The International Conference on Dependable Systems & Networks

Washington, D.C., USA • June 23 - 26, 2002

ADVANCE PROGRAM

and registration form

Sponsored by:
IEEE Computer Society Technical Committee on Fault-Tolerant Computing
and IFIP WG 10.4 on Dependable Computing and Fault Tolerance
In co-operation with: DARPA, LAAS-CNRS, and University of Michigan

www.dsn.org

Welcome Message from the General Chair

On behalf of the organizing committee, it is my pleasure to welcome you to the 2002 International Conference on Dependable Systems and Networks (DSN-2002), the leading international conference on dependability, to be held this year at the Hyatt-Regency Hotel in Bethesda, MD from June 23rd to 26th, 2002.

Computer systems and communications networks now pervade every aspect of our daily lives. While that has benefited society and increased our productivity, it has also made our lives more critically dependent on their correct functioning. The traditional concerns of the dependability community (e.g., inadvertent faults, errors, and failures) have now been enlarged by the massive connectivity provided by the Internet to include malicious exploitation of imperfect systems and networks and intentional cyber-attacks on them. How can we build systems that are not vulnerable to such threats - systems that users can depend upon in defense, transportation, financial, and e-commerce sectors? After 9-11, these questions have taken on added importance.

We have put together an excellent technical program for researchers, practitioners, and users to learn and exchange information on the latest research results and operational systems experiences in dependable systems and networks. There are multiple tracks that include Dependable Computing and Communications (DCC), the International Performance and Dependability Symposium (IPDS), as well as several Workshops and Tutorials, a Student Forum, and late-breaking research. There will also be an excellent social setting to network and mingle, including a reception, lunches, frequent breaks, and a dinner/cruise on the Potomac.

Plan now to attend the premiere conference on dependable systems and networks, in the capital region of USA, filled with museums, monuments and many more historic attractions. I look forward to seeing you at the conference.

Sincerely,

Jaynarayan H. Lala

Jaynarayan H. Lala
General Chair
DSN 2002

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Schedule

Sunday, June 23
- Pre-conference Registration
- Tutorials
- Reception

Monday, June 24
- Conference Registration
- DCC & IPDS Technical Tracks, Workshops 1 & 2

Tuesday, June 25
- Conference Registration
- DCC & IPSDS Technical Tracks, Workshops 3 & 4
- Excursion and Banquet

Wednesday, June 26
- Conference Registration (Room Name/Number)
- DCC & IPDS Technical Tracks, Workshops 5 & 6

DSN 2002

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Program at a glance: Day 1

Sunday, June 23, 2002

08:00 - 12:00 TUTORIALS

T1 (room TBD)	T2 (room TBD)
Fault Tolerance Against Design Faults *Bev Littlewood & Lorenzo Strigini*	Power of Negative Thinking *Chuck Howell*

12:00 - 13:30 LUNCH

13:30 - 17:30 TUTORIALS (CONT'D)

T3 (room TBD)	T4 (room TBD)
Safety Cases SOUP/COTS *Robin Bloomfield & Peter Bishop*	Intrusion Tolerant Systems *Paulo Veríssimo*

18:00 - 21:00 RECEPTION

Program at a glance: Day 2

Monday, June 24, 2002

08:00 - 09:00 Continental Breakfast
08:30 - 09:00 Opening Remarks
09:00 - 10:00 Keynote Speech
10:00 - 10:30 Coffee Break

10:30 - 12:00

DCC Session 1A (room TBD)	DCC Session 1B (room TBD)	IPDS Session 1C (room TBD)	WORKSHOP #1 (room TBD)	WORKSHOP #2 (room TBD)
Distributed Systems I	Practical Experience Reports I	Practical Experience Reports	Intrusion Tolerant Systems	Robotics & Dependability

12:00 - 13:30 LUNCH

13:30 - 15:30

DCC Session 2A (room TBD)	Student Forum Session 2B (room TBD)	IPDS Session 2C (room TBD)	WORKSHOP #1 (continued) (room TBD)	WORKSHOP #2 (continued) (room TBD)
Dependable Networking	Session 1	Security and Fault Tolerance	Intrusion Tolerant Systems	Robotics & Dependability

15:30 - 16:00 COFFEE BREAK

16:00 - 17:30

DCC Session 3A (room TBD)	DCC Session 3B (room TBD)	IPDS Session 3C (room TBD)	WORKSHOP #1 (continued) (room TBD)	WORKSHOP #2 (continued) (room TBD)
Modeling & Evaluation	Software Techniques	Modeling, Simulation, and Evaluation Tools	Intrusion Tolerant Systems	Robotics & Dependability

Program at a glance: Day 3

Tuesday, June 25, 2002

08:00 - 09:00 Continental Breakfast

08:30 - 10:00

DCC Session 4A (room TBD)	DCC Session 4B (room TBD)	IPDS Session 4C (room TBD)	WORKSHOP #3 (room TBD)	WORKSHOP #4 (room TBD)
Distributed Systems II	Practical Experience Reports II	Performance & Dependability Modeling	Dependability of e-commerce systems	IPDS Panel on Dependability Benchmarking: Methods, Techniques and Approaches

10:00 - 10:30 COFFEE BREAK

10:30 - 12:30

DCC Session 5A (room TBD)	Fast Abstract Session 5B (room TBD)	IPDS Session 5C (room TBD)	WORKSHOP #3 (continued) (room TBD)	WORKSHOP #4 (continued) (room TBD)
Security & Intrusion Tolerance	Session I	Fault Tolerant Design & Evaluation	Dependability of e-commerce systems	Dependability Benchmarking

12:30 - 13:30 LUNCH

13:30 - 15:30

DCC Session 6A (room TBD)	DCC Session 6B (room TBD)	IPDS Session 6C (room TBD)	WORKSHOP #3 (continued) (room TBD)	WORKSHOP #4 (continued) (room TBD)
Panel on Dependability & the Grid	Software & System Demonstrations	Modeling Techniques	Dependability of e-commerce Systems	Dependability Benchmarking

18:00 - 22:00 EXCURSION & BANQUET: Dinner Cruise on the Potomac

Program at a glance: Day 4

Wednesday, June 26, 2002

08:00 - 09:00 Continental Breakfast

08:30 - 10:00

DCC Session 7A (room TBD)	DCC Session 7B (room TBD)	IPDS Session 7C (room TBD)	WORKSHOP #5 (room TBD)	WORKSHOP #6 (room TBD)
Group Communication	Practical Experience Reports III	Invited Industry Session: Measurement & Evaluation	Dependable Middleware-based Systems	Scalable, Uninterruptible Computing

10:00 - 10:30 COFFEE BREAK

10:30 - 12:30

DCC Session 8A (room TBD)	Fast Abstract Session 8B (room TBD)	IPDS Session 8C (room TBD)	WORKSHOP #5 (continued) (room TBD)	WORKSHOP #6 (continued) (room TBD)
Consensus & Failure Detectors	Session II	Internet Performance & Dependability	Dependable Middleware-based Systems	Scalable, Uninterruptible Computing

12:30 - 14:00 LUNCH

14:00 - 16:00

DCC Session 9A (room TBD)	DCC Session 9B (room TBD)	IPDS Session 9C (room TBD)	WORKSHOP #5 (continued) (room TBD)
Hardware Architecture & Design	Detection & Correction	Modeling, Measurement and Analysis of Distributed Systems	Dependable Middleware-based Systems

16:30 - 17:30 BUSINESS MEETING: IEEE TECHNICAL COMMITTEE on FTC

Dependable Computing and Communications

Fast Abstracts & Student Forum

PROGRAM

Session 1A: Distributed Systems I

10:30 - 12:00, Monday, June 24

Exactly-once Delivery in a Content-based Publish-Subscribe System
Sumeer Bhola, Robert Strom, Saurabh Bagchi, Yuanyuan Zhao, Joshua Auerbach *(IBM T. J. Watson Research Center, Yorktown Heights, NY, USA)*

An Adaptive Framework for Tunable Consistency and Timeliness Using Replication
Sudha Krishnamurthy, William H. Sanders, Michel Cukier *(Coordinated Science Laboratory, U. of Illinois at Urbana-Champaign, USA)*

Generic Timing Fault Tolerance using a Timely Computing Base
António Casimiro, Paulo Veríssimo *(Faculdade de Ciências da Universidade de Lisboa, PORTUGAL)*

Session 1B: Practical Experience Reports I

10:30 - 12:00, Monday, June 24

Lessons Learned in Building a Fault-Tolerant CORBA System
Priya Narasimhan *(Carnegie Mellon University, Pittsburgh, PA, USA)*, Louise E. Moser, Michael Melliar-Smith *(University of California, Santa Barbara, CA, USA)*

Model Checking Safety Properties of Servo-Loop Control Systems
M. Edwin Johnson *(ITT Industries, Advanced Engineering and Sciences, Reston, VA, USA)*

Formal Development of an Embedded Verifier for Java Card Byte Code
Ludovic CASSET, Lilian Burdy, Antoine Requet *(Gemplus Research Lab, Gémenos, FRANCE)*

Session 2A: Dependable Networking

13:30 - 15:30, Monday, June 24

Detection of Invalid Routing Announcement in the Internet
Xiaoliang Zhao *(North Carolina State University, Raleigh, NC, USA)*, Dan Pei, Lan Wang, Lixia Zhang *(Univ. of California Los Angeles, USA)*, Daniel Massey, Allison Mankin *(Univ. of Southern California Information Sciences Institute, Arlington, VI, USA)*, S. Felix Wu *(Univ. of California Davis, USA)*

