

**First Annual IFIP WG 11.10 International Conference  
on Critical Infrastructure Protection  
Dartmouth College  
Hanover, New Hampshire  
March 18-21, 2007**

**March 18, 2007 (Sunday)**

**06:30pm – 09:00pm: Reception and Dinner**

**Hayward Lounge/Wheelock Room, Hanover Inn, Main Street, Hanover, NH 03755**

**March 19, 2007 (Monday)**

**07:00am – 08:00am: Breakfast**

**Rockefeller 1 and 2, The Nelson A. Rockefeller Center, Dartmouth College**

**08:00am – 08:10am: Welcoming Remarks and Logistics**

**08:10am – 09:00am: Keynote Lecture**

*Critical Information Infrastructure Protection: Silver Bullets or a Tough Grind?*

Seymour Goodman, Georgia Institute of Technology, Atlanta, Georgia

**09:00am – 10:15am: Session 1: Critical Infrastructure Protection: Challenges and Solutions**

Chair: Eric Goetz, Institute for Information Infrastructure Protection, Dartmouth College, Hanover, New Hampshire

*Security Challenges to the Use and Deployment of Disruptive Technologies*

N. Robinson and L. Valeri

RAND Europe, Cambridge, United Kingdom

Accenture Italy, Rome, Italy

*Critical Infrastructure Cyber Security: Are Economic Incentives Adequate?*

S. Dynes, E. Goetz and M. Freeman

Dartmouth College, Hanover, New Hampshire

Naval Postgraduate School, Monterey, California

*Markets, Market Failures and Critical Infrastructure Protection: Laying the Grounds for Government Intervention*

D. Assaf

University of Toronto, Toronto, Canada

**10:15am – 10:30am: Break**

**10:30am – 11:45am: Session 2: Securing Process Control and SCADA Systems**

Chair: Ann Miller, University of Missouri – Rolla, Rolla, Missouri

*Securing Process Control Systems of Today and Tomorrow*

R. Cunningham, S. Cheung, M. Fong, U. Lindqvist, D. Nichol, R. Pawlowski, E. Robinson, W. Sanders, S. Singh,

A. Valdes, B. Woodworth and M. Zhivich

MIT Lincoln Laboratories, Cambridge, Massachusetts

Pacific Northwest National Laboratories, Richland, Washington

SRI International, Menlo Park, California

University of Illinois, Urbana-Champaign, Illinois

*Security Strategies for SCADA Networks*

R. Chandia, J. Gonzalez, T. Kilpatrick, M. Papa and S. Sheno

University of Tulsa, Tulsa, Oklahoma

*A Custom Intrusion Detection System for Substation and Process Control Systems*

P. Oman and M. Phillips

University of Idaho, Moscow, Idaho

## **March 19, 2007 (Monday) (continued)**

### **11:45am – 01:00pm: Lunch**

**Rockefeller Hinman Forum, The Nelson A. Rockefeller Center, Dartmouth College**

### **01:00pm – 01:30pm: Keynote Lecture**

*Security and Privacy in Tomorrow's Critical Infrastructure*

David Kotz, Institute for Security Technology Studies, Dartmouth College, Hanover, New Hampshire

### **01:30pm – 03:10pm: Session 3: Infrastructure Security**

Chair: Eric Luijff, TNO Defense, Security and Safety, The Hague, The Netherlands

*New Ways for Operating Oil and Gas Production Facilities*

S. Johnsen and R. Ask

SINTEF, Trondheim, Norway

Det Norske Veritas, Trondheim, Norway

*The Maroochy Water SCADA Breach: Lessons Learned*

J. Slay and M. Miller

University of South Australia, Mawson Lakes, Australia

*Rail Infrastructure Security Issues for Positive Train Control Systems*

M. Hartong, R. Goel and D. Wijesekera

Federal Railroad Administration, Washington, DC

Howard University, Washington, DC

George Mason University, Fairfax, Virginia

*Analysis of the Security of Information Flow in the Advanced Electric Power Grid*

H. Tang and B. McMillin

University of Missouri – Rolla, Rolla, Missouri

### **03:10pm – 03:30pm: Break**

### **03:30pm – 04:00pm: Session 4: Novel Research Ideas (Short Papers)**

Chair: James Graham, University of Louisville, Louisville, Kentucky

*Extensible Threat Taxonomy for Critical Infrastructures*

E. Luijff and A. Nieuwenhuijs

TNO Defense, Security and Safety, The Hague, The Netherlands

*An International Approach to Resilience in Critical Infrastructures and Critical Infrastructure Protection*

