2002 WESTERN MULTICONFERENCE

ON COMPUTER MODELING AND SIMULATION

Celebrating 50 Years of Simulation

1952 · SCS · 2002

SHERATON FOUR POINTS HOTEL, RIVER WALK NORTH • SAN ANTONIO, TEXAS • JANUARY 27–31, 2002

THE FOLLOWING TOPICS ARE SCHEDULED:

INTERNATIONAL CONFERENCE ON HEALTH SCIENCES SIMULATION

FIRST INTERNATIONAL CONFERENCE ON GRAND CHALLENGES FOR MODELING AND SIMULATION

INTERNATIONAL CONFERENCE ON SIMULATION AND MULTIMEDIA IN ENGINEERING EDUCATION

THIRD INTERNATIONAL SYMPOSIUM ON COLLABORATIVE TECHNOLOGIES ANS SYSTEMS

INTERNATIONAL CONFERENCE ON SIMULATION TECHNOLOGY FOR NUCLEAR POWER PLANTS AND SYSTEMS
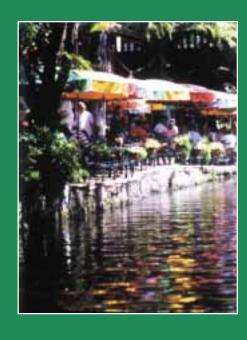
INTERNATIONAL CONFERENCE ON FOSSIL SIMULATION AND TRAINING

COMMUNICATION NETWORKS AND DISTRIBUTED SYSTEMS MODELING AND SIMULATION

INTERNATIONAL CONFERENCE ON VIRTUAL WORLDS AND SIMULATION

WMC '02

The River Walk

Photo complements of the San Antonio Convention and Visitor's Bureau

WMC 02

The 2002 SCS Western MultiConference (WMC'02) brings together ten conferences, providing a variety of formats for the presentation of different aspects of simulation and simulators. In addition to the conferences, featured speakers, vendor exhibits, formal seminars, administrative meetings, and informal gatherings, WMC'02 provides opportunities for presenters and attendees to meet diverse individual and corporate objectives.

Celebrating 50 Years of Simulation — 1952 — 2002

ABOUT SCS

Established in 1952, The Society for Modeling and Simulation International (SCS) is the only technical society dedicated to advancing the use of computer simulation in all disciplines to solve real-world problems. SCS membership includes a worldwide network of simulation professionals, with regional councils in North America, the European Economic Community, Pacific Rim nations, and China that meet both informally and at SCS conferences for more formal presentations of research breakthroughs.

WMC 2002 GENERAL CHAIR
DR. FRANÇOIS E. CELLIER
UNIVERSITY OF ARIZONA

WMC 2002 PROGRAM CHAIR
DR. CHELL ROBERTS
ARIZONA STATE UNIVERSITY

WMC 2002 ASSOCIATE V.P.
DR. HAMID VAKILZADIAN
UNIVERSITY OF NEBRASKA – LINCOLN

HAPPENINGS

Saturday, January 26
- SCS Strategic Planning Meeting

Sunday, January 27
- WMC Tutorials
- SCS Executive Committee Meeting
- WMC '02 Pre-Conference Planning Meeting
- Exhibitor Setup
- WMC '02 Registration Begins 2:00pm–6:00pm
- WMC'02 Welcome Reception 6:00pm–8:00pm

Monday, January 28
- Speakers' Breakfast
- General Session
- Keynote Address (8:30am–10:00am)
- SCS Awards Meeting
- SCS Nominations Meeting
- SCS Open Membership Meeting (All are encouraged to attend)
- Exhibitor Reception (evening)

Tuesday, January 29
- Speakers' Breakfast
- SCS Publications Board Meeting
- SCS Membership Board Meeting
- WMC Conference Luncheon
- WMC Social Event (see below)

Wednesday January 30
- Speakers' Breakfast
- USUG Meeting
- WMC 2003 Planning Meeting
- SCS Conference Board Meeting

Thursday, January 31
- EPRI Meeting
- USUG Meeting

WMC SOCIAL EVENT

**Dinner Cruise on the famous Riverwalk
Tuesday, January 29, 6:30-8:30pm**

We hope you plan to join us for an evening on San Antonio's Famous Riverwalk. Dinner cruisers will push-off at 6:30pm for a two-hour dinner cruise featuring the best Texas and Southwestern cuisine that San Antonio has to offer. All WMC'02 attendees are invited to attend, but space is limited, so pre-registration (no later than January 10) is suggested. Cost is $55 per person (includes non-alcoholic beverages), and spouses/guests are invited to participate.

EXHIBITIONS

The WMC'02 exhibit area provides an opportunity to preview the state of the art in simulation hardware, software, applications, and services. Displays, demonstrations, and vendor presentations offer visitors a chance to examine and compare these products, as well as talk informally with those who develop them. All WMC'02 participants are welcome to visit the exhibit area. Plan on attending the exhibitor reception Monday evening.

EXHIBITORS

CAE Electronics, Inc.
Ball Aerospace
SAIC
Data Systems & Solutions
CORYS T.E.S.S.
Powergen
SGI

EXHIBIT AREA HOURS

Sunday, January 27
12:00pm – 6:00pm (setup)
Monday, January 28
10:00am – 5:00pm
6:00pm – 7:30pm *Reception*
Tuesday, January 29
10:00am – 5:00pm
Wednesday, January 30
10:00am – 12:00pm
12:00pm – 5:00pm (tear down)

For more information about exhibiting at the WMC '02, contact the SCS office:
Tel: (858) 277-3888, Fax: (858) 277-3930
E-mail: sbranch@scs.org

PROCEEDINGS

Registrants receive a CD containing all electronic submissions for the 2002 Western MultiConference as part of their registration fee. Past conference proceedings are available at a 50% discount, during the conference only. Many other publications will also be on display and available for purchase throughout the conference.

SCS

TUTORIAL 1:
Management of Service Level Agreements
Sunday 12:00–3:00

SUMMARY:

A current trend in business enterprises is to establish an information technology (IT) department whose responsibility is to support IT services for other departments, e.g. marketing, research, sales, and production. Similarly, service providers often Internet and other IT services to consumers. In both cases, there is much interest in the concept of Service Level Agreements — contracts made between provider and consumer — replete with punishment and reward clauses relative to the degree to which agreed services are met. However, vendor support of SLA management is fragmented. Some vendors promote statistics reporting as the essence of SLA management, while other vendors promote application monitoring, service development, business process re-engineering, supplier/consumer negotiation, or contract development as the essence of SLA management. In this sort of situation, a general definitive framework that subsumes piecemeal approaches does much good.

In this tutorial we provide a framework that serves as a baseline against which one may situate, evaluate, and/or execute SLA programs. We provide (i) definitions which lead to the broader concept of Service Level Management (SLM), (ii) a general SLM process, (iii) an SLM architecture, (iv) research challenges, (v) current tools and applications, and (iv) case studies. The framework derives from real-world experiences by the author and other practitioners in the area. During the tutorial, we provide lessons learned and guidelines for service providers and consumers.

TARGET AUDIENCE:

- Information Technology (IT) professionals or those interested in IT

PREREQUISITE BACKGROUND KNOWLEDGE:
In depth technical knowledge is not required.

BIOGRAPHY OF PRESENTER:

Dr. Lundy Lewis is Director of Research at Aprisma Management Technologies (USA). He holds some dozen patents in network management. He publishes in the professional literature and frequently gives presentations and tutorials at professional conferences. His first book, Managing Computer Networks: A Case-Based Reasoning Approach was published by Artech House in 1995. His second book Service Level Management for Enterprise Networks was published by Artech House in 1999. His third book, Managing Business and Service Networks, was published by Kluwer Academic Press in 2001.

Dr. Lewis is an adjunct professor at the University of New Hampshire and New Hampshire College, where he teaches graduate level courses in Artificial Intelligence, Computer Information Systems, Object-Oriented Methodology, and Software Engineering. He has taught courses in computer science and philosophy at Renssalaer Polytechnic Institute, State University of New York at Binghamton, and the University of Georgia.

TUTORIAL 2:
Collaborative Applications and Infrastructures
Sunday 3:30–6:30

SUMMARY:

In the past decade, a variety of systems (applications and infrastructures) have been developed to support collaboration. These systems have been developed in diverse fields including user-interfaces, multimedia, operating systems, database systems, programming languages, networking, computer hardware, distributed systems, and hypermedia. This tutorial will take the audience on a brief tour of these systems, discussing technical issues that arise in the design and implementation of these systems.

The tutorial will first address collaborative applications. It will first consider three traditional tools for collaboration, mail, chat, and databases, and show that the more recent collaborative applications, essentially, mix and extend features of these systems. It will also present taxonomies for classifying these applications.

The second part of the tutorial will address collaborative infrastructures. In particular, it will look at shared distributed repositories, mechanisms for supporting distributed communication, shared objects, and shared user-interfaces. To compare these systems and understand how they work, we will outline how a simple, group "hello world," program can be implemented using these systems. We will also evaluate their contribution to CSCW by discussing the kind of collaborative applications they support.

