WMC '03

2003 WESTERN MULTICONFERENCE
FINAL PROGRAM

JANUARY 19–23, 2003
ORLANDO AIRPORT MARRIOT
ORLANDO, FLORIDA

WMC 2003 Registration

Location: Lobby

The conference registration/information desk will be open during the following hours:

Sun., January 19	**2:00pm–5:00pm**
Mon., January 20	**7:00am–5:00pm**
Tue., January 21	**7:00am–5:00pm**
Wed., January 22	**7:00am–5:00pm**

WMC 2003 Exhibition Area

Location: Sanibel

The Exhibit area will be open immediately following the WMC 2003 Keynote Address according to the following schedule:

Mon., January 20	**10:00am–7:30pm**
Tue., January 21	**10:00am–5:00pm**
Wed., January 22	**10:00am–12:00pm**

Coffee Breaks

Location: Sanibel

Refreshments will be served in the Exhibit Area at mid-morning and mid-afternoon session breaks according to the following schedule:

Mon., January 20	**10:00am, 3:00pm**
Tue., January 21	**10:00am, 3:00pm**
Wed., January 22	**10:00am, 3:00pm**

Exhibitor Reception

Location: Sanibel

Mon., January 20	**6:00pm–7:30pm**

Sponsored by CAE Electronics Ltd.

Speaker's Breakfast

Mon., January 20	**7:00am–8:00am**	**Murphy's**
Tue., January 21	**7:00am–8:00am**	**Murphy's**
Wed., January 22	**7:00am–8:00am**	**Murphy's**
Thurs., January 23	**7:00am–8:00am**	**Murphy's**

Breakfast is served for each speaker **on the morning of his/her presentation.** Presenters meet with Track and Session Chairmen at designated tables to discuss presentations of the day. Admittance with Breakfast ticket only.

WMC 2003 Luncheon

Location: Amelia

Tue., January 21	**12:00pm–1:30pm**

Sponsored by The Society for Modeling and Simulation International

MEETINGS

SCS EXECUTIVE COMMITTEE MEETING
Sun., January 19   2:00pm – 5:00pm   Boardroom A
Tues., January 21   1:30pm – 5:00pm   Boardroom A
A meeting of the SCS Executive Committee where an administrative review of SCS is conducted. All members of the Executive Committee are expected to attend, and members of the Board of Directors are welcome to observe.

WMC 2003 PRECONFERENCE MEETING
Sun., January 19   3:00pm – 5:00pm   Captiva C
All with a current role in organizing the 2003 WMC should plan to attend.

GENERAL SESSION
Mon., January 20   8:30am – 10:00am   Vista
WMC 2002 Keynote Address

SCS MEMBERSHIP BOARD MEETING
Mon., January 20   1:30pm – 3:00pm   Boardroom A
A meeting with the SCS Vice President of Membership and the Membership Board of The Society for Modeling and Simulation International, to discuss improving the membership benefits of SCS.

SCS CONFERENCE BOARD MEETING
Mon., January 20   3:30pm – 5:00pm   Boardroom A
A meeting of the SCS Vice President of Conferences and the Conference Board to discuss future venues for SCS conferences, growth in participation, and conference programming.

SCS PUBLICATIONS BOARD MEETING
Tues., January 21   10:30am – 12:00pm   Boardroom A
A meeting of the SCS Publications Board to discuss current and future publications of The Society for Modeling and Simulation International.

WMC 2003 LUNCHEON
Tues., January 21   12:00pm – 1:30pm   Amelia
Sponsored by The Society for Modeling and Simulation International

WMC 2003 CONFERENCE COMMITTEE MEETING
Tues., January 21   5:00pm – 6:00pm
Individual conference program committees meet in their respective meeting rooms to plan and prepare technical program development for WMC 2003.

WMC LUAU DINNER SHOW AT SEAWORLD

Tues., January 21   Meet at 4:45pm   Ballroom foyer
We hope you plan to join us for an evening dinner show, which starts at 5:30pm. The two-hour dinner show features the best Luau show that Orlando has to offer. All WMC'03 attendees are invited to attend, but space is limited, so please pre-register by noon on Monday at the registration desk. Cost is $50 per person (includes dinner show and one beverage), and spouses/guests are invited to participate as space permits.

WMC 2004 PLANNING COMMITTEE MEETING

Wed., January 22   12:00pm – 1:30pm   Pine
The WMC Organizing Committee and the SCS Vice President of Conferences will meet to plan for the WMC 2004. Those with a current or future role in organizing the program should attend to discuss specific plans for January 2004 in San Diego, CA.

SCS SENIOR VP MEETING

Wed., January 22   10:30pm – 12:00pm   Boardroom A
A meeting with the Senior Vice President of SCS where analysis of societal relationships and strategic planning will be discussed.

SCS SOUTHEASTERN REGIONAL MEETING

Wed., January 22   3:30pm – 5:00pm   Boardroom A
All SCS members living in the Southeastern United States are invited to attend and discuss the membership and meeting activities within the region.

DR. RAYMOND C. MONTGOMERY
SENIOR SCIENCE AND TECHNOLOGY ADVISOR, NSF/CISE

Monday, January 20   **8:30am–10:00am**   **Vista**

Dr. Montgomery is a Senior Research Scientist in the Dynamics and Control Branch of the NASA Langley Research Center, where he has had an illustrious career spanning over 40 years of government service. Currently his duties are to direct and conduct basic research in dynamics and control for aircraft and spacecraft.

He received BS and MS degrees in Aerospace Engineering from the University of Alabama and his Ph.D from the Virginia Polytechnic Institute & State University. At Virginia Tech he served as Assistant Professor of Aerospace and Ocean Engineering, and he has assisted Old Dominion University as Adjunct Professor in Mechanical, and Associate Professor of Electrical Engineering. He has also served as Curriculum Examiner for the Graduate School of the Arts and Sciences for Howard University.

He is an Associate Fellow of the AIAA and has served that organization as a Member of the Guidance and Control Committee and Member and Chairman of the Space Automation and Robotics Committee on Standards. He is also a Senior Member of the IEEE and has served as Technical Associate Editor of the IEEE Transactions on Automatic Control, and is currently a Member of the Editorial Board of Spectrum, the IEEE magazine that is distributed to all of its members.

His technical contributions are documented in over 160 NASA, journal, and conference publications in the field of control systems for aircraft and spacecraft. His novel and original development of Optimal Analytic Redundancy Management (ARM) for aircraft and Backup Flight Control System Design for the Space Shuttle Flight Control System, earned him the NASA Special Achievement Award in 1978. Following that he has served as Langley principal investigator for the ARM design for the F8-Digital Fly-By-Wire Flight Test, for Space Shuttle Separate Surface Control System Research, and for Adaptive/Learning Controls Research for Large Space Structures. In the later activity he led joint research between the Marshall Space Flight Center and the Langley Research Center in robotics.

Currently he is the Langley principal investigator for the twelfth assembly mission, 12A, of the International Space Station, scheduled for launch in March 2003. His responsibilities are to investigate control/structures interactions for the mission via simulation using existing techniques and to conduct basic research on advanced simulation techniques for multibody spacecraft for future missions.

WEB ADDRESS: http://webser01/dcb/DCBStaff/rcm/rcm.htm
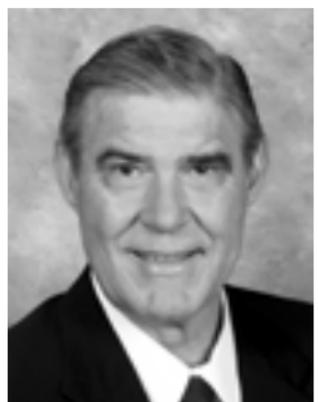
LUNCHEON SPEAKER

BUILDING WORLDS FOR LEARNING
BY MICHAEL MOSHELL,
CREAT DIGITAL MEDIA PROGRAM DIRECTOR,
UNIVERSITY OF CENTRAL FLORIDA, USA

Growing up, we construct mental models of larger and larger spaces as we learn to control and modify them. Children arrange their toys, and then their own rooms. Adults build houses, cities, and nations. The spaces we build are extensions of our minds. Our minds in turn are framed (and limited) by the worlds we build and inhabit.

What if we could build worlds without limitations of cost or competition? What if we could choose with whom to share them? How would our thinking change? Would we become better citizens – or worse ones? This experiment is underway, as computer games and virtual environments provide an expanding array of options for experimental world-building.

This talk reports on work by the author and others, in which learners construct virtual worlds and tell stories within these worlds. Schoolchildren, university students, soldiers, and adults of all ages are learning new skills and pioneering new forms of human-human interaction through shared virtual worlds. Education in the future may be profoundly different as a result.

Dr. J. Michael Moshell received his Ph.D in Computer Science from Ohio State University in 1975. He taught at the University of Tennessee before moving to the University of Central Florida (Orlando, Florida USA) in 1984. He developed the Visual Systems Laboratory at UCF's Institute for Simulation and Training, served as a professor of Computer Science, and now directs the CREAT Digital Media Program. His research concerns simulation and virtual environments for learning. He has published over 50 papers and received over $6 million in research grants and contracts.

BALL AEROSPACE & TECHNOLOGIES CORP.
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8585 Cote de Liesse
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FAX: 514-341-7699
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CAE Power Systems and Simulation

CAE has been developing power plant simulators for three decades. These simulators reproduce the physical and environmental properties of the plant control room and function operationally in precisely the same manner as the actual plant being simulated. CAE also provides simulator upgrades and retrofit services.

