SPRING TUTORIAL DOUBLE FEATURE:

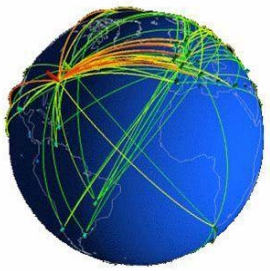
(sign up now to attend one or both)

(1) Introduction to Systems Engineering
(2) Introduction to Transformational Systems Engineering

Led by **Scott Workinger**
Friday and Saturday, 14-15 March 2014 8:00 a.m. - 5:00 p.m.
Workforce Training Center, Albuquerque, NM

Brought to you by the INCOSE Enchantment Chapter, Albuquerque NM

Tutorial #1: INTRODUCTION TO SYSTEMS ENGINEERING – Friday, March 14



The goal of the Systems Engineering process is the development of optimized, integrated systems that meet market/customer needs within the constraints of cost, schedule, and technical feasibility, at an acceptable level of risk. This course presents the fundamentals of classical Systems Engineering and introduces some of the key issues that face systems engineers today.

The classical strength of Systems Engineering is its comprehensive approach, which has been successfully applied to the development of a wide range of systems, including complex infrastructure and defense systems such as cell phone networks and spacecraft systems, complex machines and facilities such as robotic manufacturing facilities, and individual commercial products such as hybrid automobiles and advanced airliners. Systems Engineering begins by understanding the "big picture" of how a proposed system will function in its target environment.

Once the need is adequately understood, engineers focus on carefully chosen issues, such as tradeoffs between architectures, framing detailed design problems, identifying key hardware and software elements, and the approaches to interfaces and verification.

Participants will receive: a) Instruction: A variety of creative and analytic tools will be introduced. Examples of pitfalls and practical challenges will be discussed in class. b) Course Notes: Each student will receive a set of course notes for reference. c) Practice: Students will have an opportunity to practice fundamental Systems Engineering skills in classroom exercises.

You should attend this course if you:

- Need to apply systems engineering techniques to fulfill your job responsibilities
- Work on teams that integrate efforts from multiple disciplines to develop complex systems

The course is aimed at:

- Engineers of all Disciplines
- Managers
- Leaders who need systems engineering skills to address today's problems

By course end, students will be able to:

- Apply basic systems engineering skills
- Understand the basic issues in the development of complex systems
- Know how to develop a concept of operations
- Know how to write requirements
- Understand how to construct a basic trade study
- Understand the two fundamental approaches to system architecting:
  (1) Architecting as "art" and
  (2) Architecting as knowledge-based practice
- Understand basic verification and validation practice

Tutorial #2: INTRODUCTION TO TRANSFORMATIONAL SYSTEMS ENGINEERING – Saturday, March 15

The classical strength of Systems Engineering has been its comprehensive approach. This approach has been successfully applied to the development of a wide range of systems over a long, successful history, particularly in defense and aerospace. However, the needs of today's technical and business environment are driving rapid changes. Today's systems engineering needs to be more agile, more scalable, more accurate, more responsive to the humans that operate and rely on systems, more integrated with other engineering disciplines, more capable when addressing complexity in systems and environments, and more adaptable as it changes to meet the needs of a changing business, technical, and societal environment.

In response to these diverse needs, innovations in Systems Engineering practice have emerged, with practices such as Agile Systems Engineering, Complex Systems Engineering, Human / Systems Integration, Model-Based Systems Engineering, Systems of Systems Engineering, and Design Thinking. The Systems Engineering Transformation Caucus was formed to integrate these new techniques with classical Systems Engineering to develop a broader, deeper, more agile Systems Engineering. This course is an introduction to this new, rapid evolving paradigm in Systems Engineering Practice.

Participants will receive: a) Instruction: Creative and Analytical tools from TSE will be introduced. b) Course Notes: Each student will receive a set of course notes for reference. c) Practice: Students will have an opportunity to practice basic Transformational Systems Engineering skills in classroom exercises.

You should attend this course if you:

- Practice systems engineering in a rapidly changing environment
- Work on large, complex systems
- Need greater accuracy and predictability in the performance of your designs
- Want to enhance your creative potential

The course is aimed at:

- Engineers of all Disciplines
- Managers
- Leaders who need systems engineering skills to address today's problems