An Adaptive Architecture for Monitoring and Failure Analysis of High Speed Networks
Benjamin Floering, Benjamin J. Brothers, Zbigniew Kalbarczyk, Ravishankar Iyer *(Center for Reliable and High-Performance Computing, University of Illinois at Urbana-Champaign, USA)*

Edge-Based Fault Detection in a DiffServ Network
Aaron D. Striegel, G. Manimaran *(Dependable Computing and Networking Laboratory, Dept. of Electrical & Computer Engineering, Iowa State University, Ames, IA, USA)*

An Evaluation of Connectivity in Mobile Wireless Ad Hoc Networks
Paolo Santi *(Istituto di Matematica Computazionale, CNR, Pisa, ITALY)*, Douglas M. Blough *(Georgia Institute of Technology, Atlanta, GA, USA)*

Session 2B: Student Forum

13:30 - 15:30, Monday, June 24 (See www.dsn.org for updates)

Session 3A: Modeling & Evaluation

16:00 - 17:30, Monday, June 24

Model Checking Performability Properties
Boudewijn R. Haverkort, Lucia Cloth, *(Dept. of Computer Science, RWTH Aachen, GERMANY)*, Holger Hermanns, Joost-Pieter Katoen *(Dept. of Computer Science, Univ. of Twente, Enschede, NETHERLANDS),* Christel Baier *(Univ. of Bonn, GERMANY)*

Process Modelling to Support Dependability Arguments
Robin E. Bloomfield *(Adelard and CSR, City University, London, UK)*, Sofia Guerra *(Adelard, London, UK)*

On the Use of Disaster Prediction for Failure-Tolerance in Feedback Control Systems
João C. Cunha, Marió Zenha Rela *(Dep. Engenharia Informatica e de Sistemas Instituto Superior de Engenharia de Coimbra, PORTUGAL)*, João Gabriel Silva *(Dep. Engenharia Informatica, Univ. de Coimbra, PORTUGAL)*

Session 3B: Software Techniques

16:00 - 17:30, Monday, June 24

On the Placement of Software Mechanisms for Detection of Data Errors
Martin Hiller, Arshad Jhumka, Neeraj Suri *(Department of Computer Engineering, Chalmers University of Technology, Göteborg, SWEDEN)*

Robust Software - No More Excuses
John P. DeVale, Phil Koopman *(Department of ECE, Carnegie Mellon University, Pittsburgh, PA, USA)*

Increasing the Robustness of C-libraries using Robustness Wrappers
Christof Fetzer, Zhen Xiao *(AT&T Labs Research, Florham Park, NJ, USA)*

Session 4A: Distributed Systems II

08:30 - 10:00, Tuesday, June 25

Hydra: Secure Replication on the Internet
Christian Cachin, Jonathan A. Poritz *(IBM Research, Zurich Research Laboratory, SWITZERLAND)*

Coordination of Mobile Processes with Mobile Groups, Raimundo J de A Macêdo, Flávio M Assis Silva *(Distributed System Laboratory - LaSiD Federal University of Bahia, Salvador-BA, BRAZIL)*

Optimizing Buffer Management for Reliable Multicast
Zhen Xiao *(AT&T Labs Research, Florham Park, NJ, USA)* Kenneth P. Birman, Robbert van Renesse *(Dept. of Computer Science, Cornell University, Ithaca, NY, USA)*

Session 4B: Practical Experience Reports II

08:30 - 10:00, Tuesday, June 25

Reliability and Survivability in the Reduced Ship's Crew by Virtual Presence System
Gary Schwartz *(Charles Stark Draper Laboratory, Inc., Cambridge, MA, USA)*

Impact of Deep Submicron Technology on Dependability of VLSI Circuits
Constantinescu Cristian *(Intel Corp., Hillsboro, OR, USA)*

Experimental Evaluation of Time-redundant Execution for a Brake-by-wire Application
Joakim Aidemark, Jonny Vinter, Peter Folkesson, Johan Karlsson *(Department of Computer Engineering, Chalmers University of Technology, Göteborg, SWEDEN)*

Session 5A: Security & Intrusion Tolerance

10:30 - 12:30, Tuesday, June 25

Masquerade Detection
Roy A. Maxion and Tahlia N. Townsend *(Dependable Systems Laboratory, Carnegie Mellon Univ., Pittsburgh, PA USA),*

Quantifying the Cost of Providing Intrusion Tolerance in Group Communication Systems
HariGovind V Ramasamy, Prashant Pandey, James Lyons, Michel Cukier, William H. Sanders *(Coordinated Science Laboratory, University of Illinois at Urbana-Champaign, USA)*

Developing a Heterogeneous Intrusion Tolerant CORBA System
Durward McDonell, Brian Niebuhr, Brian Matt, David L. Sames, Gregg Tally, Szu-Chien Wang, Brent Whitmore *(NAI Labs - Network Associates Inc., Glennwod, MD, USA)*, David Bakken *(Washington State University, Pullman, WA, USA)*

Distributed Object Middleware to Support Dependable Information Sharing between Organisations
Nick Cook, Santosh Shrivastava, *(Dept. of Computing Science, University of Newcastle, UK)*, Stuart Wheater *(HP Arjuna Lab, Newcastle upon Tyne, UK)*

Session 5B: Fast Abstracts I

10:30 - 12:30, Tuesday, June 25 (see www.dsn.org for updates)

Session 6A: Panel: Dependability and the Grid

13:30 - 15:30, Tuesday, June 25

Session 6B: Software and System Demonstrations

13:30 - 15:30, Tuesday, June 25

MAFALDA-RT: A Tool for Dependability Assessment of Real Time Systems
Manuel Rodriguez, Arnaud Albinet, Jean Arlat *(LAAS-CNRS, Toulouse, France)*

Mr. Fusion: A Programmable Data Fusion Middleware Subsystem with a Tunable Statistical Profiling Service
Andy Franz, Radek Mista, David Bakken, Curtis Dyreson, Murali Medidi *(Washington State University, Pullman, WA,)*

A Dependable SNMP-based Tool for Distributed Network Management
Elias P. Duarte Jr., Luis C.E. De Bona *(Department of Informatics, Federal University of Parana, Curitiba, BRAZIL)*

The Design and Implementation of an Intrusion Tolerant System
James C. Reynolds, James Just, Ed Lawson, Larry Clough, Ryan Maglich *(Teknowledge Corporation, Fairfax, VA, USA),* Karl Levitt *(Univ. of California Davis, USA)*

Session 7A: Group Communication

08:30 - 10:00, Wednesday, June 26

Reducing the Cost of Group Communication with Semantic View Synchrony
José O. Pereira *(Universidade do Minho, PORTUGAL)*, Luís Rodrigues *(Universidade de Lisboa, PORTUGAL)* Rui Oliveira *(Universidade do Minho, PORTUGAL)*

SWIM: Scalable Weakly-consistent Infection-style Process Group Membership Protocol
Indranil Gupta, Abhinandan Das, Ashish Motivala *(Dept. of Computer Science, Cornell University, Ithaca, NY, USA)*

Probabilistic Multicast
Patrick Th. Eugster, Rachid Guerraoui *(Swiss Federal Institute of Technology in Lausanne, SWITZERLAND)*

Session 7B: Practical Experience Reports III

08:30 - 10:00, Wednesday, June 26

Experimental evaluation of a COTS system for space applications
Henrique Madeira *(University of Coimbra, PORTUGAL),* Raphael Some *(Jet Propulsion Laboratory, Pasadena, CA, USA)*, Francisco Moreira, Diamantino Costa *(Critical Software, Coimbra, PORTUGAL), David Rennels (Univ. of California Los Angeles, CA, USA)*

Experimental Analysis of the Errors Induced into Linux by Three Fault Injection Techniques
Tahar Jarboui, Jean Arlat, Yves Crouzet, Karama Kanoun *(LAAS-CNRS, Toulouse, FRANCE)*

Reliability and Availability Analysis for the JPL Remote Exploration and Experimentation System
Dong Chen, Selvamuthu Dharmaraja, Dongyan Chen, Lei Li, Kishor S. Trivedi *(Center for Advanced Computing & Communication, Dept. of Electrical and Computer Engineering, Duke University, Durham, NC, USA)*, Raphael R. Some, Allen P. Nikora *(Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, USA)*

Session 8A: Consensus & Failure Detectors

10:30 - 12:30, Wednesday, June 26

Collapsing the Failure-Detector Hierarchy
Carole Delporte, Hugues Fauconnier *(LIAFA, Univ. of Paris VII, FRANCE),* Guerraoui Rachid *(Swiss Federal Institute of Technology in Lausanne, SWITZERLAND)*

Implementation and Performance Evaluation of an Adaptable Failure Detector
Marin Bertier *(Laboratoire Informatique, University of Paris VI, FRANCE)*, Olivier Marin *(Univ. of Le Havre and LIP6, FRANCE)*, Pierre Sens *(Laboratoire Informatique, University of Paris VI, FRANCE)*

A Versatile and Modular Consensus Protocol
Achour Mostefaoui, *(IRISA, Univ. of Rennes, FRANCE),* Sergio Rajsbaum (Compaq Research Lab, Cambridge, MA, USA), Michel Raynal *(IRISA, Univ. of Rennes, FRANCE)*

Small Byzantine Quorums
Jean-Philippe Martin, Lorenzo Alvisi, Michael Dahlin *(Dept. of Computer Science, University of Texas at Austin, TX, USA)*

Session 8B: Fast Abstracts II

10:30 - 12:30, Wednesday, June 26 (see www.dsn.org for updates)