CAE has pioneered many of the principal advances in simulator design and functionality. It is this desire to create value through innovation that has led to industry-wide recognition of CAE's cutting-edge simulator technologies based on ROSE – CAE's real-time component-based simulation environment.

However, utilities turn to CAE for more than its long service record and technology leadership. From conception to completion, and for the total life cycle of the project, CAE's customer services and response augment the high degree of system reliability that is expected of CAE simulators.

In open competition, customers constantly select CAE when they are seeking a balanced solution i.e. technical superiority and value for money. CAE is well established in the power sector and is always ready to address your simulation needs.

DATA SYSTEMS AND SOLUTIONS
CONTACT: Oussama Ashy
5705 Industry Lane, 2nd floor
Frederick, MD 21704
TEL: 301-695-3040
FAX: 301-695-3057
http://www.ds-s.com/

SimPort

SimPort is the complete object oriented real-time simulation environment. SimPort includes modeling tools, and Instructor Station, Real-Time Executive, Panel Graphics emulation, and a powerful Graphical Engineering Editor to allow you to meet your simulation needs far into the future.

RELAP5 R/T

RELAP5 R/T is a very high fidelity real-time model for diverse applications ranging from nuclear reactor thermal hydraulics to complex feedwater systems.

Embedded in RELAP5 R/T is the Nodal Neutronics Kinetics Module (NNKM), a 3D engineering grade neutronics model.

EXHIBITORS

GSE POWER SYSTEMS
CONTACT: Alex Lekich
9189 Red Branch Road
Columbia, MD 21945
TEL: 410-772-3500
FAX: 410-772-3595
http://www.gses.com

GSE Power Systems and our RNI Technologies division have installed over 180 fossil and nuclear simulators plus 70 major upgrades. As the leading provider of real-time power plant simulators, we offer cost effective, high fidelity technology and solutions to help you achieve your objectives for operator training, classroom instruction, and engineering evaluation. With software from MS Windows, UNIX, and Linux. At WMC'03 we present JADE, our new modeling and Instructor Station tools.

SAIC – INFORMATION & SIMULATION SCIENCES DIVISION
CONTACT: Steve Walters
4031 Colonel Glenn Highway
Beavercreek, OH 45431
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FAX: 937-431-2297
http://www.saic.com

SD-Link is software that supports collaborative communications through firewalls in a fully secured and firewall friendly manner. AVS is a collaborative and distributed test system currently in use on multiple military system acquisitions.

DPS TECHNOLOGIES INDIA PVT. LTD.
CONTACT: Soumyajit Ghosh
4rth Floor, Phase II, Block - M,
NAM Complex, B Wing,
New Alipore, Kolkata - 700 053.
TEL: 91- 33 - 2400 4581 (5 lines), Extn. 226
FAX: 91- 33- 2400 0554
http://www.dpsindia.com

SYMBOLS stands for: System Modeling by Bondgraph Language and Simulation. It is a modeling, simulation, and control systems software for dynamic systems in multi-energy domain and control theoretic analysis and synthesis encompassing a broad range of engineering systems.

TRAX CORPORATION
CONTACT: Diane Holt
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http://www.traxcorp.com

TRAX provides a full range of high-fidelity process simulators; dynamic simulation services; ProTRAX simulation software; a suite of training services; control system design and tuning, and a complete line of SCR-related services.

vPowerHouse
CONTACT: Patrick Foley
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Ames, IA 50014
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Email: **pfoley@iastate.edu**

vPowerHouse provides power plant simulation
for training and modeling purposes.

Frontier Technology Inc.
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Controllab Products BV
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http://www.20sim.com

20-SIM is an advanced modeling and simulation package for Windows. With 20-SIM you can simulate the behavior of dynamic systems, such as electrical, mechanical, thermal and hydraulic systems, and any combination of these. 20-SIM models may consist of iconic diagrams, bond graphs, block diagrams as well as differential equations. It is used in mechatronics, control engineering, robotics, mechanical engineering, signal processing, hydraulics, etc.

SCS - Society for Modeling and Simulation International
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www.scs.org

Health Sciences Simulation
General Co-Chair: James G. Anderson, *Purdue University*
General Co-Chair: Meyer Katzper, *FDA/CDER*

MONDAY, JANUARY 20, 2003
HEALTH CARE POLICY   CAPTIVA B   10:30 - 12:00
Chair: Godefridus G. van Merode, Ph.D.
Maastricht University, The Netherlands

A State Space Dynamic Modes Model of Health Care Prices, 1900-1950
George W. Pasdirtz, Ph.D.
University of Wisconsin-Madison, USA

Correlation and Health Care Research
William C. Conley, Ph.D.
University of Wisconsin-Green Bay, USA

HEALTH SERVICES I   CAPTIVA B   1:30-3:00
Chair: Ruth Davies, Ph.D.
University of Southampton, UK

Using Simulation for Planning Services for End-Stage Renal Failure
Ruth Davies, Paul Roderick, and Chris Jones
University of Southampton School of Management, UK

Treating Ailing Emergency Departments with Simulation: An Integrated Perspectives
S.C. Brailsford
University of Southampton School of Management, UK
L. Churilov and S.K. Liew, *Monash University, Australia*

Stimulation of Demand for Health Care: Evidence from a Model-Based Study of Shifts in Cardiac Catheterization Provision
K.S. Taylor, *London School of Economics and Political Science, UK*
B.C. Dangerfield, *University of Salford, UK*

TUTORIAL I   CAPTIVA B   3:30 - 5:00

Ruth M. Davies, Ph.D., Senior Lecturer, University of Southampton UK will offer a tutorial on The Use of Monte Carlo Simulation, Discrete Event Simulation and System Dynamics in Health Systems Modeling. The purpose of the tutorial is to provide an understanding of commonly used simulation approaches and how they may be used in hospitals and health services planning. Simulation software will be demonstrated and the different approaches compared.

TUESDAY, JANUARY 21, 2003
HEALTH SERVICES II   CAPTIVA B   8:30 - 10:00
Chair: George W. Pasdirtz,*University of Wisconsin, USA*

Hospitals as Complexes of Queuing Systems
Godefridus G. van Merode and Siebren Groothuis
Maastricht University, The Netherlands

Simulation at the Emergency Department
Siebren Groothuis, Godefridus G. van Merode,
Yvonne J.M. Koppelman, and Arie Hasman
Maastricht University, The Netherlands

Computer-Based Physician Order Entry in a Hospital: A Simulation Study
James G. Anderson, Ph.D., *Purdue University, USA*
Marilyn M. Anderson, B.A., *Anderson Consulting, USA*

HEALTH SCIENCES

MODELING EPIDEMICS I
CAPTIVA B   10:30 - 12:00
Chair: B.C. Dangerfield, *University of Salford, UK*

Using Discrete Event Simulation to Select Affordable Intervention Programs for Vertical HIV Transmission in Developing Countries
> Marion S. Rauner, *University of Vienna, Austria*
> Sally C. Brailsford, *University of Southampton, UK*
> Steffen Flessa
> *Evangelical University of Applies Sciences Nuernberg, Germany*

A Model-Based Analysis of AIDS Treatment
> Felippe De Souza, *UBI-Universidade Beira Interior, Portugal*

MODELING EPIDEMICS II
CAPTIVA B   1:30 - 3:00
Chair: Marion S. Rauner, *University of Vienna, Austria*

The Impact of Social Isolation on STD-Transmission: A Micro-Modeling Approach to Modeling Epidemics in a Network of Heterogeneous Actors
> Christoph Weismayer, Riaz Abdullah, and James G. Anderson
> *Purdue University, USA*

A Simulation Model of Schistosomiasis Transmission Dynamics and Control: Uncertainty and Sensitivity Analysis, and Model Calibration
> Song Liang, *University of California, Berkeley, USA*

TUTORIAL II   CAPTIVA B   3:30-5:00

Jignesh Shah, a graduate Student at the Computer Engineering Department at Virginia Technical University, will present a tutorial on "Simulation and Reverse Engineering of Bio-chemical Networks." In this presentation a simulation project related to the development of new methods to aid in the identification of gene regulatory networks will be presented. Using biochemical network simulator GEPASI (http://www.gepasi.org) time series of simulated DNA microarray data are produced. A gene regulatory network can be represented as a discrete dynamical system on a finite set of states. With the appropriate choice of state set each such system can be represented by a collection of polynomial functions with values in a finite field. That is, the gene regulatory network is represented as a collection of nodes, and the state of each node is a function of one or more genes in the network. Each gene has a polynomial function associated with it, which takes in the present state of the network as an input and outputs the next stage of the gene. Using tools from computational algebra all such systems consistent with a given data set can be determined. Using the polynomial system simulato, PolyNet, the behavior of such networks can be studied and compared to the behavior of the Gepasi system that produced the data.

The goal of the project is to study the limiting behavior of such systems, and its relationship to the structure of the polynomials. In this poster we present an overview of our approach and some preliminary experimental results.

