protocols in MANETs
Hussein Mouftah, Mohammed Al-Kahtani
University of Ottawa, Canada
Improving the Performance of Path Discoveries in Dense Mobile Ad Hoc Networks
Yujin Noishiki, Hidetoshi Yokota, Akira Idoue
KDDI R&D Laboratories, Inc., Japan.
C. K. Toh, Queen Mary University of London, UK.

An Adaptive Redundancy Protocol for Mesh Based Multicasting
Ravindra Vaishampayan, J.J. Garcia-Luna-Aceves, Katia Obraczka
University of California at Santa Cruz, USA

Session 2: Routing II
Tuesday 1:30–3:00 p.m.
Room: Crystal II
Chair: Francisco Javier González-Castaño
Universidad Politécnica de Cartagena, Spain

An Optimized VPLS Traffic Engineering Distributed Routing
Hussein Mouftah, University of Ottawa, Canada
Najah Abu Ali, Saeed Gazor
Queens University, Kingston, Canada

Path Lifetime Distributions of Single and Multipath Ad Hoc Routing Strategies
Ingo Gruber, Stephan Eichler
Munich University of Technology, Germany

Multicast Service Overlay Design
Li Lao, UCLA, USA
Jun-Hong Cui, University of Connecticut, USA
Mario Gerla, UCLA, USA

BGP Route Flap Damping Algorithms
Wei Shen, Ljiljana Trajkovic
Simon Fraser University, Vancouver, Canada

Session 3: Scheduling
Tuesday 3:30–5:00 p.m.
Room: Crystal II
Chair: Mohammed Al-Kahtani
University of Ottawa, Canada

Microarchitecture Support for the Dynamic Scheduling of Task Systems with Data Control Dependencies on Reconfigurable Architectures
Zexin Pan, B. Earl Wells, University of Alabama in Huntsville, USA
Juanjo Noguera
Hewlett-Packard Inkjet Commercial Division, Spain
A Framework for Evaluating Fairness in Input-Queued Switches: Fundamental Principles and Practical Strategies
Madhusudan Hosaagrahara, Harish Sethu
Drexel University, USA

EDF versus FIFO Local Scheduling in a Bluetooth Piconet
Slim Ben Ayed, Leila Azouz Saidane
ENSI – CRISTAL, Campus Universitaire Manouba, Tunisia

Achieving Differentiated Quality of Service and High Revenue through Scheduling on E-Commerce Systems
Yingjing Wang, Shikharesh Majumdar
Carleton University, Ottawa, Canada

Decoupled Parallel Hierarchical Matching Schedulers and their Evaluation
Francisco González-Castaño, Rafael Asorey-Cacheda
Universidad de Vigo, Spain
Cristina Lopez-Bravo
Universidad Politécnica de Cartagena, Spain

TRACK 6

Session 1: WiNCS IV
Tuesday 10:30 a.m.–12:00 p.m.
Room: Crystal III
Chair: Vojislav B. Misic
University of Manitoba, Canada

Theoretic Analysis of Broadcasting Schemes For Two-Dimensional MANETs
Hao Zhang, Zhong-Ping Jiang
Polytechnic University, Brooklyn, USA

Demonstrating the Wired Equivalent Privacy (WEP) Weaknesses Inherent in WiFi Networks
Kevin Curran, Elaine Smyth
University of Ulster, Northern Ireland

MAC Layer Security Issues in 802.15.4 Sensor Networks
Vojislav B. Misic, Jobaida Begum, Jelena Misic
University of Manitoba, Canada
Session 2: Sensor and Ad hoc Networks  
Tuesday 1:30–3:00 p.m. 
Room: Crystal III 
Chair: Alexander Thomasian  
New Jersey Institute of Technology, USA

Simulations Tools for Wireless Sensor Networks  
Joan Garcia-Haro, Esteban Egea-Lopez  
Javier Vales-Alonso, Alejandro S. Martinez-Sala  
Pablo Pavon-Marino, 
Polytechnic University of Cartagena, Spain

