



Resilience Week 2014

Transforming the
Resilience of Cognitive,
Cyber-physical Systems

August 19-21, 2014

Tuesday, August 19 - Special Topics Sessions

	Resilience Models and Measures Track Chair: Marco Carvalho, FIT; Craig Rieger, INL <i>[Crystal Peak B/C]</i>	Mixed Human-Automation Resilience Track Chairs: Frank Ferrese, NAVSEA; Will Nothwang, ANL <i>[Mt. Elbert A]</i>	Resilient Infrastructure Track Chairs: David Alderson, NPS; Cherrie Black, INL; Sean McAraw, INL <i>[Mt. Evans]</i>
7:00 a.m.	Coffee and Registration <i>[Capitol Pre-Function Area, 38th Floor]</i>		
8:00 a.m.	Symposium Opening Plenary <i>[Capitol Peak]</i> Bill Bryan, Deputy Assistant Secretary, Infrastructure Security and Energy Restoration DOE		
8:20 a.m.	Logistics <i>[Capitol Peak]</i>		
	Keynote Speakers		
8:30 a.m.	Bill Sanders, UIUC	Lynne Parker, UTK	Stephen Flynn, NU
9:15 a.m.	Nancy Leveson, MIT	Chris Wickens, CSU	Morning Break (9:30 a.m.)
10:00 a.m.	Morning Break		
	Invited Speakers		Invited Speakers
10:30 a.m.	Control-Cyber Research Perspective Craig Rieger, INL Indrajit Ray, CSU	Cyber-Control Research Perspectives David Garlan, CMU; Nathan Michael, CMU	Stakeholder Perspectives Facilitator: Cherrie Black, INL; David Alderson, NPS; John Madden, State of Alaska; Sean McAraw, INL; Steven Kuhr, Colorado Springs Util
11:30 a.m.	Hosted Lunch with Plenary Speaker <i>[Capitol Peak]</i> Rosemary Wenchel, DHS Deputy Assistant Secretary for Cybersecurity Coordination		
	Invited Speakers		Lightning Talks
1:00 p.m.	Cyber-Cognitive Research Perspectives Marco Carvalho, FIT; Nick Multari, PNNL; Michael Assante, NBISE	Cognitive-Control Research Perspectives Anthony Seman, ONR; Mike McCourt, UF; Kaleb McDowell, ARL	J. Phillips, ANL, "Critical Infrastructure Dependencies"; I. Martinez-Moyano, ANL, "Community Resilience and the Role Played by Critical Infrastructure"; L. Genik, DRDC, "Systems Analysis of Community Resilience"; J. Phillips, ANL, "Critical Infrastructure and Regional Resilience"; J. Richards, DHS, "Regional Resiliency Assessment Program Successes and Goals"; R. Bowman, NEU, "Focusing the Lessons of Disaster through the Lens of Resilience: A Case for More Case Studies"; D. Alderson, NPS, "Moving Away from Threat-- Based Analysis"

2:30 p.m.

Afternoon Break *[Crystal Peak A]*

3:00 p.m.

Facilitated Discussions**Promising Interdisciplinary Methodologies**

Facilitator: Chairs

Research Challenges

Facilitators: Chairs

Panel Discussion**Challenges and Opportunities**Moderator: Stephen Flynn, NU;
David Brannegan, ANL;
Connie Lau, HEI;
John Madden, State of Alaska;
Brandon Wales, DHS

4:30 p.m.

GridGame Competition and Poster Session *[Crystal Peak A / Pre-function Area]*

Heavy hors d'oeuvres will be served

A. Rege, Temple U., "Adversary Dynamics and Smart Grid Security: A Multiagent System Approach";
 D. Bodeau, MITRE, "Resiliency Techniques for Systems-of-Systems: Extending and Applying the Cyber Resiliency Engineering Framework to the Space Domain";
 D. Naidu, ISU, "Nonlinear Model Predictive Control for Regulation of a Class of Nonlinear Singularly Perturbed Discrete-time Systems";
 N. Gong, Temple U., "Evaluation of Highly Conditionally Diagnosable (n,k)-star Topology for Applications in Resilient Network on Chip";
 Q. Ren, Temple U. "A BDI Multi-agent Approach for Power Restoration";
 Xie Feng, China ITSEC, "Using Simulation Platform to Analyze Radio Modem Security in SCADA"

6:30 p.m.