Outline:
1. Introduction
   What are collaborative applications
   Why are they important
2. Collaborative Applications
   Session-based Collaboration (Talk++)
       MUDs: Textual Virtual Reality
       DIVE: 3-D VR
       Media Space
       Hydra: Gaze Awareness
       MAJIC: Seamless User Boundaries
       GestureCam: Remote Surrogate
          Message-based Collaboration (Mail++)
          Information Lens: Typed Messages
             Coordinator/Action Workflow:
             Structured Conversations
             Computational Mail
       Artifact-based Collaboration (File++)
       Quilt: Writeable Hypermedia and Typed Links
          PREP: Zero-Cost Hyperlinks
       Session- and Artifact- based Collaboration (Talk + File)
          RTCAL: Real-Time Artifact Sharing
          Groupsketch and GroupDraw:
          Multiple Gestures and Optimistic Locks
       Message and Artifact-based (Mail + File)
          News Bulletin-Boards: Shared Mailboxes
          GroupLens: Extensible
          Aggregation-based Filtering
          Session-, Message- and Artifact- based
          Collaboration (File + Mail + Talk)
          Forum: Distributed Presentations
       Taxonomies
          Time/Space
          Malone's Coordination Theory
3. Collaborative Infrastructures
   Example: Saul's True "Hello World" Program
       Shared Distributed Repositories
          File System: Coarse-grained Data
          Traditional DBMS: Fine-Grained Data
             Lotus Notes: Rarely-Connected
             Document Replicas
          Distributed Communication
             Interprocess Communication
             MBone: Network Multicast
          Shared Objects
             Java: Code Downloading + Remote
             Method Invocation
             Clock: Distributed MVC
             Rendezvous
             Colab Programming Environment:
             Broadcast Methods
          Shared User Interfaces
             XTV: Shared Windows
             MMConf: Replicated Windows
             DistView
             GroupKit
             Suite
4. Conclusions

AUDIENCE:
The target audience is practitioners interested in state-of-the-art collaborative applications and infrastructures, and researchers interested in understanding the technical issues raised by the design of these systems. The tutorial will assume that the audience consists of software developers but will make no assumptions about their familiarity with the field of CSCW. Thus it will be accessible to "beginners" in this field. At the end of the tutorial, the audience will understand the relationship among the surveyed systems and their contributions to CSCW.

WMC Tutorials

BIOGRAPHY OF INSTRUCTOR:
Prasun Dewan is a Professor of Computer Science at the University of North Carolina. His interests are in infrastructure for implementing groupware, collaborative software engineering, object-oriented database systems, and distributed operating systems. He is also Associate Editor of the ACM Transactions on Information Systems and the ACM Transactions on Computer Human Interaction, and a member of the IFIP WG2.7 group on Engineering for Human Computer Interaction. Professor Dewan has had some experience in presenting some of these concepts. He has written two survey papers on collaboration - one on design and another on implementation. He also addressed these in depth in 2 seminar courses he taught at UNC in Fall '93 and Spring '97, and an 18 hour course he taught at EFP, Poznan in Spring '96. He gave a 2-hour talk on this subject for NTU (National Technology University) in Spring '93, a half-day tutorial on this subject for IEEE '94 Conference on Data Engineering and ACM '94 Conference on CSCW, and a full day tutorial in this area for ECSCW'95, CSCW'96, ECSCW'97, CSCW'98, and ECSCW'99.

TUTORIAL 3:
Synthetic Task Environments For The Study Of Collaboration In Supervisory Control Teams
Sunday 3:30–6:30
SUMMARY:

Most complex military decisions involve many data, human, and technological sources collaborating to support commanders in achieving "decision superiority." However, when a decision or task moves from the province of one person to distribution over multiple natural and artificial intelligences, the system changes quantitatively and qualitatively. Thus the tools and methodologies that have been developed to understand the work of the sole individual do not necessarily accommodate the interaction of multiple members. Much work has been done to attempt to understand the team environment in the form of cognitive engineering, computer cooperative supported work, and groupware. Much of the works in these areas focus on artifact-centered work where teams can debate, negotiate and time is much less critical. While this research has provided some insight into how teams operate, in many cases it has been inconclusive on elements that impact team performance.

In contrast, supervisory control teams engage in a much more dynamic and event driven situation where negotiation and debate are not generally feasible. In these types of environments, timely coordination of activities is vital (Jasek and Jones, 2001). In fact, much has been done in the attempt to develop team performance measures (cf. Fleishman, and Zaccaro, 1992, Cannon-Bowers and Salas, 1997a, Cannon-Bowers and Salas, 1997b, Cannon-Bowers and Salas, 1998). However, the bulk of this work has focused on

existing man-machine systems that were seen as fixed constraints and R&D has mainly been directed at applying existing theory, regarding human performance and measurement to these decision-making environments.

In order to provide researchers and trainers information they can use to create new system interfaces, a more systematic and rigorous approach to team research must be undertaken. Not only must we understand how the human collaborates, whether with another human or machine, we must also be able to characterize how a particular implementation to support collaboration (e.g., technology or process) impacts the team collaborative performance. This tutorial will discuss the use of synthetic environments to assist us in understanding and evaluating team performance. The use of simulations in the study of complex decision making behavior and team interactions has yielded success in recent years (Bondenella et al., 1999; Handley et al., /1999; Sauer et al., 2000). However, this success is tempered by the need for situation-specific modeling (Pew and Mavor, 1998).

TOPICS TO BE DISCUSSED:
- Introduction to telerobotics and human supervisory control
- Definition of task environments
- Definition of individual and team task performance
- Establishing a team performance baseline

TARGET AUDIENCE:
- Researchers developing team performance metrics
- Managers and team leaders interested in assessing team performance in a dynamic task environment

INSTRUCTORS BIOGRAPHY:
Ling Rothrock, Ph.D., Assistant Professor in the Department of Biomedical, Industrial, and Human Factors Engineering at Wright State University; Ph.D., Industrial Engineering, Georgia Institute of Technology, 1995. Dr. Rothrock's research areas include human-machine performance assessment and modeling as well as human-in-the-loop discrete event simulations. His simulation software is currently being used by the U.S. Navy for training and modeling. He also developed human performance measures and measurement methods in the National Missile Defense command and control system. He has published five technical articles in the area and is the principal investigator on grants from the Office of Naval Research and the state of Ohio totaling $250,000. Dr. Rothrock is a member of the Institute of Electrical and Electronics Engineers, the Human Factors and Ergonomics Society, and the Society for Modeling and Simulation International. Tel. 937.775.5150; Fax 937.775.7364; e-mail: lrothroc@cs.wright.edu

Craig Harvey, Ph.D., P.E., Assistant Professor in the Department of Biomedical, Industrial, and Human Factors Engineering at Wright State University. A registered professional engineer in Wyoming, he holds a Bachelor of Industrial Engineering from Georgia Institute of Technology and a M.S. and Ph.D. in Industrial Engineering from Purdue University. Prior to joining academia, Dr. Harvey was an officer in the United States Air Force, managed business process reengineering at the Student Loan Marketing Association, and was a reengineering consultant for KnowledgeWare, Inc. Dr. Harvey's research focuses on the human aspects of collaboration in the accomplishment of complex tasks. Previous work has looked at distributed communication media and computer sharing tools in the support of collaborative engineering. He has 13 publications of which 6 are directly related to human aspects of collaboration. Dr. Harvey is a member of IIE, IEEE, and HFES. Tel. 937.775.5151; Fax 937.775.7364; e-mail: charvey@cs.wright.edu

TUTORIAL 4:
Collaboration Across Network Firewalls
Monday 3:30–5:30
SUMMARY
This tutorial covers Network firewalls and specifically how they filter network traffic; network protocols; different methods for communicating through firewalls including opening ports, Virtual Private Networks, and SD-Link, a product allowing secure application collaboration to penetrate modern firewalls.

TARGET AUDIENCE:
Collaboration tool developers and users who need to securely collaboration across network firewalls.

PREREQUISITE BACKGROUND KNOWLEDGE:
User-level working knowledge of computers and networks; no significant network technical knowledge is required.

BIOGRAPHY OF PRESENTER:
Mr. Mark Stephenson is Chief Scientist of Advanced Integration and Systems Technology at SAIC in Dayton, Ohio. Mark has spent over 19 years researching technologies for designing, developing, maintaining, and testing complex software-intensive systems. He received a BS in Electrical Engineering and Applied Physics from Case Western Reserve University in 1983, and a MS in Electrical Engineering from the University of Dayton in 1997. He is currently technical lead for efforts in automated testing, modeling and simulation, collaborative technology, and web-based information systems. He is also lead inventor and designer of the SD-Link — a tool for secure communications between applications behind separate firewalls.

TUTORIAL 5:
KnowledgeKinetics™ (K²™): Implementing Collaborative Decision Support Solutions
Tuesday 2:00–5:30

SUMMARY:

This tutorial provides an overview of the KnowledgeKinetics™ (K²™) Collaborative Engineering Environment. K² is a comprehensive collaborative environment that enables a full gamut of collaboration activities including human-to-human, human-to-machine, and machine-to-machine distributed interaction. Practical examples and exercises will reinforce the key concepts and capabilities available through K² including:

- Enterprise Creation
- Enterprise Model development
- Workflow Automation
- Forms User Interface development
- Rules and Event based activities
- Tool Integration
- Human Collaboration

Participants will learn how this technology can be applied to provide solutions to their collaboration and decision support needs.

TARGET AUDIENCE:

Business professionals, Collaboration tool developers and users, Collaboration Enterprise developers and users, and scientists and engineers that wish to use a centralized repository for information, and capture, record and automate common processes and practices.

PREREQUISITE BACKGROUND KNOWLEDGE:

Basic engineering, programming and/or business management experience

BIOGRAPHY OF PRESENTERS:

Bradley Mallare is a software engineer and manager at Ball Aerospace and Technologies Corp. in Fairborn Ohio. Brad directly supports the Collaborative Simulation Technology Branch in AFRL and is a lead engineer for the development of collaboration and decision support applications using the KnowledgeKinetics™ product. Mr. Mallare has 12 years of experience in a broad range of software engineering related activities including software architecture, development and management in both the commercial and defense acquisition environments. Prior to joining Ball, Brad has also held positions with Lockheed Martin Systems Integration as a software architect and an international printing company as a software project manager. Additionally, before transitioning to the commercial marketplace, Brad served 8 years in the US Air Force as a computer systems engineer attaining the rank of Captain. Mr. Mallare holds a MS degree in Computer Engineering from the Air Force Institute of Technology and a BS degree in Electrical Engineering from Clarkson University.