Architecting a Sensor Network: Analysis and Implementation of a Cluster Building Algorithm  
Sandro Zappatore, Luca Caviglione, Stefano Vignola, Giuseppe Spanò, University of Genoa, Italy

Adhoc Wireless Heterogeneous Cooperative Sensors Networks  
Alessandro Garibbo, Annamaria Raviola, Andrea Raso  
Selenia Communications SpA, Italy

BASR: A Beacon-Aided Source Routing Protocol in Wireless Ad Hoc Networks  
Jun Liu, University of North Dakota, USA

Session 3: Computer Systems and Middleware Architecture  
Tuesday 3:30–5:00 p.m. 
Room: Crystal III 
Chair: Joan Garcia-Haro, Polytechnic University of Cartagena, Spain

‘Dynamic Protocol plug-in’: a Middleware Provision for Enhancing Network Service Availability  
Kaliappa Ravindran, City University of New York, USA

Epidemic Collaborative Replication for Maintaining File Sharing Reliability in Mobile Peer-to-Peer Devices  
Constandino Mavromoustakis, Helen Karatza, Aristotle University of Thessaloniki, Greece

An FPGA-based Network Processor for IP Packet Compression  
Carey Williamson, Dan Munteanu, University of Calgary, Canada

Design and Implementation of Data Fragmentation in Distributed Database Systems  
Ismail Hababeh, Muthu Ramachandran, Leeds Metropolitan University, UK  
Nicholas Bowring, Manchester Metropolitan University, UK
Heterogeneous Disk Array: Design and Data Allocation
Alexander Thomasian, Chunqui Han
New Jersey Institute of Technology, USA

Wednesday, July 27

Keynote Speaker 3: All Tracks
Wednesday 8:30–10:00 a.m.

Keynote Speaker 4 (Luncheon Speaker)
Wednesday 12:00–1:30 p.m.

TRACK 7

Session 1 : Applications I
Wednesday 10:30 a.m.–12:00 p.m.
Room: Crystal I
Chair: Shikharesh Majumdar,
Carleton University, USA

A New Multi-Attributes Access Method for Voluminous Files
Mohamed Aridj, University of Chlef, Alger, Algeria
D.E. Zegour, Institut National d’Informatique, Alger, Algeria

An Adaptive Neural Network-Based Caching Strategy for WWW Proxies
Rachid El Abdouni Khayari
University of the Armed Forces, Munich, Germany

Evaluation of Current Java Technologies for Service Enabling Platform Design
Bruno Van den Bossche, Filip De Turck, Bart Dhoedt, Thierry Pollet,
Piet Demeester, Didier Colle, Ghent University, Belgium
Bert Van Vlieren, Nico Janssen
Alcatel Research Center in Anwerp, Belgium

Session 2 : Applications II
Wednesday 1:30–3:00 p.m.
Room: Crystal I
Chair: Anthony Lo, Delft University of Technology, The Netherlands

Performance of Parallel Interaction Architectures for CORBA-Based Systems
Shikharesh Majumdar, Ming Huo, Carleton University, Canada

July 24–28, 2005
A Step By Step Capacity Planning Model for a Web Server
Rachid El Abdouni Khayari
University of the Armed Forces Munich, Germany
Hanno Koop, Vodafone GmbH, Germany

A Study of Group-Tree Matching in Large Scale Group Communications
Jun-Hong Cui, University of Connecticut, USA
Li Lao, Mario Gerla, UCLA, USA

Failover and Load Sharing in SIP Telephony
Kundan Singh, Henning Schulzrinne, Columbia University, USA

Session 3: Applications III
Wednesday 3:30–5:00 p.m.
Room: Crystal I
Chair: Jun-Hong Cui, University of Connecticut, USA

