Rethinking Cybersecurity: A Systems-Based Approach

Darden School of Business - University of Virginia
November 16 – 17, 2010

Workshop sponsored by
the Center for Risk Management of Engineering Systems and the Institute for Information Infrastructure Protection (I3P)

Co-chaired by George Foresman, Yacov Y. Haimes, Barry M. Horowitz and Charles Palmer

Tuesday, November 16
(15 minute break during each session)

8:00 – 8:30  Registration and Continental Breakfast

8:30 – 9:00  Welcoming Remarks: Shari Lawrence Pfleeger, I3P Director of Research

Introduction: A Systems-Based Approach to Cybersecurity

What is a systems-based approach to cybersecurity and why is it needed? This talk will introduce the concept of cyber-infrastructure systems, and also provide an overview of emerging threats and how a systemic process for cybersecurity might prove effective against those threats.

Charles Palmer, Senior Technical Advisor to the I3P

9:00 – 9:30  Morning Keynote: Rethinking Cybersecurity: A Systems-Based Approach
Robert Carey, Deputy CIO, DoD

9:30 – 11:45  Session One: Application-Based Security

This session will examine critical system functions and how they factor into a comprehensive approach to security. How, for example, can one devise security solutions that are directly based on, and related to, the functions of the system being secured? And how can these solutions effectively supplement perimeter security, the strategy most commonly employed in today’s systems? Topics for discussion will include resilience, data integrity, system operator tools and real-time oversight.

Moderator: Barry Horowitz, University of Virginia

Kristen Baldwin, Principal Deputy, Systems Engineering OUSD(AT&L)/DDR&E

Jennifer Bayuk, Former CISO, Bear Stearns
Rick Dove, Chairman, Paradigm Shift International
Robert A. Martin, Principal Engineer, the MITRE Corporation

11:45 – 12:15  Discussion led by Shari Lawrence Pfleeger
12:30 – 2:00  **Luncheon Speaker: Up in the Air Security, Privacy Law in the Cloud Environment**  
Mark D. Rasch, Director, CyberSecurity and Privacy Consulting, CSC

2:15 – 4:30  **Session Two: Opportunities and Risk Posed by Cloud Computing**  
By providing a pool of configurable computing resources that can be rapidly accessed and managed with minimal effort, cloud computing represents a significant technological advance in cyberspace. Yet the same cloud that has vastly increased the functionality of computing has also created multidimensional security concerns. How does cloud computing contribute, or detract from, a systems-based approach to cybersecurity? This session will delve into the security challenges posed by the cloud and the opportunities provided by the cloud to enhance security.

**Moderator: Yacov Haimes, University of Virginia**

Clyde Chittister, Chief Operating Officer, Carnegie Mellon Software Engineering Institute  
Tom Longstaff, Senior Advisor, Information Warfare Systems, Johns Hopkins Applied Physics Laboratory  
Charles Palmer, Director of IBM's Institute for Advanced Security and CTO for Security and Privacy for IBM Research  
Greg Shannon, Chief Scientist, CERT® Program at Carnegie Mellon University’s Software Engineering Institute

4:30–5:00  **Day One Wrap-up**

5:00–6:00  **Reception**

6:00–8:00  **Dinner Speaker: Marcus H. Sachs, PE, Executive Director for National Security and Cyber Policy, Verizon**

**Wednesday, November 17**
(15 minute break during session 3)

8:30–9:00  **Continental Breakfast**

9:00–9:30  **Morning Keynote: 20+ Years of Cyber (in) Security: what we’ve seen, what we’ve learned, what we might do**  
Rich Pethia, Director of the CERT® Program at Carnegie Mellon University’s Software Engineering Institute

9:30–12:00  **Session Three: Moving Collaboratively Forward**  
Both the government and industry have worked hard to design more secure systems. What are some of the lessons learned from their respective experiences? Are there effective ways, for example, to create new organizational structures and support tools that enhance resilience and therefore deter prospective attackers? Topics to be discussed will include the sharing and understanding of alternative organizational models, the implementation of system management strategies and opportunities to enhance resilience through R&D.

**Moderator: George Foresman, Former Under-Secretary of Homeland Security, President, Highland Risk & Crisis Solutions, LTD**

Lynn McNulty, CISSP, McNulty and Associates  
Gregory Garcia, Senior Vice President of Cybersecurity and Identity Management, The Bank of America Corporation, and former Assistant Secretary for Cyber Security and Communications for the U.S. Department of Homeland Security  
Rob Pate, Chair of Coordination, Awareness, Training and Education (CATE) committee; Chief Security Officer at Renesys; and formerly with DHS

12:00–12:30  **Box Lunch**

12:30 – 2:30  **Wrap-up**  
Drawing on the information and ideas presented over the course of this two-day workshop, participants will discuss the steps needed to expedite the adoption of a systems-based approach to cybersecurity. What are the underlying drivers? Who are the key players? Are there identifiable priorities? And how realistic are the prospects for reform?

**George Foresman, Yacov Haimes, Charles Palmer**