HEALTH SCIENCES

WEDNESDAY, JANUARY 22, 2003

PHARMOCOMETRIC APPLICATIONS
CAPTIVA B   8:30 - 10:00
Chair: James Hargrove, *University of Georgia, USA*

Adrenal Dynamics and Corticosteroids
  Meyer Katzper, *FDA/CDER, USA*

Optimal Design of a Clinical Test for Measuring Glomerular Filtration Rate in Patients with Borderline Renal Function
  Karl Thomaseth, *LADSEB-CNR, Italy*

Mathematical Models of Glucose and Free Fatty Acids Kinetics During Glucose Tolerance Tests
  Karl Thomaseth, Alessandra Pavan, Giovanni Pacini,
  Alexandra Kautzy-Willer, Angelo-Avogaro
  LADSEB-CNR, Italy

BIOMEDICAL APPLICATIONS CAPTIVA B   10:30 - 12:00
Chair: Karl Thomaseth, *LADSEB-CNR, Italy*

Human Respiratory System: Simulation of Breathing Mechanics and Gas Mixing Processes Based on a Non-Linear Mathematical Model
  Bernhard Qautember, *Der Universitaet Innsbruck, Austria*

Mathematical Modeling: A Tool for Nutritional Genomics and Bioinformatics
  James L. Hargrove and Diane K. Hartle
  The University of Georgia, Athens, USA

A CAT-scan Slice Matrix Approach to Simulation Based Dental Training
  Dr. Gerald Pitts, Mr. Chris Smith, *Trinity University, USA*

TUTORIAL III (CONTD) CAPTIVA B   1:30 - 3:00

Roger W. Jelliffe, M.D., Professor of Medicine, USC, will offer a workshop on "Principles of Pharmacokinetics-New Unified Approaches to Parametric and Nonparametric Population PK and PD Modeling-Applications to Therapeutic Drug Monitoring and to Optimal Individualization of Drug Therapy and Cancer Chemotherapy." This course is intended for biomedical scientists, physicians, pharmacists, and those with an interest in drug development and evaluation, medical decison-making, clinical trials, population pharmacokinetic/pharmacodynamic modeling and simulation, and therapeutic drug monitoring and individualization of drug therapy for optimally precise patient care. The course will examine and review current and new methods of parametric and nonparametric population PK/PD modeling, with special emphasis on the FOCE parametric Iterative 2-Stage Bayesian (IT2B) and the nonparametric adaptive grid (NPAG) programs. Statistical and mathematical consistency and efficiency of methods in population PK/PD modeling will be discussed, evaluated, and compared.

TUTORIAL III (CONTD) CAPTIVA B   3:30-5:00

ENGINEERING EDUCATION

MONDAY, JANUARY 20, 2003

SESSION 1   **MAPLE**   **10:30 - 12:00**
E-LEARNING AND DISTANCE EDUCATION
Chairs: R. Davoli, *University of Bologna, Italy*
R. Negrini, *Politecnico di Milan, Italy*

Personalization Mechanisms for Active Learning in a Distance Learning System
     Antonella Carbonaro, *University of Bologna, Italy*

Effectiveness of a Fully On-line Bachelor Programme in Computer Engineering
     Roberto Negrini, *Politecnico di Milan,Italy*

Simulation in Professional Industrial E-Training Applications
     Jan Bartak, Christian Leo, Yves Sicard, *Corys, France*

SESSION 2   **MAPLE**   **1:30 - 3:00**
HARDWARE AND NETWORK SIMULATION
Chairs: J. Bartak, *Corys, France*
Z. Navabi, *University of Tehran, Iran*

New Directions in Operating Systems Courses Using Hardware Simulators
     Renzo Davoli, *University of Bologna, Italy*
     Michael Goldweber, *Xavier University, USA*

OSim: An Open Source Simulator for Teaching Networking Concepts
     Arnold Pears, *University of Uppsala, Sweden*

A Pluggable Environment for Evaluation of RT Level Hardware Component Designs
     Zain Navabi, *University of Tehran, Iran*

SESSION 3   **MAPLE**   **3.30 - 5.00**
EXPERIENCES WITH CURRICULA AND SOFTWARE TOOLS
Chairs: A. Pears, *University of Uppsala, Sweden*
J.W. Herrmann, *University of Maryland, USA*

Class Projects in Analytical Techniques for Electrical Engineering with the Use of Maple
     Rodney J. Soukup
     University of Nebraska, USA

A Curriculum on Modeling and Simulation
     Hamid Vakilzadian
     University of Nebraska, USA

Interfaces to Enhance User-Directed Experimentation with Simulation Models of Discrete-Event Systems
     Sara T. Hewitt, Jeffrey W. Herrmann
     University of Maryland, USA

ENGINEERING EDUCATION

TUESDAY, JANUARY 21, 2003

SESSION 4   **MAPLE**   **8.30 - 10.00**
KNOWLEDGE MANAGEMENT AND MULTIMEDIA TOOLS
Chairs: A. Pears, *Univeristy of Uppsala, Sweden*
M. Magnani, *University of Bologna, Italy*

An Urban Studies Model of Applied Learning: Integrating Internet-based Visualization and Multimedia Technology
 Janet Cherrington-Cucone
 Minnesota State University, USA

A Multimedia Mobile City Guide to Support Outdoor Learning on Demand
 Paola Salomoni
 University of Bologna, Italy

Assessment Strategies of an Intelligent Learning Management System
 Matteo Magnani, Giorgio Casadei, *University of Bologna, Italy*

SESSION 5   **MAPLE**   **10.30 - 12.00**
MODELING AND SIMULATION TOOLS
Chairs: P. Salomoni, *University of Bologna, Italy*
L. Znamirowski, *Silesian Univsersity of Technology, Poland*

System Dynamics Simulation Model of the Port-Transhipment System Manager Expert-Logical Complex Functions: Sklok, Sklow and Sklos
 Ante Munitic, *Maritime Faculty University of Split, Croatia*

Simulation of Environment-Forced Conformations in the Polypeptide Chains
 Lech Znamirowski, *Silesian Univsersity of Technology, Poland*
 Ewa D. Zukowska, *Macro&Nano Systems Designs, USA*

An Algorithm for the Assessment of Reduced Dynamic System Models for Design
 Polat Sendur, Jeffrey L. Stein, Loucas S. Louca, Huei Peng
 University of Michigan, USA

SESSION 6   **MAPLE**   **1.30 - 3.00**
MODELING AND SIMULATION IN ENGINEERING EDUCATION
Chairs: H. Vakilzadian, *University of Nebraska, USA*
P. Salomoni, *University of Bologna, Italy*

The Application of Matlab in Engineering Education
 Jiri Vondrich
 Czech Technical University, Prague

Investigating Cognitive Processes in Robotic Programmes Developed by Children in Educational Context
 Pier Augusto Bertacchini, Eleonora Bilotta, Lorella Gabriele
 Universita della Calabria, Italy
 Pietro Pantano, Rocco Servidio
 Centro Interdipartimentale della Comunicazione, Cuba

PEARL: A Generic Architecture for Live Experiments in a Remote Laboratory
 Tilman Schaefer, Jean-Marc Seigneur, Alexis Donelly
 Trinity College, Ireland

SESSION 7   **MAPLE**   **3.30 - 5.00**
ROUND TABLE PANEL DISCUSSION ON MODELING AND SIMULATION IN ENGINEERING EDUCATION
Chair: H. Vakilzadian, *University of Nebraska, USA*

2003 International Conference on Bond Graph Modeling and Simulation (ICBGM'2003)

General Chair: Professor Jose J. Granda
California State University, Sacramento, USA
Program Chair: Professor Francois Cellier
University of Arizona, Tucson Arizona, USA

MONDAY JANUARY 20, 2003

WMC'03 KEYNOTE SESSION
8:30 - 10:00

Keynote Address: Shaking the Foundations
Dr. Raymond Montgomery
NASA Langley Research Center, USA

SESSION 1   VISTA A/B   10:30 - 12:00

WELCOME.
Prof. Jose J. Granda, ICBGM 2003 General Chair
California State University, USA
Prof. Francois Cellier, ICBGM 2003 Program Chair
University of Arizona, USA

THEORY

Simulation of Qualitative Bond Graph Model using Fuzzy Arithmetic
Chi Hang Lo, Y. K. Wong, A. B. Rad
Hong Kong Polytechnic University, Hong Kong

Incremental Bond Graph: Starting Point for Sensitivity Analysis as well as Robustness Study
Wolfgang Borutzky
University of Applied Sciences, Germany
Genevieve Dauphin-Tanguy
Ecole Centrale de Lille, France

BG-CFD Methodology for Multicomponent Solutions.
Part I: Multivelocity Model
Jorge Luis Baliño
Instituto de Pesquisas Energeticas e Nucleares, Brazil

SESSION 2   VISTA A   1:30 - 3:00
METHODOLOGY I

BG-CFD Methodology for Multicomponent Solutions
Part II: Diffusion Model
Jorge Luis Baliño
Instituto de Pesquisas Energeticas e Nucleares, Brazil

Uncertainties in Multiport Elements
Genevieve Dauphin-Tanguy, Casimir Kam, Philippe Kubiak
Ecole Centrale de Lille, France

Analysis of Electromagnetic Systems Using the Extended Bond Graph Method: Mechanically Static Systems
Dwight Landen
University of Texas at Austin, USA

Session 3 Vista B 1:30 - 3:00
Methodology II

Switching Cell as a Converter Core Representation for Analysis
Kaicar Ammous, Bruno Allard, Hervé Morel
Cegely Centre de Génie Electrique de Lyon, France
Anis Ammous
LETI, Laboratoire d'Electronique et des Technologies de l'Information

Bond Graphs for 1-Dimensional Duct Flows Using Nonlinear Finite Lumps
Donald Margolis
University of California, Davis, USA

Structural Analysis of Linear Bond Graphs with Integrated State Variables
Christophe Sueur, Genevieve Dauphin-Tanguy
Ecole Centrale de Lille, France

Session 4 Vista A 3:30 - 5:00
Fault Detection

Bond Graph: A Suitable Tool For Component Faults Diagnosis
Naamane Aziz , Sia Kamel, *DIAM IUSPIM, Marseille, France*