Performance of MPEG-4 Video Streaming over UMTS Networks using an Integrated Tool Environment
Anthony Lo, Delft University of Technology, The Netherlands
Geert Heijenk, Ignas Niemegeers
University of Twente, Enschede, The Netherlands

A Caching Algorithm for Dynamic Web Objects
Rachid El Abdouni Khayari, Axel Lehmann, Thomas Götzinger,
University of the Armed Forces Munich, Germany

An Optimal Method for SIP-Based Session Establishment Over IMS
Muhammad Alam, Z-D Wu, Bond University, Australia

TRACK 8

Session 1: Radio and Heterogeneous Networks
Wednesday 10:30 a.m–12:00 p.m.
Room: Crystal II
Chair: Guido Albertengo. Politecnico di Torino, Italy

Fast Authentication in Heterogeneous Wireless Networks
Guido Albertengo, Politecnico di Torino, Italy
Claudio Pastrone, ISMB, Italy
Giacomo Tolu, CNIT, Italy
Approaching Ad Hoc Wireless Networks with Autonomic Computing: A Misbehavior Perspective
Martin Drozda, Helena Szczerbicka, Thomas Bessey, Matthias Becker, Rainer Barton
University of Hannover, Germany

DTGR: Disruption Tolerant Geographic Routing for Wireless Ad Hoc Networks
Yingjie Li, Ohio State University, USA
Min-Te Sun, Junmo Yang, Auburn University, USA

Filomena Del Sorbo, Cristina Párraga Niebla
German Aerospace Center (DLR), Germany

Session 2: Traffic Modelling I
Wednesday 1:30–3:00 p.m.
Room: Crystal II
Chair: Moshe Sidi, Technion - Israel Institute of Technology, Israel

Self-Similarity of IP Core Network Traffic in Multiple Measurement Points
Timo Viipuri, Marko Luoma
Helsinki University of Technology, Finland

Measurement-Based E-Mail Traffic Characterization
Edward Chlebus, Rahul Ohri, Illinois Institute of Technology, USA

Experimental Validation of the ON-OFF Packet-Level Model for IP Traffic
Daniel Zaragoza, Carlos Belo
Telecommunication Institute, Lisbon, Portugal

Characterizing the Behaviour of RealVideo Streams
Sean Boyden, Anirban Mahanti, Carey Williamson
University of Calgary, Canada

July 24–28, 2005
Session 3: Traffic Modelling II
Wednesday 3:30–5:00 p.m.
Room: Crystal II
Chair: Timo Viipuri, Helsinki University of Technology, Finland

Locality Characteristics of Web Streams Revisited
Aniket Mahanti, Anirban Mahanti, Carey Williamson
University of Calgary, Canada

Maximum Entropy Based One-Way Link Delay Estimation
Omer Gurewitz, Israel Cidon, Moshe Sidi
Technion - Israel Institute of Technology, Israel

Delay Jitter Analysis
Moshe Sidi, Boris Oklander
Technion - Israel Institute of Technology, Israel

On the Transient and Steady-State Behavior of a Priority Queuing System with a Mix of Correlated and Uncorrelated Arrivals
Faouzi Kamoun, Dubai University College, Dubai, UAE

TRACK 9

Session 1: Performance Evaluation Tools II
Wednesday 10:30 a.m.–12:00 p.m.
Room: Crystal III
Chair: Susan Lincke, University of Wisconsin Parkside, USA

BRUTE: A High Performance and Extensible Traffic Generator
Raffaello Secchi, Nicola Bonelli, Stefano Giordano, Gregorio Procissi, University of Pisa, Italy

MoNet-s: a Flexible Simulation Framework for Mobile Networks
Laurent Franck, Telecom Paris - Site of Toulouse, France

Benchmark Precision and Random Initial State
Tomas Kalibera, Lubomir Bulej, Petr Tuma
Charles University, Prague, Czech Republic