Gary Whitted has over 17 years of engineering management experience. He is experienced in research, development, test and evaluation of large-scale software systems (decision support systems, domain specific applications in embedded weapon systems, modeling and simulation and management information), software architecture, technical design supervision, requirements analysis and project management. Currently, Mr. Whitted is the Program Manager for Ball's Distributed Collaborative Decision Support Technology program. Mr. Whitted earned a Master of Software Engineering from the Air Force Institute of Technology and an MBA from Wright State University in 1989. Mr. Whitted also earned a BS in Engineering (Computer and Information Science) from the University of Florida in 1982.

TUTORIAL 6:
Synthetic Environments for Distributed Team Training
Wednesday 8:30–12:00

SUMMARY:

The Information Systems Training Branch of the Air Force Research Laboratory at Brooks AFB Texas (AFRL/HEAI) is engaged in a number of research initiatives related to collaborative learning. The purpose of this tutorial is to describe these initiatives.

The **Distributed Mission Training – Research Network (DMT-Rnet)** program integrates research in cognitive and behavioral science with advances in training technology to develop a theoretical and operational framework to improve C2 warfighter Distributed Mission Training (DMT) effectiveness. The goal is to develop descriptive and predictive behavioral-based models of organizational performance focusing on the interdependencies of distributed decision-making between multiple teams in the context of C2 synthetic task environments. This program connects synthetic team task emulators that represent the cognitive decision-making functions of real-world weapon system analogs, to the Internet for collaborative research. Several synthetic team tasks have been scaled-up to form a distributed C2 environment to investigate how to train cooperation and coordination between teams, develop and test theories of multi-agent decision making, determine the effects of uncertainty or poor reliability of information on decision-makers, and develop models of team reconfiguration in response to changing task demands or organizational restructuring.

The **Advanced Distributed Learning (ADL) C2 Warrior** program attempts to specify and build theoretically sound and empirically proven instruction for training C2 teams in a distributed manner. The Information Systems Training Branch at Brooks AFB Texas (AFRL/HEAI) is a member of the ADL Joint CoLaboratory. Along with the Navy, Army, Marines, Coast Guard, and the Air National Guard, AFRL/HEAI conducts basic and applied research on distributed learning in general, and distributed team learning in particular. The domain upon which AFRL/HEAI has chosen to focus is C2 teams. To that end, the work performed in the Team Training Laboratory at Brooks AFB is directly applicable. With sponsorship from the Joint CoLab, AFRL/HEAI has under construction a prototype web-based system for building intelligent distributed courseware. Concurrent with this system, AFRL/HEAI has an initiative to build courseware for Air University (AETC) that uses the same technologies being developed with the Joint CoLab.

The **Team Performance and Modeling** program takes an engineering approach to team modeling, diagnosis, and development. Team performance is greater than the sum of its parts; it is qualitatively different from individual competencies. It is best modeled by studying the dynamic, interdependent and adaptive interactions directed toward a common goal, mission, or objective. The framework for the project is a team-task taxonomy that is used to develop a set of criterion tasks. These criterion tasks are being designed to empirically test and evaluate critical aspects of team performance within the context of Air Force missions. In particular, tasks will represent, with emphasis on cognitive fidelity, complex command and control tasks such as those performed by the Combined Air Operations Cell – Forward (CAOC-F). Interventions such as team organization, training, leadership, decision making, and communication will be evaluated for their impact on team performance. As a military facility with access to field operations personnel, a second purpose of the facility is to establish benchmarks for comparing research results within a common framework. The focus is on benchmarks for performance of command and control teams and modeling the rate at which these levels are approached during initial (novice) and qualified (expert) training. Once these benchmarks are established they will be made available to university researchers as a challenge problem to develop training strategies to accelerate learning in the context of inter-team organizational C2 component cultures (sensors, shooters, commanders) and coalition forces.

PREREQUISITE BACKGROUND KNOWLEDGE:

None, although supplied are several references

WMC Tutorials

BIOGRAPHY OF PRESENTERS:

Dr Alan Ashworth is the director of the Advance Distributed Learning (ADL) Initiative at the US Air Force Research Laboratory, Brooks AFB Texas. The ADL mission is to develop and transition theoretically rigorous and empirically valid technologies in support of Air Force education and training. The Brooks ADL laboratory is a member of the Secretary of Defense's Joint Experimental Co-Laboratory, managed by the Navy, in Orlando Florida. Dr Ashworth earned a doctorate in Cognitive Neuroscience from Yale University, and has published in the areas of mnemonic representation, categorization, human learning, and imagery chronometrics. He is an adjunct professor of psychology at the University of Texas at San Antonio.

Dr Barry Goettl is the director of Team Training Research at the US Air Force Research Laboratory, Brooks AFB Texas. The Team Training Research mission is to develop and transition theoretically rigorous and empirically valid models of team performance in general, and Command & Control teams in specific, for the purpose of high-skills team training, both schoolhouse and distributed. The Team Training Research laboratory is a primary basic research node on the Distributed Mission Training Research Network, an Internet II consortium of Universities and government research facilities. Dr Goettl earned a doctorate in Engineering Psychology from the University of Illinois, and has published in the areas of complex skill acquisition, team training, and situation awareness. He is a professor of psychology at Our Lady of the Lake University at San Antonio.

Dr Scott Chaiken is a research psychologist in the Command, Control, Communication Simulation and Training Assessment Research System (C3STARS) at the US Air Force Research Laboratory, Brooks AFB Texas. C3STARS is an integrated research program that develops Internet, job-analysis, and job-measurement technology to enable research on multi-team processes in the context of networked Command, Control, & Communication systems. C3STARS is a participating member in the US Air Force Distributive Mission Training exercises network, and specializes in training Airborne Warning and Control System (AWACS) specialists. Dr Chaiken earned a doctorate in Cognition from Harvard University, and has published in the areas of psychomotor ability, human processing speed, and individual-differences psychology. Additional research interests include man-machine interactions, team-performance and training in information-rich networked systems, and the general relevance of cognitive theory to computer-managed training and performance environments.

Dr. Linda Elliott is a research scientist with Veridian Engineering, San Antonio Texas. Her research in Command & Control supports the US Air Force Research Laboratory, Brooks AFB Texas, as well as academia and industry. Dr Elliot earned a doctorate in Industrial & Organizational Psychology from Michigan State University, and has published in the areas of team coordination and adaptive problem-solving in expert Command & Control teams, decision-aiding tools to enhance mission planning, execution, debriefing processes, and team performance in complex naturalistic settings. Additional research interests include the use of functional and cognitive analysis methods to scale aspects of fidelity, validity, and generalizability in pc-based analogues of operational performance.

SUGGESTED REFERENCES:

Holyoak, K. J. (1984). Analogical thinking and human intelligence. In R. J. Sternberg (Ed.) Advances in the Psychology of Human Intelligence (Vol. 2, pp. 199-230). Hillsdale, NJ: Earlbaum.
Jentsch, F., & Bowers, C. (1998). Evidence for the validity of low-fidelity simulation in aircrew research. International Journal of Aviation Psychology, 8(3), 243-260.
Military aviation simulation: A training and simulation special edition (2001). Armed Forces Journal Global Publications: McLean, VA.
Roscoe, S. N. (1980). Transfer and cost effectiveness of ground-based flight trainers. In S. N. Roscoe (Ed.) Aviation Psychology (pp. 194-203). Ames, IA: Iowa State University Press.

Dynamic Data Driven Application Systems

Dr. Frederica Darema
Senior Science and Technology Advisor, NSF/CISE

In this talk I will discuss a new paradigm for application simulations, which at execution time are able to accept and respond to dynamically injected measurements, and reversely such application systems will have the ability to dynamically control the measurement process. The synergistic and symbiotic feedback control-loop between simulations and measurements can open new domains in the capabilities of simulations with high potential pay-off, and can create applications with new and enhanced analysis and prediction capabilities. In addition it provides a new methodology for more efficient and effective measurement process. This new paradigm has the potential to transform the way science and engineering are done, and induce a major impact in the way many functions in our society are conducted, such as manufacturing, commerce, transportation, hazard prediction/management, and medicine.

The presentation will discuss the new and enhanced simulation opportunities, the challenges and the applications' and systems' software technologies needed to enable such capabilities. These include: examples from several application areas that can benefit from this paradigm, application composition environments, systems software enabling dynamic runtime support, applications' algorithms amenable to perturbations by the dynamic data inputs. Such challenges clearly also present the need for a synergistic multidisciplinary research in applications, systems' and algorithms' areas. Current relevant research projects and programs will be discussed, together some new research efforts that have been recently initiated to enable this new paradigm.

Dr. Darema is the Senior Science and Technology Advisor at EIA and CISE, and Director of the Next Generation Software Program. Dr. Darema's interests and technical contributions span the development of parallel applications, parallel algorithms, programming models, environments, and performance methods and tools for the design of applications and of software for parallel and distributed systems. Dr. Darema received her BS degree from the School of Physics and Mathematics of the University of Athens - Greece, and MS and Ph. D. degrees in Theoretical Nuclear Physics from the Illinois Institute of Technology and the University of California at Davis respectively. After Physics Research Associate positions at the University of Pittsburgh and Brookhaven National Lab, she became a Technical Staff Member in the Nuclear Sciences Department at Schlumberger-Doll Research. Subsequently, in 1982, she joined the IBM T. J. Watson Research Center as a Research Staff Member in the Computer Sciences Department and later-on she established and became the manager of a research group at IBM Research on parallel applications. While at IBM she also served in the IBM Corporate Strategy Group examining and helping set corporate-wide strategies. In 1984 Dr. Darema proposed the SPMD (Single-Program-Multiple-Data) computational model which has become the popular model for programming today's parallel and distributed computers.

