## 21st National Information Systems Security Conference

### Papers

**Assurance/Criteria/Testing**  
Track A

- **A Practical Approach to Sufficient INFOSEC**  
  Dr. Rayford Vaughn, Jr., *Mississippi State University*

- **A Metric For Trusted Systems**  
  Audun Jøsang, *Telenor R& D*

- **Practical Steps Toward Providing a Cost-Effective Security Architecture Based on the Common Criteria**  
  Bernard Ramsey, Jr., *Federal Aviation Administration*

- **An Approach for Certifying Security in Software Components**  
  Anup K. Ghosh, *Reliable Software Technologies*

- **Building a Case for Assurance from Process**  

**Internet**  
Track D

- **An Approach to UNIX Security Logging**  
  Stefan Axelsson, *Chalmers University of Technology, Sweden*  
  Ulf Lindqvist, Ulf Gustafson, Erland Jonsson, *Chalmers University of Technology, Sweden*

- **A Layered Framework for Placement of Distributed Intrusion Detection Devices**  
  Marcelo Medina, *George Washington University*

- **The Macro Virus and Virus Scanning Software: An Analysis of Their Interaction**  
  LT William A. Macchione, *Naval Air Systems Command*  
  Daniel Warren, *Naval Postgraduate School*

- **The Remedy Dimension of Vulnerability Analysis**  
  Ulf Lindqvist, Erland Jonsson, *Chalmers University of Technology, Sweden*  
  Per Kaijser, *Seimens AG, Germany*

- **A Forecasting Model for Internet Security Attacks**  
  Alexander D. Korzyk, Sr., *Virginia Commonwealth University* and J.G. Van Dyke & Associates

- **An Analysis of Some Software Vulnerabilities**  
  Mahesh Tripunitara, Ivan Krsul, Eugene Spafford, *COAST Lab Purdue University*

- **Conflict and the Computer: Information Warfare and Related Ethical Issues**  
  Sam Nitzberg, *Telos Information Protection Solutions*
Common-Sense: An Alternative Approach to Web Security
Russell M. Shumway, *Global Integrity Corporation*

Management of Network Security Applications
Philip C. Hyland, Ravi Sandhu, *George Madison University*

The Cyber Battlefield – Is This the Setting for the Ultimate World War?
Sam Nitzberg, *Telos Information Protection Solutions*

Improving Computing Security During the Development of DOD Computerized Weapons Platform
Sam Nitzberg, Mike Carson, *Telos Information Protection Solutions*

Security Implications of Quantum Technologies
Jim Alves-Foss, *University of Idaho*

Security and e-business: Is There a Prescription?
Jim Whitmore, *IBM Corporation*

A Decision Making Model for Securely Conducting Electronic Commerce
Alexander D. Korzyk Sr., *Virginia Commonwealth University and J.G. Van Dyke & Associates*

Anonymous Internet Credit Cards
Vijay Varadharajan, Yi Mu, *University of Western Sydney, Nepean, Australia*

Policy/Administration/Management/Operations

Security Accreditation, Management and Monitoring – Getting the Balance Right!
Peter J. Fischer, *Government Communications Headquarters, UK*

The Benefits of Applying the DoD Information Technology Security Certification and Accreditation Process to Commercial Systems and Applications
Robert M. Jackson, Gerald L. Oar, SphereCom Enterprises Inc.

Conversion of a 300 User Unclassified Network to a Restricted High Network
Roger M. Griffin, *Civil Service College, Sunningdale, UK*
Peter J. Fischer, *Government Communications Headquarters, UK*

Considerations for Allocating Resources for Information Security
Marshal D. Abrams, Carolyn M. Johnson, Jay J. Kahn, Susan G. King, *The MITRE Corporation*