OTRENET: Overall Trend Replicating Network Emulator Tool
Anura Jayasumana, Daniel Vivanco
Colorado State University, USA
Session 2: Performance Evaluation Tools III  
Wednesday 1:30–3:00 p.m.  
Room: Crystal III  
Chair: Anura Jayasumana  
Colorado State University, USA

A Linux Based Multi TCP Implementation for Experimental Evaluation of TCP Enhancements  
Carlo Caini, Rosario Firrincieli, Daniele Lacamera  
University of Bologna, Italy

Discrete-Event Simulation of Network Systems Using Distributed Object Computing  
Weilong Hu, Hessam Sarjoughian, Arizona State University, USA

Evaluation of Partition-Aware MANET Protocols and Applications with ns-2  
Abdelmajid Khelil, Pedro José Marrón, Rüdiger Dietrich, Kurt Rothermel, University of Stuttgart, IPVS/VS, Germany

A Performance Evaluation of Software Tools for Delay Emulation  
Eduard Hasenleithner, Thomas Ziegler  
Telecommunications Research Center Vienna, Austria  
Peter Krueger, Kapsch CarrierCom AG - Mobile Packet Core

Session 3: Performance Evaluation Tools IV  
Wednesday 3:30–5:00 p.m.  
Room: Crystal III  
Chair: Laurent Franck, Telecom Paris, France

On Node Virtualization for Scalable Network Emulation  
Steffen Maier, Daniel Herrscher, Kurt Rothermel  
University of Stuttgart, Germany

Using Permutated States and Validated Simulation to Analyze Conflict Rates in Optimistic Replication  
Andy Wang, Florida State University, USA  
Geoffrey Kuenning, Harvey Mudd College, USA  
Peter Reiher, UCLA, USA

Scenario-Specific Topology Reduction in Network Simulations  
Barath Petit, Mostafa Ammar, Richard Fujimoto, Georgia Tech, USA

Validation of Network Simulation Models: Gauss-Seidel versus Product Form Models  
Susan Lincke, University of Wisconsin Parkside, USA
Summer Computer Simulation Conference 2005

General Chair
Agostino G. Bruzzone
MISS, DIP, University of Genoa, Italy

Program Chairs
Edward Williams
PMC, USA

Student Papers
Peter Kropf
University of Montreal
Ling Rothrock
Penn State University
Gabriel Wainer
Carleton University

Steering Committee Chair
Mohammad S. Obaidat
Monmouth University

Monday, July 25

M&S Methodology and Tools I
Monday 10:30 a.m.–12:00 p.m.
Room: Plaza IV
Chair: Ralph Huntsinger

Using Simulation as Support for Optimising Distribution Policies in Critical Conditions
Marina Massei, Viazzo Simone
Liophant Simulation/University of Genoa, Italy

Optimization of Large-Scale, Real-Time Simulations by Spatial Hashing
Erin Hastings, Jaruwan Mesit, Rtan Guha
University of Central Florida, USA

Specification-Based Parameter-Model Interaction: Towards a Correct Reflection of Memory Characteristics in a DSM Cluster Simulation
Worawan Marurngsith, Roland Ibbett
University of Edinburgh, United Kingdom
Lean Simulation Workshop  
**Monday, 10:30 a.m.–12:00 p.m.**  
**Room: Plaza V**  
**Chair: Stefano Saetta**

Lean Simulation as a tool for the management of supply chain in the sector of natural stones  
Stefano Saetta, Lorenzo Tiacci  
University degli Studi di Perugia, Italy

J20WAB a Web Based Business Game About an Aircraft Project  
Stefano Saetta, Lorenzo Tiacci, Stefano Bianconi  
University degli Studi di Perugia, Italy

Optimizing Inventory Management in Retail Supply Chain  
Enrico Bocca, Chiara Briano  
University of Genoa/DIP Consortium, Italy

An Approach based on Simulation and Verification for the Schedulability Analysis of Real-Time Systems  
Angelo Furfaro, Libero Nigro  
Università della Calabria, Italy

