

2004 SUMMER SIMULATION MULTICONFERENCE

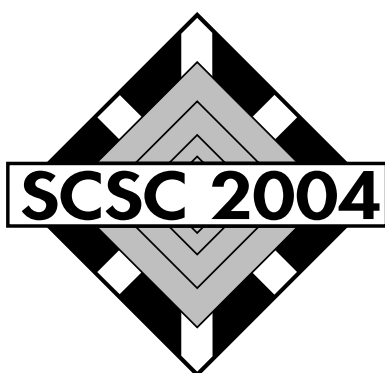
July 25–29, 2004
San Jose, California, USA

International Symposium on
Performance Evaluation
of Computer and
Telecommunication Systems



GENERAL CHAIR:
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Summer Computer
Simulation Conference



GENERAL CHAIR:
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SummerSim '04 Registration Desk

The Registration is located in the Mediterranean Center 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 '04 Speakers' Breakfast

Mon—Wed 7:00–8:00 a.m.

Castillian

SCSC/SPECTS 2004 presenters are invited to enjoy breakfast and the company of co-presenters on the morning of their presentations.

SummerSim '04 Exhibit Area Hours

| | |
|-----------|--|
| Monday | Mediterranean Center foyer 10:00 a.m.–7:30 p.m. |
| Tuesday | Mediterranean Center foyer 10:00 a.m.–5:00 p.m. |
| Wednesday | Mediterranean Center foyer 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 '04 Exhibitor Reception

Monday 6:00–7:30 p.m.

Mediterranean Center

SummerSim '04 General Session and Keynote Address

8:30–10:00 a.m.

Med Center

Monday

Raj Jain, Nayna Networks and Ohio State University, USA

Tuesday

Paul Fishwick, University of Florida, USA

Wednesday

Mario Gerla, University of California, Los Angeles, USA

SummerSim '04 2004 Luncheon and Address

Wednesday 12:00–1:30 p.m.

Med Center

Larry Burger, United States Army, USA

NASA AMES Tour

Tuesday, July 27, 2004 1:00–5:00 p.m.

See SummerSim'04 Registration Desk to Signup

On Tuesday, July 27, the Transportation Track will host a trip to NASA's Future Flight Central simulation facility at the Langley Research Center (<http://ffc.arc.nasa.gov>), which is a 360-degree virtual control tower that is state-of-the-art in real-time simulation. There will be a brief presentation by a NASA official at the conference at 1:00 p.m., followed by a shuttle bus to the facility at 2:00 p.m. Attendance is limited to the first 15 people that register, and there will be a \$15 charge to cover the cost of the shuttle. The shuttle will return to the conference hotel at approximately 5:00 p.m. Those wishing to participate may sign up at the conference registration desk.

Non-US citizens who wish to attend the tour must provide the following information in order to register: full legal name, country of citizenship, passport number, Visa number, and affiliation.

DEVS Open Meeting

Tuesday, July 27, 2004 3:30–5:00 p.m.

Governor's House C

Since 2002, an international group (with 75+ members today) has been studying how to provide a standard representation for a computer processable representation of DEVS models. DEVS is a modeling and simulation framework with a sound theoretical foundation which makes it in principle independent of various programming languages and hardware platforms. The goal of this meeting is to continue to find a core of the DEVS formalism that is suitable for standardization of activities at the level of modeling. It will bridge the gap between existing simulation frameworks and modeling activities using a standard notation. All DEVS users, and those interested to learn more about DEVS are invited to attend.

M&SNet Workshop—Power of Synergy

Sunday, July 25, 2004 1:00–6:00 p.m.

Governor's House D

On behalf of the organizers of the workshop we hereby announce the first official meeting of the new M&SNet will take place at the 2004 Summer Simulation Mutlconference, on Sunday, July 25.

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.

Meetings

SCS Executive Committee

Saturday, July 24

1:00–6:00 p.m.

Sunday, July 25

9:00 a.m.–3:00 p.m.

Governor's House A

Bernard Zeigler, *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 25

9:00 a.m.–12:00 p.m.

Governor's House C

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 25

1:00–6:00 p.m.

Governor's House D

Tuncer Ören, *Coordinating Director*

Directors and representatives of centers of the M&SNet review and plan activities of the Institute.

SPECTS 2004 Pre-conference

Sunday, July 25

3:00–4:00 p.m.

Governor's House B

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 2004 Pre-conference Briefing

Sunday, July 25

4:00–5:00 p.m.

Governor's House B

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.

SCS Bylaws, Policies, and Procedures

Monday, July 26

10:30 a.m.–12:00 p.m.

Willows 1

François Cellier, *SCS Senior VP*

This committee considers proposed changes to SCS Bylaws and maintains our Policies and Procedures. Members willing to assist are welcome.

SCS Publications Board

Tuesday, July 27 10:30 a.m.–12:00 p.m.

Willows 1

Helena Szczerbicka, SCS Vice President of Publications

Editors of Society publications meet with the vice president of publications and production staff to deal with publications issues.

SCS Membership Board

Tuesday, July 27 3:30–5:00 p.m.

Willows 1

Erol Gelenbe, 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 2005 Planning

Tuesday, July 27 12:00–1:30 p.m.

Granada

Agostino Bruzzone, SCSC 2004 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 2005 Planning

Tuesday, July 27 12:00–1:30 p.m.

Castillian

Mohammad Obiadat, SPECTS 2004 General Chair

All interested in an organizing role for next year's Symposium on Performance Evaluation of Computer and Telecommunication Systems should attend.

SCS European Operations

Tuesday, July 27 1:30–3:00 p.m.

Willows 1

Bernard Zeigler, SCS President

Leading European members meet with officers of the Society to discuss administration of SCS activities in Europe.

SummerSim Steering Committee

Tuesday, July 27 3:30–5:00 p.m.

Willows 1

Mohammad Obiadat, SCS VP Conferences

This committee plans the locations, technical program issues for future Summer Simulation Multiconference events.

Meetings

SCS Board of Directors Budget Caucus

Tuesday, July 27

5:00–7:00 p.m.

Willows 1

Joe Gauthier, *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 28

10:30 a.m.–12:00 p.m.

Willows 1

Bruce Fairchild, *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 28

1:30–3:00 p.m.

Willows 1

Mohammad Obiadat, *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 28

3:30–5:00 p.m.

Willows 1

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.

2002–2004 Board of Directors Annual Meeting

Thursday, July 29

8:00 a.m.–12:00 p.m.

Willows 1/3

Bernie Zeigler, *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.

2004–2006 Board of Directors Annual Meeting

Thursday, July 29

12:00–5:00 p.m.

Willows 1/3

Francois Cellier, *President Elect*

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.

SummerSim 2004 Steering Committee Chair's Message



Mohammad S. Obaidat
Steering Committee Chair,
SummerSim 2004

Welcome to the 2004 Summer Simulation Multiconference (SummerSim 2004). This year's conference marks the 36th anniversary of the SummerSim that started in 1969 with the name "Conference on Applications of Continuous System Languages," which was held between June 30 and July 1, 1969, in San Francisco. In 1970, the name of the conference was changed to "Summer Computer Simulation Conference, SCSC." The latter name has been used since.

Since July 2002, SCSC 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.

SummerSim 2004 consists of two major conferences: the 2004 International Symposium on Performance Evaluation of Computer and Telecommunication Systems (SPECTS 2004), and the 2004 Summer Computer Simulation Conference (SCSC 2004). Each of these conferences has new promising tracks and workshops. The program committees of SummerSim 2004 have accepted top quality papers from all over the world. This multiconference is a unique setting where an author can submit papers to two different conferences that convene in the same place and during the same period. In addition to a stimulating environment, this multiconference has an economical attraction as it saves a lot of expenses for the participants, presenters, exhibitors, and organizers

SummerSim 2004 offers a unique forum for researchers and practitioners from academia, industry, business, and government to share their results and research findings in all areas of modeling and simulation, and performance evaluation of computer and telecommunications systems.

This year's multiconference includes a superb technical program, four distinguished keynote speakers, insightful tutorials, and an exhibit. We have chosen the Hyatt San Jose Hotel, San Jose, California, as the site for our conference. The hotel provides excellent meeting facilities and will be a comfortable setting for our multiconference. The City of San Jose is famous for its many attractions and proximity to San Francisco, Silicon Valley, Carmel, Monterey, and many other marvelous cities and towns.

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 Prof. Agostino Bruzzone, General Chair of SCSC 2004, for his excellent efforts. Many thanks to Professor Franco Davoli, Vice General Chair of SPECTS 2004, Professor Abbas Jamalpour, Program Chair of SPECTS 2004, and Professor Edward Williams, Program Chair of SCSC 2004 for their outstanding work on the program. Special thanks go to Mike Chinni, SummerSim 2004 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 the 2004 Summer Simulation Multiconference and the Society for Modeling and Simulation International, I invite all of you to enjoy the conference and your stay in the beautiful city of San Jose and its neighborhoods.

Mohammad S. Obaidat
Steering Committee Chair, SummerSim 2004

SPECTS 2004 Program Chair's Message

As the Program Chair, I would like to welcome you to the 2004 International Symposium on Performance Evaluation of Computer and Telecommunication Systems (SPECTS 2004). The theme of this year's symposium is "Performance Evaluation is a Must for Cost-effective Design and Operation." SPECTS remains one of the few conferences where researchers and experts from computer and information sciences; computer and electrical systems; and telecommunication engineering can get together and exchange their rather different ideas toward the same goal of enhancement of telecommunication networks.



Abbas Jamalipour
Program Chair, SPECTS2004

The research fields of these disciplines have found their way to success using more collaboration through the invention of the global Internet—where distinguishing between a computer network and a telecommunication network is becoming more and more difficult. As the networks are becoming bigger and more heterogeneous, analyzing the performance of systems becomes more difficult and expensive.

In that way, simulation becomes the only means to predict the performance of the network before its costly implementation. As a major part of simulation, experts from computer science should join telecommunication network researchers to find the best and most optimum coding method to analyze the performance of the network.

This year, in continuation of the success of previous SPECTS conferences, we received a large number of submissions. All papers were reviewed by two to four experts in the field. The variety of technical topics required us to gather a diverse list of reviewers from computer science, electronic design, wireless communications, and wired communications fields. I would like to thank all members of program committee and reviewers who did an excellent job in a very short period of time. Due to large number of conferences in the field and because the deadline for many conferences are close to one another, the reviewers had a lot of reviews for different conferences. I am pleased to announce the result of this fantastic effort by the program committee members is a very high quality technical content that includes over 100 papers.

In order to facilitate attendees desire to listen to most paper presentations, we tried to minimize the number of parallel sessions this conference. On the first two days of technical sessions we have three parallel sessions, and on the last day there will be two sessions at the same time. In total there will be 23 sessions that are organized in eight tracks, including three special sessions. Technical sessions cover a variety of research topics including TCP performance and analysis, wireless LAN and ad hoc networks, network and computer simulation and analysis, queuing theory, routing, security and middleware, web server analysis, traffic engineering, and satellite communications. The conference begins on Sunday with a strong group of tutorials covering the most important topics in the field.

I hope you enjoy the conference in San Jose!

Abbas Jamalipour
Program Chair, SPECTS 2004

SCSC 2004 General Chair's Message

Welcome to the 2004 Summer Computer Simulation Conference. This year SCSC is focusing on Innovative Simulation Technologies.

Modeling and simulation are dynamically evolving in the area of research and development and, thanks to the introduction of new technologies, such methodologies can be used extensively to improve competitiveness worldwide.

The Summer Computer Simulation Conference is a very effective stage for presenting the latest innovations of these new technologies and methodologies regarding the use of M&S in addition to improvements in terms of their impact on specific application areas.

The state-of-the-art in the international simulation community in terms of theory and methodologies, as well as applications and industry, is being presented at this international forum.

Indeed, simulation is a very specific science that was originally envisaged as support for problem solving in very challenging cases, for which the most advanced analytical techniques had failed. Therefore, simulation science was, from the very beginning, the perfect blend of theory and technical expertise in advanced sectors. After many years of experience, today's simulation can be considered a competitive approach, with respect to traditional techniques, thanks to extensive know-how and innovative technologies that reduce costs and improve computational power.