Derivation of Constraint Relations from Bond Graph Models for Fault Detection and Isolation
Belkacem Ould Bouamama, Arun Kumar Samantaray,
Marcel Staroswiecki,
Cite Scientifique, Bat. EUDIL, France
Genevive Dauphin-Tanguy
Ecole Centrale de Lillle, France

Model-Based Reasoning about Fault Propagation
Stefan Feyock
College of William & Mary, USA

TUESDAY January 21, 2003

Plenary Session Vista A/B 9:00 - 10:00
Plenary Paper

Henry Paynter and the History and Development of Bond Graphs
Dean Karnopp, Donald Margolis,
University of California, Davis, USA

Session 5 Vista A 10:30 - 12:00
Causality

Determination of the Energy Distribution Inside a Linear Time-Invariant System Using a Bicausal Bond Graph
Serge Scavarda , X. Xia, E. Bideaux
Institut National des Sciences Appliquées de Lyon, France

An Energy-Based Approach to Parameterizing Parasitic Elements for Eliminating Derivative Causality
Donald G. Rideout , Jeffrey L. Stein
University of Michigan, USA

Bicausality-based Procedures for Transfer and Transmission Matrix Determination of Single Source Single Load Linear Systems
Wilfrid Marquis-Favre, Xiaoguang Xia, Serge Scavarda
Institut National des Sciences Appliquées de Lyon, France

Sesssion 6   Vista B   10:30 - 12:00
Electrical Systems

Sizing of an Electric Power Steering System on Dynamic and Energetic Criteria
Olivier Mechin, Wilfrid Marquis-Favre, Serge Scavarda
Institut National des Sciences Appliquées de Lyon, France
Pierre Ferbach
PSA Peugeot Citroen, France

Transmission Line and Bond Graphs
Herve Morel, Kaicar Ammous, Bruno Allard,
Hatem Garab, Dominique Bergogne, Philippe Auriol
Institut National des Sciences Appliquées de Lyon, France

Skin Effect and Bond Graphs
Herve More, Kaicar Ammous, Anis Ammous,
Bruno Allard, Mi Wei, Dominique Bergogne
Institut National des Sciences Appliquées de Lyon, France

Sesssion 7   Vista A   1:30 - 3:00
Software

Object-oriented Modeling of Complex Physical Systems Using the Dymola Bond-Graph Library
Francois E. Cellier
University of Arizona, USA
Robert T. McBride
Raytheon Missile Systems, USA

The CAMP-G/MATLAB-SIMULINK Computer Generated Solution Of Bond Graph Derivative Causality
Jose J. Granda
California State University, Sacramento, USA

Sesssion 8   Vista A   3:30 - 5:00
Control

Physically-plausible Models for Identification
Peter J. Gawthrop
University of Glasgow, UK

Sliding Mode Control of Hybrid Systems Modelled Using Bond Graph with Ideal Switches
Pierre-Yves Richard, Cécile Morvan, Jean Buisson, Hervé Cormerais
SUPêLEC-Campus de Rennes, France

One Model for One Frequency Range: Comparison of Bond Graph Based Simplification Methods
Grace Gandanegara, Xavier Roboam, Bruno Sareni
LEEI UMR, France
Genevieve Dauphin-Tanguy
Ecole Centrale de Lille, France

SESSSION 9   VISTA B   3:30 - 5:00
THERMODYNAMICS I

Kinetic Energy in Convection Bond Graphs
    Forbes T. Brown, *Lehigh University, USA*

Object-oriented Modeling of Convective Flows Using the Dymola Thermo-Bond-Graph Library
    Francois E. Cellier, *University of Arizona, USA*
    Jargen Greifeneder, *Universitat Stuttgart, Germany*

Electrochemical Cells Modelling by Means of the Bond Graph Technique. Application to the Lead-Acid Batteries
    Jesus Felez, Carlos Vera, Jose M. Mera, Juan J. Esperilla
    Universidad Politécnica de Madrid, Spain

WEDNESDAY JANUARY 22, 2003

SESSSION 10   VISTA A   8:30 -10:00
VEHICLES

Influence of the Roll Axis Consideration in Vehicle Dynamics: Bond Graph Models
    Jose Manuel Mera, Carlos Vera, Jesus Felez, Juan Jose Esperilla
    Universidad Politécnica de Madrid

Torque Converter with Lock-up Clutch by Bond Graphs
    Katsuya Suzuki, *Aichi Science & Technology Foundation, Japan*
    Kazuhiro Tanaka, *Kyushu Institute of Technology, Japan*

SESSSION 11   VISTA B   8:30 - 10:00
APPLIED MECHANICS

A Comparison of Bond Graph Modeling with Adams Simulation Software as Applied to the Conceptual Design of a Novel Machine Tool
    Pete Fitsos, Donald Margolis
    University of California, Davis, USA

Object-Oriented Bond-Graph Modeling of a Gyroscopically Stabilized Camera Platform
    Robert T. McBride, *Raytheon Missile Systems, USA*
    Francois E. Cellier, *University of Arizona, USA*

An Engineering Model of Modified Atmosphere Packaging for Vegetables
    Hajo Rijgersberg, *ATO B.V, The Netherlands*
    Jan l. Top, *ATO B.V. and VU Amsterdam, The Netherlands*

SESSION 12   VISTA A   10:30 - 12:00
MULTIBODY DYNAMICS

Using Bond Graphs for Articulated, Flexible Multi-bodies, Sensors, Actuators, and Controllers with Application to the International Space Station
    Raymond Montgomery, *NASA Langley Research Center, USA*
    Jose J. Granda, *California State University, Sacramento, USA*

A First Approach of Distributed Parameters Systems Sizing Using Bond Graphs
    Abdechafik Derkaoui , Eric Bideaux, Serge Scavarda
    Institut National de Sciences Appliquées de Lyon, France

Self-Balancing Two Legged Walking Robot
    Amalendu Mukherjee, Pushparaj Mani Pathak, Anirvan Dasgupta
    Indian Institute of Technology, India

Bond Graph

Session 13   **Vista B**   **10:30 - 12:00**
Life Sciences

A Model Of The Left Ventricle: From The Mechanisms Of Contraction To Hemodynamics
  Ahmed Rahmani, *Industrielle de Lille, France*
  Vanessa A. Diaz-Zuccarini, *Ecole Centrale de Lille, France*
  Marisol Delgado, *Universidad Simon Bolivar, Venezuela*
  Jacques Lefevre, *IDEA.SIM LTD, UK*

A Bond Graph Model of Outer Hair Cell Active Force Generation
  Chayawee Wangcharoenrung, Raul G. Longoria
  University of Texas, USA

Session 14   **Vista A/B**   **1:30 - 3:00**
Electric Motors

Understanding Induction Motor State Equations Using Bond Graphs
  Dean Charles Karnopp
  University of California, Davis, USA

A Bond Graph Approach to Flatness-based Cascade Control of Nonlinear DC-Motor
  Sergio J. Junco
  Universidad Nacional de Rosario, Argentina
  Christophe Sueur, Genevieve Dauphin-Tanguy
  Ecole Centrale de Lille, France

Electric Motor Sizing for an Automotive Power Train to Reach Thermal Engine Powered Vehicles Performance Using an Inverse Bond Graph-Based Method
  Jérìme Laffite
  Centre technique de Vélizy, France
  Eric Bideaux, Serge Scavarda
  Institut National de Sciences Appliquées de Lyon, France
  Franck Guillemard
  Centre technique de Vélizy, France

Session 15   **Vista A/B**   **3:30 - 4:30**
Panel Discussion

Where Do We Go on from Here ?
  Moderator: Francois Cellier
  University of Arizona, USA

The Fourth International Symposium on Collaborative Technologies and Systems

General Co-Chair: Waleed W. Smari, *University of Dayton*
William McQuay, *Air Force Research Laboratory*

SUNDAY, January 19, 2003

WELCOME REMARKS   VISTA C   1:00 - 1:05
CTS SYMPOSIUM GENERAL CHAIRS

TUTORIAL 1   VISTA C   1:00 - 3:00
Session Chair: Dr. Kirk Weigand
Mixed Reality? Blending the Real, Virtual, and Imagined
   Dr. Charles E. Hughes
   University of Central Florida, USA

TUTORIAL 2   VISTA C   3:30 - 5:30
Session Chair: Dr. Christian Toinard
Mobile Collaboration
   Dr. Sumi Helal
   University of Florida, USA

MONDAY, January 20, 2003

WMC '03 OPENING REMARKS   8:30 - 9:00
Dr. Chell Roberts, WMC '03 General Chair

WMC '03 KEYNOTE SPEECH   VISTA   9:00 - 10:00
SHAKING THE FOUNDATIONS!
   Dr. Raymond C. Montgomery, Senior Research Scientist
   NASA Langley Research Center, VA, USA

CTS 03 KEYNOTE SPEECH I
**   VISTA C/D   10:30 - 12:00**
Session Chair: Mr. William McQuay
Collaborative Web Services and Peer-to-Peer Grids
   Dr. Geoffrey C. Fox
   Community Grid Computing Laboratory, Indiana University, USA

SESSION 1   VISTA C/D   1:15 - 2:20
INFRASTRUCTURE FOR COLLABORATIVE SYSTEMS AND APPLICATIONS

Collaborative Electronic Notebooks as Electronic Records: Design Issues for the Secure Electronic Laboratory Notebook (ELN)
   James D. Myers, Pacific Northwest National Laboratory, USA

Service Mediating Workflow Management
   Jinmin Hu and Paul Grefen
   University of Twente, The Netherlands