Session 9A: Hardware Architecture and Design

14:00 - 16:00, Wednesday, June 26

Modeling the Effect of Technology Trends on Soft Error Rate of Combinational Logic
Premkishore Shivakumar, Michael Kistler, Stephen Keckler, Doug Burger, Lorenzo Alvisi *(Department of Computer Science, University of Texas at Austin, TX, USA)*

Detecting Processor Hardware Faults by Means of Automatically Generated Virtual Duplex Systems
Markus Jochim *(Computer Science Dept., University of Essen, GERMANY)*

A Portable and Fault-Tolerant Microprocessor Based on the SPARC V8 Architecture
Jiri Gaisler, *(Gaisler Research, Göteborg, SWEDEN)*

Soft Error Sensitivity Characterization for Microprocessor and Dependability Enhancement Strategy
Seongwoo Kim and Arun K. Somani *(Dependable Computing and Networking Laboratory, Dept. of Electrical and Computer Engineering, Iowa State University, Ames, IA, USA)*

Session 9B: Detection and Correction

14:00 - 16:00, Wednesday, June 26

Track-Based Disk Logging
Tzi-cker Chiueh, Lan Huang *(State University of New York at Stony Brook, USA)*

Transactional Rollback for Language-Based Systems
Algis P. Rudys, Dan S. Wallach *(Department of Computer Science, Rice University, Houston, TX, USA)*

Time-Constrained Failure Diagnosis in Distributed Embedded Systems
Nagarajan Kandasamy, John P. Hayes *(Advanced Computer Architecture Lab., University of Michigan, Ann Arbor, MI, USA)* Brian T. Murray *(Delphi Automotive Systems, Brighton, MI, USA)*

32-Bit Cyclic Redundancy Codes for Internet Applications
Philip J. Koopman *(Department of ECE, Carnegie Mellon University, Pittsburgh, PA, USA)*

International Performance and Dependability Symposium

PROGRAM

Session 1C: IPDS Practical Experience Reports

10:30 – 12:00, Monday, June 24

Measuring End-User Availability on the Web: Practical Experience
Matthew Merzbacher and Dan Patterson *(U.C. Berkeley, Computer Science Division, Berkeley, CA, USA)*

Advanced Pattern Recognition for Detection of Complex Software Aging Phenomena in Online Transaction Processing Servers, Karen J. Cassidy *(SmartSignal Corporation, Lisle, IL, USA),* Kenny C. Gross *(Sun Microsystems, San Diego, CA, USA)*, Amir Malekpour *(Sun Microsystems, Palo Alto, CA, USA)*

JACA: a Reflective Fault Injection Tool based on Patterns
Eliane Martins, Cecilia Mary, Fisher Rubira, Nelson Guilherme, Mendes Leme *(Institute of Computing - State University of Campinas (UNICAMP), Campinas, Brasil)*

Automatic Generation of Availability Models in RAScad
Dong Tang, Ji Zhu, and Roy Andrada *(Sun Microsystems, Palo Alto, CA, USA)*

Session 2C: Security and Fault Tolerance

13:30 – 15:30, Monday, June 24

Evaluating the Security Threat of Firewall Data Corruption Caused by Instruction Transient Errors
Shuo Chen, Jun Xu, Ravishankar K. Iyer *(Center for Reliable and High-Performance Computing University of Illinois at Urbana-Champaign, Urbana, IL, USA),* Keith Whisnant *(Center for Reliable and High-Performance Computing University of Illinois at Urbana-Champaign, Urbana, IL, USA)*

Modeling and Quantification of Security Attributes of Software Systems
Bharat B. Madan, *(Dept. of ECE, Duke University, Durham, NC, USA)*, Katerina Goseva-Popstojanova *(Dept. of Computer Science and Electrical Engineering, West Virginia University, Morgantown, WV, USA)*, Kalyanaraman Vaidyanathan, Kishor S. Trivedi *(Dept. of ECE, Duke University, Durham, NC, USA)*

Stepwise Construction and Refinement of Dependability Models
Claudia Betous-Almeida and Karama Kanoun *(LAAS-CNRS, Toulouse, France)*

Ditto Processor
Shih-Chang Lai *(Dept. of ECE Oregon State University, Corvallis, OR, USA),* Shih-Lien Lu, Konrad Lai *(Microprocessor Research Labs, Intel Corp., USA),* Jih-Kwon Peir *(Dept. of Computer Science University of Florida, Gainesville, FL, USA)*

Session 3C: Modeling, Simulation, and Evaluation Tools

16:00 – 17:30, Monday, June 24

(Short presentations of tools, followed by on-site demonstrations)

CAVEAT: A Tool for Software Validation
P.Baudin, A.Pacalet, J.Raguideau, D.Schoen, N.Williams *(CEA Saclay, DTSI-SLA, Cedex, France)*

CLAIRE: An Event-Driven Simulation Tool for Test and Validation of Software Programs
Adriana Carloganu, Jacques Raguideau *(CEA Saclay, France)*

C-Sim – the C Language Enhancement for Discrete-Time Systems Simulation
Jan Hlavicka *(Czech Technical University in Prague, Prague, Czech Republic)*, Stanislav Racek *(University of West Bohemia, Pilsen, Czech Republic)*

DrawNet++: A Flexible Framework for Building Dependability Models
G. Franceschinis, C. Bertoncello *(Universita' del Piemonte orientale, Torino, Italy)*, M. Gribaudo *(Universita'di Torino, Torino, Italy),* M. Iacono, *(Seconda Universita'di Napoli, Aversa, Italy), V. Vittorini (Universita' di Napoli "Federico II", Napoli, Italy)*

Libsafe: Transparent System-Wide Protection against Buffer Overflow Attacks
T. Tsai, N. Singh *(Avaya Labs Research, Basking Ridge, NJ, USA)*

NFTAPE: Networked Fault Tolerance and Performance Evaluator
D. Stott, P.H. Jones, M. Hamman, Z. Kalbarczyk, R.K. Iyer *(Center for Reliable and High-Performance Computing University of Illinois at Urbana-Champaign, Urbana, IL, USA)*

PhFit: A General Phase-type Fitting Tool
Andrea Bobbio *(DISTA, Universita del Piemonte Orientale, Alessandria, Italy)*, Andras Horvath, Miklos Telek *(Dep. Of Telecommunications, Budapest University of Technology and Econmics, Budapest, Hungary)*

SHARPE 2002: Symbolic Hierarchical Automated Reliability and Performance Evaluator
Kishor S. Trivedi *(Center for Advanced Computing and Communication, Department of Electrical and Computer Engr., Duke University, Durham, NC, USA)*

SMART: Stochastic Model Analyzer for Reliability and Timing
G. Ciardo, R. L. Jones, III, R. M. Marmorstein, R. Siminiceanu *(Department of Computer Science, College of William and Mary, Williamsburg, VA, USA),* A. S. Miner, *(Department of Computer Science, Iowa State University, Ames, IA, USA)*

SREPT: A Tool for Software Reliability Estimation and Prediction
K. S. Trivedi *(Center for Advanced Computing and Communication, Department of Electrical and Computer Engr., Duke University, Durham, NC, USA)*

Xception™ - Enhanced Automated Fault-Injection Environment
R. Maia, L. Henriques, D. Costa, *(Critical Software, Coimbra, Coimbra, Portugal), H. Madeira (University of Coimbra, Coimbra, Portugal)*

Session 4C: Performance and Dependability Modeling

8:30 – 10:00, Tuesday, June 25

Performance Analysis of a Consensus Algorithm Combining Stochastic Activity Networks and Measurements
Andrea Coccoli *(CNUCE-CNR, Pisa, Italy)*, Peter Urban, Andre Schiper *(Ecole Polytechnique F´ed´erale de Lausanne (EPFL, Lausanne, Switzerland),* Andrea Bondavalli, *(Universit`a di Firenze, Firenze, Italy)*

Performability Analysis of Guarded-Operation Duration: A Successive Model-Translation Approach
Ann T. Tai *(IA Tech, Inc. Los Angeles, CA, USA),* William H. Sanders *(Coordinated Science Laboratory, University of Illinois at Urbana-Champaign, USA),* Leon Alkalai, Savio N. Chau, *(Jet Propulsion Laboratory, Pasadena, CA, USA),* Kam S. Tso, *(IA Tech, Inc. Los Angeles, CA, USA)*

A Simple Characterization of Provably Efficient Prefetching Algorithms
Wei Jin, Rakesh D. Barve, Kishor S. Trivedi *(Center for Advanced Computing & Communication, Dept. of ECE, Duke University, Durham, NC, USA)*

Panel on Dependability Benchmarking: Methods, Techniques and Approaches

8:30 – 10:00, Tuesday, June 25

Joint Panel - IPDS and Workshop on Dependability Benchmarking
Moderator: Ravi Iyer
Organizers: Ravi Iyer, Zbigniew Kalbarczyk *(Center for Reliable and High-Performance Computing, University of Illinois at Urbana-Champaign, Urbana, IL, USA),* Philip Koopman, *(Department of ECE, Carnegie Mellon University, Pittsburgh, PA, USA),* Henrique Madeira *(University of Coimbra, Coimbra, Portugal),*

Panelists: Gunter Heiner *(Daimler-Chrysler, Germany),* Karama Kanoun *(LAAS-CNRS, France),* Haim Levendel *(Motorola, USA)*, Brendan Murphy *(Microsoft, UK),* Larry Votta *(Sun Microsystems, USA)*