This year's Summer Computer Simulation Conference is being held in the heart of Silicon Valley, a very good potential for a set of different applications where the simulation could support a "right the first time" solution, providing expert users with strategic competitive advantages.

This conference is back to its successful classic format and we expect a good result in this promising land. So, after the big success of last year's SCSC 2003 in Montreal, in terms of audience and paper quality, we expect similar achievements in San Jose.

Today, a conference's success is based on the possibility of giving top experts and young researchers the opportunity to meet and discuss the latest, up-to-date evolutions in simulation techniques. In this sense, SCSC 2004 is a truly fantastic opportunity, particularly when combined with other SummerSim events being held in San Jose and the networking organization pre-conference meetings involving major simulation institutions such as MS_Net, McLeod Institute of Simulation Science, and Liophant Simulation.

Just like last year's conference in Montreal, SCSC 2004 also puts the concept of quality in the spotlight. In fact, the authors went through an extensive review process to select the best papers, but also to improve the manuscripts based on reviewer feedback. About 75 percent of the full papers and extended abstracts submitted for publication were approved by three reviewers, and each author was provided with a report that included feedback in addition to detailed suggestions and notes.

This significantly high selection percentage is the result of the improvement process developed thanks to the extensive efforts of the International Program Committee (IPC).

SCSC 2004 includes tracks involving different methodologies and application areas. This year we added new workshops in order to promote discussion and cooperative activities, confirming the ongoing events from 2003: Meeting of the Technical Council in Simulation Applications in Management, Planning, and Forecasting and a Standards Workshop. At the same time the Transportation Workshop, based on the success of last year's track, obtained very good results in terms of audience and quality of the papers.

Last but not least, the Student Workshop, established one year ago, is now considered a major event for SCS International to inject new blood into the simulation field.

This year, special emphasis has been placed on tutorials, considering the extent to which they promote simulation and based on the success of last year's edition during which 40 people from companies and academia attended such sessions.

Because SCSC 2004's success is mainly the result of 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 session chairs. My special thanks as well to the Program Chair Edward Williams, to Track Chairs and the IPC: V. Amico, F. Barros, L. Birta, M. Brandolini, C. Briano, P. Broas, J.M. Couretas, C.L.N. dos Santos, P. Elfrey, A. Elkamel, C. Frydman, N. Giambiasi, P. Gravitz, A. Guasch, J.A. Hamilton, D.V. Hlupic, R. Huntsinger, M. Itmi, A. Javor, P. Kropf, R. Lutz, R. McGraw, M. Mollaghasemi, R. Mosca, T. Ören, M.A. Piera, H. Pranevicius, E. Radwan, R. Revetria, C. Roberts, L. Rothrock, S. Saetta, H. Sarjoughian, R. Signorile, R.A. Strini, H. Szczerbicka, H. Unger, J. Uzdziński, G. Wainer, J. W. Wallace, F. Wieland, E. Williams, L. Yilmaz, S. Youngblood, M. Zarrillo, and A. Zini.

I would also like to acknowledge the efforts of M. Massei and M. Chinni for SCSC 2004 web work and overall management, and the SCS International Office for their valuable contributions, namely: Steve Branch, Sharon Odegaard, Amy Shapiro, and Mark Yen.

The Silicon Valley milieu will hopefully be a fantastic platform for running the 2004 Summer Computer Simulation Conference.

Agostino Bruzzone
General Chair, SCSC 2004



Agostino Bruzzone
General Chair, SCSC 2004

SummerSim Keynote Speakers

1. Monday, July 26, 8:30 a.m., Med Center Raj Jain, Nayna Networks and Ohio State University, USA

Computer Networking: Recent Developments, Trends, and Issues



ABSTRACT

We are in a networking age, where computer networking developments affect all aspects of life, technology, and industry. They have impacted education and research as well. The time between research and productization has narrowed. Over the last few years, hyping the impact of networking technology has led to the so called “hype cycle of technology.” After a general discussion of networking and its impact, we will discuss the recent developments in optical and wireless networking. In optical networking, the industry has

moved away from core networking issues to metro and access issues. These developments will be described. In wireless networking, the aspects of broadband access, mobility and handoff are becoming important. These and other hot telecom issues will be discussed.

2. Tuesday, July 27, 8:30 a.m., Med Center Paul Fishwick, University of Florida, USA

What Games Teach Us about Modeling



ABSTRACT

The game industry recently topped Hollywood in terms of raw sales, and there seems no end in sight to the potential of games to transform not only entertainment, but also education and science. People of all ages are drawn to games, with the 3D variety playable on consoles and personal computers offering immersion, aesthetics, and motivation. Over the years, the simulation industry has learned from computer graphics that the interface is paramount—analysts want to see

all aspects of what they are modeling from the 3D scenarios that they are modeling, down to the time-based graphs of state variables. How will gaming transform modeling and simulation as a discipline? I will present recent experiments in aesthetic computing, where models are customizable and engaging. I’ll also lay out challenges that will better bridge us to the game culture, helping to pave the way to teach the next generation about modeling and simulation.

3. Wednesday, July 28, 8:30 a.m., Med Center Mario Gerla, University of California, Los Angeles, USA

Ad hoc Networks: Large Scale Challenge and Vehicle
Grid Opportunity



ABSTRACT

Ad hoc networks were first introduced to provide “instant” communications where an infrastructure did not exist, for example battlefield, search and rescue, etc. Some of these applications have now become very sophisticated and complex, involving thousands of nodes with various degrees of mobility. The much broader scope now poses a host of new problems from design to evaluation and implementation. The first “challenge” we address in this talk is scalability. Beginning with scalable protocol design, more specifically scalable routing, we outline the difficulties and present a solution technique based on “group” mobility. Then we move to scalable performance modeling in a wireless ad hoc environment; using TCP as example we show that the conventional wisdom of scaling by abstraction may backfire. Seeking scalable testbeds, we introduce WHYNET, the NSF funded wireless testbed at UCLA, and show how hybrid emulation helps scale the WHYNET testbed to thousands of nodes! Yet, the most important challenge faced by ad hoc networks today is not scale, it is “commercial applications.” Highly sophisticated ad hoc network technology struggles to find a place in people’s everyday lives. An emerging concept that may reverse this trend is “opportunistic ad hoc networking”—i.e., extending the infrastructure to support anything from kids playing Internet games in a shopping mall to nomadic users separated from Mesh Network access points. We conclude this talk with a vision of the urban “vehicular grid,” seen as a dynamic, dense, large scale, opportunistic ad hoc network.

4. Wednesday, July 28, 12:30 p.m., Med Center Larry Burger, United States Army, USA

Innovative Advances in Army Space Modeling and Simulation



ABSTRACT

The talk will focus on how the Army’s Space and Missile Defense Command is advancing the state of the art in simulation technologies to address pressing needs for the Army in this critical area.

Laurence (Larry) H. Burger, a member of the Senior Executive Service, is the director of the U.S. Army Space and Missile Defense Command’s (SMDC) Space and Missile Defense Battle Lab (SMDDBL). In this position, he outlines general program policy to support the Battle Lab’s primary roles in bringing space and missile defense innovations to the warfighter.

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Society for Modeling and Simulation International (SCS)

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Established in 1952, The Society for Modeling and Simulation International (SCS) is a nonprofit, volunteer-driven corporation (Simulation Councils, Inc.). SCS is the only technical society dedicated to advancing the use of modeling and simulation to solve real-world problems, and is devoted to the advancement of modeling and simulation, and allied computer arts, in all technical fields. The mission of SCS is to facilitate communication among professionals in the field of simulation. To this end, SCS organizes, sponsors, and co-sponsors national and international conferences in North America and Europe, and publishes the monthly journal *SIMULATION: Transactions of The Society for Modeling and Simulation International*, the quarterly journal for Defense Modeling and Simulation (*JDMS*), and the quarterly membership publication, *Modeling & Simulation Magazine*.

SAGE Publications

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Sage is an independent international publisher of journals, books, and electronic media. Known for our commitment to quality and innovation, we are a world leader in our chosen scholarly, educational, and professional markets. Since 2002, SAGE Publishers have printed *SIMULATION* journal in partnership with SCS.

Sunday, July 25, 2004

Tutorial 1 (8:30 a.m.–12:30 p.m.) Woodside 1 Real-time Performance Evaluation in Networks and Telecommunications Systems

Dr. Petre Dini, Cisco Systems, Inc., USA / Concordia University, Canada

This tutorial will present several advanced techniques and instrumentation used for performance evaluation of network devices and across networks. Techniques for performance measurements and reporting will be introduced through examples of practical tools and current network device instrumentation. As a result of the practice, the tutorial will introduce advanced techniques for static and dynamic real-time performance metrics, measurements, and their use in the self-monitoring approach. Particular network device agents (Service Assurance Agent, NetFlow, etc.) specialized in collecting and processing performance data will be considered in conjunction with OSS specialized performance tools (Infovista's, Concord's, WAPMS, etc.). Examples from device instrumentation, MPLS use cases, both in-box and out-of-box problems, and new metrics for static and dynamic real-time performance/availability give the presentation a concrete allure.

Tutorial 2 (8:30 a.m.–12:30 p.m.) Woodside 2 Recent Advances in Web Caching Technologies

Dr. Dipu Ghosh, Distributed Performance Engineering, USA

Academic and corporate communities have been dedicating considerable effort to web caching and replication to meet the scalability demands on the intranet and internet infrastructure. web caching and replication is a rapidly evolving field which makes it difficult to keep up with recent advances. This tutorial captures a snapshot of the state-of-the-art in web caching design, describing a variety of specific trends and techniques. Topics include replication systems, replica communication protocols, web acceleration, replication strategies, cache placement, prefetching, edge servers, commercial products, and future directions.

Tutorial 3 (8:30 a.m.–12:30 p.m.) Woodside 3 Wireless IP through Integration of Wireless LAN and Cellular Systems

Professor Abbas Jamalipour, University of Sydney, Australia

In this tutorial, the wireless IP, considered not only as an extension of the conventional wired IP but also as a co-operating network with the wired IP, will be introduced. The change in protocol design required for a complete migration from wired networks into a heterogeneous wired/wireless as well as wireless LAN/cellular system will be explained and the architectural concepts to support the future broadband and high-speed wireless IP will be discussed. Comparison between the loose and tight coupling architecture as well as with other possible architectures will be provided. The tutorial also will examine the third generation wireless networks and the wireless LAN architectures in detail and show how the two differently designed networks can efficiently work together. Major research topics in the field including quality of service, mobility and traffic management, TCP, and IP protocol enhancement will be addressed. Standardization activities within 3GPP, 3GPP2, and ETSI also will be included in the tutorial.

Tutorial 4 (2:00–6:00 p.m.) Woodside 1 **IP-Oriented QoS in the Next Generation** **Networks: Application to Wireless Networks**

Professor Pascal Lorenz, University of Haute Alsace, France

Emerging Internet Quality of Service (QoS) mechanisms are expected to enable widespread use of real time services like VoIP and videoconferencing. The “best effort” Internet delivery cannot be used for the new multimedia applications. New technologies and new standards are necessary to offer (QoS) for these multimedia applications. Therefore new communication architectures integrate mechanisms allowing to guarantee QoS services as well as high rate for the communications. This tutorial covers an introduction to QoS in heterogeneous networks, Internet delivery over future wireless networks, the ATM, MPLS, DiffServ, and IntServ protocols. It addresses characteristics of the Internet and its mobility features and how it could guarantee QoS using wireless IP services. It also presents concepts of routing, quality-of-service provisioning and security, baseline architecture of the inter-networking protocols, and end-to-end traffic management issues.

Tutorial 5 (2:00–6:00 p.m.) Woodside 2 **Using DEVS for Modeling and** **Simulation of Computer Networks**

Professor Gabriel A. Wainer, Carleton University, Canada

In this tutorial, we will introduce DEVS origins and general ideas, and we will show the current status of DEVS M&S and its application for modeling computer networks. We will focus on the development of networking models, starting with examples of simple applications (like routing in TCP/IP), and will evolve towards more complex applications (like routing in ad hoc networks). We also will focus in describing how to create models that can be executed automatically in a parallel environment without any modifications to the original models, or user intervention. We will present different examples of application, and discuss open research issues in this area.