Analytical Issues in Collaborative Performance Assessment
   William Leigh Ottati, Randall D. Whitaker, and Clifford E. Brown
   Air Force Research Laboratory, Northrop Grumman Information Technology, and Wittenberg University, USA

COLLABORATIVE TECHNOLOGIES

SESSION 2   VISTA C/D   2:20 - 3:10
COORDINATION MECHANISMS AND APPLICATIONS

Modelling Process Internal Coordination

Philippe Lopistéguy, Patrick Etcheverry, and Pantxika Dagorret
Laboratoire d'Informatique de l'Université de Pau et des Pays de l'AdourBayonne, France

A P2P Approach to Land Warriors Coordination

Maurizio Panti and Loris Penserini
University of Ancona, Ancona, Italy

SESSION 3   VISTA C/D   3:30 - 4:15
KNOWLEDGE MANAGEMENT IN COLLABORATIVE SYSTEMS

Methods and Tools for Integrated Knowledge-Development of Environmentally Sound Products

Reiner Anderl, and Tri-Ngoc Pham-Van
University of Technology Darmstadt, Germany

The Age of Collaborative Knowledge Management Systems: A Technical View

Ty W. Hayden, *Ball Aerospace & Technologies Corp., USA*

SESSION 4   VISTA C/D   4:15 - 5:30
AWARENESS AND COLLABORATIVE ENVIRONMENTS FOR DECISION SUPPORT

A Flexible Architecture to Support Awareness in Heterogeneous Collaborative Environments

Carlos D. Correa and Ivan Marsic
Rutgers - The State University of New Jersey, USA

Virtual Sandplay Action Evaluation of Key Performance Parameters Relevant to Operational Requirements Documents

Vaughn Crandall, Keith W. Jones, and Kirk A. Weigand
ARIA Group, Aeronautical Systems Center at WPAFB, and Air Force Research Laboratory, USA

Decision Support Tools for Collaborative Environments to Enable Affordability for Science and Technology

Ron Shroder and Sam Boykin
Frontier Technology, Inc., USA

DEMO SESSION 1   VISTA C/D   5:30 - 6:00
Real Time Decision Support System (RTDSS)

Dawn A. Trevisani, Alex F. Sisti, and Jerome Reaper
Air Force Research Laboratory, NY and SAIC, OH, USA

TUESDAY, JANUARY 21, 2003

SESSION 5   VISTA C/D   8:30 - 9:20
WEB-ENABLED SIMULATION AND COMPUTING

A Framework for Creating VRML Visualizations from Discrete Event Simulations

Lee A. Belfore, II, Roland R. Mielke and Krishna C. Kunam
Old Dominion University, USA

XNSim: Distributed Simulation via an Extensible Network

John Novotny, Igor Karpov, Chendi Zhang, and Nazareth S. Bedrossian
Rice University and The Charles Stark Draper Laboratory, Inc., USA

Collaborative Technologies

Session 6   Vista C/D   9:20 - 10:10
Web Infrastructure for Collaborative Applications

Transparent Collaborative Web Environment
Adbulmotaleb El Saddik
University of Ottawa, Canada

Integrating Heterogeneous Systems for Real-time Distributed Command and Control
Curtis A. Carver, Stephen Hamilton, and John M.D. Hill
United States Military Academy, USA

CTS '03 Keynote Speech II
Vista C/D   10:30 - 12:00
Session Chair: Mr. William McQuay
The Scientific Workspace of the Future:
An Overview of Advanced Collaboratory and Grid Research
Dr. Rick Stevens, Director,
Mathematics and Computer Science Division, Argonne National Laboratory and The University of Chicago

Tutorial 3   Vista C/D   2:00 - 3:15
Constructing Collaborative Enterprises and Decision Support Solutions in KnowledgeKinetics™ (K2™)
Gary Whitted and Brad Mallare
Ball Aerospace and Technologies Corp., USA

Tutorial 3 (Contd)   Vista C/D   3:30 - 4:00
Constructing Collaborative Enterprises and Decision Support Solutions in KnowledgeKinetics™ (K2™)
Gary Whitted and Brad Mallare
Ball Aerospace and Technologies Corp., USA

CTS 2003 Panel Session I
Vista C/D   4:00 - 5:30
Collaborative Virtual Environments to Support System Design and Manufacturing
Moderator: Dr. Grace Bochenek
U.S. Army Tank-automotive and Armaments Command's Advanced Collaborative Environments Group, USA

Panel Members:
Bob Brown, *DELMIA Corp., USA*
Ken Ciarelli, *U.S. Army, USA*
Pat Banerjee, *University of Illinois-Chicago, USA*
James Ragusa, *University of Central Florida, USA*

Demo Session 2   Vista C/D   5:30 - 6:00
A Collaborative Electronic Laboratory Notebook
James D. Myers and Michael R. Peterson
Pacific Northwest National Laboratory, USA

COLLABORATIVE TECHNOLOGIES

WEDNESDAY, JANUARY 22, 2003

SESSION 7 **VISTA C/D** **8:30 - 10:10**
SPECIAL SESSION ON MOBILE COLLABORATIVE ENVIRONMENTS
Session Organizers & Chairs
Doctors Heri Ramampiaro and Alf Inge Wang
Norwegian University of Science and Technology, Norway

Language Constructs for Conceptual Modelling of Mobile Object Systems
Peter Ahlbrecht, Silke Eckstein, Karl Neumann,
Technical University Carolo-Wilhelmina at Brunswick Braunschweig, Germany

Context Information vs. Sensor Information:
A Model for Categorizing Context in Context-Aware Mobile Computing
Louise Barkhuus
The Information Technology University of Copenhagen, Denmark

Evaluating the Usability of a Mobile Collaborative System: Exploring Two Different Laboratory Approaches
Jesper Kjeldskov and Mikael B. Skov
Aalborg University, Denmark

A Mobility Prediction Scheme with a Call Admission Control in Wireless Cellular Network
J. Tsiligaridis and Raj Acharya
SUNY at Buffalo, NY, and Penn State University, PA, USA

CTS '03 PLENARY SESSION I
VISTA C/D **10:30 - 12:00**
Collaborative Technology Adoption: A Case Study of Success and Challenges
Dr. Steven E. Poltrock, *Fellow*, *The Boeing Company*

TUTORIAL 4 **VISTA C/D** **1:15 - 3:10**
The Craft of Building Social Agents in Collaborative Enterprises
Dr. Henry Hexmoor
University of Arkansas, USA

CTS '03 PANEL SESSION II
VISTA C/D **4:00 - 5:30**
Warfighters Speak Out on Collaboration: Current State of the Practice in Collaboration Systems
Moderator: Donald E. Henager, *SAIC, CA, USA*
Panel Members:
Lt Col David Hagopian, *US Marine Corps, USA*
Lt Col Walter Price, *US Air Force, USA*
CDR Tim Labor, *US Navy, USA*

DEMO SESSION 3 **VISTA C/D** **5:30 - 6:00**
XNsim - Distributed Simulation Via an eXtensible Network
Dr. Nazareth Bedrossian,*The Charles Stark Draper Laboratory, USA*

COLLABORATIVE TECHNOLOGIES

THURSDAY, JANUARY 23, 2003

SESSION 8   CYPRESS   8:30 - 10:10
SPECIAL SESSION ON COLLABORATIVE ROBOTS

Session Organizers and Chairs
Drs. Kuo-Chi Lin and Louis Chan
University of Central Florida and AFRL, USA

Realistic Simulation of Cooperating Robots
Erol Gelenbe, Khaled Hussain and Varol Kaptan
University of Central Florida, USA

Marriage of Simulation and Robotics: Collaboration in a Live-Virtual World
Sonia von der Lippe and Bradley C. Schricker
AT&T Government Solutions, Inc., USA

Distributed Combined Discrete-Continuous Simulation for Multiple MAVs Motion Analysis
Zheng Xia and Kuo-Chi Lin, *University of Central Florida, USA*

Sensor Fusion Issues in Collaborative Robots
Dan Mullally, Mike Dolezal, Joe Martinez, Matt Rhodes,
Tim Roberts, Gary Stein, Josh Wilson, and Frank Goergen
University of Central Florida, USA

CTS '03 PLENARY SESSION II
     CYPRESS   10:30 - 12:00

Fusion of Language and Thought Processes for Collaborative Technologies and Systems
Dr. Leonid I. Perlovsky
Air Force Research Laboratory, USA

SESSION 9   CYPRESS   1:15 - 2:20
COLLABORATIVE DISTRIBUTED MODELING AND SIMULATION APPROACHES

Modular Distributed Modeling
Taner Eskil, Jon Sticklen, and Clark Radcliffe
Michigan State University, USA

Collaborative and Distributed Simulation Through a Reflective XML Middleware
Mathieu Blanc, Olivier Francillon, and Christian Toinard
LIFO/ENSI Bourges, France

Integrating Behavioral Models with Detailed OPNET Network Models in a Distributed Framework
Michael J. Dooley, Joel D. Dallaire, and Jerome H. Reaper
Air Force Research Laboratory, USA

SESSION 10   CYPRESS   2:20 - 3:10
COLLABORATIVE ENGINEERING MODELING, DESIGN AND VERIFICATION

Multidisciplinary Collaboration Methodology for System-of-Systems (SOS)
Hoda S. Abdel-Aty-Zohdy and Robert L. Ewing
Oakland University, MI, and US Air Force Research Laboratory, USA

Optimizing Collaborative Engineering Verification Environments
Gregory D. Peterson, *The University of Tennessee, USA*