Dr. Darema has been at NSF since 1994, where she has developed intitiatives for new software capabilities, a new paradigm for applications, and pushing for research in the interface of neurobiology and computing. These ideas are fostered in programs that she is the Director of the following NSF Programs: Next Generation Software, Scalable Enterprise Systems, and Biological Information Technology & Systems (BITS). She is also managing the Dynamic Data Driven Application Systems (ITR component), and involved in the Nanotechnolgy Science and Engineering, and the Scalable Enterprise Systems (cross-Directorate programs). During 1996-1998 she completed a two-year assignment at DARPA where she initiated a new thrust for research on methods and technology for performance engineered systems.

2002 Western MultiConference

HEALTH SCIENCES SIMULATION
General Co-Chair: James G. Anderson, *Purdue University*
General Co-Chair: Meyer Katzper, *FDA/CDER*

Monday 10:30–12:00
Session 1: Health Services I
Chair: Frits VanMerode, *Maastricht University*

A Simulation Model of US Health Care Expenditure 1900-1950: The Effects of Party, Policy Regime, and War
George W. Pasdirtz, *University of Wisconsin - Madison, USA*

Simulating medical Work: An Information-Processing Approach
Douglas Fridsma, *University of Pittsburgh Medical Center, USA*

Monday 1:30–3:00
Session 2: Health Services II
Chair: Douglas Fridsma, *University of Pittsburgh Medical Center*

Enterprise Resource Planning in Health Care: The Planning Framework
Godefridus G. van Merode, Siebren Groothuis, Arie Hasman, Carin Blokzijl, *Maastricht University, The Netherlands*

Enterprise Resource Planning in Health Care: The Role of Simulation
Siebren Groothuis, Godefridus G van Merode, Arie Hasman, Carin Blokzijl, *Maastricht Univeristy, The Netherlands*

Monday 3:30–5:00
Session 3: Health Services III
Chair: Siebren Groothuis, *Maastricht Univeristy*

Annual Cost of Incontinence in the United States
Christoph Weismayer, James Anderson, *Purdue University, USA*

Using Computer Simulation to Reallocate Emergency Medical Services System
Syi Su, Sc.D., *National Taiwan University, Taiwan*

A Queuing Network Model with Blocking for the Bed Capacity Planning of the Mental Health System in Philadelphia
Naoru Koizumi, Eri Kuno, *University of Pennsylvania, USA*

Tuesday 8:30–10:00
Session 4: Modeling Epidemics I
Chair: Daniel C. Barth-Jones, *Wayne State University*

The Effects of Parenting Styles on Adolescent Sexual Experience
James Anderson, Marilyn Anderson, Michelle Rainey, *Purdue University, USA*

Factors Affecting Sexual Activity Among Adolescent Females
James Anderson, Marilyn Anderson, Devon Hensel, *Purdue University, USA*

Tuesday 10:30–12:00
Session 5: Modeling Epidemics II
Chair: Syi Su, *National Taiwan University*

Determining Optimal Vaccination Policy for HIV Vaccines
Daniel C. Barth-Jones, ra M. Longini, Jr., *Wayne State University, USA*

Vaccination Rates and the Prevalence of Hepatitis A in Remote Alaskan Villages-A Simulation Based Argument for Increased Vaccinations
Gary Kretchik, *University of Alaska Anchorage, USA*

Tuesday 1:30–3:00
Session 6: Pharmacometrics
Chair: James Hargrove, *The University of Georgia*

Dynamics of Tamponade Gas Exchange in Vitroetinal Surgery
Joseph C. Hutter, My Do Luu, *Center for Devices and Radiological Health, USA*

Compartmental Analysis: Mass Balance and Loss
Meyer Katzper, *Center for Drug and Evaluation Research, FDA, USA*

Using XML to Specify and manage Biomedical Simulation Model Descriptions
J. Mailen Kootsey, G. McAuley, H. Liu

Tuesday 3:30–5:00
Session 7: Medical Applications I
Chair: Joseph C. Hutter, *FDA*

Rate of Exchange of Adipose Precursors to Cell Membrane Phospholipids When Feeding Canola Oil to Rodents
James Hargrove, Michael Azain, Diane Hartle, and Jinah Hwang, *The University of Georgia, USA*

The 'Illusion of Control' in Obesity Treatment
Tarek K. Abdel-Hamid, *Stanford University, USA*

Wednesday 8:30–10:00
Session 8: Medical Applications II
Chair: Bernhard Quatember, *University of Innsbruck*

Simulation of Policies for Prevention and Treatment in Coronary Heart Disease
Ruth Davies, University of Southampton, Highfield, UK

Using Decision Trees to Conduct a Cost-Effectiveness Analysis of Tirofiban in Acute Coronary Syndromes
David Goldsman, *Georgia Institute of Technology, USA*

Development of Simulation-Based Breast Cancer Screening Policy Support Systems
Polun Chang, *National Yang-Ming University, Taiwan*

Wednesday 10:30–12:00
Session 9: Medical Applications III
Chair: Ruth Davies, University of Southampton

Modeling the Effects of Nonlinear Blood Viscosity on the Systemic Vascular Resistance
Marcel Guarini, *Catholic University of Chile, Chile*

Simulation of Three Dimensional Flow of Blood Around Stenoses: Mesh Generation Issues
Bernard Quatember, Hannes Muhlthaler, *University of Innsbruck, Austria*

Wednesday 1:30–3:00
Session 10: Medical Education
Chair: David Goldsman, *Georgia Institute of Technology*

Simulation Chips for GOLEM- Multimedia Simulator of Physiological Functions
Jiri Kofranek, Michal Andrik, Tomas Kripner, Jan Masek, Tomas Velan, *Charles University, Czech Republic*

A New Virtual Reality Simulator for Medical and Dental Training
Gerald Pitts, Christopher Smith, Frank Weaker, *Trinity University, USA*

Wednesday   3:30–4:15
Session 11: Medical Applications IV
Chair: Gerald Pitts, *Trinity University*

Modeling Gene Sequences Using Formal Grammars
Pradip Dey, Arun Datta

Wednesday   4:15–5:30
Session 12: Simulation and Decision Making
Chair: Meyer Katzper, *FDA*

Open forum for discussing experiences with simulation and decision making.

INTERNATIONAL CONFERENCE ON GRAND CHALLENGES FOR MODELING AND SIMULATION

General Chair: W.H. Lunceford, *U.S. Army Model and Simulation Office*
Program Chair: Ernest H. Page, *The MITRE Corporation*

Monday   10:30–12:00
Grand Challenges Admin and Keynote Address

The New 'Special Ops' – Investigator-Driven Simulation Research in the Era of Strategic Confusion
Michael Schrage

Monday   1:30–3:00
Session 1

Modeling the NAS: A Grand Challenge for Simulation
Frederick Wieland, Craig Wanke, Bill Niedringhaus, Len Wojcik, *The MITRE Corporation, USA*

Grand Challenges in Modeling and Simulating Urban Transportation System
Richard Fujimoto, John Leornard II, *Georgia Tech, USA*

Monday   3:30 – 5:00
Session 2

Science and Engineering of Large Scale Socio-Technical Simulations
Chris Barrett, Madhav Marathe, Christian Reidys, *Los Alamos National Laboratory, USA*

Grand Challenge - Using Simulation to Explain Global Routing Instabilities
David M. Nicol, *Dartmouth College, USA*

Tuesday   8:30–10:00
Session 3

A Next Generation Modeling Framework
Paul Fishwick, *University of Florida, USA*

Distributed Virtual Physical Interactions - How to Scratch the Surface
Gregory B. Tackett, *U.S. Army AMRDEC, USA*

Tuesday   10:30–12:00
Session 4

Quantum Algorithms for Modeling and Simulation: A Grand Challenge for Modeling and Simulation
Thomas L. Clarke, David J. Kaup, *University of Central Florida, USA*

Proposal to Develop Networked Modeling and Simulation to Reduce National Reliance on Animal Models for Medical Research
Dennis K. McBride, *Potomac Institute, USA*

Tuesday   1:30–3:00
Session 5

Simulating Large Networks – How Big is Big Enough?
George F. Riley, Mostafa H. Ammar, *Georgia Tech, USA*

Establishing the Limits of Networked Simulation: A Grand Challenge for Modeling and Simulation
Thomas L. Clarke, *University of Central Florida, USA*
Michael D. Myjak, *The Virtual Workshop, Inc., USA*

Tuesday   3:30–5:00
Session 6

Issues in Enhancing Model Reuse
C. Michael Overstreet, *Old Dominion University, USA*
Richard E. Nance, Osman Balci, *Virginia Tech, USA*

Fully Automated Forces: A Grand Challenge for Military Training
C. Zachary Furness, John Tyler, *The MITRE Corporation, USA*
Status of submission not verified

Wednesday   8:30–10:00
Session 7

Simulation for Agent-Oriented Software Engineering
Adelinde Uhrmacher, *University of Rostock, Germany*

Integrating Software Performance Evaluation in Software Engineering
Matthias Becker, Lutz Twele, Helena Szczerbicka, *University Hannover, Germany*

Wednesday   10:30–12:00
Session 8

Differential Inclusions Solver
Stanislaw Raczynski, *Universidad Panamericana, Mexico*

The Simulation of Consciousness: A Grand Challenge for Modeling and Simulation
Thomas L. Clarke, *University of Central Florida, USA*
Dennis K. McBride, *Potomac Institute, USA*