Sunday, July 25, 2004

Tutorial 1 (9:30 a.m.–12:30 p.m.) Willows 1
Developing Facility Geometry for a Missile
Hardware-in-the-Loop Simulation Using
the Synthetic Line-of-Sight Method

Helmut Snyder, Raytheon Company, USA

This tutorial is the third in the series that describes “What is a Missile Hardware-in-the-Loop Simulation.” Part 1 was a conceptual presentation describing what is meant by a hardware-in-the-loop simulation and specifically focused on the Raytheon Patriot facility in Bedford, Ma., (presented at ASTC 2002). Part 2 described some of the standard nomenclature and math techniques that are used (presented at ASTC 2003), and the third and final part describes how we replicate real-world geometry in a facility using an anechoic chamber, a RF target generator, a flight table,, and the synthetic line-of-sight method. The SLOS method has the following advantages over the simulation method that employs a fixed non rotating reference frame.

- (1) The SLOS method extends the geometry that can be simulated for a given 3-axis flight table and target generator.
- (2) The SLOS method eliminates the need to physically or electronically move the target in the facility for a single-target engagement. This can greatly reduce the cost or make simulations possible where the target generator could not be moved under any circumstances. For multiple target engagements, however, spatial target motion (electronic or physical) must be generated.
- (3) The SLOS method can be used without a flight table with some restrictions, which may or may not affect the validity of the simulation.
- (4) The complete implementation also includes:
 - (a) compensatory terms for the non-concentric mounting for the seeker of the missile-under-test in a flight table,
 - (b) redefining the center of the target generator in the facility for special applications or to extend the dynamic range of the simulated intercept geometry, and
 - (c) the ability to model a continuously rolling missile, at slow rates for a single-target engagement, without requiring a continuous-roll flight table.

Helmut Snyder is a principal engineer and simulation expert who has been instrumental in all of Raytheon’s missile hardware-in-the-loop facilities prior to the Hughes acquisition. These included the AMRAAM, Sparrow, Maverick, Standard Missile, Hawk and Patriot facilities. He received both his BSEE and MSEE from the University of Massachusetts at Lowell and has taught simulation courses as an adjunct professor at Fitchburg State College.

Tutorial 2 (2:00–5:30 p.m.) Woodside 3 **Overview of Discrete Event Models:** **Petri Nets, DEVS, GDEVS**

Norbert Giambiasi, LSIS, France

This tutorial is devoted to give an overview of characteristics of Discrete-event models and to present different modeling paradigms. The tutorial discusses the possibilities for using these paradigms for modeling and simulation in different sectors of application. The tutorial includes an overview about different techniques and formalism such as Petri Nets, Automata, Event Graphs, DEVS (Discrete-Event Specifications), Queuing Models, etc. The tutorial provides also fundamentals about new advances and generalizations (i.e., G-DEVS Generalized DEVS).

Norbert Giambiasi (Norbert.giambiasi@lsis.org) is full professor in Aix-Marseille III University as well as Director of LSIS (Laboratory of Science and Information Systems). He has been active for many years in simulation and currently his research is focusing especially on researches on DEVS and relative developments. He represents France at a Trans Atlantic Master Program in Modeling and Simulation, applied to logistics, sponsored by the European community and the United States.

Tutorial 3 (9:30 a.m.–12:30 p.m.) Willows 2 **Simulation for Time Series** **Analysis and Forecasts**

Simone Simeoni, Liophant Simulation Club, Italy

This Tutorial focuses on providing an overview about benefits of using the simulation for time series analysis and forecasts. The tutorial includes 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. The tutorial discusses fundamentals about the common use forecast models and time series analysis in different applications: demand analysis, logistics, planning, etc. The tutorial includes examples and exercises for demonstrating the techniques; some background in engineering or statistics could be useful, however all the fundamental elements will be transferred during the course.

Simone Simeoni completed the management engineering degree in Genoa University working on the PUMA project in cooperation with Ansaldo Energia. He participated in several international symposiums (i.e. , ASTC 2001 Seattle, ESS 2000, HMS 2000, and AICE 2000) and in 2000 he won the First Place Award for Best Project in ICAMES. He has visiting experiences in CAE Montreal (working with Rose in Modeling & Simulation of Power Plants), Lockheed Martin Canada for cooperating in data fusion projects, ford motor company in Detroit (where he worked on Logistics projects applied to production plants using Witness, Automod, and Simul8). He participated actively into SIREN courses in M&S and HLA. Currently he is involved in supervision and project management of project related to implementing an ERP (SAP R/3 Retail (tm)) with a major Italian company; he is active in logistics modeling for retail. He is currently involved as project manager representative in over 100 IT projects in a billion dollar company operating as member of DIP special research team.

Tutorial 4 (2:00–5:30 p.m.) **Critical Issues in Simulation**

Vince Amico, UCF/NCS, USA

Matteo Brandolini, BRB Studio, Italy

Willows 1

This Tutorial focuses on providing an overview about the critical issues in simulation; the presentation identifies the different aspects of a simulation project, providing clues for improving their effectiveness. The simulation project management is outlined and includes examples from industrial and military applications and general criteria as well as performance indexes. The presentation benefits from a large experience obtained over years by the experts and from case study extracted worldwide from real simulation projects. Some background in simulation, engineering, or project management could be useful, however all the fundamental elements are included in the tutorial package.

Vince Amico started his career in simulation when he joined the Special Devices Center in 1948 as a project engineer in the Flight Trainers Branch. He was promoted to branch head, division head, and then to chief engineer of the Special Projects Office. In 1969 he was selected for the position of director of engineering at the Senior Executive level. Then was assigned to the position of director of research in 1979. He retired in 1981. Since then he has done consulting, taught short course of simulation, and presented papers at SCS and I/ITSEC conferences. He was member of the board of SCS and also served as vice president for conferences. He is a member of AFCEA, AIAA, NDIA, and SCS. He holds BofAE, MBA, and MSE degrees. He is the industrial affiliates coordinator for the School of Computer Science at UCF. He is a member of the board of directors of the National Center for Simulation.

Matteo Brandolini obtained the full degree in management engineering. In May 1996 he won the ICAMES '96 best project award, held in Istanbul; in the following years he attended several international conferences as speaker and participated to Scientific and NATO workshops related to innovative technologies. He taught professional courses in Europe and North America on modeling and simulation, VV&A, HLA and design of experiments for major world companies and institutions (i.e. Honeywell, LMC, Alenia, Genoa University, TU Delft). He specialized in consulting related to BPR, environmental management, simulation and training, retail reorganization, ERP projects, ecommerce and project management with major Italian Companies. He is a founding member of the Liophant Simulation Club, where he serves as treasurer. He is author of several scientific papers; currently serves as member of the IPC in several international conferences (Track Chair of Business Applications in SCSC San Jose`, Conference Coordinator in HMS2004 and MAS2004); and he is partner in BRB Studio and in 3B Studio consulting firms.

Tutorial 5 (2:00–5:30 p.m.) Willows 2 **Design of Experiments for Simulation Projects**

Chiara Briano, Liophant Simulation Club, Italy
Roberto Mosca, DIPEM, Italy

This tutorial is devoted to using DOE (Design of Experiments) in Simulation projects for completing experimental analysis of results; the course includes ANOVA analysis applied to Stochastic Discrete Event Simulation as well as Factorial and Composite Designed for Sensitivity Analysis and Metamodeling. Critical Issues on DOE applied to simulation are highlighted and a detailed overview of techniques and real examples are 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.

Chiara Briano obtained the university degree in logistic and production engineering from Genoa University and completed her studies obtaining doctorship in Management Engineering, both “summa cum laude.” She has been active in computer simulation for many years and she has realized several simulators for industrial applications (i.e., ship yard construction, target tracking and classification, environmental emergencies management, logistics, and industrial management). Currently she is working in consulting M&S applied to ERP integration, customer satisfaction, company reorganization, and BPR. She is senior partner in two engineering consulting firms. She is a founding member and director of Liophant Simulation Club.

Roberto Mosca is full professor at the DIP (department of industrial production and engineering), University of Genoa. He has worked in the simulation sector since 1969 using discrete and stochastic industrial simulators for off-line and on-line applications. His research work focuses on the evaluation of simulation languages and new modeling techniques and his research team is developing new AI applications for industrial plant management. Currently he is involved as coordinator in the coordination of Savona campus, focused on industrial engineering and he is the director of DIPEM University of Genoa.

International Symposium on Performance Evaluation of Computer and Telecommunications Systems 2004

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Imad Mahgoub
Florida Atlantic University, USA

Sunday, July 25, 2004

Tutorial 1 (8:30 a.m.–12:30 p.m.)

Real-time Performance Evaluation in Networks and Telecommunications Systems

Dr. Petre Dini, Cisco Systems Inc., USA/Concordia University, Canada

Tutorial 2 (8:30 a.m.–12:30 p.m.)

Recent Advances in Web Caching Technologies

Dr. Dipu Ghosh, Distributed Performance Engineering, Ohio, USA

Tutorial 3 (8:30 a.m.–12:30 p.m.)

Wireless IP through Integration of Wireless LAN and Cellular Systems

Professor Abbas Jamalipour, University of Sydney, Australia

Tutorial 4 (2:00–6:00 p.m.)

IP-Oriented QoS in the Next Generation Networks: Application to Wireless Networks

Professor Pascal Lorenz, University of Haute Alsace, France

Tutorial 5 (2:00–6:00 p.m.)

Using DEVS for Modeling and Simulation of Computer Networks

Professor Gabriel A. Wainer, Carleton University, Canada

Monday, July 26, 2004

Keynote Speaker 1

Med Center

8:30–10:00a.m.

Computer Networking: Recent Developments, Trends, and Issues

Raj Jain, Nayna Networks and Ohio State University, USA

Co-Founder and Chief Technology Officer, Nayna Networks, Inc.
Adjunct Professor, Ohio State University

TRACK 1

Monday 10:30 a.m.–12:00 p.m.

Woodside 1

TCP Traffic Analysis

Chair: Mario Marchese, CNIT—Italian National Consortium for Telecommunications, University of Genoa, Italy

A Fluid Model for Aggregate TCP Connections

Raffaele Bolla, Roberto Bruschi, Matteo Repetto, *University of Genoa, Italy*

A Fluid-Based Model of Policed RIO Router Networks Loaded by Time-Limited TCP Flows

Mario Barbera, Alfio Lombardo, Giovanni Schembra, C. Andrea Trecarichi, *University of Catania, Italy*

Function Based Approach in TCP Send Buffer Allocation

Vasudev Sudharsan, R. Jagadeesh, PSG College Of Technology, Chennai, Tamil Nadu, India

Evaluation of Available Bandwidth Measurement Algorithms

Jingsha He, Beijing University of Technology, China

A New Scheduling Algorithm for WWW, Validation and Comparison by Trace-Driven Simulation

Rachid El Abdouni Khayari, University of the Armed Forces, Munich, Germany

Monday 1:30–3:00 p.m. Woodside 1

TCP Performance

Chair: Yong-Jin Lee, Woosong University, Taejon, Korea

An Empirical Evaluation of Packet Reordering Link Aggregation Schemes and their Impact on TCP Performance

K.N. Gopinath, Wibhu Technologies/CASL, IISc, India
Josep Blanquer, Univ. of California, Santa Barbara, USA
Banu Ozden, Univ. of South California, Los Angeles, CA, USA

Analysis of the Effect of Delay Spike and Initial Congestion Window Size on TCP Performance in Wireless Cellular Networks

Fei Xin, Abbas Jamalipour, University of Sydney, Australia

High-Resilience SACK TCP,

Qiang Ye, Mike H. MacGregor, University of Alberta, Canada

TCP Bulk Repeat for Heavy Random Losses: A Performance Analysis

Guang Yang, Ren Wang, Mario Gerla, M. Y. Sanadidi, UCLA, USA

Mean Waiting and Turnaround Time for Multiple Web Transaction

Yong-Jin Lee, Woosong University, Korea,
Mohammed Atiquzzaman, Univ. of Oklahoma, USA