Session 5C: Fault Tolerant Design and Evaluation

10:30 – 12:30, Tuesday, June 25

An Experimental Evaluation of the REE SIFT Environment for Spaceborne Applications
Keith Whisnant, Ravi Iyer, Phillip Jones *(Center for Reliable and High-Performance Computing, University of Illinois at Urbana-Champaign, Urbana, IL, USA),* David Rennels *(Univ. of California Los Angeles, CA, USA)*, Raphael Some *(Jet Propulsion Laboratory, Pasadena, CA, USA)*

Pinpoint: Problem Determination in Large, Dynamic Systems
Mike Y. Chen, *(U.C. Berkeley, Computer Science Division, Berkeley, CA, USA)* Emre Kiciman, Eugene Fratkin, Armando Fox *(Stanford University, Stanford, CA, USA),* Eric Brewer, *(U.C. Berkeley, Computer Science Division, Berkeley, CA, USA)*

Minimizing Mean-Time-To-Recover in a Recursively Restartable Software System
George Candea, James Cutler, Armando Fox, Rushabh Doshi, Priyank Garg, Rakesh Gowda *(Stanford University, Stanford, CA, USA)*

Recovery and Performance Balance of a COTS DBMS in the Presence of Operator Faults
Marco Vieira *(ISEC Polytechnic Institute of Coimbra, Coimbra, Portugal)*, Henrique Madeira *(DEI-FCTUC University of Coimbra, Coimbra, Portugal)*

Session 6C: Modeling Techniques

13:30 – 15:30, Tuesday, June 25

The Scale Factor: A New Degree of Freedom in Phase Type Approximation
Andrea Bobbio *(DISTA, Universita del Piemonte Orientale, Alessandria, Italy),* Andras Horvath, Miklos Telek *(Dep. Of Telecommunications, Budapest University of Technology and Econmics, Budapest, Hungary)*

Efficient state space generation of GSPNs using decision diagrams
Andrew Miner *(Department of Computer Science, Iowa State University, Ames, IA, USA)*

An Adaptive Decomposition Approach for the Analysis of Stochastic Petri Nets
Peter Buchholz *(Institute for Applied Computer Science, Dresden University of Technology, Dresden, Germany)*

Parallel Randomization for Large Structured Markov Chains
Kemper Peter *(Informatik IV, Universitat Dortmund, Dortmund, Germany)*

Session 7C: Invited Industry Session: Measurements and Evaluation

8:30 – 10:00, Wednesday, June 26

Test and Development Process Retrospective: a Case Study using ODC Triggers
R. Chillarege, K. Prasad, *(Chillarege Inc., New York, USA)*

Availability Requirement for a Fault Management Server in High-Availability Communication Systems
H. Sun, J. Han, H. Levendel, *(Motorola Inc., Schaumburg, IL, USA)*

Analysis of Failure and Recovery Rates in a Wireless Telecommunications System
S. Matz, L. Votta, M. Malkawi, *(Motorola Inc., Arlington Heights, IL, USA)*

Application Performance Assurance via Post-Production Monitoring
S. Dalal, Yu-Y. Ho, A. Jain, and A. McIntosh, *(Telcordia Technologies, Morristown, NJ, USA)*

Session 8C: Internet Performance and Dependability

10:30 – 12:30, Wednesday, June 26

Resource Management Policies in GPRS Wireless Internet Access Systems
Michela Meo, Marco Ajmone Marsan, Cecilia Batetta *(Dipartimento di Elettronica, Politecnico di Torino, Torino, Italy)*

Evaluating the Impact of Different Document Types on the Performance of Web Cache Replacement Schemes
Christoph Lindemann and Oliver P. Waldhorst *(Department of Computer Science, University of Dortmund, Dortmund, Germany)*

A Validation of the Pseudo Self-Similar Traffic Model
Boudewijn Haverkort, Rachid El Abdouni, Ramin Sadre *(Laboratory for Performance Evaluation and Distributed Systems, Department of Computer Science, RWTH Aachen, Germany)*

Evaluation of the Maximum Level Reached by a Queue Over a Finite Period
G. Rubino *(Irisa/Inria/EnstB, Campus de Beaulieu, Rennes Cedex, France)*

Session 9C: Modeling, Measurement and Analysis of Distributed Systems

14:00 – 16:00, Wednesday, June 26

Modeling the Coverage and Effectiveness of Fault-Management Architectures in Layered Distributed Systems
Olivia Das and C. M. Woodside *(Department of Systems and Computer Engineering, Carleton University, Ottawa, Ontario, Canada)*

Self-Organizing Systems with Self-Diagnosability
Kiyoaki Yoshida *(Kurume Institute of Technology, Kurume, Fukuoka, Japan)*, Tohru Kohda *(Kyushu University, Higashi, Fukuoka, Japan),* Yasumasa Sujaku *(Kurume Institute of Technology, Kurume, Fukuoka, Japan)*

A Compositional Approach to Monitoring Distributed Systems
Mohammad Zulkernine and Rudolph E. Seviora *(Bell Canada Software Reliability Laboratory, University of Waterloo, Waterloo, Ontario, Canada)*

Validation and Evaluation of a Software Solution for Fault Tolerant Distributed Synchronization
Paolo Ballarini, Simona Bernardi, and Susanna Donatelli *(Dip. Di Informatica, Universita di Torino, Torino, Italy)*

Workshop on Intrusion Tolerant Systems

WORKSHOP #1

Co-Chair

Steven Bellovin
AT&T Labs Research, USA
<smb@research.att.com>

Carl Landwehr
National Science Foundation, USA
<clandweh@nsf.gov>

Program Committee

Badger, Lee *(NAI, USA)*
Chandersekaran, Sekar *(Microsoft, USA)*
Dacier, Marc *(IBM-Zurich, Switzerland)*
Deswarte, Yves (LAAS-CNRS, France)
Heimerdinger, Walt *(Honeywell, USA)*
McGraw, Gary *(Cigital, USA)*
Reiter, Mike *(Carnegie-Mellon Univ., USA)*
Schneider, Fred *(Cornell Univ., USA)*
Venema, Wietse *(IBM-Watson, USA)*

The Intrusion Tolerant Systems Workshop will provide a forum for the presentation and discussion of current efforts to develop subsystems and systems that can continue operating, perhaps in a degraded mode, in the face of cyber attacks. The goal of the workshop is to have a critical and productive discussion of the state of current research and development efforts in the area of intrusion tolerant systems and to dentify promising directions for future research in the area.

Several promising contributions describing current research efforts in the area of intrusion tolerant systems have been received and reviewed by the Program Committee. To make the most of the one-day workshop, the Co-Chairs have decided on the following organization. Please refer to the DSN 2002 ITS workshop web site: **http://www.dsn.org/workshops.html** for the latest information on the systems to be presented and the names of panelists.

The day will be organized as three sessions with distinct purposes.

In the first session, following the morning plenary on the first day of the conference, the assumptions, architectures and technical details of selected systems will be presented to the workshop (and to the Red Team members, see below) by researchers who are developing them.

In the second session, following lunch, a "red team" panel drawn from the Program Committee and other experts will address each of the presented systems in turn to try to show vulnerabilities and weak points. The red team panel members will have been provided with further material on the systems under discussion in advance of the workshop. The researchers who presented the systems will have the opportunity to rebut the hypothesized attacks and contributions will be invitedfrom all workshop participants.

In the third session, a separate set of participants will comment on the results of the red-teaming and propose fruitful research avenues based on the day's discussions. Again, contributions from all workshop participants will be welcome.

At the end of the day, the organizers hope that the workshop participants will have both a better understanding of current research efforts in the area, their strengths and weaknesses, and an idea of where further research might be directed.

In addition to the discussion, the organizers plan to make space available in the workshop room for demonstrations of prototypes of two current intrusion tolerant system efforts; these may be viewed by participants during lunch and breaks as well as at the end of the day.

Workshop on Robotics & Dependability

WORKSHOP #2

Chairs

Raja Chatila
LAAS-CNRS, France
<chatila@laas.fr>

Jean-Claude Laprie
LAAS-CNRS, France
<laprie@laas.fr>

The workshop program will be based on invited technical presentations from both the robotics and dependability communities, and a panel discussion.The list of invited speakers includes:

Russ Taylor, *Johns Hopkins University, USA*
Reid Simmons, *Carnegie Mellon U., USA*
Yoji Yamada, *Toyota Tech. Institute*, *Japan.*
Raja Chatila, *LAAS-CNRS, France*

Robotic systems are complex machines controlled by software modules implementing basic functions such as servo loops and programs which deal with supervision and action planning. These components are integrated within an architecture which defines an organization for robot operation. The issues of robustness and dependability of such systems didn't attract much attention in the robotics community in general, except for very critical applications (e.g., assisted surgery). However, in applications such as public-oriented service, assistive and personal robots will involve close interactions with non-professional users. This clearly raises critical questions of physical safety and operating robustness. Both aspects can be captured by the concept of Dependability. Other applications such as space robotics and planetary exploration, have similar concerns on dependability.

Unlike the industrial robotics domain where the workspace of machines and humans can be segmented, service and personal robots must, by definition, have physical contact and interaction with the user. The safety aspect entailed is, of course, already an important challenge addressed by Robotics research. However, a more difficult and far reaching challenge concerns operating robustness. Here, the issues are central to the very concept of "Intelligent" robots.

The objective of this one-day workshop is to bring together researchers from the robotics and dependability communities to exchange views and to cross fertilize their fields by reviewing the main technical challenges and research issues, assessing the research opportunities central to future critical developments and to foster research activity and international cooperation. Medium-term and long-term industrial applications will also be considered.