Student Workshop I  
**Monday 10:30 a.m.–12:00 p.m.**  
**Room: Plaza VII**  
**Chair: L. Rothrock**

DEVSVIEW: A Tool for Visualizing CD++ Simulation Models  
W. Venhola, G. Wainer, Carleton University, Canada

Performance Analysis of the Disk Subsystem  
Ozlem Akpinar, Tayfur Altiok  
Rutgers University, USA

Dynamic Simulation Control With Queue Visualization  
Saurabh Mittal, Bernard Zeigler  
University of Arizona, USA

VisioSim Portal: Interfacing Business Planning and Simulation Modeling  
Pooya Farahvash, Ozgecan Uluscu, Tayfur Altiok, Alan Santucci  
Rutgers University/Picatinny Arsenal, USA
M&S Methodology and Tools II  
**Monday 1:30–3:00 p.m.**  
**Room: Plaza IV**  
**Chair: Fernando Barros**  

**Definition of Cell-DEVS Models for Complex Diffusion Systems**  
Carleton University, Canada  

**Layered Approach to Development of OO War Game Models Using DEVS Framework**  
Chang Ho Sung, Su-Youn Hong, Tag Gon Kim  
KAIST, Korea  

**Measurement of RTI Performance for Tuning Parameters to Improve Federation Performance in Real-time War Game Simulation**  
Su-Youn Hong, Jae Hyun Kim, Tag Gon Kim, KAIST Korea  

Military Application and Simulation I  
**Monday 1:30–3:00 p.m.**  
**Room: Plaza V**  
**Chair: Subhashini Ganapathy**  

**Logistics Readiness Agent for a Space Logistics Readiness Center**  
Jason Seyba, Paul Faas, US Air Force, USA  

**A Need For Human-in-the-Loop Simulation Testbed for Logistic Maintenance Decision Support Research**  
Jennie J. Gallimore, Ann Maki, Paul Faas, Jason Seyba, Laurie Quill, Elizabeth Matthews, Wright State University, USA  

**Interactive Optimization for Unmanned Aerial Vehicle Routing**  
Sasanka Prabhala, Subhashini Ganapathy, Jennie J. Gallimore, S. Narayanan, Raymond Hill  
Wright State University, USA
Student Workshop II
Monday 1:30–3:00 p.m.
Room: Plaza VII
Chair: Gabriel Wainer

Extending the Levels of Conceptual Interoperability Model
Charles Turnitsa, Old Dominion University, USA

Load Balancing for Clustered Web Servers with Auto-Correlated Traffic
Wei Xiong, Tayfur Altiok, Benjamin Melamed
Rutgers University, USA

Experimental results on the use of Modelica/CD++
L. Chechiu. University of Ottawa, Canada
G. Wainer, Carleton University, Canada

Modelling Air Craft Analysis for Construction process and Organization
Enrico Briano, Enrico Bocca
Liophant Simulation, University of Genoa, Italy

Analysis of Safety Stock Policies in Supply Chains
Mustafa Rawat, Tayfur Altiok
Rutgers State University, USA

M&S Methodology and Tools III
Monday 3:30–5:00 p.m.
Room: Plaza IV
Chair: Ralph Huntsinger

Extending UML with DEVS for Validating Systems by Simulation
Frydman Claudia, Severin Daniel, Torres Lucile
LSIS

A DEVS-based Concurrent and Comparative Fault Simulation Algorithm
Fabrice Bernardi, Laurent Capocchi, Dominique Federici,
Paul-Antoine Bisgambiglia
University of Corsica, France
Military Application and Simulation II
Monday 3:30–5:00 p.m.
Room: Plaza V
Chair: Asad Malik

Cross-Layer Design and Control for Multihop Wireless Networks
Ness Shroff, Xiaojun Lin
Purdue University, USA