Wednesday   1:30–3:00
Panel Session: Grand Challenges for M&S – a Business Perspective

Warren Katz, *MÄK Technologies*
John Illgen, *Illgen Simulation*
William F. Waite, *Aegis Technologies Group*
William R. Swartout, *USC Institute for Creative Technologies*

Wednesday   3:30–5:00
Conference wrap-up

2002 Western MultiConference

Monday — 10:30–12:00
Session 1: Java-Based Applications and Tools
Chairs: Renzo Davoli, *University of Bologna*
Flavio Tonelli, *University of Genoa*

A JAVA based circuit diagram tool for an intelligent questioning and problem solving system
Mazumdar Saurav, James Leathrum, Oscar Gonzalez, *Old Dominion University*

Design and Implementation of an Interactive Java-Based Tutor
Sumanta Guha, Binh Phu Le, Ichiro Suzuki, *University of Wisconsin, USA*

Using JAVA Apple-Based Application to Improve Practices in Environmental Production Monitoring
Roberto Revetria, Flavio Tonelli, *University of Genoa, Italy*

Monday — 1:30–3:00
Session 2: Modeling and Simulation in Electrical and Computer Engineering
Chairs: Lawrence Huelsman, *University of Arizona*
Renzo Davoli, *University of Bologna*

Using MAPLE to Model Engineering Systems in Cylindrical and Spherical Coordinates
R.J. Soukup, *University of Nebraska*

Visual Study of Rotating Electrical Machines
Clovis Goldemberg, Eduardo Pellini, EPUSP - *University of Sao Paulo - Polytechnical Scholl*

The NetWire emulator: teaching and understanding networks in both synthetic and real scenarios
Enrico Carniani, Renzo Davoli, *University of Bologna, Italy*

Virtual Prototyping of Embedded Systems Using VHDL
Hamid Vakilzadian, *University of Nebraska-Lincoln, USA*

Monday — 3:30–5:00
Session 3: WWW-Based Tools in Education
Chairs: Rodney Soukup, *University of Nebraska-Lincoln*
Marco Roccetti, *University of Bologna*

VR and WEB Page Support in Civil Engineering Education. A Recent Experience.
Gerardo Silva, *University of Santiago*

Simulated Speech for Interactive Outdoor Web-Based Distance Learning
Marco Roccetti, Paola Salomoni, *University of Bologna, Italy*

An Information Filtering Approach to Personalize the Multimedia Instructional Material in a Web-Based Multimedia Distance Learning System
Antonella Carbonaro, *University of Bologna, Italy*

Tuesday — 8:15–9:00
Session 4: Modeling Tools in Business and Management
Chairs: Eyler Coates, *University of Souther Mississippi*
Flavio Tonelli, *University of Genoa*

Manufacturing Management Training Through Process-Oriented Simulation Tool
Roberto Mosca, Flavio Tonelli, Roberto Revetria, Sergio Pozzi Cotto, *University of Genoa, Italy*

Modeling a Make or Buy Decision Using Simulation Software
Eyler Coates, Rita Sadasivan, Jon Juneau, Ruth Cade, *University of Southern Mississippi , USA*

Tuesday — 9:00–10:10
Session 5: Knowledge Management and Multi-Media Tools
Chairs: Giovanni Pau, *UCLA*
Marco Roccetti, *Universita' di Bologna*

Simulation Potential in Processes of Knowledge and Skills Obtaining
Vaclav Votava, Jan Han, Zednek Ulrych, Milan Edl, Jiri Kaiser, Flavio Tonelli, *University of Genoa, Italy*

Multimedia tools applied to technical knowledge management
Christian LEO, Jan BARTAK, Yves SICARD, *CORYS T.E.S.S.*

A Middleware for Interactive Multimedia Applications
Giovanni Pau, *UCLA, USA*

Tuesday — 10:30–12:00
Session 6: Experiences with Computer Eng./Science Curricula and Software Tools
Chairs: Flavio Tonelli, *University of Genoa*
Renzo Davoli, *University of Bologna*

Experience In Integrating Computers and Software Tools In Learning Design and Improvement of Business Processes
Marvin Seppanen, Sameer Kumar, *Productive Systems*

www.laureaonline.it The on-line bachelor programme in Computer Engineering at Politecnico di Mlano
Alberto Colorni, Pierluigi Della Vigna, Roberto Negrini, *Politecnico di Milano*

Describing Computer Science Education Research: An Academic Process View
Arnold Pears, Mats Daniels, Anders Berglund, *Uppsala University*

Secure Online Learning Based on Mobile Agents
Xun Yi, Yiming Ye, Chee Kheong, *Information and Communication Institute* Mahbubur Rahman Syed, *Minnesota State University, USA*

Tuesday — 1:30–3:00
Session 7: Application of Modeling and Simulation in Engineering
Chairs: Rahman Syed Mahbubur, *Minnesota State University*
Lech Znamirowski, *Silesian University of Tecnology*

Parallel Nano-modeling of Ribosomal Translation Process
Lech Znamirowski, Ewa Zukowska, Silesian University of Technology

Parameter Estimation And Modeling Of A Non-Minimum Phase Plant Via Simulation Based Methodology
Swapan Mukherjee, Anil Kumar, Mondira Roy

Algorithm for Triangular Flutes Broaching Calculation
Faisal AL-Ghathian, *Tafila Applied Univesity College*

Tuesday   **3:30–5:00**
Session 8: Round Table Panel Discussion on Modeling and Simulation-Based Curriculum
Moderator: Hamid Vakilzadian, *University of Nebraska-Lincoln*

THE THIRD INTERNATIONAL SYMPOSIUM ON COLLABORATIVE TECHNOLOGIES AND SYSTEMS
General Co-Chair: Waleed W. Smari, *University of Dayton*
William McQuay, *Air Force Research Laboratory*

Sunday   **10:00–12:00**
Tutorial Registration

Sunday   **12:00–3:00**
Tutorial 1: Management of Service Level Agreements
Dr. Lundy Lewis, *Aprisma Management Technologies*

Sunday   **3:30–6:30**
Tutorial 2: Mobile Collaboration
Prasun Dewan, *The University of North Carolina, USA*

Sunday   **3:30–6:30**
Tutorial 3: Synthetic Task Environments For The Study Of Collaboration In Supervisory Control Teams
Chairs: Dr. Ling Rothrock, *Wright State University, USA*
Dr. Craig Harvey, *Wright State University, USA*

Monday   **10:30–11:30**
CTS Keynote Speech
Joint Distributed Engineering Plant (JDEP) Collaboration To Achieve Joint System of System Interoperability
Dr. Judith Dahmann, *Scientific Advisor and Director of Interoperability, The MITRE Corporation*

Monday   **11:30 - 12:20**
Session 1: Collaborative Systems Design
Dynamic Content and Offline Collaboration in Synchronous Groupware
Mihail Ionescu, Allan M. Krebs, Ivan Marsic, *Rutgers University, USA*

Is Peer to Peer the Next Step for Collaborative Systems?
Daniel C. Hyde, *Bucknell University, USA*

Monday   **1:45–3:00**
Session 2: Collaborative Decision Support
Collaborative Decision Support Technology - Making Simulation Based Acquisition (SBA) Work Across the Board
Gary A. Whitted, *Ball Aerospace & Technologies, Corp., USA*

Distributed Mission Training Collaborative Briefing and Debriefing System
Capt Gregory J. Sidor, *Air Force Research Laboratory, USA*

Intelligent Agent Augmentation For Collaborative Situational Awareness and Decision Support Applications
DuWayne Heupel, Michael VonPlinsky, *Frontier Technology, Inc., USA*

Monday   **3:30–5:30**
Tutorial 4: Collaboration Across Network Firewalls
Mark Stephenson, Chief Scientist, *SAIC*

Monday   **5:30–6:00**
Demo Session 1: Business Process Simulation with HP Process Manager
Li-Jie Jin, Fabio Casati, Ming-Chien Shan, *Hewlett Packard*

Tuesday   **8:30–10:10**
Session 3: Mechanical CAD - CAE Integration
Chair: Dr. Russell W. Claus, *NASA Glenn*
Multidisciplinary Optimization in the Federated Intelligent Product EnviRoment (FIPER)
R. Kolonay, M. Sobolewski, M. Paradis, S. Burton, *General Electric, USA*

Mechanical CAD Interoperability through Industry Standard Interfaces
Russell W. Claus, Ilan Weitzer, *NASA Glenn Research Center, USA*

Script Based Templates for Rapid CFD Application Development
Vincent J. Harrand, Vadim G. Uchitel, *CFD Research Corp., USA*

Enabling Engineering Application Integration via an Abstraction of CAD Services
Doug Cheney, Keith Davidson, Tim Hurdle, Tom Makoski, *International TechneGroup Inc., USA*

Tuesday   **10:30–12:10**
Session 4: Cooperative Distributed Information Systems
Chairs: Dr. Mads Nygard and Dr. Heri Ramampiaro, *Norwegian University of Science and Technology*
Atomicity Implementation in Cooperative Distributed Systems with High Performance and Availability
Lars Frank, *The IT University of Copenhagen, Denmark*

Applying Java-Triggers for X-link Management in the Industrial Framework
Abraham Alvarez, Youssef Amghar, *INSA de Lyon Laboratoire LISI, France*

The XML Schema as a Pivot Model for DDBMS Managing Documents
T. Ould Braham, *University of Limoges, France*

On Building Customizable Cooperative Information Systems
Awais Rashid, *Lancaster University, United Kingdom*

Tuesday   **2:00–3:00**
Tutorial 5 Part I: KnowledgeKinetics™ (K²™): Implementing Collaborative Decision Support Solutions
Bradley Mallare, Gary Whitted, *Ball Aerospace & Technologies Corp.*