Monday 3:30–5:00 p.m. Woodside I

Congestion Control

Chair: Arjan Durrezi, Louisiana State University, USA

ABR Traffic Congestion Control in ATM Networks based on FIFO Queuing

Nahid Saberi, Hossein Saidi, Isfahan University of Technology, Isfahan, Iran

Adaptive Multi-level Explicit Congestion Notification

Arjan Durrezi, Louisiana State University, Baton Rouge, USA
Mukundan Sridharan, Raj Jain, Ohio State University, USA

An Efficient Adaptation of RSVP-TE in GMPLS

Zhiyu Zhou, Bell Labs Research China, Beijing, China, Donghui Gao, Tsinghua University, China

Evaluating User-Perceived Benefits of Content Distribution Networks

Claudia Canali, University of Parma, Italy,
Valeria Cardellini, University of Roma, Italy
Michele Colajanni, Riccardo Lancellotti, University of Modena, Italy

TRACK 2

Monday 10:30 a.m.–12:00 p.m. Woodside 2 **Optical Communications**

Chair: Guoping Zeng, University of Texas at Dallas, USA

Design and Analysis of a Scalable 3-Dimensional Multicomputer Architecture Using Optical Interconnection for PetaFLOP Computing

Ekpe Okorafor, Mi Lu, Texas A&M University, USA

Label Switching and Contention Resolution in all optical networks

Yassine Khlifi, Sihem Guemara-Elfatmi, Noureddine A. Boudriga, School of Communication, Tunisia

On the Conservation Law in Optical Burst Switching Networks

Guoping Zeng, Kejie Lu, Imrich Chlamtac, University of Texas at Dallas, USA

Routing Capability and Performance of Cubical OTIS Networks

Hashem Hashemi Najaf-abadi, Sarbazi-azad Hamid, IPM, Sharif University of Technology, Iran

Analytical Loss Models for MAC Protocols in Optical Ring Network Operating under a Static Traffic Load

Esa Hyytia, Laura Nieminen, Helsinki University of Technology, Finland

Monday 1:30–3:00 p.m. Woodside 2 **Multicast Systems**

Chair: Przemyslaw Jaskola

Warsaw University of Technology, Poland

A Retransmission Control Scheme for Tree-Based Reliable Multicast

Jinsuk Baek, Jehan-Francois Paris, University of Houston, USA

Forwarding Entry Reduction and Source Mobility Support for Source Specific Multicast

Ken Igarashi, Harunobu Fukazawa, Shoichi Hirata, DoCoMo, Japan

A Multi-Objective Multipath Routing Algorithm for Multicast Flows

Ramon Fabregat Gesa, Universitat de Girona, Spain

Yezid Donoso Meisel, Universidad del Norte, Colombia

Jose Luis Marzo Lazaro, Alfonso Ariza Quintana

Universidad de Malaga, Spain

Monday 3:30–5:00 p.m. Woodside 2

VoIP and Sensor Networks

Chair: Pascal Lorenz, Universite de Haute Alsace, France

A Perceptual Quality Model for Adaptive VoIP Applications

Christian Hoene, Holger Karl, Adam Wolisz, Technical University of Berlin, Germany

Modeling Voice Quality with QoS Parameters in VoIP Networks: A Multivariate Statistical Approach

Hongliang Gai, Jae C Oh, Syracuse University, USA

Signaling Performance of SIP Based VoIP

Swapna Gokhale, Jijun Lu, University of Connecticut, USA

A Peer-to-Peer Bandwidth Allocation Scheme for Sensor Networks

Luca Caviglione, Franco Davoli, University of Genoa, Italy

TRACK 3

Monday 10:30 a.m.–12:00 p.m.

Woodside 3

Wireless LAN and Mobile IP

Chair: Herman D. Hughes, Michigan State University, USA

An Experimental Performance Analysis of MAC Multicast in 802.11b Networks for VoIP Traffic

Martin Kappes, Avaya Inc., USA

Performance Analysis of Unsaturated Multi-Pattern Frequency Hopping Wireless LANs

Danyan Chen, A. K. Elhakeem, Xiaofeng Wang, Concordia University, Montreal, Quebec, Canada

A Performance Evaluation Study of Jitter Characteristics in Wireless Mobile IP Networks

Yulian Wang, Tampere University of Technology, Finland
Mohammad S. Obaidat, Monmouth University, USA

Quality of Service Aspects in an IPv6 Domain

Christos J. Bouras, University of Patras, Greece
Apostolos Gkamas, Dimitris Primpas, Kostas Stamos, RACTI, Greece

Monday 1:30–3:00 p.m. Woodside 3

Wireless Cellular Networks

Chair: Pascal Lorenz, Universite de Haute Alsace, France

A Discrete-Time Markovian Model for GPRS/EDGE Radio

Engineering with Finite-Length Sessions Traffic

Bruno Baynat, University of Paris 6, France

Khaled Boussetta, Pierre Eisenmann, Nidham Ben Rached, Nortel Networks, France

Composite Model of Packetized VBR Source for Next Generation All-IP Mobile Networks

Dmitri A. Moltchanov, Yevgeni Koucheryavy, Jarmo Harju, Tampere University of Technology, Finland

Concurrent Multipath Transfer Using SCTP Multihoming, University of Delaware, Newark, DE, USA

Janardhan R Iyengar, Keyur C Shah, Paul D Amer, Randall R Stewart, Cisco Systems, USA

Resources Reservation for Handoffs in UTRA TDD Systems

Faouzi Zarai, Noureddine A. Boudriga, Carthage University, Tunisia, Mohammad S. Obaidat, Monmouth University, USA

Monday 3:30–5:00 p.m. Woodside 3 Ad hoc Networks

Chair: Sami Habib, Kuwait University, Kuwait

Analyzing the Behavior of Wireless Ad Hoc Networks Using Cell-DEVS

Gabriel Wainer, Bengu Balya, Farooq Umar, Carleton University, Canada

Modeling the Performance of Flooding in Wireless Multi-Hop Ad Hoc Networks

Kumar Viswanath, Katia Obraczka, University Of California, Santa Cruz, USA

Routing Strategies for Fair Power Consumption in Wireless Ad Hoc Networks

Takahiro Matsuda, Miki Yamamoto, Osaka University, Japan

Scheduling in Wireless Multi-hop Networks

Matthias Lott, Siemens AG, Munich, Germany, Martin Weckerle, Matthias Siebert, University of Aachen, Germany

Tuesday, July 27, 2004

Keynote Speaker 2

8:30–10:00 a.m.

Med Center

Paul Fishwick, University of Florida, USA

What Games Teach Us about Modeling

TRACK 4

Tuesday 10:30 a.m.–12:00 p.m. Woodside 1 **Satellite and Heterogeneous Communications**

Chair: Jose Marzo, University of Girona, Spain

A Bandwidth Allocation Scheme in Satellite Channels with Internet Traffic Sources: Strategy and Performance Evaluation

Mario Marchese, Igor Bisio, CNIT, University of Genoa, Italy

Measurement and Analysis of Traffic in a Hybrid Satellite-Terrestrial Network

Ljiljana Trajkovic, Qing Shao, Simon Fraser University, Canada

Neural Approximation of Open Loop-Feedback Rate Control in Satellite Networks

Maurizio Mongelli, Franco Davoli, Mario Marchese, Marco Baglietto, CNIT, University of Genoa, Italy

Service Level Specification Mapping in a Heterogeneous Network Through a MPLS-based Interface

Mario Marchese, Maurizio Mongelli, CNIT, University of Genoa, Italy

Tuesday 1:30–3:00 p.m. Woodside 1 **Resource Management**

Chair: Jose Marzo, University of Girona, Spain

Distributed Network Resource Management Using a Multi-Agent System: Scalability Evaluation

Pere Vilà, José L Marzo, Antonio Bueno, Eusebi Calle, Lluís Fàbrega, Universitat de Girona, Spain

The Component Balancer: Optimizing Component-Based Application

James A Fontana, Unisys Corporation, USA

Traffic Intensity Dependent Dynamic Partitioning CAC Strategy for Multimedia Wireless Networks

Dervis Z. Deniz, Nagla O. Mohamed, Eastern Mediterranean University, Turkey

Two Methods of Optimal Bandwidth Allocation in TCP/IP Networks With QoS Differentiation

Przemyslaw Jaskola, Warsaw University of Technology, Poland
Krzysztof Malinowski, Research and Academic Computer Network—NASK, Poland

TRACK 5

Tuesday 10:30 a.m.–12 p.m. Woodside 2

Network and Computer Simulation and Analysis I

Chair: Alexander Thomasian, New Jersey Institute of Technology, USA

Automatic Analysis of Protocol Headers

Huilong Huang, Stephen Pink, Mikael Degermark, University of Arizona, USA

Conducting Vulnerability Analysis of Missile Defense Simulation Software Using Genetic Algorithms

Eric Imsand, Gerry Dozier, John A. Hamilton, Auburn University, USA

Empirical Performance Analysis of the SATF Policy

Alexander Thomasian, Chang Liu, New Jersey Institute of Technology, USA

Experimental Evaluation of the Performance Advantages of Adaptation-aware Replica Placement in Adaptive CDNs

Sven Buchholz, Dresden University of Technology, Germany

Network Simulators: A Developer's Perspective

Marek M. Malowidzki, Military Communication Institute, Poland

Tuesday 1:30–3:00 p.m. Woodside 2

Network and Computer Simulation and Analysis II

Chair: Alexander Thomasian, New Jersey Institute of Technology, USA

On Model-based Available Bandwidth Measurement on the Internet

Xiaojun Hei, Danny H.K. Tsang, Bensaou Brahim, Hong Kong University of Science and Technology, Hong Kong

Performance Evaluation for Variations of SATF Scheduling Policy

Alexander Thomasian, Chang Liu, New Jersey Institute of Technology, USA

Precise Measurement of One-way Delays in an NTPv3 Environment

Mike MacGregor, Aaron Dittrich, Keely Sullivan, University of Alberta, Canada

Suitability of Bloom Filters for Network Applications

Rüdiger Schollmeier, Technische Universität München, Germany
Wolfgang Kellerer, DoCoMo Communications Laboratories Europe GmbH, Germany

Tuesday 3:30–5:00 p.m. Woodside 2**Modeling and Analysis**

Chair: Guoping Zeng, University of Texas at Dallas, USA

A Methodology for Availability-aware Cost Modeling of Long-Haul Networks

Hakki Candan Cankaya, Ana Lardies, Gary Wester, Alcatel USA, USA

Synthetic Trace Generation for the Internet: An Integrated ModelWeiguang Shi, Mike H MacGregor, Pawel Gburzynski
University of Alberta, Canada**The Queuing Models of Mendelson - Review, Analysis and Some Generalizations**

Bartlomiej Jacek Kubica, Krzysztof Malinowski, Warsaw University of Technology, Institute of Control and Computation Engineering, Warsaw, Poland

A Novel Approach to Evaluating Implementations of Location-Based SoftwareDaniel Herrscher, Steffen Maier, Jing Tian, Kurt Rothermel
University of Stuttgart, Germany**TRACK 6****Tuesday 10:30 a.m.–12:00 p.m. Woodside 3****Special Session: Performance Issues of****Wireless LANs, PANs, and Ad hoc Networks I**

Organizers: Jelena Mistic and Vojislav B Mistic, University of Manitoba, Canada

Chair: Vojislav B. Mistic, University of Manitoba, Canada

A Non-Uniform Traffic Detection Scheme in DS-CDMA Networks - Case of Single Traffic Type

Yat-Kwan Tang, Jelena Mistic, Hua Zhu, Imrich Chlamtac, University of Texas at Dallas, USA

A Fair Scheduling Algorithm with Traffic Classification for Wireless Networks

You-Chiun Wang, Shiang-Rung Ye, Yu-Chee Tseng, National Chiao Tung University, Taiwan