Adjourn for Day

Wednesday, August 20 - Papers

	Cyber Track Chairs: Marco Carvalho, FIT; Annarita Giani, LANL <i>[Crystal Peak B/C]</i>	Control Track Chairs: Frank Ferrese, NAVSEA; David Scheidt, JHU APL <i>[Mt. Elbert A]</i>	Cognitive-Communications Track Chairs: Roger Lew, UI; Jie Wu, Temple <i>[Grays Peak A/B]</i>	Resilient Infrastructure Track Chairs: David Alderson, NPS; Cherrie Black, INL; Sean McArarw, INL <i>[Mt. Evans]</i>
7:30 a.m.	Coffee and Registration <i>[Capitol Pre-Function Area, 38th Floor]</i>			
8:20 a.m.	Logistics <i>[Capitol Peak]</i>			
8:30 a.m.	Keynote Speaker <i>[Capitol Peak]</i>			Invited Speakers
	Michael VanPutte, MOD-2			Connie Lau, HEI, "CEO's View of Resilience"; Brandon Wales, DHS, "Analyzing Infrastructure Interdependencies: Lessons Learned"
9:30 a.m.	Morning Break <i>[Crystal Peak A]</i>			
	Cyber Security Methodologies	Power and Energy Systems	Human System Interaction and Training	Lightning Talks
10:00 a.m.	N. Evans, ANL, "Multiple OS Rotational Environment: An Implemented Moving Target Defense"	*E. Archibong, ISU, "Time Scale Analysis and Synthesis for Model Predictive Control under Stochastic Environments"	R. Lew, INL, "A Prototyping Environment for Research on Human-Machine Interfaces in Process Control: Use of Microsoft WPF for Microworld and Distributed Control System Development"	N. Mehravari, CMU, "Evaluating and Improving Cyber Resilience Capabilities of the Electricity and Oil & Natural Gas"; J. Phillips, ANL, "Mathematical Disruption and Impact Models for Addressing Regional Resilience"; B. Thomas, ORNL, "Modeling Climate Impacts on Critical Infrastructures"; D. Judi, LANL, "Urban Water System Modeling and Simulation Tools to Evaluate Infrastructure Resilience"; N. Mehravari, CMU, "Improving the Resilience of National Postal and Related Transportation Critical Infrastructure"; K. Stamber, SNL, "Event Response Resource Quantification and Prioritization"; P. Roege, INL, "Metrics for Energy Resilience"
10:30 a.m.	C. Miles, UL, "VirusBattle: State-of-the-Art Malware Analysis for Better Cyber Threat Intelligence"	B. Niemoczynski, NAVSEA, "Closed Loop Control of Hysteretic Magnetization"	R. Lanier, Design Interactive, "Aptitude Testing for Selection, Specialization, and Training, of Airport Security X-ray Imaging Operators (X-APT)"	
11:00 a.m.	M. Atighetchi, BBN, "A Framework for Resilient Remote Monitoring"	C. Nwankpa, DU, "Performance Indicator Dependency on Measurement Sets in a DC Multi-Converter Power System"	R. Lew, INL, "A Prototype Computerized Operator Support System"	

11:30 a.m.	Hosted Lunch with Plenary Speaker [<i>Capitol Peak</i>] Kevin Moore, Dean of Engineering and Computational Sciences, CSM			
	Cyber Security and Control Systems [<i>Mt. Elbert A</i>]		Keynote Speaker [<i>Capitol Peak</i>]	
1:00 p.m.	R. Hink, ORNL, "Machine Learning for Power System Disturbance and Cyber-attack Discrimination"		Jalal Mapar, HSARPA RSD	
1:30 p.m.	C. Patterson, Virginia Tech, "Isolating Trust in an Industrial Control System-on-Chip Architecture"			
2:00 p.m.	W. Abbas, Vanderbilt U., "Resilient Consensus Protocol in the Presence of Trusted Nodes"		Facilitated Discussion [<i>Capitol Peak</i>]	
			Workforce Development Facilitator: David Alderson, NPS	
2:30 p.m.	Afternoon Break [<i>Crystal Peak A</i>]			
	Evaluation and Analysis of Defense Systems	Perturbed Systems and Nonlinear Control	Resilience Measurement	Lightning Talks
3:00 p.m.	*G. Martins, Vanderbilt U., "Performance Evaluation of an Authentication Mechanism in Time-Triggered Networked Control Systems"	D. Naidu, ISU, "Time Scale Analysis and Synthesis for Unmanned Aerial Vehicles(UAVs)"	S. Duff, Design Interactive, "The Diagnosis and Measurement of Team Resilience in Sociotechnical Systems"	D. Christiansen, INL, "Virtual Simulation for Cyber and Physical Integration"; R. Bent, LANL, "Optimal Resilient Distribution Grid Design"; B. Jennings, SNL, "Resilience certification for commercial buildings: A study of stakeholder perspectives"; S. Tam, ANL, "Applications of Nonlinear Dynamics to Resiliency Analysis"; C. Unis, SNL, "Understanding Complexities in Emergency Management in Order to Mitigate Cascading Consequences"; D. Egli, JHUAPL, "The Value Proposition of Operationalizing Resilience"; J. DiRenzo III, USCG, "Maritime Strategic Surprise: Can An Emphasis on Resilience Be The True Center of Gravity?"; P. Roege, INL, "Resilience: Modeling for Conditions of Uncertainty and Change"
3:30 p.m.	M. Balchanos, Georgia IT, "Metrics-based Analysis and Evaluation Framework for Engineering Resilient Systems"	J. Kollmer, Temple U., "Hovering Synchronization of a Fleet of Quadcopters"	C. Rieger, INL, Resilient Control Systems Practical Metrics Basis for Defining Mission Impact	
4:00 p.m.	Z. Beech, PNNL, "Quantifying Cyber-Resilience Against Resource-Exhaustion Attacks"	D. Naidu, ISU, "Real-Time Algorithm for Nonlinear Systems With Incomplete State Information Using Finite-Horizon Optimal Control Technique"	P. Ostovari, Temple U, "Priority-Based Broadcasting of Sensitive Data in Error-Prone Wireless Networks"	
4:30 p.m.	Sponsor Reception [<i>Wynkoop Brewing Company, 1634 18th Street</i>]			
7:00 p.m.	Adjourn for Day			

