

**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**



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MODELING AND SIMULATION INTERNATIONAL
[HTTP://WWW.SCS.ORG](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****12:00–6:00 p.m.****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****8:00 a.m.–3:00 p.m.****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****9:00 a.m.–12:00 p.m.****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****1:00–5:00 p.m.****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 Mutliconference, 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****4:00–5:00 p.m.****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****4:00–5:00 p.m.****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.

Tutorials #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 100s 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, DIPTTEM, Italy

Enrico Briano, Liophant Simulation, Italy

This Tutorial focuses on 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 for analyzing data; the tutorial includes applicative introduction to both Time Series Analysis, Moving Average and Exponential Smoothing, ARMA 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.

Meetings (continued)

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.

Meetings (continued)

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

Francois 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.

Steering Committee Chair's Message



Mohammad S. Obaidat
Steering Committee Chair
SummerSim 2005

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



Mohammad S. Obaidat
Steering Committee Chair,
SummerSim 2005

“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

SCSC 2005 General Chair's Message



Agostino Bruzzone
General Chair, SCSC 2005
MISS, DIP,
University of Genoa, Italy

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.

Because these impressive results were made possible thanks to many individual contributions, I would like to extend my most sincere gratitude to all authors, technical program committee members and their reviewers, as well as track and sessions chairs and organizers. Special thanks as well to the Steering Committee Chair Mohammad S. Obaidat, to the Program Chair Edward Williams, to Track Chairs and to the IPC: T. Altiok, V. Amico, I. Barjis, F. Barros, G. Benvenuto, L. Birta, M. Brandolini, C. Briano, P. Broas, J. Couretas, G. Cunha, C.L.N. dos Santos, P. Elfrey, A. Elkamel, C. Frydman, N. Giambiasi, P. Gravitz, A. Guasch, A. Haghani, J.A. Hamilton, R. Hill, V. Hlupic, R. Huntsinger, M. Itmi, A. Javor, P. Kropf, R. Lutz, M. Massei, R. McGraw, M. Mollaghasemi, R. Mosca, T. Ören, M.A. Piera, H. Pranevicius, H. Qiao, E. Radwan, C. Roberts, L. Rothrock, H. Sarjoughian, S. Saetta, B. Schroer, S. Simeoni, R. Signorile, R. Strini, S. Swenson, H. Szczerbicka, H. Unger, J. Uzdinski, G. Wainer, J. Wallace, F. Wieland, L. Yilmaz, S. Youngblood, M. Zarrillo and A. Zini.

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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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

TRACK 1

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

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

TRACK 3

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, Nouredine 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 Mistic, Reddy Gonapati Rajashekar, Vojislav B. Mistic
University of Manitoba, Canada**Energy Efficiency in Full Sensing Collision Resolution Protocols**Aran Bergman, Moshe Sidi
Technion - Israel Institute of Technology, Israel**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

Youcef 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
 Ioanis Nikolaidis, Pawel Gburzynski
 University of Alberta, Canada

A Scheme for a Guaranteed Minimum Throughput Service Based on Packet Classes

Lluís 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 Pimpas, 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 Urrea, 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. Mistic

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. Mistic, Jobaida Begum, Jelena Mistic
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 Strat-
egy 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 Vlerken, 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

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 Heijen, Ignas Niemegeers
University of Twente, Enschede, The Netherlands

A Caching Algorithm for Dynamic Web Objects

Rachid El Abdouni Khayari, Axel Lehmann, Thomas Göttinger,
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

**Performance Evaluation of Radio Resource
Management Strategies using the 3GNetSim
Protocol Simulator**

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

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, Hessem 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 Permuted 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

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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 Akpınar, 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

W. Ding, C. Lin, L. Chechiu, X. Wu, G. Wainer.

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

**Parallelization of the Joint Integrated Mission Mod-
el (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

d \geq FACT 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/DIPConsortium, 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 Merlhiot, 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-DIPTM/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 Breiteneker
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

SUNDAY AT-A-GLANCE:

SPECTS Tutorials		Time	Room
Tutorial # 1 Using the Innovative NCTUns 2.0 Network Simulator and Emulator to Facilitate Network Researches (p. 4)	9:00 a.m.-12:30 p.m.	Plaza IV	
Tutorial # 2 Sensor Networks – Applications, Technologies and Protocols (p. 4)	9:00 a.m.-12:30 p.m.	Plaza V	
Tutorial # 3 Web Caching, its Application and Performance Aspects (p. 4)	1:30-5:00 p.m.	Plaza IV	
Tutorial # 4 Integration toward Future Heterogeneous Wireless Networks (p. 4)	1:30-5:00 p.m.	Plaza V	
SCSC Tutorials			
Tutorial # 1 Deterministic Analysis of Discrete Stochastic Models: Proxel-Based Simulation (p. 5)	9:00 a.m.-12:30 p.m.	Plaza I	
Tutorial # 3 Design of Experiments for Simulation Projects (p. 5)	9:00 a.m.-12:30 p.m.	Plaza II	
Tutorials # 5 Ethics in Simulation (SimEthics) (p. 5)	9:00 a.m.-12:30 p.m.	Plaza III	
Tutorial # 2 Web Based Multi-Paradigm Simulation (p. 5)	1:30-5:00 p.m.	Plaza I	
Tutorial # 4 Simulation for Time Series Analysis and Forecasts (p. 5)	1:30-5:00 p.m.	Plaza II	