Performance Analysis of Prediction Based Routing Algorithms

Erik Weiss, Bangnan Xu, Sven Hischke, RWTH Aachen, Germany

Using Network Activity Data to Model Utilization of a Trunked Radio System

Nikola Cackov, Bozidar Vujicic, Svetlana Vujicic, Ljiljana Trajkovic, Simon Fraser University, Canada

An Analysis of a QoS Based Hybrid Push-Pull Algorithm for Wireless Information Networks

A. Boukerche, T. Dash, C. M. Pinotti, University of Ottawa, Canada

Tuesday 1:30 p.m.–3:00 p.m. Woodside 3
Special Session: Performance Issues of
Wireless LANs, PANs, and Ad Hoc Networks II

Organizers: Jelena Masic and Vojislav B Masic, University of Manitoba, Winnipeg, Manitoba, Canada

Chair: Vojislav B. Masic, University of Manitoba, Winnipeg, Manitoba, Canada

Analysis of 802.15.4 Beacon Enabled PAN in Saturation Mode

Jelena Masic, Shairmina Shafi, Vojislav B Masic, University of Manitoba, Canada

Analysis of Loosely Coupled Scatternets

Jelena Masic, Vojislav B Masic, Ka Lok Chan, University of Manitoba, Canada

Optimal Packet Size for Wireless Local Area Networks under Various Traffic Loads

Jun Yin, Xiaodong Wang, Tarun Joshi, Dharma Agrawal, University of Cincinnati, USA

The Impact of QoS-Aware MAC Protocols in Classic and QoS MANET Architectures

Kiran K Vadde, Violet R Syrotiuk, Arizona State University, USA

Performance Evaluation of Leveled Probabilistic Routing in Mobile Ad Hoc Networks

Qi Zhang, Dharma Agrawal, University of Cincinnati, USA

Tuesday 3:30–5:00 p.m. Woodside 3
Disk, Memory, and Storage Systems

Chair: Alexander Thomasian, New Jersey Institute of Technology, Newark, NJ, USA

Measuring the Compressibility of Metadata and Small Files for Disk/NVRAM Hybrid Storage Systems

Nathan K. Edel, Ethan L. Miller, Karl S. Brandt, Scott A. Brandt, UC Santa Cruz, USA

Memory Disambiguation using Load Forwarding

Shin-Rung Chen, Jong-Jiann Shieh, Tatung University, Taiwan

Performance Evaluation of Flash Memory-Based File Storages: NAND vs. NOR

Minyoung Sung, Taesun Chung, Myungjin Jung, Guiyoung Lee, Bumsoo Kim, Samsung Electronics, Korea

Rebuild Strategies for Clustered Redundant Disk Arrays

Gang Fu, Alexander Thomasian, New Jersey Institute of Technology, USA
Chunqi Han, Spencer Ng, Hitachi Global Storage Technologies, USA

Trace Based Analysis of File System Effects on Disk I/O, Summit

Narayan, John A Chandy, University of Connecticut, USA

Wednesday, July 28, 2004

Wednesday 8:30–10:00 a.m.

Keynote Speaker 3 Med Center

Mario Gerla, University of California, Los Angeles, USA

Ad Hoc Networks: Large Scale Challenge and Vehicle Grid Opportunity

TRACK 7

Wednesday 10:30 a.m.–12:00 p.m.

Woodside 1

Queuing and Routing Systems

Chair: Weider D. Yu, San Jose State University, USA

Generating Queuing Network Models from UML-based Models for Software Performance Prediction

Zhongfu Xu, Axel Lehmann, Universitaet der Bundeswehr Muenchen, Germany

Queuing Performance under Linear Fractional Stable Motion Traffic

Zhipin Ye, Dang Chuangyin, City University of Hong Kong, Hong Kong

A Quality of Service Routing Scheme for Packet Switched Networks based on Ant Colony Behavior

Liliana María Carrillo Flórez, José Luis Marzo Lázaro, University of Girona, Spain

A Finite Queuing Network Model for Burst Assembler in OBS Networks

Guoping Zeng, Imrich Chlamtac, Kejie Lu, Yi Su, University of Texas at Dallas, USA

Wednesday 12:00–1:30 p.m.

Med Center

Keynote Speaker 4 (Luncheon Speaker)

Larry Burger, United States Army, USA

Innovative Advances in Army Space Modeling and Simulation

Wednesday 1:30–3:00 p.m. Woodside 1

Processor Routing

Chair: Alexander Thomasian, New Jersey Institute of Technology, Newark, NJ, USA

A comparison of Broadcast-based and Switch-based Networks of Workstations

Constantine Katsinis, Diana Hecht, Drexel University, USA

A Distributed Multiplatform Architecture for Traffic Generation

Antonio Pescape, Stefano Avallone, Donato Emma, Giorgio Ventre, University of Napoli, Informatica e Sistemistica, Italy

A Novel Load Balancer for Multiprocessor Routers

Weiguang Shi, Mike H MacGregor, Pawel Gburzynski, University of Alberta, Canada

Affinity Based Routing in Mirrored Disks with Zoning

Chunqi Han, Alexander Thomasian, Chang Liu, New Jersey Institute of Technology, USA

Wednesday 3:30–5:00 p.m. Woodside 1

Traffic Engineering

Chair: Sheng-Tzong Cheng, National Cheng Kung University, Taiwan

Experimental Analysis of Propagation Properties with Heavy-Tailedness

Takuo Nakashima, Kyushu Tokai University, Japan

Improved Efficient Loss Rate Estimation under Heavy-Tail Traffic Based on a Global Burst Multiplier Factor

Peyman Adibi, Siavash Khorsandi, AmirKabir University of Technology, Iran

Modeling MPEG4 Video Traffic Based on a Customization of the DBMAP

Sébastien Baey, SUPELEC, France

Replacing HTTP-TCP Traffic Sources with Open-Loop UDP Traffic Sources

Malik Sireen, Ulrich Killat, Technical University of Hamburg-Harburg, Germany

Genetic Optimal Deployment in Wireless Sensor Networks

Sheng-Tzong Cheng, Chia-Liang Hsu, National Cheng Kung University, Taiwan

TRACK 8

Wednesday 10:30 a.m.–12:00 p.m. Woodside 3 Security/Middleware

Chair: Petre Dini, Cisco Systems Inc., USA and Concordia University, Canada

Performance Comparison of Middleware Threading Strategies

Marcel Harkema, University of Twente, The Netherlands
Bart Gijzen, Rob van der Mei, TNO Telecom, The Netherlands
Bart Nieuwenhuis, Vrije Universiteit, The Netherlands

Middleware Performance: A Quantitative Modeling Approach

Marcel Harkema, University of Twente, The Netherlands, Bart Gijzen, TNO Telecom, Expertise Group QoS Control, The Netherlands
Rob van der Mei, Yanko Hoekstra, Vrije Universiteit Amsterdam, The Netherlands

Engineering VPN with Differentiated Resilience Support

Huan Pham, The University of New South Wales, Australia

Wednesday 1:30–3:00 p.m. Woodside 3 Special Session: Mobile

Computing and Networking

Organizer: Imad Mahgoub, Florida Atlantic University, USA
Chair: Imad Mahgoub, Florida Atlantic University, USA

Evaluation of Application-Specific Multiprocessor Mobile System

Imad Mahgoub, Abu Asaduzzaman, Florida Atlantic University, USA

Cluster-Based Routing in Wireless Sensor Networks: Issues and Challenges

Jamil Ibriq and Imad Mahgoub, Florida Atlantic University, USA

An XML Based Solution to Delivering Adaptive Web Content for Mobile Clients

Wenzheng Gu and Abdelsalam (Sumi) Helal, University of Florida, USA

A Mobile Web Caching Protocol: x-ICP

Wenzheng Gu and Abdelsalam (Sumi) Helal, University of Florida, USA

Wednesday 3:30–5:00 p.m. Woodside 3
Web Server Analysis

Chair: Weider D. Yu, San Jose State University, USA

A Probabilistic Approach for Admission Control to Web Servers

Zhengdao Xu, University of Toronto, Canada
Gregor v Bochmann, University of Ottawa, Canada

Design and Evaluation of Snoop Filters for Web Servers

Sundaram Chinthamani, Ravi Iyer, Intel Corporation, USA

Evaluating Self-Similar Processes for Modeling Web Servers

Ronit Nossenson, Hagit Attiya, Technion, Israel

On the Availability of Replicated Contents in the Web with Server Capacity Constraints

Mohammad S. Obaidat, F. Tenzakhtim, Monmouth University, USA
K. Day, University of Glasgow, United Kingdom
M. Ould-Khaoua, Sultan Qaboos University, Oman

Overload Control of a Parlay X Application Server

Jens K. Andersson, Maria Kihl, Daniel Sobirk, Lund University, Sweden

Summer Computer Simulation Conference 2004

General Chair

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

Program Chairs

Edward Williams
PMC, USA

Student Papers

Peter Kropf
University of Montreal, Canada
Ling Rothrock
Penn State University, USA

Steering Committee Chair

Mohammad S. Obaidat
Monmouth University, USA

Track Chairs

Agent Directed Simulation

Chairs: T. Ören, MISS–Ottawa Center, Canada
L. Yilmaz, Auburn University, USA

Applications in Management, Planning & Forecasting

Chair: Marina Massei, Liophant Simulation Club, Italy

Business & Industry

Chairs: M. Brandolini, BRB Studio, Italy; P. Elfrey, NASA, USA

Education

Chairs: A. Javor, Budapest Univ. of Technology and Economics, Hungary;
Hessan Sarjoughian, ASU, USA

Maritime Simulation

Chairs: P. Broas, VTT, Finland; A. Zini, Cetena Fincantieri, Italy

M&S Methodology and Tools

Chairs: Fernando Barros, University of Coimbra, Portugal
Ralph Huntsinger, MISS–UC Chico, USA

On-Line Simulation Workshop

Chair: Helena Szczerbicka, University of Hannover, Germany

Optimization of Logistic Systems Through Simulation

Chairs: A. Guash, University Politecnica de Catalunya, Spain; M.A. Piera,
University Autonoma de Barcelona, Spain

Production and Manufacturing

Chair: Roberto Revetria, ITIM, Italy

Science and Technology

Chairs: Robert McGraw, RAM, CA, USA; S. Simeoni, Liophant

Standards Workshop

Chairs: Peggy Gravitz, Aegis, USA; Dr. Albert Legaspi, DARPA Network Modeling and Simulation (NMS), USA

Student Workshop

Chairs: Peter Kropf, University of Montreal; Ling Rothrock, Penn State University

Transportation Workshop

Chairs: Mhamed Itmi, MISS-PSI-INSA, Rouen, France; Essam Radwan, UCF, FL, USA; Fred Wieland, MITRE Corp., VA, USA; Marguerite Zarrillo, UMD, MA, USA

Verification Validation and Accreditation

Chair: Simone. Youngblood, DMSO, USA

Virtual Reality, Visualization, and Simulation

Chair: C.L.N. dos Santos, UFRJ/COPPE/PEC/LAMCE, Brasil

Monday, July 26, 2004

Keynote Speaker 1 Med Center

Monday 8:30–10:00a.m.

Computer Networking: Recent Developments, Trends, and Issues

Raj Jain, Nayna Networks and Ohio State University, USA

Co-Founder and Chief Technology Officer, Nayna Networks, Inc.
Adjunct Professor, Ohio State University

Agent-Directed Simulation 1

Monday 10:30 a.m.–12:00 p.m.