Collaborative Technologies

Intelligent and Autonomous Agents for Collaborative Applications

Towards Collaboration between Human and Social Agents that Mind Human Social Personality
> Henry Hexmoor and Srinivas Battula
> *University of Arkansas, USA*

Autonomous Agents as Conference Aids in Ubiquitous Collaborative Environments
> Marcela Rodriguez, Pedro Arroyo, Ana I. Martinez,
> Jesús Favela, and Christian Navarro
> *CICESE, B. C., México*

The CTS 2003 Forum
                        Cypress   4:15 - 5:45
Why Collaboration Hasn't Worked
> Moderator: Mark Stephenson, *SAIC, USA*

Friday, January 24, 2003

Special Session on Advanced Information Systems
Session Organizers & Chairs:
Heri Ramampiaro and Mads Nygård,
Norwegian University of Science and Technology, Norway

The DynaQuest-Framework for Dynamic and Adaptive Source Selection
> Marco Grawunder and Frank Köster,
> *University of Oldenburg, Germany*

Increasing Concurrency without Early Release
> Weihai Yu, *University of Tromsø, Norway*

Work-In-Progress Session

Enhancing Experimental Management Through Collaborative Technologies
> Jim Nagy, David Martin, Eric Loomis, and Bruce Denner
> *Air Force Research Laboratory, Windmill International Inc.,*
> *and Ball Aerospace & Technologies Corp., USA*

Advanced CEE Tool for Enterprise Analysis and Monitoring (ATEAM)
> Kevin Fitzpatrick, Michael Fogus, Ty Hayden, John Hosage,
> Seon Lee, and Daman Padam
> *Virtual Technology Corp., and Ball Aerospace & Technologies*
> *Corp., USA*

Case Study of the Applicability of Applying Telematics Enabled Collaboration Technology to Advanced Powertrain Development
> Glen N. Courtright
> *Science Applications International Corporation,SAIC, USA*

COLLABORATIVE TECHNOLOGIES

SESSION 14   **CYPRESS**   **9:15 - 10:15**
INDUSTRIAL TRACK SESSION

Implementing Collaborative Decision Support Systems Using the Object Modeling Features of KnowledgeKinetics
  Gary A. Whitted, *Ball Aerospace & Technologies Corporation, USA*

Use of Collaboration Technology in a Large Simulation Suite
  Bradley D. Dunaway
  Science Applications International Corporation, SAIC, USA

Is It Information Or Is It Knowledge? From Theory to Application
  Bradley D. Mallare
  Ball Aerospace & Technologies Corporation, USA

CONFERENCE CLOSING REMARKS
                           CYPRESS   **11:30 - 11:45**
CTS '03 SYMPOSIUM GENERAL CHAIRS

Nuclear Power Plants and Systems
Co-Chair: Scott Halverson, *AmerenUE*
Co-Chair: Mac McDade, *Carolina Power and Light*

MONDAY JANUARY 20, 2003

WMC'03 KEYNOTE PRESENTATION   8:30 - 10:00

SESSION 1   AUGUSTA A/B 10:30-12:00
SIMULATION CONCEPTS
Session Chairman: Rick Murray

ROSE® 4: After 12 years of evolution…the Revolution
   Les White, Robert Boire, *CAE*

Nuclear Asset Management
   William Parkinson, Thomas Jenkins,
   Oussama Ashy, David Hiltbrand, *DS&S*

Simulation Technology Overview
   Jody Ryan, *RNI Technologies*

LUNCH AND VENDOR DISPLAYS 12:00 - 1:30

SESSION 2A   AUGUSTA A/B 1:30 - 2:30
SIMULATOR VENDOR PRESENTATIONS
Session Chairman: Sam Ashy
Data Systems & Solutions (DS&S)
Latest simulator vendor updates from DS&S

SESSION 2B   AUGUSTA A/B 2:45 - 3:45
SIMULATOR VENDOR PRESENTATIONS
Session Chairman: Michael Chatlani
CAE Electronics Ltd.
ROSE® 4: Simulation and Beyond CAE

SESSION 2C   AUGUSTA A/B 4:00 - 5:00
SIMULATOR VENDOR PRESENTATIONS
Session Chairman: Hal Paris/Chuck Rohrmann
Simulation Solutions GSE Systems

TUESDAY JANUARY 21, 2003

SESSION 4   AUGUSTA A/B 8:30 - 10:00
APPLIED THERMAL HYDRAULIC AND CORE MODELS
Session Chairman: Graham Hancock

Significant Process Model Upgrade for the Oconee Simulator
   Keith Welchel, *Duke Energy, USA*
   Pierre-Yves Blais, *CAE, Canada*

Modeling the Balance of Plant Systems with THOR-BOP
   Chris Huth, *Domion Energy, USA*
   Dave O'Farrell, *RNI Technologies, USA*
   Peter Andersen, *Simulation Engineering, USA*

Three-dimensional Thermo Hydraulic Code BAGIRA
   Peter Kohut, *Brook Haven NationalLaboratory, NY, USA*
   S. D. Kalinichenko, A. E. Kroshilin, V.E. Kroshilin
   and A.V. Smirnov, *VNIIAES, Russia*

Session 5   Augusta A/B 10:30 - 12:00
Tools, enhancements and models
Session Chairman: TBA

Benchmarking Advanced Core Model Performance for Training Simulators
Jeff Borkowski, *Studsvik Scandpower, Inc., USA*

**Performance Test Evaluation Methodology for Operator
Training Simulator KNPEC#2**
Lee Yong Kwan, *KEPRI, Korea*

Nuclear Simulators Practical Advice for I&C Upgrades
Graham Fryer, *Powergen, UK*

Session 6   Augusta A/B 1:30 - 3:00
Simulator Upgrades and Retrofits
Session Chairman: TBA

Project Profile: The Sizewell B Simulator Replacement
Nick Alexander, *British Energy, UK*
John Micks, *CAE, Canada*

Certification of the Laguna Verde Nuclear Power Plant Simulator
Edgardo J. Roldan, *Institudo de Investigaciones Electricas, Mexico*

DOE Simulator Projects in the former Soviet Union Nuclear Power Plants
Ken Erickson, *PNNL, USA*

RELAP5-R/T Modeling of Salem Pressurizer Spray Valve Failure Event
Wayne Moran and Mike Swartz, *PSE&G, USA*
Dave Hiltbrand, P.E., and Ken Williams, Ph.D, P.E., *DS&S, USA*

Session 7   Augusta A/B 3:30 - 5:00
Simulator Related Topics
Session Chairman: TBA

Nuclear Power Plant Design Verification by Simulation
Heinz Lomann, *STN ATLAS*

Replica DCS Emulations with Datapathâ X
Tony El-Chakieh, *CAE, Canada*

Trillo NPP Full Scope Replica Simulator Project
Norberto Rivero, Alejandro Abascal, *Tecnatom, S.A.*

Wednesday January 22, 2003

Session 8   Augusta A/B 8:30 - 10:00
Panel ANS-3.5 Survey and Standard Update
Session Chairman: Mac McDade
Possible NRC Workshop on New Regulations

Open Panel Discussion
Session 9   Augusta A/B 10:30 - 12:00
Panel ANS-3.5 and Regulation Changes
Session Chairman: Mac McDade
Larry Vick, *NRC 10CFR55.46, Reg Guide 1.149*
Jim Florence, *ANSI-3.5 Working Group Secretary*
NRC Workshop Part 2

Regional Workshops In   **1:30 – 5:00**
Parallel Breakout Rooms

SESSION 10   **AUGUSTA A**
MANTG SIMULATOR MEETING WORKSHOP/WORKSHOP
Session Chairman: TBA
Topic: Open Agenda

SESSION 11   **AUGUSTA B**
MNTA SIMULATOR MEETING/WORKSHOP
Session Chairman: TBA
Topics: Open Agenda

SESSION 12   **MAPLE**
SSNTA MEETING
Session Chairman: TBA
Topic: Open Agenda

SESSION 13   **OAK**
WESTRAIN SIMULATOR MEETING/WORKSHOP
Session Chairman: Richard A. Murray, *Wolf Creek*
Topic: Open Agenda

SESSION 13B   **OAK**
STARS MEETING/WORKSHOP
Session Chairman: Scott Halverson, *AmerenUE*
Immediately follows the Westrain Workshop

THURSDAY, JANUARY 23,2003
SESSION 14   **MAGNOLIA**   **9:00 - 10:30**
USUG ANNUAL MEETING
Session Chairman: Scott Halverson, *AmerenUE*
Election Chairman: Jim Florence
    Introductions and Open Siscussions, Minutes from the Previous
    Meeting , Elections Regions 1 and 3 (odd year regions)
    Region Reports, Recent Activities, Workshop updates
    Old Business, New Business – Web Page Adjustments, Task List

SESSION 15   **MAGNOLIA**   **10:30 - 11:30**
USUG PANEL DISCUSSION/REGION REPORTS
Session Chairman: Region 1 & 2 Representatives
Panel Topic: Scenario Based Testing Implementations

SESSION 16   **MAGNOLIA**   **1:30 - 2:30**
USUG PANEL DISCUSSION/REGION REPORTS
Session Chairman: Region 3 & 4 Representatives
Panel Topic: Possible NRC Workshop Part 3

SESSION 17   **MAGNOLIA**   **2:45 - 3:45**
USUG PANEL DISCUSSION – INTERNATIONAL
Session Chairman: Region Representative
Panel Topic: Inputs from International Members

SESSION 18   **MAGNOLIA**   **4:00 - 5:00**
USUG CURRENT TOPICS FROM CONFERENCE
Session Chairman: To be announced
Panel Topic: Scenario Based Testing

