Systems Engineering
in the
Test & Evaluation Environment

A Full-Day Tutorial with former INCOSE president Eric Honour

Thursday, 5 February 2009, 8:00 a.m. � 4:00 p.m.
PDC Auditorium (Room 120) at WSMR, NM

Abstract

Systems engineering was developed as a way of thinking about large, complex system development. Today, the Test & Evaluation (T&E) environment involves highly complex systems operating in networked conjunction with each other to perform their test functions. Often, the development of the test environment is a system development as difficult as any operational system being tested.

This workshop examines the increasingly close relationships between systems engineering and T&E. On one hand, T&E is presented as an integral but independent part of the target system development, performing the essential system role of proof. On the other hand, systems engineering is presented as an essential part of the T&E environment, providing the methodology to develop today�s complex T&E systems.

By the end of this day, the participants will understand what systems engineering tools are useful in the T&E environment and how to be more effective in system-level proof.

Intended Audience

You should attend this course if you are:

- Working in the T&E environment developing proof methods for complex systems.
- Developing complex system products that are subject to extensive T&E.

The course is aimed at:

- Test engineers and test managers,
- Systems engineers,
- Project leaders,
- Technical team leaders,
- Design engineers, and

- Developing systems in an environment that demands the most efficient methods.
- Others who participate in complex design.

Topics Covered

The Test & Evaluation Environment � Test and evaluation overview; application to complex systems, relationship to other engineering and management disciplines. Roles of test and evaluation throughout product development, test phases (requirements, planning, conduct, analysis & reporting), correlation with program phases. Ten basic principles of T&E.

Why Systems Engineering? � What is systems engineering and where does it apply? Real examples that show the efficiency obtained with systems engineering. Quantified results that indicate the Return on Investment (ROI). An underlying process model that ties together all the concepts and methods. Importance of considering more than just �process,� including also methods, skills, and knowledge. How to take the pragmatic view to obtain the best benefits.

Developing a Test � Using systems engineering principles to develop a test. Test strategy and the TEMP. The role of requirements in test development. Test planning based on item requirements. Using analysis before the test to develop the procedures. The distinct parallels between developing a system and developing a test, and how systems engineering applies to test development.

Developing a Test Environment � Extending the test development into the development of the necessary environment. Selecting the environment, the stimulation, and the measurement methods. Resource optimization for efficient testing, and the cost of quality. The lead-time issues involved in developing test systems. Planning overlaps and how to handle them.

Test & Evaluation in Systems of Systems � Extended thoughts about the impact of �Systems of Systems� (SoS) on the T&E environment. Testing and evaluation in the SoS environment present unique challenges due to the evolutionary nature of development. Multiple levels of T&E are necessary, and the usual success criteria no longer suffice. Evaluating SoS interfaces - why interface testing is necessary but isn�t enough. Validating the functional footprint of the SoS. Evaluating SoS dynamics. Finding and evaluating emergent behavior, both favorable and detrimental.

Summary � Review of the important points of the workshop. Course evaluation.

Tutorial cost includes printed slides, references, and links for downloading electronic versions.

The Presenter

Mr. Eric Honour, CSEP has been in international leadership of the engineering of systems for a dozen years, part of a 39-year career of complex systems development

and operation. His energetic and informative presentation style actively involves class participants. He was the founding Chair of the INCOSE (International Council on Systems Engineering) Technical Board in 1994, was elected to INCOSE President for 1997, and served as Director of the Systems Engineering Center of Excellence (SECOE). He was selected in 2000 for Who�s Who in Science and Technology and in 2004 as an INCOSE Founder. He is on the editorial board for Systems Engineering. He has been a systems engineer, engineering manager, and program manager at Harris Information Systems, E-Systems Melpar, and Singer Link, preceded by nine years as a US Naval Officer flying P-3 aircraft. He has led or contributed to the development of 17 major systems, including the Air Combat Maneuvering Instrumentation systems, the Battle Group Passive Horizon Extension System, the National Crime Information Center 2000, and the DDC1200 Digital Zone Control system for heating and air conditioning. Mr. Honour has a BSSE (Systems Engineering) from the US Naval Academy, MSEE from the Naval Postgraduate School, and is a doctoral candidate at the University of South Australia. See www.hcode.com for more information.

Download the tutorial Flyer and Signup sheet.

Meeting Details

Sponsorship: This event is sponsored by ATAMIR-WSMR and The INCOSE Enchantment Chapter.

Location: The WSMR Education Center is located in the Professional Development Center, Auditorium, Bldg 465, on the corner of Dyer Street and Rock Island Street. The front desk telephone number is (575) 678-4646.

Directions: To help you find the buildings you need to reach we have a Range Map available by clicking here.

Package: The tutorial includes notes, and snacks. There is no cost to this tutorial. Lunch is on your own.

Registration: Registration is required as space is limited. Confirmation will be via e-mail. NOTE: THIS TUTORIAL IS FULL.

Join INCOSE   Renew Lapsed INCOSE Membership

Send the following information for each attendee to:

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Fax (575) 678-6946
Or call (575) 678-0601

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5 February 2009
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