Monthly Meeting and Lecture

Wednesday, 20 April 2022 (6:45 – 8:00 pm)

Analytical Assessment Method to Directly Measure Impact and Resilience of Mission Assurance

Michael Darby

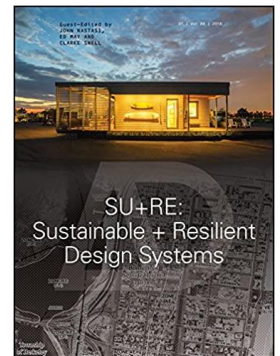| **Location:** This presentation is purely **VIRTUAL/ONLINE.**	*An online chat questions-and-answers session will also be available. Webcast Link will be sent to Registrants*

Presentation: Idaho National Laboratory (INL) has developed a novel analytical assessment method to directly measure the impact and resilience of mission assurance. The resulting framework crosses over multiple organizations and enabling hardware, defines a direct metric to mission impact, develops logic-based algorithms integrated with the framework, creates an evaluation engine for identification of systematic failures, and integrates a dynamic time-based analysis capability. This methodology can be applied to any set of objectives that require any set of infrastructure support that needs to be resilient in some way, and as a case study, has been applied to the United States Air Force using a systematic approach to improve the Air Force's evaluation of mission assurance. This included objectives of 1) how to evaluate power outage impact to their important missions and 2) a method to value resilience in identifying and prioritizing solutions. The INL developed Mission Thread Analysis (MTA) approach, referred to as the Decomposition for Energy Assurance and Electrical Power Resiliency (DEEPR) process, to meet these objectives. INL has advanced the technical approach and supporting modeling effort to expand the analysis of dependencies beyond power by integrating the DEEPR process with an All-Hazard Analysis (AHA) GIS-based toolset that incorporates the interdependencies of utilities and services beyond the installation fence. The combined GIS-based modeling approach also incorporated automated threat and environmental analysis, enabling multiple mission threads at multiple location analyses. The developed simulation capability provides analyses of threat scenarios over time and includes impacts of supply disruptions. Additional work in progress includes using the integrated AHA analytical toolset with black out exercises at various Air Force base locations to produce observation-based validated relationships in the model. The results of threat-informed scenarios may drive evaluations to define readiness courses of action (COAs) and investment needs to improve mission resilience.

This presentation will provide an overview of how the MTA approach has been used to evaluate mission resilience. Show generalized results of additional threat-based scenarios and how the AHA tool can be integrated with black out exercises to assess how and where alternatives, or courses of action, are needed to ultimately improve the overall mission resilience.

Door Prize

SU+RE: Sustainable + Resilient Design Systems

By Nastasi, May,& Snell

Speaker: Michael has spent the last 7 years at INL as a Systems Engineer. He has served on the INCOSE Snake River Chapter board for 6 years, of which two years were as chapter president, and is Certified Systems Engineering Professional (CSEP) since 2015. Prior to INL, he has worked at Fort Greely, AK, a large Data Center in Denver, and spent 24 years in the US Navy submarine service.

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Our Evening's Agenda	6:00 – 6:45 pm SE Table talk 6:45 – 7:00 pm Chapter Business Meeting 7:00 – 8:00 pm LECTURE

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