

Verification and Validation (V&V) of Complex Systems: A Holistic, Model-Based Approach

Led by **William Miller**

Friday, 27 August 2021, 8:00 a.m. – 4:00 p.m. MDT

Virtual Event

Brought to you by the INCOSE Enchantment Chapter, Albuquerque NM

Tutorial: V&V of Complex Systems: A Holistic, Model-Based Approach

V&V is inherently integral to risk and opportunity management, and therefore key to the technical systems engineering process areas identified in ISO 15288 (e.g., requirements engineering, architecture, implementation, integration). This tutorial presents an overview of V&V, its history, goals, and challenges. V&V of models will also be presented. Evaluation of V&V adequacy and effectiveness will be covered. Case studies, example models, and exercises illuminate the tutorial material.

Attendees Will Learn:

- Essential V&V concepts, terminology, attributes, and history
- V&V challenges/pain points
- Factors to consider for V&V planning
- Evaluating V&V adequacy and effectiveness
- V&V and relationship with other systems engineering processes
- V&V and model-based systems engineering (MBSE), balancing upfront modeling and “back-end” V&V
- Leveraging activities from MBSE
- New mold for V&V

Participants will receive: Copy of all presentation material; all course exercises and solutions; and document of course completion.

Course Objectives:

- Provide an understanding of V&V
- Provide an understanding of the relationship of V&V and other technical systems engineering processes
- Provide an understanding of factors to consider in V&V planning

- Provide an understanding of V&V of MBSE, leveraging activities
- Future of V&V

Pre-requisites:

- Experience of systems engineering
- An awareness of V&V is useful, but not essential

THE PRESENTER



William Miller is an Executive Principal Analyst with Innovative Decisions, an Adjunct Professor at Stevens Institute of Technology, Editor-in-Chief of INCOSE INSIGHT systems engineering practitioners magazine, Future of Systems Engineering (FuSE) lead, and past INCOSE Technical Director (2013-2014). Mr. Miller has more than forty years of experience in the conceptualization and engineering application of communications and information technologies, products, and services. His experience has been in both commercial and government sectors. These applications have fallen in the areas of resource allocation, R&D priorities, strategic planning, requirements definition, system modeling, system design, system acquisition, system development, system integration and system test. Mr. Miller has managed projects including positions as chief systems engineer and program manager funded by Bell Laboratories, AT&T, Army and Navy development commands, and elements of the Intelligence Community. Mr. Miller teaches graduate courses in systems engineering fundamentals, system architecture and design, and systems integration. He has also served as a senior researcher for the Systems Engineering Research Center (SERC) University Affiliated Research Center (UARC) focused on mission engineering. He is a Life member of the IEEE and a 28-year member of INCOSE, receiving the INCOSE Founders Award in 2017. As Technical Director, he shepherded over 40 working groups and major initiatives in systems engineering standards, model-based systems engineering, the systems engineering body of knowledge, and the systems engineering handbook based on ISO/IEC/IEEE 15288 Life Cycle Systems. He previously served as Assistant Director – (Systems Engineering) Knowledge Enabler. He was elected secretary of INCOSE for three terms (1996-1997, 2003-2004 and 2005-2006). He has also served as secretary and president of the INCOSE Liberty Chapter. He holds a B.S. in Electrical Engineering and an M.S. in Electrical Engineering – both from Pennsylvania State University.

MEETING DETAILS

Time: Tutorial is 8:00 a.m. – 4:00 p.m.

Date: Friday, August 27, 2021

Virtual Event: Webinar link and other details will be sent to registrants.

Package: The tutorial cost includes **soft-copy downloadable** tutorial notes.

Registration & Payment: Register via EventBrite: link [here](#). INCOSE members: \$0; non-members or Corporate Advisory Board associate members: \$25; students: \$0. You will receive an email receipt from EventBrite, which will act as your confirmation. If you do not receive a confirmation, have trouble registering or paying, or to register and pay by check, contact Mary Compton at mlcompt@sandia.gov.

Contact: Other questions? Contact Ann Hodges at alhodge@sandia.gov.