Creating Active Space in ExRTI
Asad Waqar Malik, Shoab A. Kham
NUST, Pakistan

“TaskWare” - A New Tool for Task Scheduling for Distributed System Design
David Rhodes, Benjamin Epstein
OpCoast LLC, USA

Military Application and Simulation III
Tuesday 10:30–12:00 p.m.
Room: Plaza V
Chair: Subhashini Ganapathy

Parallellization of the Joint Integrated Mission Model (JIMM) Using Cautious Optimistic Control (COC).
David W. Mutschler
NAVAIR, USA

A Holistic Approach to Target and Lethality Modeling for a Hardware-in-the-Loop Simulation of an Air Defense Missile System
David M. Curry, Craig A. Combs, Kimberly C. Williams
US Army RD&E Command, USA

Analyzing Energy Efficient Communication Protocol for Wireless Microsensor Networks And Improving System Reliability of LEACH
Irfan Butt, Ahmed Khan Shoab
E & ME College, Pakistan
Tuesday, July 26

Military Application and Simulation IV
Tuesday 1:30–3:00 p.m.
Room: Plaza V
Chair: Drew Hamilton

Simulation Experimentation with Secure Overlay Services
Harold W. Fletcher, Kevin Richardson, J. A. Hamilton
Auburn University, USA
Martin Carlisle, United States Air Force Academy, USA

Task Graph Analysis of Security Approaches for Heterogeneous Platforms
David Rhodes, Benjamin Epstein
OpCoast LLC, USA

Homeland Security M&S
Tuesday 3:30–5:00 p.m.
Room: Plaza V
Chair: Enrico Briano

Modelling & Simulation Applied to Security Systems
Francesco Longo, Agostino Bruzzone
University of Calabria/MISS-Unige, Italy

Simulating the Knowledge Transfer Dilemma: Lessons for Security and Counter-Terrorism
Alan Abrahams, Max Boisot, Gnana Bharathy
The Wharton School, University of Pennsylvania, USA

Reprise of Foundations 2004
Dennis Stevenson, Clemson University, USA
M&S Methodology and Tools IV
Tuesday, 10:30 a.m.–12:00 p.m.
Room: Plaza IV
Chair: Fernando Barros

Modular Dynamic Model of the Small Scale Externally Fired Gas Turbine for Stationary Applications
Radoslaw Gnutek, Delft University of Technology, Netherlands

dFACT Insight – An Immersive Material Flow Simulator With Multi-User Support
Christoph Laroque, Wilhelm Dangelmaier, Bengt Mueck
Heinz Nixdorf Institute, Germany

Reachable Sets for a Marketing Game: Looking for New Modeling Tools
Stanislaw Raczynski, Universidad Panamericana, Mexico

Advanced Model for Truck Transportation Analysis
Agostino Bruzzone, Matteo Brandolini
MISS-DIPTEM/DIP Consortium, Italy

Some Insights of Indifference-Zone Selection via All-Pairwise Comparisons
Chen Engyee, BASF Corporation, USA

Production and Manufacturing
Tuesday 1:30–3:00 p.m.
Room: Plaza VII
Chair: Miquel A. Piera

Performance Analysis of Batch Ordering Policies in Supply Chains
Abdullah Karaman, Tayfur Altiok
Rutgers University, USA

Generic Structures for Modeling, Simulation and Analysis of Manufacturing Systems – A Petri Net Approach
Marcus Dahms, Jan Schomerus
Hamburg University of Technology, Germany

Constraint Satisfaction in the Automobile Industry: A Coloured Petri Net Simulation Model Approach
Miquel Piera, Toni Guasch
UAB/UPC, Spain

Virtual Manufacturing for the Management of Complexity
T. Guasch, V. Porcar, M.A. Piera, M. Bacardit
UAB/UPC/Nissan Motor/LogiSim, Spain
Agent–Directed Simulation  
Tuesday 3:30–5:00 p.m.  
Room: Plaza IV  
Chair: Tuncer Oren