The topics covered by the workshop include,
but are not limited to:

- Reliable sensing and control
- Fault tolerant real-time processing
- Operability diagnosis
- Validation
- Fault location and isolation
- Decisional autonomy and exception handling
- User-robot communication robustness
- Networked operation
- Legal and liability issues
- Standards and their role today

Workshop on Dependability of E-Commerce Systems

WORKSHOP #3

Co-Chairs

Lisa Spainhower
IBM, USA
<lisa@us.ibm.com>

Nicholas Bowen
IBM, USA
<bowenn@us.ibm.com>

Steven Hunter
IBM, USA
<hunters@us.ibm.com>

Program Committee

Patrick, John R. *(Attitute LLC)*
Siegel, Eric *(Keynote Systems)*
Hunter, Steven *(IBM)*
Hutzler,Carl *(America Online)*
Feldman, Stu *(IBM)*
Kerner, Matthew M. *(Microsoft)*

This workshop on dependability brings together technical insight of top researchers with business perspectives from companies that are leaders in electronic commerce and drive significant volumes of business over theInternet. Attendees are researchers, product designers, and IT architects.The day's activities provide a mixture of talks on key issues with an interactive panel session by those who are actively operating major e-business systems. There will also be a presentation of papers addressing prototype e-commerce systems.

The panel is designed to engage the creators of the technology, the users of the technology, and researchers in a fruitful discussion about key issues that must be addressed in the 21st century.

A workshop on practical real life, high value, high integrity, continuously available e-business systems. These systems present new challenges and new opportunities for delivering around-the-clock uptime. They are distributed and heterogeneous but each component is more likely to be dedicated to a single application and much of the workload is read-only.

Like all high availability systems, they must be designed to cope with hardware and software failures. In addition, configuration changes and software updates need to be performed while applications remain operational. Workload demands are unpredictable with high peak to average ratios, introducing opportunities for exploiting normally idle capacity as part of the high availability solution. In addition, as technology costs decline and complexity increases, the management of these systems becomes a critical aspect of them.

WORKSHOP#3 PROGRAM Dependabability of E-Commerce Systems

08:30-08:40 Introductory Remarks . . . . . .Lisa Spainhower

Section 1:
The first section of the workshop explores Internet-based business and the dependability opportunities and challenges thereof.

08:40-09:20 . . . . . .John Patrick (Attitute LLC)

09:20-10:00 . . . . . .Eric Siegel (Keynote)

10:00-10:30
BREAK

10:30-11:10 . . . . . .Carl Hutzler (AOL)

11:10-11:50 . . . . . .Section 1 Question & Answer Session

Section 2:
The second section considers Internet-based business from the perspective of major IT vendors.

11:50-12:30 . . . . . .Matthew Kerner (Microsoft)

12:30-13:30
LUNCH

01:30-02:10 . . . . . .Stuart Feldman (IBM)

02:10-02:50 . . . . . .Section 2 Question & Answer Session

Section 3:
The third section will consist of the presentation of papers on the topic of e-commerce dependability.

02:50-3:30 . . . . . .Papers

03:30 ADJOURN

Workshop on Dependability Benchmarking

WORKSHOP #4

Co-Chairs

Philip Koopman
Carnegie Mellon U., USA
<koopman@cmu.edu>

Henrique Madeira
Univ. of Coimbra, Portugal
<henrique@dei.uc.pt>

Program Committee

Wilson, Don *(Compaq, USA)*
Murphy, Brendan *(Microsoft Research, UK)*
Kanoun, Karama *(LAAS-CNRS, France)*
Cukier, Michel *(UIUC, USA)*
Blanquart, Jean-Paul (Astrium, France)
Karlsson, Johan *(Chalmers Univ. Sweden)*

Classical features such as raw performance and functionality have long driven the computer industry to improve their products. But now, dependability and maintainability are seen as equally important. While there are relatively straightforward ways to evaluate and compare performance and functionality of different systems or components, the evaluation of dependability and maintainability features is much more difficult. Among the challenges that must be addressed are: incorporating the effects of software failures, characterizing the dependability of opaque off-the-shelf hardware and software components, including the effects of typical maintenance, operational, and configuration management procedures, and accommodating the fact that different application areas have different requirements for the various factors influencing dependability.

The goal of the Dependability Benchmarking Workshop is to provide a forum for the computer industry and academia to discuss problems associated with the evaluation and characterization of dependability and maintainability of components and computer systems. The identification of dependability benchmarking measures and the essential technologies for dependability benchmarking, including both experimental measuring and modeling technologies, are central aspects of this large discussion meant to garner ideas on practical and cost-effective ways to evaluate dependability and maintainability features.

WORKSHOP#4 PROGRAM Dependabability Benchmarking

08:30 – 10:30

Joint Panel with IPDS on Dependability Benchmarking: Methods, Techniques and Approaches

10:30 – 12:30

Progress on Defining Standardized Classes for Comparing the Dependability of Computer Systems**
Don Wilson *(Compaq/Tandem Labs, USA)*

A Preliminary Framework for Dependability Benchmarking*
Karama Kanoun and Jean Arlat *(LAAS-CNRS, France)*, Henrique Madeira *(University of Coimbra, Portugal)*

Capturing the Human Component of Dependability in a Dependability Benchmark**
Aaron Brown, Leonard Chung, and David Patterson *(University of California at Berkeley, USA)*

Benchmarking Semantic Availability of Dynamic Data Feeds and Their Monitors*
Orna Raz, Mary Shaw, and Philip Koopman *(Carnegie Mellon University, USA)*

Using Bayesian Theory for Estimating Dependability Benchmark Measures*
Michel Cukier and Carol Smidts *(University of Maryland at College Park, USA)*

Empirical Evaluation of Techniques and Methods Used for Achieving and Assessing High Dependability of Software* Ioana Rus *(Fraunhofer Center for Empirical Software Engineering, USA),* Victor Basili and Marvin Zelkowitz *(University of Maryland USA),* Barry Boehm *(University of Southern California, USA)*

Extended questions to panel of presenters
Moderator: Philip Koopman *(Carnegie Mellon University, USA)*

13:30 – 15:30

The Set-Check-Use Methodology for Detecting Error Propagation Failures in I/O Routines**
Michael Bigrigg and Jacob Vos *(Carnegie Mellon University, USA)*

Defect and Fault Seeding In Dependability Benchmarking*
Barry Boehm and Daniel Port *(University of Southern California, USA)*

System Recovery Benchmarking*
Ji Zhu, James Mauro, and Ira Pramanick *(Sun Microsystems, USA)*

Faultload Representativeness for Dependability Benchmarking*
Jean Arlat and Yves Crouzet (LAAS-CNRS, France)

What's Wrong With Fault Injection As A Benchmarking Tool?**
Philip Koopman *(Carnegie Mellon University, USA)*

Extended questions to panel of presenters
Moderator: Henrique Madeira *(University of Coimbra, PORTUGAL),*

(Note: ** = Paper; * = Position statement)

Workshop on Dependable Middleware-Based Systems

WORKSHOP #5

Co-Chairs

Priya Narasimhan *(Carnegie Mellon University)*

Pascal Felber *(Bell Labs, Lucent)*

Program Committee

Dave Bakken *(Washington State Univ., USA)*
Roy Friedman *(Technion, Israel)*
Rachid Guerraoui *(EPFL, Switzerland)*
Isabelle Rouvellou *(IBM Research, USA)*
Rick Schantz *(BBN Technologies)*
Doug C. Schmidt *(UC Irvine and DARPA, USA)*

While middleware technologies, such as CORBA, EJB and DCOM, are gaining adoption is most application domains, there is still some reluctance in deploying middleware in mission-critical systems with high dependability requirements. Recognizing the need for dependable middleware, several research, industrial and standardization efforts have focussed independently on specific pieces of this dependability puzzle, but have not collectively attempted to solve the entire puzzle. One specific objective of the one-day Workshop on Dependable Middleware-Based Systems (WDMS 2002) is to bring together the leading researchers and practitioners (and therefore, the pieces of the puzzle) in this area, to discuss their insights on dependable middleware, along with the open issues and the challenges that they still face. To this end, some of the presentations at WDMS 2002 will cover practical experiences with, and lessons learned in using and testing, dependable middleware in the field; yet other presentations will uncover novel research ideas that are on the cutting edge in the design and implementation of dependable middleware.

Because there is an equally increasing need for middleware-based systems to exhibit, in addition to dependability, many other "-ilities" (such as survivability, adaptability, scalability, availability, mobility, security, real-time, etc.), another objective of this Workshop is to look at the composition of various other interesting "-ilities" with dependability. Some of the presentations will be aimed specifically at discussing the marriages of real-time with dependability, live upgrades with dependability, etc. We expect that future research on reliable middleware will be founded on some of the ideas that will be presented at this Workshop, and those that will inevitably arise from the discussions that follow.

In keeping with the true open spirit of a Workshop, WDMS 2002 is intended to serve as a forum for fostering free-spirited technical exchanges and healthy debate. Practitioners from industry and researchers from academia will present their latest practices, ideas, technologies, standards and systems for building dependable middleware-based applications. These presentations will set the stage for the Workshop participants to explore, collectively, ways of making today's middleware technologies more robust, and to investigate the enhancement of existing dependable middleware with other "-ilities".