Tuesday   **3:30–5:30**
Tutorial 5 Part II: KnowledgeKinetics™ (K²™): Implementing Collaborative Decision Support Solutions
Bradley Mallare, Gary Whitted, *Ball Aerospace & Technologies Corp.*

Tuesday   **5:30–6:00**
Demo Session 2: Advanced CEE Tool for Enterprise Analysis and Monitoring (ATEAM)
Richard A. Briggs, *Virtual Technology Corporation*

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Wednesday   8:30–10:00
Tutorial 6 Part I: Synthetic Environments for Distributed Team Training
Alan Ashworth, Barry Goettl, Scott Chaiken, Linda Elliott, *Air Force Research Laboratory*

Wednesday   10:30–12:00
Tutorial 6 Part II: Synthetic Environments for Distributed Team Training
Alan Ashworth, Barry Goettl, Scott Chaiken, Linda Elliott, *Air Force Research Laboratory*

Wednesday   1:30 - 3:10
Session 5: UAV Control and Simulation
Chairs: Dr. Kuo-Chi Lin, *University of Central Florida*
Dr. Louis Chan, *Air Force Research Laboratory*

Distributed Real-Time On-Board/Off-Board Simulation Testbed
L.Y.K. Chan, R.L. Clericus, R.A. Krack, W.E. Austin, S.L. Umbaugh, *Air Force Research Laboratory, USA*

Dynamic Situation Assessment and Prediction on Controlling a Swarm of UCAVs
K.C. Lin, S. Farr, A. Sisti, S. Alexander, *University of Central Florida, USA*

Kalman Filter Enhancement for UAV Navigation
R. Johnson, J. Sasiedek, J. Zalewski, *University of Central Florida, USA*

Autonomous Navigation and Missile Tracking by Using the Scannerless Range Imager and the Point Tracking Software
J.N. Pecina, G.H. James III, *University of Texas at Brownsville, USA*

Wednesday   3:30–5:00
CTS 2002 PANEL SESSION: The Use of Modeling & Simulation for Enhanced Decision Support
Moderator: Vance Saunders, *Ball Aerospace*
Panel Members: Michael Cox, *Wright State University*
Colonel Phil Faye, *US Air Force*
John Illgen, *Illgen Simulation Technologies, Inc.*
Curtis Roney, *Commercial Planning Consultants*
Daniel Serfaty, *Aptima, Inc.*

Wednesday   5:00–5:30
Session 6: Collaborative Strategic Planning
Neoclassical Strategic Planning Methodology: Enabled by Information Technology
Curt W. Roney, *Commercial Planning Consultants, USA*

Wednesday   5:30–6:00
Demo Session 3: Web Centric GeoSpatial Collaboration
Chair: Sam Abuzalaf, *GeoViz.com, Inc.*

DARPA Day
Collaboration Technologies to Support Anticipatory Command and Control

Thursday   8:30–9:00
DARPA Day Opening Remarks
Chair: Ward Page

Thursday   9:00–9:30
Plenary Session
Swarming: Where KM and Network Centric Warfare Intersect
Andrew Mahon, *Senior Director of Strategic Communications, Groove Networks, USA*

Thursday   9:30–10:0
DARPA Briefs

Thursday   10:30–12:00
Presentations I

Thursday   1:30–3:00
Presentations II

Thursday   3:30–4:30
Presentations III

Thursday   4:30–5:30
Session 7: Collaborative Environments
A Family of Systems Collaborative Engineering Environment
Harry Crisp, *NCEE, ASN - RDA, US Navy, USA*

A Collaborative Enterprise Environment for the 21st Century
Bradley D. Mallare, *Ball Aerospace & Technologies, Corp., USA*

Thursday   5:30–6:00
Demo Session 4: Collaborative Operational Planning and Execution System (COPES)
Donald E. Henager, *SAIC, San Diego, California, USA*

Friday   8:30–9:20
Session 8: Collaboration - Issues on Review
Why Collaboration Hasn't Worked
Mark M. Stephenson, *SAIC, Dayton, Ohio, USA*

Review and Assessment of XML Metadata Specifications for Work Management
Stephen A. Miller, *Boeing Company, USA*

Friday   9:20–10:10
Session 9: Collaborative Enterprise Security
Using the NuSMV Model Checker to Verify the Kerberos Protocol
M. Panti, L. Spalazzi, S. Tacconi, *University of Ancona, Italy*

Security As Collaborative Relationships
Eugen Bacic, *Texar Corporation, Canada*

Friday   10:30–11:20
Session 10: Coalition Work and Cooperative Services
Customized Transactional Support for Cooperative Work: An Experience Paper
Heri Ramampiaro, Mads Nygard, *Norwegian University of Science and Technology, Norway*

Collaboration in a Coalition Environment
Donald E. Henager, Gary Shaffer, *SAIC, San Diego, California, USA*

Friday 11:20–12:10

Session 11: Interfaces for Collaborative Enterprises

An Analytical Review of Multiuser Interfaces: Design Criteria, Classification, and Case Studies
Ashish Godbole and Waleed W. Smari, *University of Dayton, USA*

Enhancing Collaborative Communication: Defining Three Dimensions Of Media Richness
Kirk A. Weigand, Deborah A. Mitta, *Air Force Research Laboratory and Georgia Tech Research Institute, USA*

Friday 12:10–12:30

Conference Closing Remarks
CTS Symposium General Chairs

NUCLEAR POWER PLANTS AND SYSTEMS
Co-Chair: Scott Halverson, *AmerenUE*
Co-Chair: Mac McDade, *Carolina Power and Light*

Sunday

Pre-conference planning meetings - times and locations to be announced by SCS
Professional Seminars - locations to be announced by SCS

Monday 10:30–12:00

Session 1: Classroom, PC and Specialty Simulation
Chair: Jody Brodsky

A New Design for Building Your Own Simulated GE Numac Drawer
Tommy Albright, *Browns Ferry TVA*

DDE Reflection of a ROSE model – Expanding Full Scope Simulation
Scott Halverson, *Callaway, AmerenUE*

Operation Experience with the first PC-Based Full Scope Simulator KKG
Heinz Lohmann, *STN ATLAS Elektronik GmbH*

Monday 1:30–3:00

Session 2: Simulator Vendor Presentations
Latest updates from simulator vendors

Monday 3:30–5:00

Session 3: Simulator Vendor Presentations
Continued updates from simulator vendors

Tuesday 8:00–9:30

Session 4: Thermal Hydraulic and Core Models
Chair: Barney Panfil

Simulating Fourth Generation Reactors
Daniel Cote, George Salim, *CAE*

Implementation of a Relap5 RCS and Secondary Plant Model in a Nuclear Power Plant Training Simulator
David W. Hiltbrand, Ken Williams, *TXU Electric/Data Systems and Solutions*

Getting the Most out of Your Third-Party Simulator
Christian Paquette, *CAE*

Tuesday 10:00–11:30

Session 5: Tools, Tools, Enhancements and Models

Motion Simulation: Earthquake and Main Turbine High Vibration
Ronald D. Conaway and James B. Florence, *Cooper Nuclear Station*

Nuclear simulator saves a million. Yours can too!
David Roberts, *Simulator Training Systems, Ratcliffe-on-Soar, Nottingham, UK*

Windows 2000 Simulation: The Ling Ao Story
Damress Helou, *CAE*

Tuesday 1:30–3:00

Session 6: System Upgrades

Improved Balance of Plant Simulation with ROSE
Roger Burelle, George Salim, *CAE*

Certification of the Laguna Verde Nuclear Power Plant Simulator
Edgardo J. Roldán Villasana, *Mexico*

Benefits of Emulation Technology
Alan Brookes, *Powergen, UK*

Tuesday 3:30–5:00

Session 7: Simulator Related Topics

Woodward Governor Simulation – Browns Ferry
Richard P. Potekhen

System Dynamics a Powerful Tool for Simulation of Business Systems with an Application Model for Electric Utility
Himadri Banerji

Neuro-Fuzzy Control Simulation for Egypt Second Research Reactor, ETRR-2
Mohamed A. Gaheen, Sayed M. Elaraby, M. Naguib Aly, *Atomic Energy Authority/Faculty of Engineering, Alexandria University, Egypt*

Wednesday 8:00–9:30

Session 8: Panel Verification and Validation
Chair: Carl Golightly

Wednesday 10:00–11:30

Session 9: Panel ANS-3.5 and Regulation Changes
Chair: Mac McDade

Jim Florence, ANSI-3.5 Committee Secretary
Larry Vick, NRC 10CFR55.46, Reg Guide 1.149
Scenario Based Testing

Wednesday 12:00–5:00

Regional workshops in parallel breakout rooms
Session 10: MANTG Simulator Meeting Workshop
Chair: Franco Pasquale
Topic: Open Agenda

Session 11: MNTA Simulator Meeting/Workshop
Chair: John Shriver
Topics: Open Agenda

Session 12: SSNTA Meeting
Chair: Tommy Albright (TVA)

Session 13: Westrain Simulator Meeting/Workshop
Chair: Scott Halverson, *AmerenUE, Callaway Plant Simulator*
Topics: Scenario Testing – Pilot Program - Callaway
Meeting ANSI/ANS-3.5-1998 Testing Requirements

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Thursday   **9:00–10:30**
Session 14: USUG Annual Meeting – Hotel
Chair: Scott Halverson, *AmerenUE, Callaway Plant Simulator*
Introductions and open discussions
Minutes from previous meeting - Jim Florence
Election Vice-Chairman
Elections Regions 2 and 4 (even year regions)
Region Reports, recent activities, workshops
Old Business
New Business – Web Page Adjustments