MONDAY AT-A-GLANCE:

SPECTS

ROOM	Crystal I	Crystal II	Crystal III
8:30-10:00 a.m.	Keynote Speaker - Grand Ballroom A/B (p. 11)		
10:30 a.m.-12:00 p.m.	Satellite Communications I (Track 1) (p.13)	Resource Management I (Track 2) (p.14)	WINCS I (Track 3) (p.16)
1:30-3:00 p.m.	Satellite Communications II (Track 1) (p.13)	Resource Management II (Track 2) (p.15)	WINCS II (Track 3) (p.16)
3:30-5:00 p.m.	Transport Layer (Track 1) (p.14)	Resource Management III (Track 2) (p.15)	WINCS III (Track 3) (p.17)

SCSC

ROOM	Plaza IV	Plaza V	Plaza VII
8:30-10:00 a.m.	Keynote Speaker - Grand Ballroom A/B (p. 11)		
10:30 a.m.-12:00 p.m.	Methodology I (p.28)	Lean Simulation (p.29)	Student Workshop I (p.29)
1:30-3:00 p.m.	Methodology II (p.30)	Military I (p.30)	Student Workshop II (p.31)
3:30-5:00 p.m.	Methodology III (p.31)	Military II (p.31)	

TUESDAY AT-A-GLANCE:

SPECTS

ROOM	Crystal I	Crystal II	Crystal III
8:30-10:00 a.m.	Keynote Speaker - Grand Ballroom A/B (p.11)		
10:30 a.m.-12:00 p.m.	Performance Evaluation Tools I (Track 4) (p.17)	Routing I (Track 5) (p.19)	WINCS IV (Track 6) (p.21)
1:30-3:00 p.m.	Resource Management IV (Track 4) (p.18)	Routing II (Track 5) (p.20)	Sensor Ad hoc Networks (Track 6) (p.22)
3:30-5:00 p.m.	Resource Management V (Track 4) (p.19)	Scheduling I (Track 5) (p.20)	Computer Systems (Track 6) (p.22)

SCSC

ROOM	Plaza IV	Plaza V	Plaza VII
8:30-10:00 a.m.	Keynote Speaker - Grand Ballroom A/B (p.11)		
10:30 a.m.-12:00 p.m.	Methodology IV (p.33)	Military III (p.32)	M&S Workforce Development (p.6)
1:30-3:00 p.m.		Military IV (p.32)	Production and Manufacturing (p.34)
3:30-5:00 p.m.	Agent-Directed (p.34)	Homeland Security (p.33)	Science and Technology (p.35)

WEDNESDAY AT-A-GLANCE:

SPECTS

ROOM	Crystal I	Crystal II	Crystal III
8:30-10:00 a.m.	Keynote Speaker - Grand Ballroom A/B (p.11)		
10:30 a.m.-12:00 p.m.	Applications I (Track 7) (p.23)	Radio Networks (Track 8) (p.24)	Performance Evaluation Tools II (Track 9) (p.26)
1:30-3:00 p.m.	Applications II (Track 7) (p.23)	Traffic Modeling I (Track 8) (p.25)	Performance Evaluation Tools III (Track 9) (p.27)
3:30-5:00 p.m.	Applications III (Track 7) (p.24)	Traffic Modeling II (Track 8) (p.26)	Performance Evaluation Tools IV (Track 9) (p.27)

SCSC

ROOM	Plaza IV	Plaza V	Plaza VII
8:30-10:00 a.m.	Keynote Speaker - Grand Ballroom A/B (p.11)		
10:30 a.m.-12:00 p.m.	Management Planning Forecasting (p.35)	VR VizSim I (p.35)	Bioinformatic / Biology (p.36)
1:30-3:00 p.m.	Business & Industry (p.37)	VR VizSim II (p.36)	Transportation (p.37)
3:30-5:00 p.m.	Methodology VI (p.38)		

HOTEL MAP

EXECUTIVE SUITES



PLAZA LEVEL



MEZZANINE FLOOR

PLAZA VI

GROUND FLOOR





2006 Summer Simulation Multiconference

International Symposium on Performance Evaluation of Computer and Telecommunication Systems

JULY 2006, CALGARY, ALBERTA, CANADA



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

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DEADLINES

Submission of Papers: January 31, 2006

Notification of Acceptance: April 25, 2006

Final Camera-Ready Submission: May 23, 2006

Summer Computer Simulation Conference

JULY 2006, CALGARY, ALBERTA, CANADA



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

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