WORKSHOP#5 PROGRAM Dependable Middleware-Based Systems

SESSION I: Fault-Tolerant CORBA: 8.30am - 10.00am

1. **Adding Real-Time Support To Fault-Tolerant CORBA** B. Natarajan, N. Wang *(Washington Univ., USA),* C. Gill, *(Vanderbilt Univ., USA),* A. Gokhale & D. C. Schmidt, *(UC, Irvine, USA)*

2. **Characterization Approaches for CORBA Systems by Fault Injection** E. Marsden, J.-C. Fabre and J. Arlat *(LAAS, France)*

3. **A Configurable CORBA Gateway for Providing Adaptable System Properties** M. Seri, T. Courtney, M. Cukier, V. Gupta, S. Krishnamurthy, J. Lyons, H. Ramasamy, J. Ren, and W. H. Sanders *(Coordinated Science Laboratory and Dept. Computer Science, U. of Illinois at Urbana-Champaign, USA)*

4. **Building and Evaluating an FT-CORBA Infrastructure** D. Szentivanyi & S. Nadjm-Tehrani *(Linkoping Univ, Sweden)*

5. **Online Upgrades for Java and CORBA** L. A. Tewksbury, S. Oberg, L. E. Moser & P. M. Melliar-Smith *(Eternal Systems, Inc.)*

SESSION II: Dependability and Other "-ilities": 10.30am - 12.30pm

6. **A Two-Tier Approach To Building Dependable Middleware Services** P. D. Ezhilchelvan & N. A. Spiers *(Univ. of Newcastle, England)*

7. **Middleware Support for Pervasive Dependability** C. Fetzer & K. Hogstedt *(AT&T Labs, USA)*

8. **Reachability Snapshots in the Presence of Failures: An Exercise in Protocol-Service Composition** S. Gutierrez-Nolasco & N. Venkatasubramanian *(UC, Irvine, USA)*

9. **A Middleware Service for Dynamic System Reconfiguration in Real-Time Fault-Tolerant Distributed Object Computing Systems** J. Liu & K. H. Kim *(UC, Irvine, USA)*

10. **Middleware Policies for Intrusion Tolerance** F. Webber, P. Pal, C. Jones, M. Atighetchi & P. Rubel *(BBN Technologies)*

SESSION III: Transactions: 2.00pm - 3.00pm

11. **Deterministic Scheduling and Online Recovery for Replicated Multithreaded Transactional Servers** R. Jimenez-Peris & M. Patino-Martinez *(Technical Univ. of Madrid, Spain)*

12. **Strong Replication in the GLOBADATA Middleware** L. Rodrigues, H. Mitanda, R. Almeida, J. Martins & P. Vicente *(Univ. de Lisbon, Portugal)*

13. **Transactional Attitudes: Reliable Enterprise Application Integration Using Web Services** T. Mikalsen, S. Tai & I. Rouvellou *(IBM Research, Yorktown, USA)*

SESSION IV: Practical Experiences: TIME: 3.00pm - 4.00pm

14. **Lessons Learned From Using Adaptive DOC Middleware in Real Application Contexts** C. Gill, J. Loyall, R. Schantz and D. C. Schmidt *(Washington University, St. Louis, USA), (BBN, UC, Irvine, USA)*

15. **Realizing Software Fault Tolerance in Radar Systems Through Fault Tolerant Middleware and Fault Injection** D. M. Blough, T. D. Bracewell, J. Cooper & R. Oravits *(Georgia Tech, USA), (Raytheon, USA), (Army SMDC)*

16. **Testability of Complex Middleware-Based Systems** D. M. Wells, R. E. Bernstein & A. Vadlamudi *(Open Group)*

Workshop on Scalable, Uninterruptible Computing

WORKSHOP #6

Chair

Dimiter Avresky
(Northeastern Univ., USA)

Program Committee

D. Avresky *(NEU, USA)*
J. Hayes *(Univ. Michigan, USA)*
B. Johnson *(Univ. of Virginia, USA)*
F. Lombardi *(NEU, USA)*
R. Maxion *(CMU, USA)*
J. Plank *(U. of Tennessee, USA)*

The goal of this half-day workshop is to provide a forum for researchers and practitioners, from academia and industry, to discuss the main challenges and practical solutions for implementing scalable uninterruptible computing systems.

Today's networked systems employ a highly heterogeneous collection of COTS, such as computers, routers, switches and storage. Clusters of advanced workstations, built from COTS, already play an important role in many industrial and military applications. Their behavior is mostly dynamic, as they are expected to undergo continuous changes in response to unpredictable events such as addition/deletion of computational resources, upgrades on hardware/software capabilities and reconfiguration. As the complexity of these systems is growing at a very explosive rate, efficient tools and techniques must be developed in a cohesive framework.

A comprehensive, multi-disciplinary approach is required to the problems associated with scalable networked systems with the ultimate objective to provide uninterruptible computing and high quality of service. Novel architectures need to be developed for providing the basis for efficient, scalable and reliable computation and communication. The architecture should incorporate system entities at different functional levels thus being able to account for complex interactions. This will require a detailed characterization of a hierarchical environment which closely monitors behavior of all resources (hardware and software). Uninterruptible computing requires the composition of many entities (for example routing, fault tolerance, reconfiguration and recovery-based computing). The approach is multi-disciplinary, because it utilizes software with a clear understanding of the underlying hardware resources (routers, switches, network-interface controllers) by analytical and algorithmic modeling techniques. This approach will allow to build scalable networked-based systems, based on COTS, that are inexpensive, accessible, scalable and dependable. These systems will insure transparent fault tolerance and uninterruptible computing.

Fast Abstracts

Fast Abstracts are short presentations of work in progress or opinion pieces that can cover any and all facets of dependable systems and networks (maximum 2 pages - standard double-column IEEE format). Because they have late deadlines and are not rigorously refereed, Fast Abstracts allow their authors to:

- Report on work that may or may not be complete.
- Introduce new ideas to the community.
- State positions on controversial issues.

Participants in this track will present a short talk (5 minutes including 1 minute for questions) and publish a concise, two-page abstract in the Supplement of the 2002 International Conference on Dependable Systems and Networks.

— More information on format and submission can be found at **www.dsn.org/fastabs.html**

Deadlines

Submission: April 22, 2002 (earlier if all slots filled)

Notification: May 8, 2002

Chair

David Bakken *(Washington State Univ., USA)*

Program Committee

Ahlström, Kristina *(Chalmers Univ., Sweden)*

Cukier, Michel *(Univ. Maryland, USA)*

Tutorial Descriptions

Fault tolerance against design faults: Design principles and reliability assessment

by Bev Littlewood and Lorenzo Strigini, Centre for Software Reliability, City University, UK

The tutorial introduces principles for fault tolerant software design as well as methods for estimating how much reliability can be gained by the use of such principles. The aim is to explain fundamental concepts and communicate research results about the reliability growth that can be expected when software fault tolerance methods are used. The overall objective is to assist designers and assessors of critical software systems.

Safety Cases and COTS/SOUP

by Robin E Bloomfield and Peter Bishop, Adelard and CSR, City University, UK

The tutorial presents an approach for justifying the use of "software of uncertain pedigree" (SOUP) and COTS in safety related applications. The approach is based on the presenters' practical experience of assessing SOUP used in critical applications. The safety assurance of SOUP is centers on a documented, five-phase safety justification (safety case) that sets out the safety claims for the system as well as the evidence and arguments that support them.

Building Dependable Systems: the Power of Negative Thinking

by Chuck Howell, The MITRE Corporation, USA

The natural human tendency is to focus on the positive functional capabilities a new software intensive system will provide. However, for critical systems, there is much to be gained from "negative thinking": at each stage of development, from requirements capture, design and construction through to testing and validation, considering all the ways things could go wrong. This tutorial will illustrate the importance of "negative thinking" techniques such as hazard analysis, stress testing and fault injection amongst others.

Intrusion Tolerance: Concepts and Design Principles

by Paulo Verissimo, Department of Informatics, University of Lisboa, Portugal

Intrusion tolerance, the ability to continue operating and providing (albeit degraded service), is the hallmark of next generation security systems. It is also currently the topic of a substantial research effort in the US and Europe. This tutorial reviews previous results in the light of intrusion tolerance, introduces the fundamental ideas and presents recent advances of the state of the art brought about by the aforementioned research effort.

Keynote Speaker

OFFICE OF SCIENCE AND TECHNOLOGY POLICY

The Honorable

Richard Mather Russell

Associate Director (Designate)

Office of Science and Technology Policy

Since November 2001, Richard Russell has served as Associate Director (Designate) for Technology at the Office of Science and Technology Policy. Between March and November of last year, he served as Chief of Staff. Prior to joining OSTP he worked on the Presidential Transition Teams for the Department of Commerce, National Science Foundation, and OSTP.

From 1995-2001, Mr. Russell worked for the House of Representatives Committee on Science and has a background in technology and environmental policy. The Committee has oversight responsibilities for all Federal civilian research and development and authorizing responsibilities for most civilian science programs.

During his time on the Committee, Mr. Russell helped draft a wide variety of legislation, including efforts to expand and improve coordination of federal information technology research, improve computer security, and authorize agencies such as the National Institute of Standards and Technology. He also was charged with overseeing the committee's technology policy, coordinating its oversight agenda, and helping manage the committee's majority staff.

Mr. Russell began his tenure on the Committee as a professional staff member for the Subcommittee on Energy and Environment. He was promoted to staff director for the Subcommittee on Technology and finally to deputy chief of staff for the full Science Committee.

Prior to joining the Science Committee, Mr. Russell was a professional staff member of the Merchant Marine and Fisheries Subcommittee on Oceanography. The Oceanography Subcommittee had jurisdiction over ocean and environmental research and management.

Mr. Russell received his initial congressional experience working for Congressman Curt Weldon (R-PA). He then joined the staff of Senator John Seymour (R-CA).

Mr. Russell began his career in Washington, D.C. as a research fellow for the Conservation Foundation. In 1988 he earned a B.S. in Biology from Yale University.

