



Transforming the Resilience of Critical Infrastructure Systems and Communities

Resilience Week Objective: A Symposium dedicated to advancing the interdisciplinary dialog on policy and technologies that accelerate critical infrastructure and community resilience to unexpected and malicious threats.

Session 03: Intuitive Analytics in Complex Decision Making Environments

Session Chair

- Chair – Robert Hanson, Assistant Director for Analysis, National Risk Management Center (DHS), Robert.hanson@hq.dhs.gov
- Co-chair – Shane Cherry, Idaho National Laboratory, shane.cherry@inl.gov
- Co-chair - Frederic Petit, Argonne National Laboratory, fpetit@anl.gov
- Co-chair – Jovana Helms, Lawrence-Livermore National Laboratory, helms7@llnl.gov
- Co-chair – Donatella Pasqualini, Los Alamos National Laboratory, dmp@lanl.gov
- Co-chair – David Judi, Pacific-Northwest National Laboratory, david.judi@pnnl.gov
- Co-chair – Charles Rath, CEO, Resilient Solutions 21, charles@rs21.io

Session Abstract

When disasters loom, leadership across all levels of government and private industry require intuitive analytics to support decision making in critical crisis scenarios. They require accurate, defensible, and timely information communicated through easily digestible formats, supporting decision making within their own organizations as well as stakeholder and partner organizations. Within the Department of Homeland Security's (DHS) Cybersecurity and Infrastructure Security Agency (CISA), the National Risk Management Center (NRMCC) is responsible for assessing and identifying the most critical risks to the Nation's infrastructure. Within this role, NRMCC has developed a suite of products that deliver intuitive analytics to senior leadership in complex decision making environments - spanning natural disasters, cyber security incidents, and attacks on critical infrastructure by intentional actors. In this special session, NRMCC will chair a facilitated discussion panel to discuss recommendations, lessons learned, and best practices for designing, developing, and delivering intuitive analytics focused on critical infrastructure. Panelists from National Laboratories and leading data science and visualization firms will discuss the critical infrastructure analytic platforms developed for NRMCC, spanning data collection and verification to the delivery of curated results in crisis action scenarios. This discussion will cover a wide range of subjects within the Complex Environments – Infrastructures topic area including analytical and advanced visualization techniques, decision support tool development, dependency and interdependency modeling, and cyber-physical interdependencies for critical infrastructure.

Topics

- INL: Functional Approaches to Cyber-Physical and Lifeline Infrastructure Interdependency Data Collection and Analysis.
- ANL: ANL DISrupt (Decision and Infrastructure Sciences for identifying disruptions, dependencies, and infrastructure system risk) approach for critical node analysis.
- LLNL: "Squirrel," a critical failure analysis tool for critical infrastructure
- LANL: Critical infrastructure vulnerability and adaptation to extremes and long-term disruptions, and decision support
- PNNL: Infrastructure analysis using the cloud-based Water Event Lookup Library
- Resilient Solutions 21: Leveraging data and models to visualize critical infrastructure impacts and resilience.