Governor's House A

Chair: Tuncer Ören, M&S Net and Ottawa Center of MISS, Canada

Dynamic Model Updating in Simulation with Multimodels: A Taxonomy and a Generic Agent-Based Architecture

Levent Yilmaz, Auburn University, USA
Tuncer I Ören, University of Ottawa, Canada

Business and Industry 1**Monday 10:30 a.m.–12:00 p.m.****Governor's House B**

Chair: Priscilla Elfrey, NASA, USA

Designing a Proposed Overseas Textile Plant using Simulation

Andrew Greasley, Aston University, United Kingdom

Simulating Business Networks in the Consulting Industry with System Dynamics

Freimut Bodendorf, Christian Bauer, University Erlangen-Nuremberg, Germany

Minimizing Lost Time at Automobile Intersections

Alexander Stanoyevitch, University of Guam, USA

Proposed Revisions to the NAICS Codes For Modeling and Simulation

Vince Amico, University of Central Florida, USA

Simulation Applications in Management, Planning, and Forecasting 1**Monday 10:30 a.m.–12:00 p.m.****Governor's House C**

Chair: S. Simeoni, Liophant Simulation Club, Italy

Performance analysis of integrated production planning in various supply chain environment

Sungwon Jung, Euksu Sim, Jinwoo Park, Seoul National University, Republic of Korea

Relocation of a flow-shop, without interrupting the production: optimization by DEVS modelisation and simulation

Patrick Pujo, Massimo Pedetti, Norbert Giambiasi, LSIS, France

Dynamic Analyzer Integrative Genetic Algorithms and Evolutionary TerritoryAgostino G Bruzzone, University of Genova, Italy
Chiara Briano, Danila Carini, Liophant Simulation, Italy**Meta-Model for Service and Operation Simulation S-A- Workshop: Simulation Applications in Management, Planning & forecasting**

Shamsuddin Ahmed, Edith Cowan University, Australia/UAE University, United Arab Emirates

M&S Methodology, Tools, and Applications 1

Monday 10:30 a.m.–12:00 p.m.

Governor's House D

Chair: F. Barros, University of Coimbra, Portugal

HIV/AIDS Modeling: A case for Universal Medicaid in America

Bhagwan D. Aggarwala, University of Calgary, Canada

A Methodology for Simulating Scientific Supercomputing Systems

Sadaf R Alam, Roland Nibbett, University of Edinburgh, United Kingdom

Agent-Directed Simulation 2

Monday 1:30–3:00 p.m.

Governor's House A

Chair: Levent Yilmaz, Auburn University, USA

Effects of Cognitive Complexity in Agent Simulation: Basics

Nasser Ghasem-Aghaee, University of Isfahan, Iran

Tuncer I. Ören, University of Ottawa, Canada

A Multi-agent Road Traffic Simulation Model: Validation of the Insertion Case

Sameh El hadouaj, Stéphane Espié, NRETS, CIR, ARCEUIL, France

Alexis Drogoul, LIP6, MIRIAD, France

Multi-Agent-Based Simulation for Supply Chain

Jiang Jinju, Lin Jie, Tongji University, China

A Model of Pedestrian Movements Based on Mental Stress and Environmental Conditions

Toshihiro Osaragi, Tokyo Institute of Technology, Japan

Business and Industry 2

Monday 1:30–3:00 p.m. Governor's House B

Chair: Vince Amico, UCF, USA

Using CommonKADS for Modeling Queuing Systems

Claudia Frydman, Amine El Hamri, Lucile Torres, LSIS, France

Simulation as a Tool in Decision Analysis: The Role of the Domain; Expert The Kennedy Launch Services Simulation Analysis Laboratory Experience

Priscilla Elfrey, Michael P. Conroy, Maria Lopez-Tellado, NASA, USA

Reviewing Human Errors in Industrial Incidents for Safety Design

Charles Santoni, MFQ Vieira Turnell, A. Scaico, M.B. Pereira M. B., LSIS, France

Simulation and Virtual Reality Applied to Modelling Retail and Store Facilities

Agostino G Bruzzone, Simone Viazzo, University of Genova, Italy
 Enrico Papoff, Francesco Longo, University of Calabria, Italy
 Chiara Briano, BRB Studio, Italy

Student Workshop 1

Monday 1:30–3:00 p.m. Governor's House C

Chair: Peter Kropf, University of Montreal, Canada

Paced Time-Stepped Synchronization of Parallel and Distributed Simulations

Bertan Altuntas, Richard A. Wysk, Pennsylvania State University, USA

Performance evaluation of alternative designs for the car recycling system using simulation analysis

Eoksu Sim, Haejoong Kim, Jinwoo Park
 Seoul National University, Republic of Korea
 Johnhee Hong, Hyundai Motor Company, Republic of Korea
 Juho Yun, Korea Automotive Technology Institute, Republic of Korea

A New OGSA-based Design for Distributed Simulations

Tong Zhang, National University of Defence Technology, China

Methodology to Quantify and Substantiate I/O Performance Based on Analytical Models

Dominique A Heger, IBM, USA

M&S Methodology, Tools, and Applications 2 **Monday 1:30–3:00 p.m. Governor's House D**

Chair: Ralph Huntsinger, MISS UC Chico, USA

Comparison of Simulated Annealing and Optimal Algorithms for Facility Layout Problems and An Application

Ibrahim Erdem, RD Instruments, USA

Umut Tuzkaya, Semih Onut, Yildiz Tech.University, Turkey

Embedding UML Subset into Object-oriented DEVS Modeling Process

Su-Youn Hong, Tag Gon Kim, KAIST, EECS, Republic of Korea

An Intermediate Representation and its Application to the Analysis of Block Diagram Execution

Ben Denckla, Digidesign, USA

Pieter J. Mosterman, The MathWorks, Inc., USA

Timed Behavior Analysis of Schedule Preserved DEVS

Moon Ho Hwang, Su Kyoung Cho

VMS Solution, Co., Ltd., Simulation & Control Center, Republic of Korea

Production and Manufacturing

Monday 3:30–5:00 p.m. Governor's House B

Chair: Matteo Brandolini, BRB Studio, Italy

The Construction of Production Planning Mechanism for Wafer Fabrication under Demand Variate Environment

Shu-Hsing Chung, Hsin-e Leem, National Chiao-Tung University, Taiwan

Chun-Mei Lai, Far East College/National Chiao-Tung University, Taiwan

Amy H.I. Lee, Chung Hua University/National Chiao-Tung University, Taiwan

A Dynamic Storage/Retrieval Algorithm for Painted Body Storage in an Automotive Factory

Dug Hee Moon, Jae Hoon Ha, Changwon National University, Republic of Korea

Cheng Song, Herbei University of Science and Technology, China

Simulating a Production Facility with an Automated Transport System

Glenn Abramczyk, Richard A Dimenna, Westinghouse Savannah River Co., USA

Student Workshop 2**Monday 3:30–5:00 p.m. Governor's House C**

Chair: L. Rothrock, Penn State University, USA

Simulation Implementation Based On MultiDEVS For Petri Net

Chen Liu, Qun Li, Weiping Wang, System Engineering, 5th School, China

Adjusting Green Lumber Inventory Before Wood Dry-Kilns Using Kiln-Charge Size

Reuben Mwamakimullah, University of Idaho, USA

Parameter Estimation for Linear Fractional Stable Noise Process

Zhipin Ye, City University of Hong Kong, Hong Kong

Chuangyin Dang, City University of Hong Kong, Hong Kong

M&S Methodology, Tools, and Applications 3**Monday 3:30–5:00 p.m.****Governor's House D**

Chair: F. Barros, University of Coimbra, Portugal

The Use of PLA formalism for creation of simulation models

Henrikas Jonas Pranevicius, Kaunas University of Technology, Lithuania

Trace-Driven Hybrid Simulation Methodology for Simulation Speedup Rapid Evaluation of a Pipelined Processor

Ho Young Kim, Tag Gon Kim, KAIST, EECS, Republic of Korea

SIMPLEST Technical Council Meeting**Monday 5:00–6:00 p.m.****Governor's House B**

Chair: A. Bruzzone, University of Genoa, Italy

Tuesday, July 27, 2004

Transportation Workshop 1

Tuesday 8:30–10:00 a.m.

Governor's House A

Chair: Mhamed Itmi, PSI-MISS, INSA Rouen, France

I-85 Traffic Study: A State-of-the-Practice Modeling of Freeway Traffic Operation

Daiheng Ni, Georgia Institute of Technology, USA

Keith Strickland, HNTB Corporation, USA

Chunxia Feng, Georgia Institute of Technology, USA

Simulating Terminal RNAV: Assessing Time and Distance Benefits

Thomas Becher, Brennan Haltli, Kevin Sprong, James DeArmon, The Mitre Corporation, USA

Development of a Generic Plant Logistics Software: Traffic Blockage Study

Sumitesh Das, Partho S. Mitra, Tata Steel, India

Keynote Speaker 2

Tuesday 8:30 a.m.

Med Center

Paul Fishwick, University of Florida, USA

What Games Teach Us about Modeling

Transportation Workshop 2

Tuesday 10:30 a.m.–12:00 p.m.

Governor's House A

Chair: Stephane Espie, INRETS Paris, France

Assessment of the Current Status of Incident Detection Algorithms: Results of a Nationwide Survey

Angshuman Guin, Daiheng Ni, Georgia Institute of Technology, USA

Billy Williams, North Carolina State University, USA

From Legal Time Gap Towards an Adaptative Time Gap System: Study of Heterogeneous Platoon in the Case of Emergency Braking with Traffic Simulation Tool Archisim

Jean-Michel Auberlet, Stéphane Espié, NRETS, MSIS, ARCUEIL, France

Mounia Nadji, SERA CD, COURTABOEUF, France

Comparison of SimTraffic and VISSIM Microscopic Traffic Simulation Tools in Signalized Intersections Modeling

Khaled S. Shaaban, Metric Engineering, Inc., USA

Essam Radwan, University of Central Florida, USA

Optimization of Logistic Systems through Simulation 1

Tuesday 10:30 a.m.–12:00 p.m.

Governor's House B

Chair: A. Guasch, University of Politecnica de Catalunya, Spain

Heterarchical Simulation Model of Fuel Distribution in México

José Pablo Nuño, UPAEP, Mexico

Carlos Aceves, Process Model, USA

A Strategy for Distributing Simulations for Statistical Analysis

Saurav Mazumdar, Reejo Mathew, James F. Leathrum, Jr., Old Dominion University, USA

Logistical Simulation of a Demand-driven Railway System Using a Discrete Production Simulator

Wilhelm Dangelmaier, Clemens Kriesel, Christoph Laroque, Bengt Mueck, University of Paderborn, Germany

M&S Methodology, Tools, and Applications 4

Tuesday 10:30 a.m.–12:00 p.m.

Governor's House C

Chair: Ralph Huntsinger, MISS UC Chico, USA

DSimCluster: A Simulation Model for Efficient Memory Analysis Experiments of DSM Clusters

Worawan Maruringsith, Roland N. Ibbett, Edinburgh University, United Kingdom

A Description Structure for Simulation Model Components

Maritta Heisel, University Münster, Munster, Germany

Johannes Luethi, Fachhochschule Kufstein, Austria

Adelinde Uhrmacher, University Rostock, Rostock, Germany

Edwin Valentin, Delft University of Technology, The Netherlands

Transaction Based Modeling and Simulation of Information Systems

Joseph Barjis, Georgia Southern University, USA

Nasrin Barjis, World Information Distributed University, Belgium

Isaac Barjis, New York City College of Technology, USA

Education 1

Tuesday 10:30 a.m.–12:00 p.m.

Governor's House D

Chair: Helmut Phillip Snyder, Raytheon, USA

A Framework for Modelling Behavioural Simulators for Parallel and Distributed Systems

Yogesh Chowbay Nuckchady, Jyrki Nummenmaa, University of Tampere, Finland

Discrete Event Modeling and Simulation using Petri Nets and Arena

Jaume Figueras, Toni Guasch, Miquel Angel Piera, Universitat Politècnica de Catalunya, Spain

Clown: a Microprocessor Simulator for Operating System Studies

Dmitry Y. Zinoviev, Suffolk University, USA

Maritime Simulation

Tuesday 1:30–3:00 p.m.

Governor's House A

Chair: S. Saetta, University of Perugia, Italy

Dynamic Performance Simulation of a Naval Propulsion System

Marco Altosole, G. Benvenuto, Massimo Figari, Ugo Campora, Giovanni Benvenuto, Università di Genova, Italy

Using Multibody Simulation Software for Naval Application

Riccardo Necrisi, Matteo Codda, Andrea Lommi, Aldo Zini, Marco Raffa, CETENA S.p.A., Italy

Using Simulation to Evaluate the Expansion of Terminal and Intermodal Operations at a Deepwater Port

Bernard J Schroer, Maruf Rahman, Les Stuart
University of Alabama, USA

Optimization of Logistic Systems through Simulation 2

Tuesday 1:30–3:00 p.m.