Thursday   **10:30–11:30**
Session 15: USUG Panel Discussion/Region Reports
Chair: Region 1 & 2 Representatives
Panel Topic: To be provided by regions

Thursday   **1:30–2:30**
Session 16: USUG Panel Discussion/Region Reports
Chair: Region 3 & 4 Representatives
Panel Topic: Kevin Cox/Jody Brodsky

Thursday   **2:45–3:45**
Session 17: USUG Panel Discussion – International
Chair: Region 3 Representative
Panel Topic: Inputs from international members

Thursday   **4:00–5:00**
Session 18: USUG Current topics from Conference

Friday
CAE2002 Owners Conference
Other follow-up meetings with vendors (by appointment only)

FOSSIL SIMULATION AND TRAINING
General Chair: Richard Pennington, *EPRI Simulator and Training Center*

Tuesday   **8:00–10:00**
SeLearning: The Next Generation of Power Plant Simulation is Here Already!
Daniel Rudich, *CAE, Inc.*

Tuesday   **10:30–12:00**
Raising the Bar for Combined-Cycle Gas Turbines Plant Simulators
Robert Boire, *CAE, Inc*

Tuesday   **1:30–2:30**
Power Plant Operator Virtual Reality Simulator
Jack Hamrick, *EPRI*

Tuesday   **3:00–4:00**
Combustion Turbine Simulation
Merrill Quintrell, *EPRI*

Tuesday   **4:00–5:00**
Digital Control Systems (DCS) Solutions for Fossil and Nuclear Power Plant Simulators
M. Udbinac & O. Ashy, *Data Systems & Solutions, LLC*

Wednesday   **8:00–10:00**
Rapid Model Development Using SimSuite Power
Garry Fotheringham, *PowerGen*

Wednesday   **10:30–12:00**
A Virtual Panel Training System for Space Station Experiments
Dave Durand, *Ratheon Aerospace Eng. Service*

COMMUNICATION NETWORKS AND DISTRIBUTED SYSTEMS MODELING AND SIMULATION
General Chair: Taieb Znati, *University of Pittsburgh*
Program Chair: A. Bruce McDonald, *Northeastern University*

Monday   **10:30–12:00**
Session 1: Simulation 1
Scenario Switches and State Updates in an Agent-based Solution to Constructing Interactive Simulation Systems
Z. Zhao, R.G. Belleman, G.D. van Albada, P.M.A. Sloot, *Universiteit van Amsterdam, the Netherlands*

Fast and Accurate Synthesis of Correlated Processes by Pre Compensated Transfer of Correlation
Robert Geist, James Westall, *Clemson University, USA*

Using the GridSim Toolkit for Enabling Grid Computing Education
Manzur Murshed, Rajkumar Buyya, *Monash University, Australia*

Monday   **1:30–3:00**
Session 2: Wireless 1
Improving Handoff Performance in Overlay Networks
Fan Du, *Green Packet, Inc., USA*
Lionel M. Ni, *Abdol-Hossein Esfahanian, Michigan State University, USA*

Evaluation of UMTS Cell Coverage and Capacity for Voice Traffic using the ETSI-3GPP QoS Model
Paolo Giacomazzi, Luigi Musumeci, Giacomo Verticale, *Politechnico di Milano, Italy*

BRICKS: A Slotted CDMA Protocol for Efficient Integration of Voice and Data
Hongjun Zhang, Pawel Gburzynski, *University of Alberta, Canada*

Monday   **3:30–5:00**
Session 3: Network Algorithms and Analysis
A TCP-like Receiver-driven Layered Multicast Transmission Scheme
Dirk Trossen, *Nokia Research Center Boston, USA*

A Disjoint Multicast Routing Algorithm for Pancake Graphs
Keiichi Kaneko, Yasuto Suzuki, *Tokyo University of Agriculture and Technology, Japan*

Modeling and Simulation of a Network for Structural Health Monitoring
Ravi Mukkamala, Mohamed Moharrum, *Old Dominion University, USA*

Tuesday   **9:00–10:00**
INVITED SPEAKER: Erol Gelenbe, *University of Central Florida*

Tuesday   **10:30–12:00**
Session 4: Simulation 2
On Shortcomings of the ns-2 Random Number Generator
Bernhard Hechenleitner, Karl Entacher, *University of Applied Sciences and Technology, Salzburg, Austria*

Course-Grained Network Simulation for Wide-Area Distributed Systems
Syam Gadde, Jeff Chase, Amin Vahdat, *Duke University, USA*

Design, Realization, and Evaluation of a Component-Based Compositional Network Simulation Environment
Hung-Ying Tyan, *Fujitsu Labs of America, USA*
Jennifer C. Hou, *University of Illinois – Urbana Champaign, USA*

Tuesday   **2:00–3:00**
Session 5: Emerging Topics—Short Paper Session

Tuesday   **3:00–5:00**
Poster Session

Modeling the Communications Capabilities of the Infantry Soldier
A. Hall, J. Surdu, F. Maymi, *United States Military Academy, West Point, USA*

Routing Simulation in the Fabric-Area-Network Supplied by Measurement Data
Christian Decker, Michael Beigl, *University of Karksruhe, Germany*

Multi-Source Performance Analysis of Distributed Software
Christoph Steigner, Jürgen Wilke, *University of Koblenz-Landau, Germany*

Modeling MAC Performance in Mobile Ad Hoc Network Simulations
Kai Li, Asis Nasipuri, *University of North Carolina – Charlotte, USA*

Tuesday   **3:30–5:00**
Session 6: Ad Hoc Networks 1

Simulation and Emulation of Mobile Ad Hoc Networks: Fidelity and Complexity
Scott F. Midkiff, *Virginia Polytechnical Institute, USA*

C143: A Real-Time Emulation System for Ad Hoc Networks
Juan Flynn, Hitesh Tewari, Donal O'Mahony, Trinity College – Dublin, Ireland

Design and Evaluation of an Individually Simulated Mobility Model in Wireless Ad Hoc Networks
Desney S. Tan, Shuheng Zhou, Jiann-Min Ho, Janak S. Mehta, Hideaki Tanabe, *Carnegie-Mellon University, USA*

Wednesday   **8:30–10:00**
Session 7: System Design and Analysis

Increasing Predictive Accuracy through Limited Prefetching
Tsozen Yeh, Darrell D.E. Long, Scott Brandt, *University of California Santa Cruz, USA*

General Method for Finding the Most Economical Distributed Router Architecture
Lukas Kencl, *IBM Zurich Research Lab, Switzerland*
Bozidar Radunovic, *EPFL, Switzerland*

Performance Modeling for Task-Parallel Programs
Matthias Kühnemann, Gudula Runger, *Tech. Univ. Chemnitz, Germany*
Thomas Rauber, *Universität Halle-Wittenberg, Germany*

Wednesday   **10:30–12:00**
Session 8: Wireless 2

Bluetooth Technology: Key Challenges and Initial Research
Roch Guérin, Saswati Sarkar, *University of Pennsyvania, USA*
Enyoung Kim, *Lucent Technologies, USA*

Survivability Analysis for Mobile Cellular Networks
David W. Tipper, Chalermpol Charnsripinyo, Hyundoo Shin, *University of Pittsburgh, USA*
Teresa A. Dahlberg, *University of North Carolina – Charlotte, USA*

C135: Channel Capacity Assessment for GPRS
J. N. Daigle, *University of Mississippi, USA*
K. H. Daigle, *KHD Systems, USA*

Wednesday   **1:30–3:00**
Session 9: Ad Hoc Networks 2

A Scalable Routing Scheme for Self-Organized Terminode Networks
Ljubica Blazevic, Jean-Yves Le Boudec, Silvia Giordano, *Swiss Federal Institute of Technology, Switzerland*

Integrating Simple yet Robust Protocol Layers for Wireless Ad Hoc Intervehicle Communications
Linda Briesmeister, Günter Hommel, *Technical University of Berlin, Germany*

Secure Routing for Mobile Ad Hoc Networks
Panagiotis Papadimitratos, Zygmunt J. Haas, *Cornell University, USA*

Wednesday   **3:30–5:00**
Session 10: QoS Delivery

Layer 7 Integrated QoS Routing Architecture for Content Delivery Network
Atsushi Iwata, Norihito Fujita, *NEC Corporation, Japan*
Rauf Izmailov, *NEC Corporation, USA*

Capturing Scene Changes in the Autoregressive Model
C. Amo-Quarm, M. Mezhoudi, *Lucent Technologies/Bell Labs, USA*

Performance Analysis of a Managed Bandwidth Service for ATM Networks
Christos Bouras, Chryssi Chantzi, Vaggelis Kapoulas, Alexandros Panagopoulos, Ionna Sampraku, Afrodite Sevasti, *Univ. of Patras, Greece*

Thrusday   **8:30–10:00**
Session 11: World-Wide-Web

On Zipf's Law and the Effectiveness of Hierarchical Caching
Xiangying Yang, Gustavo de Venciana, *University of Texas – Austin, USA*

Influence of the Document Validation/Replication Methods on Cooperative Web Proxy Caching Architectures
Victor J. Sosa, Leandro Navarro, *Universidad Politecnica de Cataluna, Spain*

Web Traffic Characterization using a Mixture of Parsimonious Distributions
Cesar Jalpa-Villanueva, *Universidad Autonoma Metropolitana, Mexico*
Zhen Liu, *IBM T. J. Watson Research Center, USA*
Nicolas Niclausse, Sylvain Barbier, *INRIA, Center Sophia Antipolis, France*

Thursday   **10:30–12:00**
Session 12: Wireless 3

A New Ray Tracing Algorithm for Propagation Prediction in Broadband Wireless Channels (LATE WITHDRAWAL FROM PROGRAM)
Hossein Zare, *Amirkabir University of Technology, Iran*
Mahdi Nezafat, *The Johns Hopkins University, USA*