Risk Management
James W. Meritt, *Wang Government Systems*
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<td>Vijay Varadharajan, Nikhir Kumar, Yi Mu, <em>University of West Sydney, Nepean, Australia</em></td>
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<td>A Visual Mathematical Model for Intrusion Detection</td>
<td>Greg Vert, Deborah A. Frincke, Jesse McConnell, <em>University of Idaho</em></td>
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<td>A Specification-Based Approach for Building Survivable Systems</td>
<td>R. Sekar, Yong Cai, <em>Iowa State University</em></td>
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<td>Mark Segal, <em>Bellcore</em></td>
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<td>A Framework for Cooperative Intrusion Detection</td>
<td>Jesse McConnell, Deborah Frincke, Don Tobin, Jamie Marconi, Dean Polla, <em>University of Idaho</em></td>
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<td>Analyzing Programs for Vulnerability to Buffer Overrun Attacks</td>
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<td>Categorization of Software Errors That Led to Security Breaches</td>
<td>Wenliang Du, Aditya P. Mathur, <em>COAST Laboratories, Purdue University</em></td>
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<td>A Survey of Multicast Security Issues and Architectures</td>
<td>Peter S. Kruus, <em>Naval Research Laboratory</em></td>
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<td>James P. Anderson, <em>James P. Anderson Company</em></td>
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<td>LT Dion Robb, USN, <em>SPAWARSYSCE</em></td>
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<td>Paul D. Sands, <em>Sandia National Laboratories</em></td>
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Artificial Neural Networks for Misuse Detection  
James Cannady, *Nova Southeastern University*

Challenges and New Technologies for Addressing Security in High Performance Distributed Environments  
Rossen Dimitrov, Matthew Gleeson, *Mississippi State University*

The Granular Protection Solution for Databases  

Inheritance Properties of Role Hierarchies  
W.A. Jansen, *National Institute of Standards and Technology*

Decentralized Group Hierarchies in UNIX: An Experiment and Lessons Learned  
Ravi Sandhu, Gail-Joon Ahn, *George Mason University*

Role-Based Access Control Features in Commercial Database Management Systems  
Chandramouli Ramaswamy, *National Institute of Standards and Technology*

Ravi Sandhu, *George Mason University*

From a Formal Privacy Model to its Implementation  
Simone Fischer-Hübner, Amon Ott, *University of Hamburg, Germany*

Wiemer-Murray Domain Security Policy Model for International Interoperability  
Douglas J.M. Wiemer, *SAIC Canada*

A HOL Formalization of CAPSL Semantics  

Future Issues

Status of the Advanced Encryption Standard (AES) Development Effort  
Jim Foti, *National Institute of Standards and Technology*

A Closer Look at Revocation and Key Compromise in Public Key Infrastructures  
David A. Cooper, *National Institute of Standards and Technology*

Multi-Protocol Attacks and the Public Key Infrastructure  
Jim Alves-Foss, *University of Idaho*

Security Policy Target, Content, and Links  
Frank T. Bass, τΩ *Engineering, Incorporated*

Case Study of H.R. 695: The Security and Freedom Through Encryption (SAFE) Act  
Catherine Miller Horiuchi, *Sacramento Municipal Utility District, University of Southern California*

Effective Information Security Documents  
Michael E.J. Stubbings, *Communications-Electronics Security Group, UK*
Panels
Assurance/Criteria/Testing

Common Criteria Version 2.0 – Launching the International Standard
Co-Chair: Gene Troy, National Institute of Standards and Technology
Co-Chair: Murray Donaldson, Communications-Electronics Security Group
Panelists:
Shukri Wakid, National Institute of Standards and Technology, US
Michael Jacobs, National Security Agency, US
Jean-Louis Desvignes, Central Information Systems Security Service, France
Dirk Henze, German Information Security Agency, Germany
Gary O’Brien, Communications Security Establishment, Canada
Nick Plasier, Netherlands National Communications-Electronics Security Agency, Netherlands
Andrew W. Saunders, Communications-Electronics Security Group, United Kingdom

The National Information Assurance Partnership: One Year Later
Chair: Kris Britton, National Security Agency
Panelists:
Linda Gilmore, SPARTA, Inc.
Bernard Ramsey, Federal Aviation Administration
Marshall Abrams, MITRE Corporation

Chair: Ron Ross, National Institute of Standards and Technology
Panelists:
Robin Medlock, Mitretek Systems
Jeffrey Horlick, National Institute of Standards and Technology

The Trust Technology Assessment Program: “Transition to Commercial Evaluations”
Chair: Thomas E. Anderson, National Security Agency
Panelists:
Douglas J. Landoll, Arca Systems, Incorporated
Peter Sergent, CoAct, Incorporated
Kimberly Kaplan, Computer Sciences Corporation
James Reynolds, Cygnacom Solutions, Incorporated
Edward McLaughlin, National Software Testing Laboratories
Robert Williamson, Science Application International Corporation

Trust Technology Assessment Program (TTAP) Evaluations: A Worked Example
Chair: Douglas J. Landoll, Arca Systems, Inc.
Panelists:
Tom Anderson, National Security Agency
Dinesh Vakharia, IBM Corporation
Paul Bicknell, The Mitre Corporation
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**Education**

**Track B**

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<td>Chair: Frederick M. Avolio, <em>Independent Security Consultant</em></td>
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<td>Chair: Dr. Sarbari Gupta, <em>CygnaCom Solutions, Inc.</em></td>
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Systems Security Engineering Capability Maturity Model
Chair: Karen Ferraiolo, Arca Systems, Inc.