M. Hyslop

Onyx Group, Newcastle upon Tyne, United Kingdom

### **04:00pm – 05:40pm: Panel: Critical Infrastructure Resilience at the Regional Level**

Chair: Adrian Gheorghe, Old Dominion University, Norfolk, Virginia

*Addressing Resilience within the Framework of Regional Homeland Security Policy and Management*

A. Gheorghe (Old Dominion University, Norfolk, Virginia)

*Critical Infrastructure Resilience for the Hampton Roads Region: Lessons from an Ongoing Project*

F. Krimgold (Virginia Tech, Blacksburg, Virginia)

*Critical Energy Infrastructures and a Practical View from Eastern Europe*

L. Muresan (EURISC, Bucharest, Romania)

*Regional Vulnerability Assessment: Research and Implementation in the Framework of the European Commission*

M. Maserà (Joint Research Center of the European Commission, Ispra, Italy)

*Design and Management for Resilience under all Hazards and Threats: A New Zealand Case Study*

G. Hooper (Center for Advanced Engineering, Christchurch, New Zealand)

### **07:30pm – 09:00pm: Dinner and Keynote Lecture**

#### **Alumni Hall, Dartmouth College**

*NATO Information Technology Research Initiatives*

Ann Miller, University of Missouri – Rolla, Rolla, Missouri

## **March 20, 2007 (Tuesday)**

### **07:30am – 08:30am: Breakfast**

**Rockefeller 1 and 2, The Nelson A. Rockefeller Center, Dartmouth College**

### **08:30am – 09:20am: Keynote Lecture**

*A Challenge to the Critical Infrastructure Protection Research Community*

Richard George, National Security Agency, Fort Meade, Maryland

### **09:20am – 10:10am: Session 5: SCADA Systems Security**

Chair: Paul Oman, University of Idaho, Moscow, Idaho

*Reflections on a European SCADA Security Test Bed*

H. Christiansson and E. Luiijf

Swedish Defense Research Agency, Stockholm, Sweden

TNO Defense, Security and Safety, The Hague, The Netherlands

*Cyber Security Enhancements for SCADA and DCS Systems*

J. Hieb, J. Graham and S. Patel

University of Louisville, Louisville, Kentucky

Morgan State University, Baltimore, Maryland

### **10:10am – 10:30am: Break**

### **10:30am – 11:45am: Session 6: Risk Analysis in Interdependent Infrastructures**

Chair: Yacov Haimès, University of Virginia, Charlottesville, Virginia

*Analysis of Risk in Interdependent Infrastructures*

Y. Haimès, J. Santos, K. Crowther, M. Henry, C. Lian and Z. Yan

University of Virginia, Charlottesville, Virginia

*Multigraph Dependency Models for Heterogeneous Critical Infrastructures*

N. Svendsen and S. Wolthusen

Gjøvik University College, Gjøvik, Norway

Royal Holloway, University of London, London, United Kingdom

*Visualizing Infrastructure Interdependencies to Protect Critical Cyber Infrastructures*

J. Kopylec and A. D'Amico

Applied Visions Inc., Northport, New York

### **11:45am – 01:00pm: Lunch**

**Rockefeller Hinman Forum, The Nelson A. Rockefeller Center, Dartmouth College**

### **01:00pm – 02:40pm: Session 7: Securing Next Generation Infrastructure Networks**

Chair: Mauricio Papa, University of Tulsa, Tulsa, Oklahoma

*Detecting Non-Discoverable Bluetooth Devices*

D. Cross, J. Hoeckle, M. Lavine, J. Rubin and K. Snow

Johns Hopkins University, Baltimore, Maryland

*Distributed Wormhole Attack Detection in Wireless Sensor Networks*

Y. Xu, J. Ford and F. Makedon

Dartmouth College, Hanover, New Hampshire

*Degrading Internet Services Using Intermittent False Feedbacks and the Countermeasures*