FRIDAY JANUARY 22, 2003
CAE 2003 OWNERS CIRCLE CONFERENCE
RELAP CONSORTIUM MEETING WEDNESDAY 4:15
Other follow-up meetings with vendors (by appointment only)

Fossil Simulation and Training
Chairs: Richard Pennington
EPRI Simulator and Training Center

Monday, January 20, 2003
Session 1   **Vista Ballroom 8:30 - 10:00**
WMC '03 Keynote Speech

Introductions   **Captiva C**   **10:15 - 10:30**

Session 2   **Captiva C**   **10:30 - 11:15**
Power Plants Failure Prediction Scheme Based on Vibration Sensor Arrays and Fuzzy Logic Pattern Recognition
    M. Mahmoud, *Sheffield Hallam University, UK*

Session 3   **Captiva C**   **11:15 - 12:00**
seLearning™: From Concept to Reality
    Christopher Cull and Bernhard Weiss, *CAE, Canada*

Vendor Breakout Sessions   **Augusta A/B**
                                      1:30 - 2:30
                                      2:30 - 3:00
                                      3:00 - 4:00
                                      4:00 - 5:00

Tuesday, January 20, 2003

Session 1   **Captiva C**   **8:30 - 10:00**
Round Table

Session 2   **Captiva C**   **10:30 - 11:15**
Cyberthon-International Competition to Test the Professional Skills of Fossil Power Plant Operators
    Vladimir Rubashkin, *Power Plant Simulators Company, Russia*
    Graham Wilson, *Eskom, South Africa*

Session 3   **Captiva C**   **11:15 - 12:00**
On-Line Simulation and its Applications
    You Jing Yu, *AF Technology, China*
    Yih-Jung Yeh, *Arch Technology, Inc. USA*
    Ma Hong Shun, *Yimin Power Plant, China*

Session 4   **Captiva C**   **1:30 - 2:30**
A Cost Effective Approach to Emulating the Plant DCS
    Tony El-Chakieh, Claude Vincent
    David Zatkovic, and Francois Mathieu
    CAE Inc., Canada

Wednesday, January 22, 2003

Session 1   **Captiva C**   **8:30 - 10:00**
EPRI GE Frame 7 Simulator and ITS System Demo
    DS&S, USA

Day 3, Session 2   **Captiva C**   **10:30 - 11:15**
Simulation Technologies for Fossil Power Plants Used in Russia
    Alexander Rubashkin and Vladimir Rubashkin
    Power Plant Simulators Company, Russia

Day 3, Session 3   **Captiva C**   **11:15 - 12:00**
The Process Optimization and Anaylsis in the Fossil Power Industry
    Yang Xinghe, Zhou Weichang and You Jingyu
    AF Technology Ltd, China

Communication Networks

Monday, January 20, 2003

SESSION 1   Oak   10:30 - 12:00
Wireless Ad Hoc Networks

Mobility versus Link Stability in the Simulation of Mobile Ad Hoc Tao Lin Networks
> Scott F. Midkiff
> *Virginia Polytechnic Institute and State University, USA*

Impact of Failures on Routing in Mobile Ad Hoc Networks Using DSR
> Xiaobing Hou, David Tippe
> *University of Pittsburgh, USA*

Sensor Data Dissemination through Ad Hoc Battlefield Communications
> Linda Briesemeister, *SRI International, USA*

SESSION 2   Oak   1:30 - 3:00
Challenges in Network Simulation

Scalability Analysis of Network Simulators Revisited
> David M. Nicol, *Dartmouth College, USA*

Progressive Scaling: A Methodology for Tuning and Validating Large Simulations of Wireless Ad Hoc Networks
> Cesar Santivanez, *BBN Technologies, USA*
> A. Bruce McDonald, *Northeastern University, USA*

Component-Based Simulation and Agent-Based Brokering: Towards Ad Hoc Simulations in Crisis and Emergency Management
> Boleslaw Szymanski, Gilbert Chen,
> *Rensselaer Polytechnic Institute, USA*
> Linda F. Wilson, *Dartmouth College, USA*

SESSION 3   Oak   3:30 - 5:00
Modeling Ad Hoc Network MAC

How Good is Fluid Simulation for Simulating IEEE 802.11 Operated WLANs?
> Hwangnam Kim, Jennifer C. Hou
> *University of Illinois at Urbana-Champaign, USA*

Performance of MAC Protocol in Ad Hoc Networks
> Yunli Chen, Qing-An Zeng, Dharma P. Agrawal
> *University of Cincinnati, USA*

Tuesday, January 21, 2003
SESSION 4   Oak   8:30 - 10:00

Network-Based Quality-of-Service

Burst Shaping Queueing
> Vasilios Darlagiannis, Martin Karsten, Ralf Steinmetz
> *KOM, Darmstadt University of Technology, Germany*

SRAMT-LE: A Hybrid Sender and Receiver-based Adaptation Scheme for TCP Friendly Multicast Transmission using Layered Encoding
> Christos J. Bouras, Apostolos Gkamas
> *Research Academic Computer Technology Institute, Greece*

Quality based Adaptive Video Over the Internet
> Xiaoxiang Lu, Shu Tao, *University of California, Irvine, USA*
> Magda El Zarki, Roch Guérin, *University of Pennsylvania, USA*

Communication Networks

SESSION 5   **Oak**   **10:30 - 12:00**
Modeling and Analysis of Wireless Systems

On the Inclusion and Simulation of Novel Uplink and Downlink Frame
    Ahmed F. Kamal, *Georgia Institute of Technology, USA*

Structures to Improve 4G Systems Capacity and Performance
    John A. Copeland, *Georgia Institute of Technology, USA*

Enhancing Congestion Control for Wireless Links
    Saad Biaz, *Texas A&M University, USA*
    Dai Yawen, *Auburn University, USA*

SESSION 6   **Oak**   **1:30 - 3:00**
Methods and Applications in Network Simulation

Parallelization of a Discrete-Event WAN Simulator based on Ptolemy
    B. Forgeau, U. Killat
    Technical University of Hamburg-Harburg, Germany

Considering Local Bus Traffic in Network Performance Simulations
    V. Jonnalagadda, M. Mathure, *University of Central Florida, USA*
    A. Kornecki, *Embry-Riddle Aeronautical University, USA*
    J. Zalewski, *Florida Gulf Coast University, USA*

MAADNET NetBuilder: A Service/Demand Focused Network Simulator
    John M. D. Hill, John R. Surdu, Scott Lathro,
    Gregory Conti, and Curtis A. Carver, Jr.
    United States Military Academy, West Point, NY

SESSION 7   **Oak**   **3:30 - 5:00**
Distributed Information Management

**Decentralized Approach to Information Discovery using
Customized Routing**
    Reginald L. Walker, *UCLA, USA*

**Effects of a Hash-based Scheduler on Cache Performance in a
Parallel Forwarding System**
    Weiguang Shi, Mike H. MacGregor, and Pawel Gburzynski
    University of Alberta, Canada

**Improving the Lifetime of Sensor Networks via Intelligent Selection of Data
Aggregation Trees**
    Koustuv Dasgupta, Konstantinos Kalpakis, and Parag Namjoshi
    University of Maryland, USA

VIRTUAL WORLDS AND SIMULATION CONFERENCE, 2003

Additional speakers and participants will be reflected in a schedule available at the WMC registration desk, January 19 - 23, 2003

Monday, January 20, 2003

Welcome to VWSIM '03
Captiva A   10:30 - 11:30

Bridging Among Real Worlds, Virtual Worlds and Cognitive Worlds
Kirstie Bellman, Ph.D., *The Aerospace Corporation, USA*

Open Discussion

Grand Challenges in Modeling and Simulation
Captiva A   1:30 - 3: 00
Chair: R. Bowen Loftin, *Old Dominion University, USA*

Stepping up to the Challenges of Real World Problems in Virtual Worlds
Ruzena Bajcsy
Director of CITRIS, University of California Berkeley, USA

Grand Challenges in Medical Modeling and Simulation
R. Bowen Loftin, Ph.D., *Old Dominion University, USA*

Building and Integrating M&S: Components into C4ISR Systems for Supporting Future Military Operations
Dr. Andreas Tolk, Dr. Michael R. Hieb

Progress Towards Dynamically Data Driven Application Systems
Frederica Darema, *National Science Foundation, USA*

Education And Training In A New World
Captiva A   3:30 - 5: 00
Chair: Frank Wattenberg, *USMA*

Building Composable Planning and Decision Models to Support Training, Analysis, and Experimentation at the Operational Level of Warfare
John A. Sokolowski

Hybrid Immersive Environments: Realistic Simulations, Story-Telling Environments, and the New CAATET
Frank Wattenberg and LTC Mike Phillips
Center for the Application of Advanced Technologies to Education and Training, USA

From Undergraduates to First Responders: Changes in the Requirements for Educational VR
Frank Hughes, *Tietronix, USA*

TUESDAY, JANUARY 21, 2003

KEYNOTE: WHY GREAT ARMIES FAIL
CAPTIVA A   8:30 - 10:00

John A. Leide, MAJ GEN, USA (Ret)
Discussant: Michael J. Kramer, *The Aerospace Corporation*

General Leide is the president of Apenine Associates, a Defense and International business consulting group. General Leide was the Staff Intelligence Officer (G-2) for US Central Command during Desert Shield and Desert Storm.

Leide's lessons learned will be applied to the use of Virtual Worlds and simulation systems for the analysis and preparation of conflict and operations other than war.