INFOSEC UPDATE: A Review of the Year’s Key Developments
Co-Chair: Michel E. Kabay, CISSP, ICSA, Inc.
Co-Chair: David M. Kennedy, CISSP, ICSA, Inc.

Electronic Commerce

The Electronic Commerce Landscape
Chair: Anish Bhimani, Global Integrity Corporation
Panelist:
Art Goldberg, Entegrity Solutions, Inc.

Building “Industrial Strength” (High Assurance) Dynamic Commerce Systems – A Multi-Disciplinary View from the Financial Services Industry Perspective
Chair: Kawika Daguio, American Bankers Association

Smart Cards: Tools for Security and Convenience
Chair: Karen Silberman, Smart Card Forum
Panelists:
Thomas Gregg, 3-G International
Gilles Lisimaque, Gemplus Corporation

The Emerging Public Key Infrastructure: Standards and Trends
Chair: Anish Bhimani, Global Integrity Corporation
Panelist:
David Solo, Citicorp
Charles Blauner, J.P. Morgan

Securing the Extended Enterprise in an Electronic World
Chair: Joe Pato, Hewlett Packard
Panelists:
Karen F. Worstell, Stanford Research Institute Consulting
Taher Elgamal, VeriGuard
April T. Brake, Hewlett Packard

Internet

Anti-Virus Strategies – Preventing an Epidemic
Chair: Christine M. Orshesky, Telos Corporation
Panelists:
Jimmy Kuo, Network Associates
Mark Jesmer, Federal Bureau of Investigation
Donald Phipps, Kaiser Permanente
Erika Langerman, The Joint Staff, Pentagon
Do Attack/Defend Exercises Belong in the Classroom?
Chair: Deborah A. Frincke, University of Idaho
Panelists:
  - Matt Bishop, University of California at Davis
  - Cynthia Irvine, Naval Postgraduate School
  - Ira Winkler, Information Security Advisors Group
  - Derek Simmel, CERT
  - Jim Davis, Iowa State University
  - Willis Marti, Texas A&M University

Public Networks for Private Access
Chair: Tina Bird, Secure Network Systems
Panelists:
  - Fred Chase, MITRE
  - Tom Gilbert, Blue Ridge Networks
  - Stacey Lum, InfoExpress
  - Roy Pereira, TimeStep

Issues and Challenges in Implementing Ipsec
Chair: Steve Kent, GTE Internetworking
Panelists:
  - Cheryl Madson, Cisco Systems, Inc.
  - Naganand Dormaswamthy, Bay Networks
  - Roy Periera, TimeStep Corporation

Policy/Administration/Management/Operations

International Information Security Solutions: Successes, Failures, and Solutions
Chair: Jim Litchko, Integrated Management Services, Inc.
Panelists:
  - Howard E. Glavin, Jr., CSX Technologies
  - Tim Maulehue, Carib F/X, Ltd.
  - Loreto Remorca, Jr., Telos International Systems, ASIA

Certification and Accreditation – A Worldwide View
Chair: Penny Klein, DISA
Viewpoints:
Lessons Learned from Application of the DITSCAP with U.S. Federal Agencies
  - Barry C. Stauffer, CORBETT Technologies, Inc.
A View of the DoD Intelligence Community Accreditation Support Team (DICAST) C&A Support and Its Role with the DITSCAP
  - Jack Torak, CIA
  - LtCol. Mark Loepker, National Security Agency
An Overview and Status of the NATO Approach to a C&A Process
  - David Murphy, NATO Headquarters
Information Assurance, C&A and INFOSEC Awareness Tools
  - Jack Eller, DISA
FIPS 140-1 Encryption Requirements: Cryptographic Module Validation Program
Chair: Annabelle Lee, National Institute of Standards and Technology
Panelists:
   Laurie Mack, Communications Security Establishment, Canada
   Ray Snouffer, National Institute of Standards and Technology

Access Certificates for Electronic Services
Chair: Judith A. Spencer, General Services Administration
Panelists:
   Stanley J. Choffrey, General Services Administration
   George Datesman, Mitretek Systems
   David Temoshok, General Services Administration