Y. Tang, X. Luo and R. Chang

Hong Kong Polytechnic University, Hong Kong, China

*Security Challenges of Reconfigurable Devices in the Power Grid*

S. Myagmar, R. Campbell and M. Winslett

University of Illinois, Urbana-Champaign, Illinois

## March 20, 2007 (Tuesday) (continued)

### 02:40pm – 03:10pm: Session 8: Novel Research Ideas (Short Papers)

Chair: Benjamin Cook, Sandia National Laboratories, Albuquerque, New Mexico

#### *Verifying SCADA Network Access Control Policy Implementations*

S. Singh, D. Nicol, W. Sanders and M. Seri

University of Illinois, Urbana-Champaign, Illinois

#### *Impact of PLC Code Vulnerabilities on SCADA Systems*

S. Valentine and C. Farkas

West Virginia University Tech, Montgomery, West Virginia

University of South Carolina, Columbia, South Carolina

### 03:10pm – 03:30pm: Break

### 03:30pm – 05:15pm: Session 9: Novel Research Ideas (Short Papers)

Chair: Robert Cunningham, MIT Lincoln Laboratories, Cambridge, Massachusetts

#### *The Pillars of Information Sharing: Anonymity and Analysis*

T. Draelos, W. Neumann, R. Schroepel, G. Cybenko and P. Thompson

Sandia National Laboratories, Albuquerque, New Mexico

Dartmouth College, Hanover, New Hampshire

#### *Formalizing Attack Trees for a SCADA System*

K. Moleyar and A. Miller

University of Missouri – Rolla, Rolla, Missouri

#### *Scenario Composition for the Revelation of Blind Spots in Critical Infrastructure Protection Planning*

W. Tolone, S. Lee, W. Xiang, R. McNally and A. Schumpert

University of North Carolina at Charlotte, Charlotte, North Carolina

#### *Vulnerabilities in the Oil and Gas Sector*

C. Restrepo, J. Simonoff and R. Zimmerman

New York University, New York, New York

#### *Analysis of Malicious Threats to Infrastructures: A Conceptual Approach Based on Multi-Agent Systems*

E. Bompardi, R. Napoli, A. Russo, F. Xue, M. Masera and A. Stefanini

Politecnico di Torino, Turin, Italy

Joint Research Center of the European Commission, Ispra, Italy

#### *Process Control System Security Metrics: Requirements for an Effective Program*

C. Glantz, A. McIntyre, M. Young, M. Stoddard, J. Santos, D. Bodeau, L. O'Neil, D. Becker and B. Gennert

Pacific Northwest National Laboratories, Richland, Washington

Sandia National Laboratories, Albuquerque, New Mexico

University of Virginia, Charlottesville, Virginia

The MITRE Corporation, Bedford, Massachusetts

#### *RiskMap: The Risk-to-Mission Assessment Process*

J. Watters, P. Kertzner and D. Bodeau

The MITRE Corporation, Bedford, Massachusetts

### 07:30pm – 09:30pm: Dinner and Keynote Lecture

#### **Wheelock Room, Hanover Inn, Main Street, Hanover, NH 03755**

#### *An(Other) Inconvenient Truth: The Coming Collision of Security with Humankind*

Charles Palmer, Institute for Information Infrastructure Protection, Dartmouth College, Hanover, New Hampshire

**March 21, 2007 (Wednesday)**

**07:00am – 08:00am: Breakfast**

**Rockefeller 1 and 2, The Nelson A. Rockefeller Center, Dartmouth College**

**08:00am – 09:40am: Session 10: Risk Assessment Methodologies**

Chair: Joost Santos, University of Virginia, Charlottesville, Virginia

*Implementation – Service – Effect: The ISE Metamodel of Critical Infrastructures*

W. Beyer and F. Flentge

Fraunhofer-Institut IAIS, Sankt Augustin, Germany

*Analysis of Interdependencies among Italian Economic Sectors via the Input-Output Inoperability Model*

R. Setola

Universita Campus Bio-Medico di Roma, Rome, Italy

*A Service-Oriented Approach to the Assessment of Infrastructure Security*

M. Masera and I. Nai Fovino

Joint Research Center of the European Commission, Ispra, Italy

*Spatial Distribution of Electricity and Oil and Gas Pipeline Failures*

J. Simonoff, C. Restrepo, R. Zimmerman and Z. Naphtali

New York University, New York, New York

**09:40am – 10:00am: Break**

**10:00am – 11:40am: Session 11: SCADA Systems Security and Forensics**

Chair: Stig Johnsen, SINTEF, Trondheim, Norway

*Passive Traffic Monitoring and Analysis of Modbus Networks*

J. Gonzalez and M. Papa

University of Tulsa, Tulsa, Oklahoma

*Remote Forensic Analysis of Process Control Systems*

R. Friend-Cassidy, J. Urrea, A. Chavez and J. Trent

Sandia National Laboratories, Albuquerque, New Mexico

*Formal Modeling and Analysis of the Modbus Protocol*

B. Dutertre

SRI International, Menlo Park, California

*Security Analysis of Multilayer SCADA Protocols: A Modbus Case Study*

J. Edmonds, M. Papa and S. Sheno

University of Tulsa, Tulsa, Oklahoma

**11:40am – 12:30pm: Lunch**

**Rockefeller Hinman Forum, The Nelson A. Rockefeller Center, Dartmouth College**