Multi-agent Distributed Simulation: Discussions and prototyping a P2P architecture  
Adnane Cabani, Mhamed Itmi, Jean-Pierre Pecuchet  
INSA, France

Agent-Based Framework for Discrete Entity Simulation in Continuous Media  
Marsha Gay, Cary Butler, Mark Cowan, David Richards, John Nestler, Niki Goerger  
U.S. Army Engineer R&D Center/U.S. Military Academy, USA

Artisanal and Small-scale Gold Mining in Alga (Burkina Faso): Building a Decision-Aid Model for Development and Governance  
Fenintsoa Andriamasinor, Eric Jaques, Remy Pelon, Bruno Martel-Jantin, BRGM, France

Science and Technology  
Tuesday 3:30–5:00 p.m.  
Room: Plaza VII  
Chair: Enrico Bocca

Watermarking Technique Using Content Based Image Segmentation  
Mohammad Obaidat, Monmouth University, USA  
M. Suhail, University of Bradford, United Kingdom

Photovoltaic Sun Tracking Programmable Fuzzy Logic Control System  
Rustom Mamlook, Isra Private University, Jordan
Wednesday, July 27

Applications in Management, Planning, and Forecasting
Wednesday 10:30 a.m.–12:00 p.m.
Room: Plaza IV
Chair: Agostino Bruzzone

Toward Moving Off the Planet
Elfrey Priscilla, NASA, USA

Monte Carlo Simulation of Telemetric Signals for Enhanced Proactive Fault Monitoring of Computer Servers
Kalyan Vaidyanathan, Kenny Gross
Sun Microsystems, Inc., USA

Modeling Discrete Event Sequences for Discovering Signatures Diagnosis
Marc Le Goc, Philippe Bouche, Norbert Giambiasi, LSIS, France

Virtual Reality, Visualization and Simulation
Wednesday 10:30 a.m.–12:00 p.m.
Room: Plaza V
Chair: Priscilla Elfrey

ThumbPen: A Novel Virtual Hand Gesture Interface
Tai Man Wong, Han Qiu Sun, Kin Hong Wong
The Chinese University of Hong Kong, China

A Survey of 3D Visualization Resources for Bioinformatics
Carlos Luiz Dos Santos
Federal University of Rio de Janeiro, Brazil
David Hill, Blaise Pascal University, France

Bioinformatic/Biology
Wednesday 10:30 a.m.–12:00 p.m.
Room: Plaza VII
Chair: Joseph Barjis

Analysis and Modeling of DNA Transcription using Rule-based Methods
Joe Yeol, Polytechnic University, USA
Yeong Ryu, Isaac Barjis,
New York City College of Technology, USA
Joseph Barjis, Georgia Southern University, USA
Finite Automata (FA) based Modeling of Molecular Biology for Analysis and Simulation
Isaac Barjis, New York City College of Technology, USA
Joseph Barjis, Georgia Southern University, USA
Joe Yeol, Polytechnic University, USA

Virtual Reality, Visualization, and Simulation II
Wednesday 1:30–3:00 p.m.
Room: Plaza V
Chair: Francesco Longo

Balanced Virtual Humans Interacting with their Environment
Antoine Rennuit, Alain Micaelli, Xavier Merlihot, Claude Andriot, Francois Guillaume, Nicolas Chevassus, Damien Chablat, Patrick Chedmail
CEA\LIST, France

Competitive Cooperative Training by Using Simulation
Enrico Bocca, Enrico Briano, Attilio Rocca
Liophant Simulation/University of Genoa/BRBStudio, Italy

Business and Industry
Wednesday 1:30–3:00 p.m.
Room: Plaza IV
Chair: Matteo Brandolini

Status Report on the Proposed Revisions to the NAICS Codes for the Modeling and Simulation Industry
Vince Amico, Lorrain Grace, UCF, USA

Technical and Economical Analysis of the Layout of a Palletization Plant Through Simulation Techniques
Vincenzo Duraccio, University of Cassino, Italy