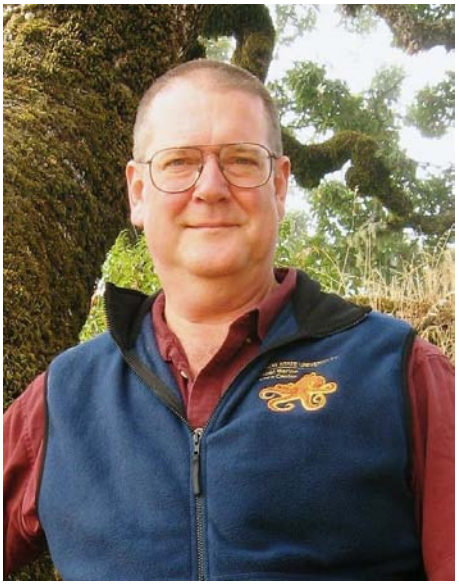
By course end students will be familiar with basic issues and techniques from:

- Agile SE – Working with complex,rapidly changing situations
- SE for complex systems
- Human / Systems Interaction
- Model-Based Systems Engineering
- System of Systems Engineering –
- Working with very large systems
- Design Thinking – At the intersection of people and technology
- Transformational thinking – Getting a paradigm shift when you need one

RELATION OF THE TWO TUTORIALS

This tutorial series accommodates both those new to systems engineering and advanced practitioners. The intent is that Tutorial #1 on Friday would be of interest mainly to beginners. Tutorial #2 on Saturday is intended for more experienced individuals. While the second tutorial deals with more advanced issues, the concepts and material would be accessible to beginners if they've taken the Friday course. More detailed syllabi of the key topics covered in each tutorial are available upon request.

THE PRESENTER



Scott Workinger, Ph.D., Stanford Engineering has 35 years experience leading people who create innovative, practical solutions to business problems and field working systems in a broad spectrum of industries. He is a Past President of the Silicon Valley Chapter of INCOSE and leads the Systems Engineering Transformation Caucus. He teaches technical leadership, systems architecture, test engineering, problem analysis, systems engineering, design thinking, systems thinking, system of systems thinking and transformational thinking. The students who attend his courses come from a broad cross section of backgrounds and include experienced leaders and technologists from such diverse backgrounds as the US Navy, NASA, pharmaceutical companies, aircraft program management, and engineering consulting. Scott has a passion for empowering his students through research, application, and teaching. His teaching style emphasizes coaching students in practical problem solving exercises, dialog, and class discussion.

MEETING DETAILS

Time: Registration is 08:00 – 8:30 am; Tutorial 8:30 am – 5:00 pm each day;

Introduction to Systems Engineering on Friday, 14 March 2014

Introduction to Transformational Systems Engineering on Saturday, 15 March 2014.

Place: Room # 130, Workforce Training Center (WTC), 5600 Eagle Rock Ave. NE Albuquerque, NM 87113, http://www.cnm.edu/depts/wtc/index.html .

Directions: From Junction of I-40 and I-25 in Albuquerque take I-25 North to exit 233, Alameda Boulevard. Take a left and cross the freeway. See map to left.

Package: The tutorial cost includes tutorial notes, lunch and snacks.

Payment: Please (a) submit the attached form by email and (b) pay on-line or by check. You will receive an email receipt, which will act as your confirmation. If you do not receive a confirmation or have trouble paying, contact Mary Compton at mlcompt@sandia.gov

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

TUTORIAL ENROLLMENT FORM (Remit with Payment)

Tutorial #1: "Introduction to Systems Engineering" (Friday, 14 March 2014)
Tutorial #2: "Introduction to Transformational Systems Engineering" (Saturday, 15 March 2014)
Albuquerque, NM

(a) please fill out and email this registration form to INCOSEEnchantment@comcast.net

Name: _____ Position (optional): _____

Company: _____

Mailing Address (number, street, city, zip code): _____
_____

Day Phone: _____ Fax (optional): _____

Email: _____ INCOSE Member No. _____

Designate the amount paid:

	INCOSE Member	**Non-Member**	**Student**
TUTORIAL #1: Intro to SE	**$200**	$225	$0
TUTORIAL #2: Intro to Transformational SE	**$200**	$225	$0
or…. BOTH TUTORIALS for One Discount Price	**$375**	$425	$0

Payment Methods:

- Payment by CREDIT CARD: can ***only*** be accepted via the link at the INCOSE Enchantment web site: www.incose.org/enchantment. Credit card payment will ***not*** be available at the door.
- Payment by CHECK: submit with this registration form. Check payment will ***not*** be accepted at the door. Please make out to "INCOSE Enchantment Chapter" and mail it to:

Spring 2014 Tutorial
INCOSE Enchantment Chapter
P.O. Box 50516
Albuquerque, NM 87181

TO SUMMARIZE: Please (a) submit this form by email and (b) pay on-line or by check. You will receive an email receipt which will act as your confirmation. If you do not receive a confirmation or have trouble paying, please contact Mary Compton at mlcompt@sandia.gov

For any other questions, email Ann Hodges at alhodge@sandia.gov .

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INCOSE Enchantment web site: www.incose.org/enchantment