Mr. Russell is married to Lynley Ogilvie. Ms. Ogilvie is an accomplished attorney with the law firm of Latham and Watkins. They have a new son, George, and live in Virginia.

Student Forum

The Student Forum will provide the opportunity for students working in the area of dependable computing to present their research and to interact in various ways. The track will include sessions featuring On-Going Student Research papers and a Poster session. Both papers and posters should be singly authored by students, and describe preliminary results and/or future directions of on-going research that is expected to continue over the next one or two years. These papers will be reviewed by a committee led by the Student Forum Chair and accepted papers will be published in the Supplement of the 2002 International Conference on Dependable Systems and Networks.

On-Going Student-Paper Submissions: All papers should be written in English and typed using the standard (double column) IEEE format. The maximum length of a paper should be 3 pages, and it should be submitted in its final form, ready to be printed. Submissions must be done electronically.

Student Poster Submissions: A brief description of the poster should be submitted electronically. Students from the On-Going Student Paper track are encouraged to also submit posters. Display supplies (e.g., easel, poster boards, etc.) will be provided at the conference.

For more information about submitting a Student Forum paper or poster, or regarding student travel scholarships, either contact the Student Forum Chair or browse through the conference web site (www.dsn.org).

Deadlines

Submission: April 22, 2002

Notification: May 8, 2002

Chair

Nuno Ferreira Neves *(Univ. of Lisboa, Portugal)*

Program Committee

Cachin, Christian *(IBM-Zurich, Switzerland)*

Castro, Miguel *(Microsoft, Cambridge, UK)*

Hiltunen, Matti *(AT&T Labs Research, USA)*

Vaidya, Nitin *(Texas A&M Univ., USA)*

Local Information

Social Events

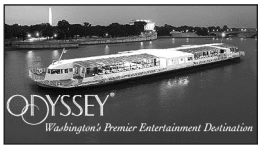
Sunday, June 23, 2002

18:00 – 21:00

Welcome Reception at Hyatt Regency Hotel

Tuesday, June 25, 2002

18:00 – 22:00



Excursion & Banquet on the Odyssey

Voted Distinctive Passenger Vessel of 1995 by *Marine Log* and Outstanding Passenger Vessel of the Year by *Maritime Reporter*, Odyssey III is the only ship of its kind in the U.S. Its unique design allows for travel beneath the historic bridges spanning the Potomac. Newly-renovated, glass-atrium dining rooms offer spectacular panoramic views of the nation's greatest monuments. The open-air perimeter deck is perfect for watching the District drift slowly by. The exterior boasts a quarter mile open-air perimeter deck.

Jackets are recommended for men (but not required) and cocktail attire for women. No jeans, shorts, tank tops or halter-tops will be allowed. Boarding time is 6:00 pm and the cruise time is 7:00 pm - 10:00 pm; dinner will include a bountiful buffet, live music and dancing! Round trip transportation will be provided to and from the Hyatt and the Gangplank Marina. If you wish to drive, there is parking available.

Odyssey Dinner Cruise: www.odysseycruises.com

Price/person
- Free of charge for DSN participants
- USD 75.00 for guests

For both participants and accompanying persons, please indicate your participation in the event on the registration form for logistical planning.

General Information

Venue

The meeting will be held at the Hyatt Regency Bethesda,
Wisconsin Ave. at Old Georgetown Rd., Bethesda, Maryland, 20814 USA

Tel: 1.301.657.1234 or 1.800.233.1234
Fax: 1.301.657.6453

http://bethesda.hyatt.com

Advance registration and fee information
Please submit your on-line registration at
www.schafercorp-ballston.com/dsn2002 , www.dsn.org or use the enclosed registration form when registering for the DSN conference, as well as for the dinner cruise.

Member IEEE/ACM	Pre-Registration Paid by 24 May 2002	Late/On-site Registration Paid after 24 May 2002
Conference Fee	$495	$595
All Workshops	$275	$330
One Workshop	$160	$200
Full-day Tutorials (2)	$200	$240
1/2 day Tutorial	$100	$120

Non-Member	Pre-Registration Paid by 24 May 2002	Late/On-site Registration Paid after 24 May 2002
Conference Fee	$620	$740
All Workshops	$345	$410
1-Day Workshop	$200	$240
Full-day Tutorials (2)	$250	$300
1/2-Day Tutorial (1)	$125	$150

Student	Pre-Registration Paid by 24 May 2002	Late/On-site Registration Paid after 24 May 2002
Conference Fee	$175	$200
All Workshops	$100	$120
1-Day Workshop	$60	$75
Full-day Tutorials (2)	$200	$200
1/2-Day Tutorial (1)	$100	$100

Full DSN Conference Registration – The DSN conference registration fee includes: All DCC and IPDS Sessions and Workshops (Monday – Wednesday), Sunday Welcome Reception, 3 Continental Breakfasts, 3 Lunches, 1 Dinner Cruise, Breaks, Proceedings, CD and the Supplemental Volume.

Student Full DSN Conference Fee – The student registration fee includes: All DCC and IPDS Sessions and Workshops (Monday – Wednesday), Sunday Welcome Reception, Breaks, Proceedings CD and the Supplemental Volume.

Workshop Only Registration – The workshop only registration fee includes: Sunday Welcome Reception, Workshop Attendance, Lunch, Breaks and the Supplemental Volume.

Tutorial Only Registration – The tutorial only registration fee includes: Tutorial attendance, Sunday Reception, One Lunch, Breaks and Tutorial Hand-outs.

Payment

The total amount due, as calculated on the registration form, must be submitted when the registration form is mailed. The registration of application will only be accepted when full payment has been received. Please include payment along with the completed registration form via mail to: Schafer Corporation, Attention DSN Registration, 3811 North Fairfax Drive, Suite 400, Arlington, VA 22203. All payments must be in USD.

A letter of confirmation will be sent to you as soon as your registration form, and payment have been received.

Cancellation

All cancellations must be made in writing and sent to Schafer Corporation, Attention DSN Registration, 3811 North Fairfax Drive, Suite 400, Arlington, VA 22203. All fees will be refunded or cancellations received before May 24, 2002. No refund can be made for cancellation received after May 24, 2002.

Conference Registration Desk
The Registration Desk for DSN will be located in the Hyatt and will be open on Sunday, June 23 through Wednesday, June 26. Please contact Carole Kelliher at 703-516-6001 or via email <coordinators@schafercorp-ballston.com> for any conference related questions.

Guests
The Welcome reception is free of charge for guests. Please indicate your participation on the registration form for planning purposes. Tickets for the Odyssey dinner cruise can be booked on the registration form for a price of USD 75.00. On-site availability is not guaranteed.

Accommodations & Directions
There is a block of rooms at the Hyatt Regency Bethesda **http://bethesda.hyatt.com**

Reservations are to be handled on an individual basis by calling the hotel reservation department directly at 301-657-1237 or 800-233-1234. Individuals must identify themselves as being with the DSN group in order to receive the rate of $165.00 plus tax for a single or double room. Please make your reservations by Friday, May 31, at 5:00 PM EST, in order to receive special rate. After this date, rooms will be given out on a space availability basis and may be subject to regular room rates.

The hotel is located at Bethesda's Metro Center, 2.5 miles inside the Capital Beltway (I-95/I495), 6 miles from the U.S. Capitol. 18 miles to Ronald Reagan Washington Airport, 32 miles to Baltimore/Washington International and Washington Dulles International airports.

Location transportation
There are 3 major airports in the Washington, DC area.

Baltimore (BWI) **www.bwiairport.com**

Washington Reagan National (DCA) **www.metwashairports.com**

Washington Dulles International Airport (IAD) **www.mwaa.com/dulles/**

Please visit the DSN meeting website for the official airline information.