Lessons Learned in Establishing a Virtual Computer Incident Response Capability
Chair: Marianne Swanson, National Institute of Standards and Technology
Viewpoints:
Lessons Learned – Communication, Coordination, and Cooperation
   Kathy Fithen, CERT/CC, Carnegie Mellon University
Lessons Learned in Establishing and Incident Handling Capability
   Marianne Swanson, National Institute of Standards and Technology
Federal Computer Incident Response Capability (FedCIRC)
   David Adler, General Services Administration

Critical Security Issues – How to Meet the Challenges
Chair: Anne F. Thomson Reed, Department of Agriculture
Panelists:
   Mark A. Boster, Department of Justice
   Daryl W. White, Department of Interior
   Dr. David Nelson, NASA

DoD Information Security Projections: The Service PM Perspective
Chair: Jim Litchko, Integrated Management Services, Inc.
Panelists:
   Colonel Mike Brown, U.S. Army
   Captain Dan Galik, U.S. Navy
   Lt. Colonel Don Solano, U.S. Air Force
# Research and Development

## Track F

**Improving Networked Information System Trustworthiness: A Research Agenda**
Chair: Fred B. Schneider, *Professor, Cornell University*

**Viewpoints:**
- Introduction to “Trust in Cyberspace”
  Fred B. Schneider, *Professor, Cornell University*
- Networked Trustworthiness: The Public Telephone Network and the Internet
  Steven M. Bellovin, *AT&T Laboratories*
- Software and Architecture Issues
  John C. Knight, *University of Virginia*
- Networked Information Systems and Security
  Stephen T. Kent, *BBN Corporation*
- Economic and Public Policy Context for Trustworthiness
  Fred B. Scheider, *Professor, Cornell University*

**Biomimicry to Protect the Global Information Infrastructure**
Chair: Hilary Hosmer, *Data Security, Inc.*

**Panelists:**
- Abigail Hafer, *Curry College*
- Ruth Nelson, *Information System Security*

**The Future of Multi-Level Secure (MLS) Information Systems**
Chair: John Campbell, *National Security Agency*

**Panelists:**
- Jim Williams, *Booz-Allen & Hamilton Inc.*

**Viewpoints:**
- New Direction for Multilevel Secure Information Systems
  Tim Ehrsam, *Oracle Corporation*
- The Future of MLS Information Systems
  Mario Tinto, *The Aerospace Corporation*

## Future Issues

**Track G**

**Practical Experiences Implementing a Scheme for Digital Signature**
Chair: Klaus J. Keus, *GISA/BSI, Germany*

**Viewpoints:**
- The German Digital Signature Bill: Pratical and Technical Implications
  Dr. O.E. Liebetrut, *Bundesamt für Sicherheit in der Informationstechnik, Germany*
- A Certification Authority’s Position and Statement
  P. Mertes, *Deutsche Telekom AG, Germany*
- Evaluation and Confirmation of Products and Security Concepts: Requirements, Problems and Solutions: Evaluation and Confirmation of Smart Cards for Digital Signatures – Special Facets in the Debis Spectrum of SigG/V-Specific Services
  Dr. H.R. Baader, *debis IT-Security Services, Germany*
- Examination and Confirmation Bodies in the German Digital Signature Act
  Dr. Ernst-Herman Gruschwitz, *TUEV Information Technology GmbH, Germany*
Encryption Key Recovery: Off the Launch Pad
Chair: Elaine Barker, National Institute of Standards and Technology
Panelists:
  Robert Frith, Motorola, Key Recovery Alliance
  Richard Guida, Key Recovery Demonstration Project
  Dr. Stephen T. Kent, BBN

A View From the Trenches: Leveraging Security Technology in the Networked Client/Server Environment
Chair: G. Mark Hardy, AXENT Technologies, Inc.

Commercial Network Intrusion Detection & Auditing Products: Installation, Integration, & Use from the Security Professional’s Prospective
Chair: Jim Codespote, National Security Agency

The Secret and Below Interoperability (SABI) Process – Assessing Community Risk
Chair: LtCol Mark Loepker, National Security Agency
Panelists:
  Curtis Dukes, National Security Agency
  Charles Schreiner, National Security Agency
  Willard Ukenholz, National Security Agency
  Dallas Pearson, National Security Agency
  Jack Eller, Defense Information Systems Agency

Report of the 1998 Annual Meeting of the National Colloquium for Information Systems Security Education (NCISSE)
Chair: Charles Reynolds, James Madison University