# System of Systems Engineering Collaborators Information Exchange (SoSECIE)

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#### Recent Efforts to Help Systems be Good Neighbors in the Modern SoS Landscape: A System Architecture Approach

***Presenter: Dr. Douglas L. Van Bossuyt, Dr. Bryan M. O’Halloran and Dr. Ryan M. Arlitt, Naval Postgraduate School and Technical University of Denmark***

#### Abstract

This briefing will describe our recent and ongoing efforts in developing methods to help systems be good neighbors in SoS in today’s rapidly evolving SoS landscape. We specifically will discuss our investigation of unanticipated failure initiating events and how to prevent them from causing system and SoS disruption. The context of the work is for DoD SoS where there are a mix of legacy systems, recently fielded systems, and new systems that may not have originally been designed with interoperability in mind. The approaches we present are intended for use during the system architecture phase of design and specifically rely upon functional block diagram models.

#### Biography

Dr. Douglas L. Van Bossuyt is an Assistant Professor in the Systems Engineering Department at the Naval Postgraduate School. His research focuses on understanding and mitigating deleterious emergent system behaviors from a risk analysis and failure modeling perspective through the development of system design methodologies targeted at the system architecture phase of the system design process. He holds an Honors Bachelor of Science in Mechanical Engineering, an Honor Bachelor of Arts in International Studies, a Masters' of Science in Mechanical Engineering, and a PhD in Mechanical Engineering all from Oregon State University.

Dr. Bryan M. O'Halloran is an Assistant Professor in the Systems Engineering Department at the Naval Postgraduate School (NPS) and the Academic Associate for the Reliability and Maintainability certificate program (curriculum 242). Previously he was a Senior Reliability and Systems Safety Engineer at Raytheon Missile Systems (RMS) and the Lead Reliability and Safety Engineer for hypersonic missile programs. He holds a Bachelor of Science degree in Engineering Physics and a Master of Science and Doctorate of Philosophy in Mechanical Engineering from Oregon State University. His current research interests include risk, reliability, safety, and failure modeling in the early design of complex systems.

Dr. Ryan M. Arlitt is an Assistant Professor in the Department of Mechanical Engineering at the Technical University of Denmark. His research focus is on understanding (1) how successful designers solve complex conceptual design challenges, and (2) how computational support can improve the likelihood and quality of success in conceptual design and beyond. He holds a PhD in Mechanical Engineering from Oregon State University, and Bachelors and Masters Degrees in Interdisciplinary Engineering and Systems Engineering respectively from the Missouri University of Science and Technology.