Modeling IP-Based Mobility Management
Wolfgang Schoenfeld, Andreas Meissner, Holger Kirchner, Ralf Steinmetz, *Fraunhofer IPSI, Germany*

Simulation of Mobile Applications
Fernando Luis Dotti, Lucio Mauro Duarte, Bernardo Copstein, *PUCRS, Brazil*
Leila Ribeiro, *UFRGS, Brazi*

2002 Western MultiConference

VIRTUAL WORLDS AND SIMULATION
Chairs: Christopher Landauer, *The Aerospace Corporation*
Kirstie Bellman, *The Aerospace Corporation*

Monday   **10:30–12:00**
Large Scale Modeling Challenges for Virtual Worlds and Real Worlds

Welcome to the VWSIM '02 Conference. What Can We Do in Virtual Worlds about the Real World Challenges of 9/11? Overview of the presentation and special working sessions. [30 minutes]
Kirstie Bellman, *The Aerospace Corporation*

Story Engines and Building Potential Outcomes [30 minutes]
Michael Zyda, *Naval Postgraduate School*

Monday   **11:30 –12:00**
Elagent Agent Infrastructure for Management of Human Robotics Networks in FCS
Erik Mettala
General discussion

Monday   **1:30 –3:00**
Scaling up Network Modeling and Simulation Methods
Chairs: Sri Kumar, *DARPA* and Rudolf Riedi, *Rice University*
Introduction to the Challenges of Scaling Up
Sri Kumar, *DARPA*

Dealing with Complexity in Very Large Systems
Rudolf Riedi, *Rice University*

Data Mining Tools for Massive Graphs
Christos Faloutsos, *CMU*

Virtual Markets in Wideband Wireless Computation and Communication Grids
Lee McKnight, *Tufts University*

The Genesis Project: Network Decomposition for Monitoring, Modeling, and Simulation for Network Management and Intrusion Detection
Boleslaw Szymanski, *Rensselaer Polytechnic University*

Monday   **3:30–5:00**
Education and Training in Virtual Worlds
Chair: Frank Wattenberg, *US Military Academy*
Training First Responders in Virtual Worlds [provisional title]
Frank E. Hughes, *Tietronix Software*

New River City: A Motivating Multi-User/Multi-Sensory Virtual Environment to Maximize Learning and Enhance Science Instruction in Simulated Worlds
Paul R. Oliver, J. Mark Pullen, *GMU*
Christopher Dede, *Harvard*

The Virtual Study Room for A CS Course
Lee Tichenor, *Western Illinois University*

Analytical Models of Emotions and Learning
Barry Kort, Bob Reilly, *MIT Media Lab*

From Jean-Luc Picard to Dumbledore: How Networked Notebook Computers and Virtual Worlds Can Transform Learning
Frank Wattenberg, *US Military Academy*

General discussion

Monday   **7:30–10:00**
Birds of Feather sessions

Tuesday   **8:30–10:00**
Some Challenges of Social and Cognitive Modeling
Social Structures for Productive Virtual Worlds
John Salasin, *DARPA*
If a virtual worlds environment is going to host a large number of (more or less) independent components -- including humans, robots and software -- it,needs to have a structure defined to provide authority and accountability,,access to and management of dynamic information, policy specification,and,*enforcement, and sensitivity to changes in context. Most of these,capabilities mirror those required to maintain a human (or animal) society.,This paper will describe a social architecture, composed of interacting,"habitats," that DARPA is investigating to provide the basis of effective, "network-centric" systems. [30 minutes]*

Social Science Is Not the Same as Cognitive Science: Bridging the Gap for the Production of Human Behavior
Jim Kennedy, *Department of Labor*

Toward the Computational Representation of Cognitive, Emotional, and Cultural Stressors on Human Decision-Making: A Peacemaking Scenario
Elaine M. Raybourn, *Sandia National labs*

Group Discussion

Tuesday   **10: 30–12: 00**
New Mathematical Weaponry for Combating "Netwar"
Organizer and Chair: Clifford Behrens, *Telcordia Technologies*
The flat, fluid, Ball-channel, B swarming-kind of engagement typical of transnational terrorist organizations has recently been referred to as Bnetwar (see Arquilla, J. and D. Ronfeldt, 2001). An increasing number of experts on terrorism have argued that social network analysis (SNA) has enormous potential for yielding keen insights into the formation and organization of netwar. This session reviews some of the key tenants of social network analysis and the challenges of applying existing SNA methods to the kind of very large, amorphous networks typical of transnational terrorism. Since the same kinds of scalability and identification issues are frequently encountered in data-mining and topological analysis of massive telecommunications networks, we offer new formal-mathematical methods recently advanced by telecommunications researchers that seem particularly relevant to the study of terrorism.

Social Network Analysis of Terrorist Organizations and Their Mobilization:Applications and New Research Challenges
Clifford Behrens, *Telcordia Technologies*
Karen Stephenson, *NetForm*

Data Mining in Uncovering Terrorist Networks
Devasis Bassu, Yu-Yun Ho, Komandur Krishnan, *Telcordia Technologies*

Sparsity-Exploiting Algorithms for Social Network Analysis
Tami Carpenter, George Karakostas, David Shallcross, *Telcordia Technologies*

Massive Multi-Digraphs
James Abello, *AT&T Shannon Laboratory*

Tuesday 1:30- 3:00
Infrastructure, Networks, and Middleware Issues for Very Large Systems
Chair: Craig Lee, *The Aerospace Corporation*

Challenges for Complex Large Sensornets [provisional title]
Shankar Sastry, *UC Berkeley*

Neuromorphic Attentional Selection for Efficient Allocation of Computing Resources
Laurent Itti, *USC*

Information Assurance: The Ruby Slippers And The Magic Wand
Blaine Burnham, *University of Nebraska, Omaha*

The Challenges of Creating Grid Event Servers to Support Events, Coordination, and Topology-Aware Communication in Massively Large Networks
Craig Lee, *The Aerospace Corporation*

Active Infrastructure for Distributed Network Services: the FLAPPS Approach
Scott Michel, *UCLA and The Aerospace Corporation*

Tuesday 3:30–5:00
Agents and Robots in Virtual Worlds and other Large Scale Applications

Social Agent Modelling for Military Simulations
W. Lewis Johnson, *USC/ISI*

Very Large Agent Architectures: a Core Competencies Approach
K. Suzanne Barber, *University of Texas, – Austin*

Multi-agent Belief Revision Process based on Trust and Reputation
K. Suzanne Barber, Joonoo Kim, Karen Fullam, *University of Texas – Austin*

The Farleybot: The Virtual Voice in One's Ear
John P Crane, Qualcomm, Michael O'Brien, *The Aerospace Corporation*

Robo Sapiens
Victor Selman, *The American University*
John Selman, *ERA Inc.*

Wednesday 8:30–10:00
Designing for Complexity
Virtual Testing for Design
Steve Wall, *JPL*

Reducing Impediments to Collaboration in a Distributed Virtual Design World
Satwik Seshasai, *MIT*

Perceptualization of Complex Data Sets: How to See the Wheat in the Chaff
Dave Warner, *Mindtel and University of Rochester*

Fast Linear Genetic Programming for Detecting Subtle Patterns in Large Data Sets
Frank Francone, *RML Technologies Inc.*

Wednesday 10:30–12:00
New Mathematical and Analytic Approaches
Chair: Anna Tsao, *Algotek*

Mathematical Challenges in Novel Types of Data Mining and Perceptual Support
Anna Tsao, *Algotek*

Networked Worlds: From Link Analysis to Virtual Places
Cliff Joslyn, *Los Alamos National Labs*

Automation for Analysis and Countermeasure Planning in Information Warfare
Joe Goguen, *UC San Diego*

Reasoning Systems Based on Para-consistent Logic Programs and Their Hardware Implementation
Kazumi Nakamatsu, *Himeji Institute of Technology*
Yoshio Mita, Tadashi Shibata, *University of Tokyo*
Jair Minoro, Abe Paulista, *University Sao Paulo*

Information Dynamics in Massively Large Complex Systems
Ashok Agrawala, *Univ. of Maryland*

Wednesday 1:30-3:00
The New Challenges to Cybermedicine
Chairs: Muriel Ross and Donald Jenkins, *NLM*

Supporting Human Perception of Complex Data Sets
Brian Athey, *U Michigan*

Issues in Scaling Up Early Warning Systems for Disease Patterns
Al Zelicoff, *Sandia National Labs*

Modeling High Throughput Screening in the End-to-End Context
Robert Shuchman, *Nikola Suvatic, ERIM*

Statistical Issues and Morpho Metrics for Large Scale Systems
Fred Bookstein, *University of Michigan*

Creating Rapid Response and Robust Cybermedicine Networks
Muriel Ross, *University of New Mexico*

Wednesday 3:30–5:00
Issues in Large Scale Modeling
Chair: Chris Landauer, *The Aerospace Corporation*

Expecting the Unexpected; Defining the Hard Challenges
Yigal Arens, *USC/ISI*

Discrete Event Architecture for Time-Critical Decision Making
Bernie Zeigler, Salim Hariri, *Univ. of Arizona*

Dynamic Data-driven Application Systems Technology: Enhancing National Security
Frederica Darema, *NSF*

Simulating Very Large Systems
Chris Landauer, *The Aerospace Corporation*

Wednesday 5:00–6:00
Tools and Technologies Demonstrations

Thursday 9:00–12:00
Open Discussion on Status of White Papers

Conference Registration Form

WMC 02

The Society for Modeling and Simulation International

2002 WESTERN MULTICONFERENCE
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