Governor's House B

Chair: M.A. Piera, University of Autònoma de Barcelona, Spain

Development of a Real-Time Decision Tool in the Trucking Industry using Simulation and Optimization

Toni Guasch, Jaume Figueras

Universitat Politècnica de Catalunya, Spain

Juan Jose Ramos, Miquel Angel Piera

Universitat Autònoma de Barcelona, Spain

Optimisation of Supply Chain Systems through Simulation: State Space Analysis.

Miquel Àngel Piera, Mercedes Narciso, Antoni Guasch, UAB, Spain

The optimal replenishment policy for a VMI system

Wu Xinyu, Education, Manufacturing Engineering and Engineering Management, Hong Kong

M&S Methodology, Tools, and Applications 5

Tuesday 1:30 p.m.–3:00 p.m.

Governor's House C

Chair: F. Barros, University of Coimbra, Portugal

Performance Analysis of a Flexible Manufacturing Cell using GSPN

Taioun Kim, Kyungsung University, Republic of Korea

Yoonho Seo, Korea University, Republic of Korea

Dongmok Sheen, Ulsan University, Republic of Korea

Design of Scalable Simulation Models for Semiconductor Manufacturing Processes

Ranjit K. Singh, Hessam S. Sarjoughian, Gary W. Godding, Arizona State University, USA

Modeling Computer Hardware Platforms using DEVS and HLA Simulation

Amir Saghir, Trevor Pearce, Gabriel Wainer, Carleton University, Canada

Research and Implementation on Collaborative Simulation Grid Platform

Bohu Li, Yanqiang Di, Xiao Song, Peng Wang, Baocun Hou,

Beijing University of Aeronautics and Astronautics, China

Xudong Chai, Wenhai Zhu, China Aerospace Group, China

Xuefeng Yan, Beijing Institute of Technology, China

Education 2

Tuesday

1:30–3:00 p.m.

Governor's House D

Chair: Hessam Sarjoughian, ASU, USA

Quantitative Evaluation of Advanced Logistics Intensive Education Programs Based on Simulation

Chiara Briano, Marina Massei, Chiara Briano, Enrico Bocca, Danila Carini, Liophant Simulation Club, Italy

Graduate Education in Modeling & Simulation: Rationale and Organization of an Online Masters Program

Hessam S. Sarjoughian, Jeffery K. Cochran, James S. Collofello, Jeffrey S. Goss, Bernard P. Zeigler, Arizona State University, USA

Postgraduate Education in Simulation Sciences

Javor Andras, University of Technology and Economics, Hungary

Science and Technology 1

Tuesday

1:30–3:00 p.m.

Monte Carlo

Chair: S. Simeoni, Liophant Simulation Club, Italy

Multimedia Copyright Security Enhancement

Mohammad S. Obaidat, Monmouth University, USA
M. A. Suhail, Bradford University, United Kingdom

Discrete Simulation Concept in Molecular Biology: The Lipid Metabolism

Joseph Barjis, Georgia Southern University, Department of Information Technology, USA.
Isaac Barjis, New York City College of Technology, USA

Power Plant Service Evaluation based on advanced Fuzzy Logic Architecture

Agostino G Bruzzone, University of Genova, Italy
Chiara Briano, Simone Simeoni, Liophant Simulation, Italy

Lean Simulation Workshop**Tuesday 3:30–5:00 p.m.****Governor's House A**

Chair: S. Saetta, University of Perugia, Italy

Methodology to Adapt the Feedwater and Condensate System, Using a Flow and Pressure Generic Model, for the Laguna Verde Nuclear Power Plant Simulator

Yadira Mendoza-Alegria, Edgardo J. Roldán-Villasana, Iván Galindo, Guillermo Romero, Instituto de Investigaciones Electricas, Mexico

Using Simulation To Calculate Effective Objective Functions Of Metaheuristics Applied To Industrial Problems

Stefano Saetta, Lorenzo Tiacci, Andrea Martini, Università degli Studi di Perugia, Italy

Development of a Tabu Search Algorithm for the Assembly Line Balancing Problem

Paolo Dominici, Andrea Martini, Lorenzo Tiacci, Stefano Saetta

DEVS Open Meeting**Tuesday, July 27, 2004 3:30–5:00 p.m.****Governor's House C**

(See Page 3 for more information)

Education 3**Tuesday 3:30–5:00 p.m.****Governor's House D**

Chair: Adras Javor, Budapest University of Technology and Economics, Hungary.

Panel: Strategies in Higher Education of Simulation and the Role of the McLeod Institute of Simulation Sciences

Mike Lightner, AEgis Technologies, USA

Tuncer Ören, University of Ottawa, Canada

Hessam Sarjoughian, Arizona State University, Tempe, USA

Helena Szczerbicka, Universitat Hannover, Germany

Science and Technology 2

Tuesday 3:30–5:00 p.m.

Monte Carlo

Chair: R. McGraw, RAM, USA

Vibration Effects on the Human Eye

Mohammad-Ameen Mahmoud Al-Jarrah, Wajeeh Qassem, American University of Sharjah, United Arab Emirates

Software Patterns Identification to Implement Dynamic Simulation Systems

Edith Cuéllar, Gustavo Rodríguez

IINAOE-National Institute of Astrophysics, Mexico

Jaime Muñoz, Universidad Autonoma de Aguascalientes, Mexico

Performance evaluation of Input-buffered ATM switches under heterogeneous traffic

Myat T. Mon, Computer Studies, Hardware Technology, Myanmar

Wednesday, July 28, 2004

Wednesday 8:30–10:00 a.m.

Med Center

Keynote Speaker 3

Mario Gerla, University of California, Los Angeles, USA

Ad Hoc Networks: Large Scale Challenge and Vehicle Grid Opportunity

Transportation Workshop 3

Wednesday 10:30 a.m.–12:00 p.m.

Governor's House A

Chair: Balqies Sadoun, Al-Balqa Applied University, Jordan

Geo-Specific Road Modeling For A Motion Based Driving Simulator

Dahai Guo, Harold Klee, Arthur Weeks, University of Central Florida, USA

Concurrent Simulation of EPS Control System and A Full Vehicle Dynamic System

Bong-Choon Jang, Jinhwi Jung

Andong National University, Republic of Korea

On the Optimum Design of Traffic Light Signals Using Simulation Analysis

Balqies Sadoun, Bassam Saleh, *Applied University, Jordan*

Toward an Agent Based Simulation of Multi-modal Transportation

Mhamed Itmi, INSA-ROUEN

France and McLeod Institute of Simulation Sciences, USA

Frédéric Serin, Université du Havre, France

Gregory Faucon, INSA-ROUEN, France

Ralph C. Huntsinger, McLeod Institute of Simulation Sciences, USA

Virtual Reality, Visualization, and Simulation 1**Wednesday 10:30 a.m.–12:00 p.m.****Governor's House C**

Chair: C.L.N. dos Santos, LAMCE, Brazil

Lessons and Challenges from Process Block-Flow to Immersive 3D Simulation

George Tompkins, Andrew Koehler, Johnell Gonzales-Lujan, Robert Burnside, Kari Lier, Los Alamos National Laboratory, USA

The Virtual Factory A Semi-immersive Interactive 3D Environment

Fausto Mancini, Gianpaolo Viganò, Liao Zhijian, Marco Sacco, Claudio R. Boër, ITIA, Italy

The Role of Virtual Reality in Bioinformatics Applications

Carlos Luiz Nunes Dos Santos, COPPE/UFRJ, Brazil and ISIMA/LIMOS/Blaise Pascal University, France

David R.C. Hill, SIMA/LIMOS/Blaise Pascal University, France
Luiz Landau, COPPE/UFRJ, Brazil**Integrating VRML, JAVA, XML, and HTML in a Web-Based Tool**

Lorie M. Liebrock, Ramesh Naidu Ande, New Mexico Institute of Mining and Technology, USA

Education 4**Wednesday 10:30 a.m.–12:00 p.m.****Governor's House D****M&S Body-of-Knowledge—Toward Authoritative Specification**

Chair: David Cook, AEgis Technologies, USA

Wednesday 12:00–1:30 p.m.**Med Center****Keynote Speaker 4 (Luncheon Speaker)****Larry Burger, United States Army, USA**

Innovative Advances in Army Space Modeling and Simulation

Transportation Workshop 4

Wednesday 1:30 p.m.–3:00 p.m.

Governor's House A

Chair: Said Hayat, INRETS Paris, France

A vision based driving assistance: methodology and system architecture

Gwenaelle Toulminet, NSA-ROUEN, France

Mhamed Itmi, NSA-ROUEN

France/McLeod Institute of Simulation Sciences, USA

Abdelaziz Bensrhair, NSA-ROUEN, France

Numerical simulation of a dynamic contact in piezoelectric engine with progressive wave

Abdelkhalak El Hami, B. RADI, INSA Rouen, France

Reliability analysis of a dynamic contact in piezoelectric engine via numerical simulation

A. EL Hami, B. Radim INSA Rouen, France

Using Optimal Control for Safe Analysis of Vehicles in a Platoon of Automated Highway Systems

Azzedine Yahiaoui, TU/e, Fago, The Netherlands

Verification Validation and Accreditation 1

Wednesday 1:30–3:00 p.m.

Governor's House B

Chair: S. Youngblood, DMSO, USA

Reuse Design and Test using Object-Oriented Hierarchical Models Libraries

Fabrice Bernardi, Jean-François Santucci, University of Corsica, SPE, UMR CNRS 6134, France

A DEVS-based Modeling and Behavioral Fault Simulator for RT-Level Digital Circuits

Capocchi Laurent, Bernardi Fabrice, Federici Dominique, Bisgambiglia Paul, University of Corsica, France

Massive Training Based on Virtual Reality Equipment Applied to Logistics and Heavy Haul Trucking

Agostino Bruzzone, University of Genova, Italy

Matteo Brandolini, BRB Studio, Italy

Simone Viazzo, Liophant Simulation, Italy

Virtual Reality, Visualization, and Simulation 2**Wednesday 1:30–3:00 p.m.****Governor's House C**

Chair: Fabrice Bernardi, University of Corsica, France

Augmented Reality for Scientific Visualization: Bringing DataSets Into the Real World

Rodrigo L.S. Silva, Paulo S. Rodrigues, Jauvane. C. Oliveira, Gilson Giralddi, National Laboratory for Scientific Computing, Brazil

Dynamic Torque Analysis of Ground Articulating Pipeline System for Oil Sands Haulage

Samuel Frimpong, Ying Li, University of Alberta, Canada

Computer Simulation and Animation of Large Scale Surface Mining SystemsSamuel Frimpong, Guo-Kang Er, Jozef Szymanski
University of Alberta, Canada**Modelling Human Behaviour in Chemical Facilities and Oil Platforms**Agostino G Bruzzone, University of Genova, Italy
Federico Figini, Liophant Simulation, Italy**Education 5****Wednesday 1:30–3:00 p.m.****Governor's House D****M&S Curricula—Current and Future Academic and Professional Education**

Co-Chair: Bruce Fairchild, Consultant

Co-Chair: Roy Crosbie, California State University, Chico

Workshop on Standards I**Wednesday 10:30 a.m.–12:00 p.m.****Woodside 2****Panel: “Priorities for M&S Standards” Panel**

Moderator: Dr. Albert Legaspi, DARPA Network Modeling and Simulation (NMS), USA

Transportation Workshop 5**Wednesday 3:30–5:00 p.m.****Governor's House A****Simulating System-Wide Effect of Alternate Routing Strategies on Air Traffic**

Mark C. Cannarsa, Frederick Wieland, The MITRE Corporation, USA

Model Calibration by Simulation

Thomas C. Holden, Frederick Wieland, MITRE, USA

July 25-29, 2004

M&S Methodology, Tools, and Applications 6

Wednesday 3:30–5:00 p.m.