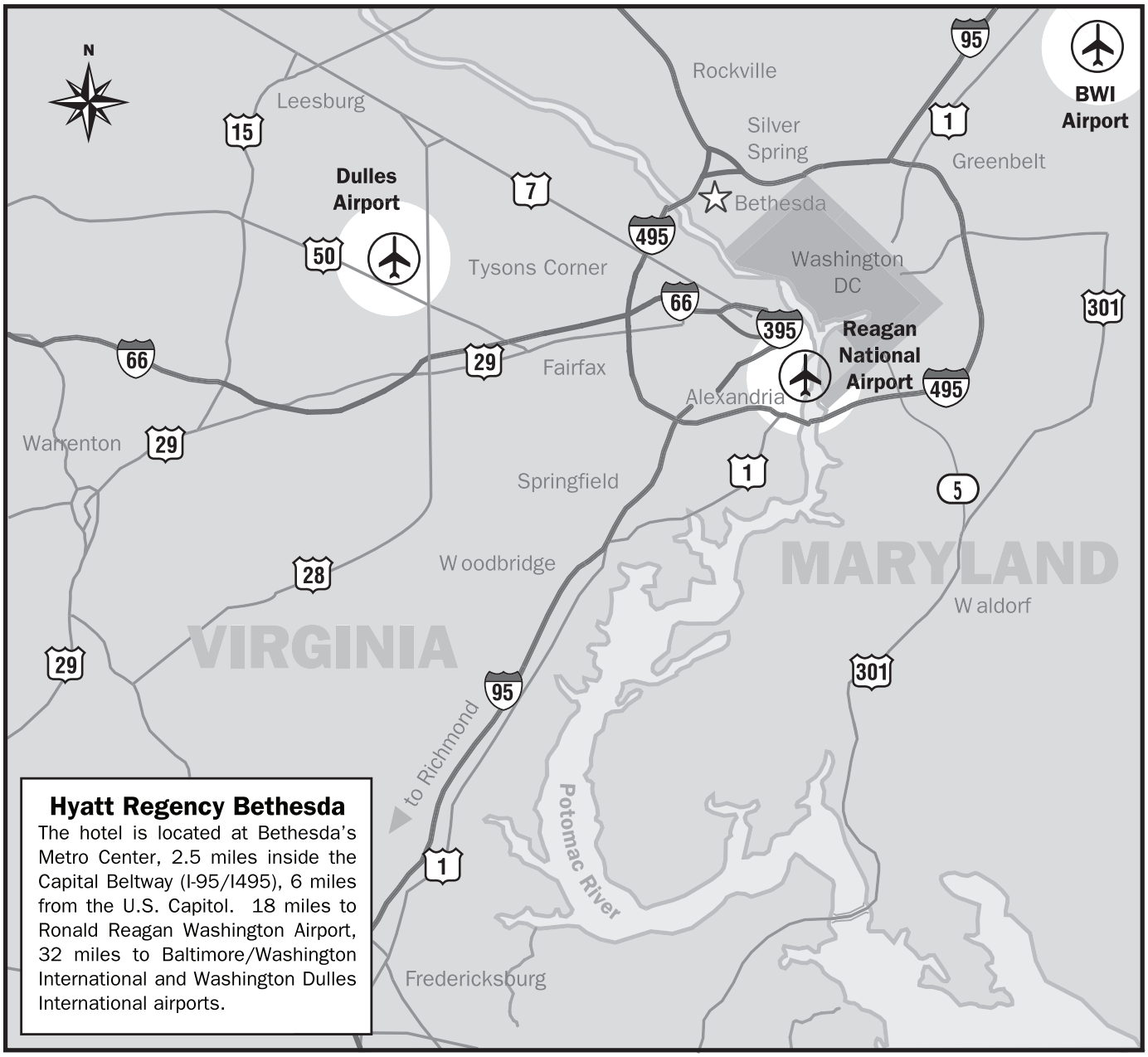
- From Ronald Reagan Washington National Airport: Take the Metrorail to the Bethesda (Red Line) stop. By car, take George Washington Parkway North to I-495 toward Maryland. Take exit 34, Wisconsin Avenue. Follow about 2.5 miles. Hotel is on the right-hand side.
- From Dulles Airport: Take the Dulles Access Road to I-495 North. Take Exit 34, Wisconsin Avenue. Follow about 2.5 miles. Hotel is on the right-hand side.
- From the North: Take I-95 South to I-495 toward Silver Spring. Take Exit 34, Wisconsin Avenue toward Bethesda. Follow Wisconsin Avenue about 2.5 miles. Hotel is on the right-hand side.
- From the South: Take I-95 North/Frederick. At the I-495/I-270 split, bear right onto I-495. Take the second exit, Wisconsin Avenue (355 South). Follow about 2.5 miles. Hotel is on the right-hand side.

Limousine Service
Awards Limousine Service Inc. (24-hour service) is recommended by the hotel, for reservations, please call 301-656-9644/9645 or via fax 301-657-6453.

Climate & Dress
The weather in June is often mild, midday temperature is between 75 – 85 degrees.

Information
For latest information regarding conference arrangements, **www.dsn.org , www.schafercorp-ballston.com/dsn2002**
Tourist Information: **www.bccchamber.org/ or www.dcchamber.org/**

Washington Metro Area



Hyatt Regency Bethesda

The hotel is located at Bethesda's Metro Center, 2.5 miles inside the Capital Beltway (I-95/I495), 6 miles from the U.S. Capitol. 18 miles to Ronald Reagan Washington Airport, 32 miles to Baltimore/Washington International and Washington Dulles International airports.

Washington Metro Rail

For more information on the Washington Metropolitan area metro rail, please visit **www.wmata.com**

Registration

DSN 2002
June 23 - 26 2002, Washington, D.C., USA

To REGISTER ELECTRONICALLY:
www.schafercorp-ballston.com/dsn2002
or visit **www.dsn.org**

Please Mail or FAX the completed form to:

Schafer Corporation
DSN Registration
3811 North Fairfax Drive, Suite 400
Arlington, VA 22203
fax 703.516.6065
Tel 703.516.6001
Email: coordinators@schafercorp-ballston.com

PERSONAL INFORMATION

Last Name:_____**First Name:**_____**Middle Initial:** ____

Affiliation:_____

Mailing Address: _____

City: _____ **State:** _____

Country: _____**Zip/Postal Code:** _____

Phone: _____ **Fax:** _____

E-mail: _____

____ Do not include my name, address, phone, fax, and email on a published list of attendees.

____ Do not include my name and address on a mailing list

Dietary needs: (e.g., vegetarian) _____

IEEE/CS Membership No.: _____

Check here if, under the Americans with Disabilities Act, you require specific aids or services during your visit.

_____ Audio

_____ Visual

_____ Mobile

Full DSN Conference Registration – The DSN conference registration fee includes: All DCC and IPDS Sessions and Workshops (Monday – Wednesday), Sunday Welcome Reception, 3 Continental Breakfasts, 3 Lunches, 1 Dinner cruise, Breaks, Proceedings, CD and a Supplemental Volume. Student Registration does not include attendance at lunches and banquet.

FULL CONFERENCE REGISTRATION:

Registration received	Before May 24	After May 24
IEEE Member	US$495 _____	US$595 _____
Non-member	US$620 _____	US$740 _____
Student/Emeritus . . .	US$175 _____	US$200 _____

Workshop Only Registration – The workshop only registration fee includes: Sunday Welcome Reception, Workshop Attendance, Lunch, Breaks and a Supplemental Volume. (Choose all you want to attend)

_____ Workshop #1
_____ Workshop #2
_____ Workshop #3
_____ Workshop #4
_____ Workshop #5
_____ Workshop #6

TWO OR MORE WORKSHOPS

Registration received	Before May 24	After May 24
IEEE Member	US$275 _____	US$330 _____
Non-member	US$345 _____	US$410 _____

ONE WORKSHOP

Registration received	Before May 24	After May 24
IEEE Member	US$160 _____	US$200 _____
Non-member	US$200 _____	US$240 _____

Tutorial Only Registration – The tutorial only registration fee includes: Tutorial attendance, Sunday Reception, One Lunch, Breaks and Tutorial Handout

(Choose 1 morning and/or 1 afternoon tutorial)

_____ Tutorial #1 AM
_____ Tutorial #2 AM
_____ Tutorial #3 PM
_____ Tutorial #4 PM

FULL-DAY TUTORIAL PASSPORT (AM AND PM TUTORIALS)

Registration received	Before May 24	After May 24
IEEE Member	US$200 _____	US$240 _____
Non-member	US$250 _____	US$300 _____
Student	US$200 _____	US$200 _____

HALF_DAY (1) TUTORIAL PASSPORT (1 TUTORIAL ONLY)

Registration received	Before May 24	After May 24
IEEE Member	US$100 _____	US$120 _____
Non-member	US$125 _____	US$150 _____
Student	US$100 _____	US$100 _____

PAYMENT INFORMATION:

Amount of Conference Registration:
_____

Amount of Workshop Registration:
_____

Amount of Tutorial Registration:
_____

Additional Dinner Cruise for Guests (Tuesday Night)
qty# _____@$75 each = _____

Total Amount Enclosed: _____

METHOD OF PAYMENT:

_____ Personal Check #_____

_____ Company Check#_____

_____ U.S. Federal Government Purchase Order #_____

_____Visa

_____MasterCard

Credit Card Number: _____
Expiration Date: _____
Zip code to where bill is sent: _____

Card Holder Name: _____
Signature: _____

Washington D.C. Attractions

Planning Your visit: Many of the monuments, museums and attractions in Washington D.C. are within walking distance of each other, however comfortable clothing and shoes are recommended! For more information on Washington D.C. tourism, including maps, directions and phone numbers, visit **www.dcvisit.com**

Museums

- Smithsonian Institution Building (The Castle)
- Smithsonian Information Center: open 9 a.m. to 5:30 p.m. daily
- Arts and Industries Building
- Cooper-Hewitt, National Design Museum
- Freer Gallery of Art
- Hirshhorn Museum and Sculpture Garden
- National Air and Space Museum
- National Museum of African Art
- National Museum of American History
- National Museum of Natural History
- National Museum of the American Indian
- National Postal Museum
- National Zoo

FDR Memorial
Located along the Cherry Tree walk on the tidal basin

John F. Kennedy Center for the Performing Arts
for up-to-date theater information, call 202.416.8340

The Library of Congress
tel 202.707.5458

National Archives
Home of the Declaration of Independence and the U.S. Constitution

Arlington National Cemetary
Across the river from the Lincoln Memorial, in Virginia

Vietnam War Veterans Memorial "The Wall"
17th Street and Constitution Avenue N.W. Washington

Washington Monument
Located between the Lincoln Memorial and The Capitol

Lincoln Memorial
Located opposite The Capitol building on the Mall

United States Capitol
Located opposite the Lincoln Memorial on the Mall

Thomas Jefferson Memorial
Located along the Cherry Tree walk on the tidal basin

Korean War Veterans Memorial
Located next to the Vietnam Veterans memorial

Tourmobile

Tourmobile, the only commercial sightseeing service federally authorized to operate on the National Mall, offers narrated tours with stops at Smithsonian museums, major memorials and monuments, government and historic buildings, Arlington Cemetery, Mount Vernon, FDR Memorial, and Frederick Douglass National Historic Site; fees include the option of getting on and off at any stop for the duration of the ticket.

For information, call
202.554.5100 (tape)
or visit:
www.tourmobile.com