A Simulation of the Theory of Union Wage Effects Using Cellular Automata
Robert Signorile, David Regan, Boston College, USA

Increasing the Use of Simulation in Business
Andrew Greasley, Aston University, United Kingdom

Model for evaluating comparative evolution of Logistics in retail
Agostino Bruzzone, Enrico Bocca, Pietro Genco, Lara Penco
MISS-DIPTEM/CIELI/DITEA, Italy
Transportation Workshop
Wednesday 1:30–3:00 p.m.
Room: Plaza VII
Chair: Mhamed Itmi

A Simple Voice Communication System For Human-In-The Loop Air Traffic Control Simulations
Florian Hafner, Mohamed Mahmoud
Embry-Riddle Aeronautical University, USA

A Statewide Freight Transportation Model
Bernard Schroer, Heather Shar, Maruf Rahman, Greg Harris, Michael Anderson
University of Alabama in Huntsville, USA

M&S Methodology and Tools VI
Wednesday 3:30–5:00 p.m.
Room: Plaza IV
Chair: Fernando Barros

Modeling and Simulation in Process Technology with Modelica
Borut Zupancic, University of Ljubljana, Slovenia
Guenter Zauner, Felix Breitenecker
Vienna University of Technology, Austria

Distributed DEVS Simulation using the MOSIX Environment
Fabrice Bernardi, Laurent Capocchi, Eric Innocenti
University of Corsica, France

Description Framework for the Proxel-Based Simulation of a General Class of Stochastic Models
Sanja Lazarova-Molnar, Graham Horton
University of Magdeburg, Germany
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**Tutorial #3**
Design of Experiments for Simulation Projects (p. 5)

**Tutorial #5**
Ethics in Simulation (SimEthics) (p. 5)

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Deterministic Analysis of Discrete Stochastic Models: Process-Based Simulation (p. 5)

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**Tutorial #3**
Sensor Networks - Applications, Technologies and Protocols (p. 4)

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- **Military IV (p.32)**
- **Production and Manufacturing (p.34)**
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- **Homeland Security (p.33)**
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**WEDNESDAY AT-A-GLANCE:**

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This annual international conference is a forum for professionals involved in performance evaluation of computer and telecommunication systems. Evaluation of computer systems and networks is needed at every stage in the lifecycle of the product including design, manufacturing, sales/purchase, use, upgrade, tuning, etc. The discipline of performance evaluation has progressed rapidly in the past decade, and it has now begun to approach maturity. Significant progress has been made in analytic modeling, simulation, and measurement approaches for performance evaluation of computer and telecommunication systems.

**SPECTS General Chair**
Mohammad S. Obaidat  
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Tel +1-732-571-4482, Fax +1-732-263-5202  
E-mail: obaidat@monmouth.edu

**Deadlines**  
Submission of Papers: January 31, 2006  
Notification of Acceptance: April 25, 2006  
Final Camera-Ready Submission: May 23, 2006

The Summer Computer Simulation Conference is focusing on Innovative Technologies for Simulation this year. Modeling and Simulation is a very critical area for supporting Research and Development as well as competitiveness worldwide; new technologies are enabling new use of M&S and increasing its impact in new areas; SCSC provides an International Forum for presenting the State of the Art in the International Simulation Community as well as the Effectiveness of Simulation Experiences in World Businesses. Several topical perspectives will serve to illuminate the evolution of the modeling and simulation community. All submissions will be reviewed based on the draft full paper and/or extended abstract.

**SCSC General Chair**
Agostino G. Bruzzone  
MISS-DIP University of Genoa, Italy  
E-mail: agostino@itim.unige.it

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**International Symposium on Performance Evaluation of Computer and Telecommunication Systems**

**JULY 2006, CALGARY, ALBERTA, CANADA**

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**Summer Computer Simulation Conference**

**JULY 2006, CALGARY, ALBERTA, CANADA**

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