Governor's House B

Chair: Ralph Huntsinger, CSU Chico, USA

Improvement of Simulation Conceptual Model

Xuehui Wang, Lei Zhang, Kedi Huang, National University of Defense Technology, China

Visual-FIR: A new platform for modeling and prediction of dynamical Systems

Antoni Escobet, Àngela Nebot, François E. Cellier, Universitat Politecnica de Catalunya, Spain

On-Line Simulation

Wednesday 3:30–5:00 p.m.

Governor's House C

Chair: H. Szczerbicka, University of Hannover, Germany

Application of On-Line Simulation to M/M/1-Priority Queueing

Thomas Bessey, University of Hannover, Germany

A Multiconstraint-based Real-time Routing Scheme using Simulation Methodology

Saurabh Mittal, Wenji Wu, Bernard P. Zeigler, University of Arizona, USA

Distributed Packet-Level Simulation for BGP Networks under Genesis

Yu Liu, Boleslaw K. Szymanski, Rensselaer Polytechnic Institute, USA

Distributed Packet-Level Simulation for BGP Networks under Genesis

Boleslaw K. Szymanski, Yu Liu, RPI, USA

Fast Real-Time DSP Simulations for On-Line Testing of Hardware and Software

Roy E. Crosbie, John J. Zenor, Dale Word, Narain G. Hingorani, California State University, Chico, USA

Education 6

Wednesday 3:30–5:00 p.m.

Governor's House D

Workshop on the Relationships among Requirements, Curricula, and Body-of-Knowledge for M&S Workforce Development

Chair: William Waite, AEGIS Technologies, USA

Workshop on Standards 2

Wednesday 3:30–5:00 p.m. Woodside 2

Panel Chairs: Dr. Albert Legaspi, DARPA Network Modeling and Simulation (NMS), USA

Peggy Gravitz, AEGIS Technologies Group, Inc.

Efforts to Enhance Interoperability for NETWARS

Cam Tran, Chris Alspaugh, Tom Hepner, Wonita Youm,

Albert K Legaspi, SPAWARSSYSCEN SAN DIEGO, USA

Steve Ferenci, Richard Fujimoto, Myung Choi

SUNDAY AT-A-GLANCE:

| SPECTS Tutorials | | |
|---|----------------------|-------------|
| | Time | Room |
| Tutorial 1: Real-time Performance Evaluation in Networks and Telecommunications Systems, Dr. Petre Dini, Cisco Systems, Inc., USA/Concordia Univ., Canada | 8:30 a.m.–12:30 p.m. | Woodside 1 |
| Tutorial 2: Recent Advances in Web Caching Technologies, Dr. Dipu Ghosh, Distributed Performance Engineering, USA | 8:30 a.m.–12:30 p.m. | Woodside 2 |
| Tutorial 3: Wireless IP through Integration of Wireless LAN and Cellular Systems, Prof. Abbas Jamalipour, University of Sydney, Australia | 8:30 a.m.–12:30 p.m. | Woodside 3 |
| Tutorial 4: IP-Oriented QoS in the Next Generation Networks: Application to Wireless Networks, Prof. Pascal Lorenz, (University of Haute Alsace, France | 2:00–6:00 p.m. | Woodside 1 |
| Tutorial 5: Using DEVS for Modeling and Simulation of Computer Networks, Prof. Gabriel A. Wainer, Carleton University, Ottawa, Canada | 2:00–6:00 p.m. | Woodside 2 |
| SCSC Tutorials | | |
| | Time | Room |
| Tutorial 1: Developing Facility Geometry for a Missile Hardware-in-the-Loop Simulation Using the Synthetic Line-of-Sight Method, Helmut Snyder, Raytheon Company, USA | 9:30 a.m.–12:30 p.m. | Willows 1 |
| Tutorial 2: Overview of Discrete Event Models: Petri Nets, DEVS, GDEVS, Nobert Giambiasi, LISIS, France | 2:00–5:30 p.m. | Woodside 3 |
| Tutorial 3: Simulation for Time Series Analysis and Forecasts, Simone Simeoni, Liophant Simulation, Italy | 9:30 a.m.–12:30 p.m. | Willows 2 |
| Tutorial 4: Critical Issues in Simulation, Vince Amico, UCF/NCS, USA and Matteo Brandolini, BRB Studio, Italy | 2:00–5:30 p.m. | Willows 1 |
| Tutorial 5: Design of Experiments for Simulation Projects, Chiara Briano, Liophant Simulation Club, Italy and Roberto Mosca, DIPEM, Italy | 2:00–5:30 p.m. | Willows 2 |

SPECTS MONDAY AT-A-GLANCE:

| | | | |
|-----------------------|---|--------------------------|----------------------------|
| ROOM | Woodside 1 | Woodside 2 | Woodside 3 |
| 8:30-10:00 a.m. | SummerSim'04 Keynote Speech 1 (In the Med Center) | | |
| | Track 1 | Track 2 | Track 3 |
| 10:30 a.m.-12:00 p.m. | TCP Traffic Analysis | Optical Communications | Wireless LAN and Mobile IP |
| 1:30-3:00 p.m. | TCP Performance | Multicast Systems | Wireless Cellular Networks |
| 3:30-5:00 p.m. | Congestion Control | VoIP and Sensor Networks | Ad hoc Networks |

SCSC MONDAY AT-A-GLANCE:

| | | | | |
|-----------------------|--|------------------------------------|---------------------------|--------------------|
| ROOM | Governor's House A | Governor's House B | Governor's House C | Governor's House D |
| 8:30-10:00 a.m. | SummerSim '04 Keynote Speech 1 (In the Med Center) | | | |
| 10:30 a.m.-12:00 p.m. | Agent-Directed Simulation 1 | Business and Industry 1 | Simulation Applications 1 | M&S Methodology 1 |
| 1:30-3:00 p.m. | Agent-Directed Simulation 2 | Business and Industry 2 | Student Workshop 1 | M&S Methodology 2 |
| 3:30-5:00 p.m. | | Production and Manufacturing | Student Workshop 2 | M&S Methodology 3 |
| 5:00-6:00 p.m. | | SIMPLEST Technical Council Meeting | | |

SPECTS TUESDAY AT-A-GLANCE:

| | | | |
|-----------------------|--|---|--|
| ROOM | Woodside 1 | Woodside 2 | Woodside 3 |
| 8:30-10:00 a.m. | SummerSim '04 Keynote Speech 2 (In the Med Center) | | |
| | Track 4 | Track 5 | Track 6 |
| 10:30 a.m.-12:00 p.m. | Satellite Communications | Network and Computer Simulation and Analysis I | Special Session: Wireless Ad hoc Networks I |
| 1:30-3:00 p.m. | Resource Management | Network and Computer Simulation and Analysis II | Special Session: Wireless Ad hoc Networks II |
| 3:30-5:00 p.m. | | Modeling and Analysis | Disk, Memory, and Storage Systems |

SCSC TUESDAY AT-A-GLANCE:

| | | | | | |
|-----------------------|--|---|---|--------------------------|--------------------------|
| ROOM | Governor's House A | Governor's House B | Governor's House C | Governor's House D | Monte Carlo |
| 8:30-10:00 a.m. | Transportation Workshop 1 | SummerSim '04 Keynote Speech 2 (In the Med Center) | | | |
| 10:30 a.m.-12:00 p.m. | Transportation Workshop 2 | Optimization of Logistic Systems through Simulation 1 | M&S Methodology 4 | Education 1 | |
| 1:30-3:00 p.m. | Maritime Simulation | Optimization of Logistic Systems through Simulation 2 | M&S Methodology, Tools and Applications 5 | Education 2 | Science and Technology 1 |
| 3:30-5:00 p.m. | Simulation Applications in Management, Planning, and Forecasting | | DEV/S Open Workshop | Education 3 (MISS Panel) | Science and Technology 2 |

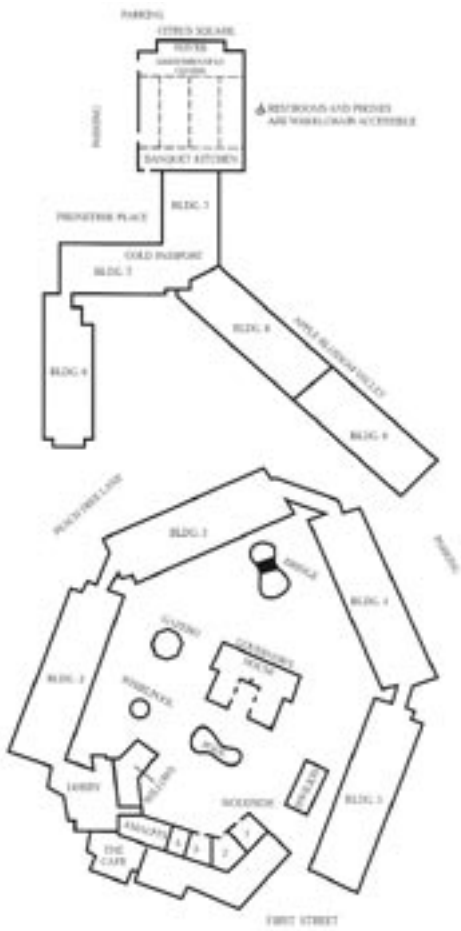
SPECTS WEDNESDAY AT-A-GLANCE:

| | | |
|-----------------------|--|--|
| ROOM | Woodside 1 | Woodside 3 |
| 8:30-10:00 a.m. | SummerSim '04 Keynote Speech 3 (In The Med Center) | |
| | Track 7 | Track 8 |
| 10:30 a.m.-12:00 p.m. | Queuing and Routing Systems | Security/Middleware |
| 12:00-1:30 p.m. | Keynote Speaker 4 (Luncheon Speaker) (In Med Center) | |
| 1:30-3:30 p.m. | Processor Routing | Special Session: Mobile Computing and Networking |
| 3:30-5:00 p.m. | Traffic Engineering | Web Server Analysis |

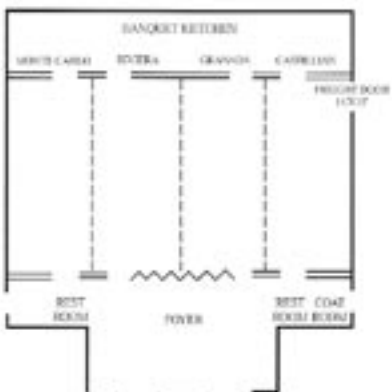
SCSC WEDNESDAY AT-A-GLANCE:

| | | | | | |
|-----------------------|--|--|--|---------------------|-------------------------------|
| ROOM | Governor's House A | Governor's House B | Governor's House C | Governor's House D | Woodside 2 |
| 8:30-10:00 a.m. | SummerSim '04 Keynote Speech 3 (In The Med Center) | | | | |
| 10:30 a.m.-12:00 p.m. | Transportation Workshop 3 | | Virtual Reality, Visualization and Simulation 1 | Education 4 M&S Bok | |
| 12:00-1:30 p.m. | Keynote Speaker 4 (Luncheon Speaker) (In Med Center) | | | | |
| 1:30-3:30 p.m. | Transportation Workshop 4 | Verification Validation and Accreditation | Virtual Reality, Visualization, and Simulation 2 | Education 5 | Workshop on Standards I Panel |
| 3:30-5:00 p.m. | Transportation Workshop 5 | M&S Methodology, Tools, and Applications 6 | On-Line Simulation | Education 6 | Workshop on Standards 2 |

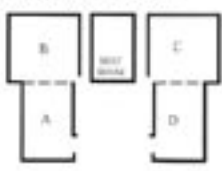
HOTEL MAP:



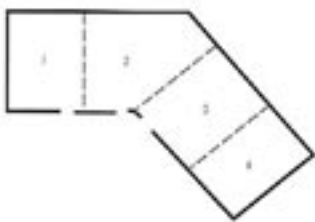
MEDITERRANEAN CENTER



GOVERNOR'S HOUSE



WOODSIDE



2005 Summer Simulation Multiconference

July 2005, Philadelphia, Pennsylvania

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.

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Deadlines

Submission of Papers: January 31, 2005

Notification of Acceptance: April 25, 2005

Final Camera-Ready Submission: May 23, 2005

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