DEFINING THE CHALLENGES FOR COGNITIVE SYSTEMS AND VIRTUAL WORLDS
CAPTIVA A   10:30 - 12:00

DMSO, OOTW Modeling and Simulation Needs and Challenges
Susan Numrich

Cybernetics, AI, and Evaluation of New Technologies for Real World Problems
Kevin Kreitman, *The Aerospace Corporation, USA*

Cognitive Networks and Virtual Worlds
Sri Kumar, *DARPA, USA*

SUPPORTING COGNITIVE NETWORKS WITH THE RIGHT INFRASTRUCTURE
CAPTIVA A   1:00 - 3:00

Scalable Time Management with Active Networks
James Stepanek and Craig Lee

Putting Time Into Cognitive Systems: From Real-Time Operating Systems To Symbolic Dynamics.
Ashok Agrawala, *University of Maryland, USA*

High Speed Networks
David Nicol, *Dartmouth College, USA*

COST: a component-oriented discrete event simulator
Gilbert Chen and Boleslaw Szymanski, *RPI, USA*

WHAT KINDS OF CAPABILITIES SHOULD THERE BE IN COGNITIVE SYSTEMS?
CAPTIVA A   3:30 - 5:30

Reflective Architectures and Virtual Worlds
Chris Landauer and Kirstie Bellman
The Aerospace Corporation, USA

Model of Pattern Processing Based on a Conceptor
Konrad R. Fialkowski and Boleslaw K. Szymanski

Controlling Sensornets with Realistic Brain Models
Laurent Itti, *University of Southern California, USA*

Analytical Models of Emotions, Learning and Relationships
Barry Kort, Rob Reilly, *MIT Media Laboratory, USA*

WEDNESDAY, JANUARY 22, 2003

AGENT ARCHITECTURES AND COGNITIVE SYSTEMS
CAPTIVA A   8: 30 - 10:00

Cognitive Agents and the Real World Challenges of Homeland Defense and New Types of Military Operations
Aaron Budgor

Multi-Agent Models for Bio-Defense
Kathleen Carley, *Carnegie-Mellon University, USA*

AGENT ARCHITECTURES AND COGNITIVE SYSTEMS, PART II
CAPTIVA A   10:30 - 12:00
Chair: Todd Carrico, *Cougaar Agent architecture*

AI Agents in Interactive Games
Mike Van Lent, *USC/ICT, USA*

Deep Agents and Soft Agents
Jim Rosbe and Brian Athey, *University of Michigan, USA*

SOCIAL COGNITION   CAPTIVA A   1:00 - 3:00
Chair: Jim Kennedy
Dept of Labor

Anthropology of Multi-Player On-Line Games
JC Herz, *New York University, USA*

Socio-cognition in People and in Machines
Jim Kennedy, *Department of Labor, USA*

Behavioral Game Theory and Organizational Culture
Colin Camerer

Emergent Cognition in Massively Populated and Persistent Worlds
Pat Lincoln, *SRI, USA*

DISCUSSION ON COGNITIVE SYSTEMS, VIRTUAL WORLDS, FUTURE RESEARCH OPPORTUNITIES, AND COLLABORATIONS
CAPTIVA A   3:30 - 5:00

Chair: Kirstie Bellman

WMC 2004 Call for Papers

2004 Western MultiConference

January 18–22, 2004
Catamaran Resort Hotel
San Diego, California

You are cordially invited to participate in the 2004 Western MultiConference. The WMC 2004 will consist of formal paper presentations and poster sessions.

The Program Committee will select papers for longer presentation slots. The corresponding papers will be fully refereed. All papers and poster session abstracts will be published in the conference proceedings. The following topics are scheduled:

- **Collaborative Technologies Symposium**
- **International Conference on Simulation and Multimedia in Engineering Education**
- **International Conference on Health Sciences Simulation**
- **Communication Networks and Distributed Systems Modeling and Simulation Conference**
- **Virtual Worlds and Simulation Conference**
- **Nuclear Power Plants and Systems**
- **International Fossil Simulation and Training Meeting**

Authors should identify the area(s) in which they think their contribution would best fit, and should clearly indicate whether the submission is for a poster session or a full paper. Only papers that have not been previously published or presented are accepted. Authors must obtain any employer, client, or government clearances before submission of the final manuscript.

WMC'04

For Conference and Exhibit Information, contact
The Society for Modeling and Simulation International
P.O. Box 17900
San Diego, California 92177-7900
www.scs.org

TRACK	ICBGM	ICBGM	CTS	NUCS	VWSIM	HSS	FOSSIL	CNDS	ICSEE
ROOM	Vista A	Vista B	Vista C/D	Augusta A/B	Captiva A	Captiva B	Captiva C	Oak	Maple
8:30–10:00	WMC '03 Keynote Speech (p. 5)								
10:30–12:00	Welcome Remarks, Theory (p. 15)		CTS Keynote I (p. 20)	Simulation Concepts (p. 27)	Opening Remarks (p. 33)	Health Care Policy (p.10)	Session 2/3 (p. 30)	Wireless Ad hoc Nets. (p. 31)	E-Learning & Distance Edu. (p.13)
1:30–3:00	Methodology I (p. 15)	Methodology II (p. 16)	Infrastructure for Col. Systems Coordination Mech. (p. 20)	Vendor Presentations (p. 27)	Grand Challenges (p. 33)	Health Services (p.10)	Vendor Presentations I (p. 30)	Challenges in Networks (p. 31)	Hardware & Network (p.13)
3:30–5:00	Fault Detection (p. 16)		Knowledge Mgmt. Awareness & Col. Env. (p. 21)	Vendor Presentations (p. 27)	Education & Training (p. 33)	Tutorial #1 (p.10)	Vendor Presentations (p. 30)	Ad hoc Network MAC (p. 31)	Curricula & Software (p.13)

TRACK	ICBGM	ICBGM	CTS	NUCS	VWSIM	HSS	FOSSIL	CNDS	ICSEE
ROOM	Vista A	Vista A	Vista C/D	Augusta A/B	Captiva A	Captiva B	Captiva C	Oak	Maple
8:30–10:00	Plenary Session: "Henry Paynter & Dev. of BG"		Web-embedded Sim / Web Infrastructure (p. 21)	Thermal Hydraulic & Core Models (p. 27)	VWSIM Keynote (p. 34)	Health Services II (p. 10)	Round Table (p. 30)	Network-based QoS (p. 31)	Knowledge Mgmt. & Multimedia (p.14)
10:30–12:00	Causality (p. 16)	Electrical Systems (p. 17)	CTS Keynote II (p. 22)	Tools, Enhancements, & Models (p. 28)	Cognitive Systems & VW (p. 34)	Modeling Epidemics I (p.11)	Session 2/3 (p. 30)	Wireless Systems (p. 32)	M&S Tools (p.14)
1:30–3:00	Software (p. 17)		Tutorial #2 (p. 22)	Simulator Upgrades & Retrofits (p. 28)	Cognitive Networks (p. 34)	Modeling Epidemics II (p.11)	Session 4 (p. 30)	Network Simulation (p. 32)	M&S in Eng. Education (p.14)
3:30–5:00	Control (p. 17)	Thermo-dynamics I	Panel Session I:System Design & Maint.(p. 22)	Simulators (p. 28)	Capabilities in Cog. Systems (p. 34)	Tutorial II (p.11)		Distributed Info. Management (p. 32)	ICSEE Round Table (p.14)

TRACK	ICBGM	ICBGM	CTS	NUCS		VWSIM	HSS	FOSSIL	NUCS	NUCS
ROOM	Vista A	Vista B	Vista C/D	Augusta A/B		Captiva A	Captiva B	Captiva C	Oak	Maple
8:30–10:00	Vehicles (p. 18)	Applied Mechanics (p. 18)	Mobile Collaborative Environment (p. 23)	Panel: ANS 3.5 Survey & Standard (p. 28)		Agent Archi. & CS I (p. 35)	Pharmacometric Applications (p.12)	Session 1 (p. 30)		
10:30–12:00	Multi Body Dynamics (p. 18)	Life Sciences (p. 19)	CTS Plenary Session I (p. 23)	Panel: ANS 3.5 Regulation Changes (p. 28)		Agent Archi. & CS II (p. 35)	Biomedical Applications (p.12)	Session 2/3 (p. 30)		
1:30–3:00	Electric Motors (p. 19)		Tutorial 4 (p. 23)	MANTG Workshop (p. 29)	MNTA Workshop (p. 29)	Social Cognition (p. 35)	Tutorial 3 (p.12)		NUCS: Westrain Workshop (p. 29)	NUCS: SSNTA Workshop (p. 29)
3:30–5:00	Panel Discussion "Where do we go from here?" (p. 19)		Panel Session II: Warfighters in Collaboration (p. 23)			Cog. Sys. VW& the Future (p. 35)	Tutorial 3 (contd.) (p.12)		NUCS: STARS Workshop (p. 29)	

First Floor

Vista — D, C, B, A

Marco — C, B, A | Amelia | Sanibel | Captiva — C, B, A — **Grand Ballroom**

Augusta — B, A | Executive Conference Room

Second Floor

Elevators | Boardroom A | Pine | Oak | Maple | Cypress

Restrooms | Boardroom B | Dogwood | Magnolia | Palm

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LOBBY

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SANIBEL

SPEAKER'S BREAKFAST
MON. - MURPHY'S
TUE. - MURPHY'S
WED. - MURPHY'S
THURS. - MURPHY'S

TUESDAY'S LUNCHEON
AMELIA ROOM

SCS