Thursday, August 21 - Special Topics Sessions

	Industrial Control System Cyber Security Track Chairs: Subbaram Naidu, ISU; Sean Peisert, LBNL; Miles McQueen, INL <i>[Crystal Peak B & C]</i>	Resilient Infrastructure Solutions User Group Track Chairs: David Alderson, NPS; Cherrie Black, INL; Sean McAraraw, INL <i>[Capitol Peak B]</i>
7:30 a.m.	Coffee and Registration <i>[Capitol Pre-Function Area, 38th Floor]</i>	
8:20 a.m.	Logistics <i>[Capitol Peak A]</i>	
	Panel Discussion <i>[Capitol Peak A]</i>	
8:30 a.m.	Resilient Infrastructure Needs and Capabilities Facilitator: Ron Fisher, INL; Matt Gibson, EPRI; Fred Hintermister, NERC; Kevin Morley, AWWA; John McCray, CSM	
9:30 a.m.	Morning Break <i>[Crystal Peak A]</i>	
	Keynote Speakers	Invited Speakers
10:00 a.m.	David Corman, NSF	Current Tools: Domain, Impact, Potential Gaps Mike Pozmantier, DHS S&T; Doug MacDonald, PNNL; David McKinnon, PNNL; John Hummel, ANL; Julia Philips, ANL; Ron Fisher, INL; Ryan Hruska, INL; Craig Miles, INL
10:45 a.m.	Zach Tudor, DHS S&T	
11:30 a.m.	Hosted Lunch with Plenary Speaker <i>[Capitol Peak A]</i> Samara Moore, Chief Cyber Security Officer for the Office of the Under Secretary for Science and Energy, DOE	
	Keynote Speaker	Invited Speakers
1:00 p.m.	Robert Laddaga, DARPA	Current Tools: Domain, Impact, Potential Gaps Tim McPherson, LANL; Russell Bent, LANL; David Judi, LANL; Ben Thomas, ORNL; Steve Fernandez, ORNL
	Overviewing Questions for Panel/Facilitated Discussion	
2:00 p.m.	Facilitators: Chairs	Facilitators: David Alderson, NPS Ron Fisher, INL
2:30 p.m.	Afternoon Break <i>[Crystal Peak A]</i>	
	Panel Discussion	Facilitated Discussion
3:00 p.m.	ICS Security Facilitators: Chairs Track Keynote Speakers	Recognized Gaps and Needs Prioritization Facilitators: David Alderson, NPS; Ron Fisher, INL
4:30 p.m.	Closing Thoughts <i>[Capitol Peak A]</i>	
4:40 p.m.	Adjourn	

Friday, August 22 - Tours

	Tours
9:00 a.m.	<i>Congregate for Tours</i> [Grand Hyatt Entry]
9:30 a.m.	<i>The Money Museum at the Federal Reserve Bank of Kansas City - Denver Branch</i>
11:00 a.m.	<i>Historical Tour of the Colorado State Capital</i>
12:00 p.m.	Tour Completion



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