NEWSLETTER

INCOSE LOS ANGELES LOS ANGELES CHAPTER

GOLD CIRCLE AWARD
2002, 2004-10

SILVER CIRCLE AWARD
2003

2008 President's Award for Most Outstanding Chapter

INCOSE International Council on Systems Engineering

UPCOMING EVENTS

November Speaker Meeting
Presenter: Scott Jackson
When: Tuesday, November 9, 2010
Where: Boeing, Huntington Beach
See page 3 for details

November Tutorial
Enterprise Engineering Bootcamp
Presenter: Walter Wilson
When: Friday, November 12, 2010
Where: Aerospace, El Segundo
See page 4 for details

SAVE THE DATE

Watch for more details on these upcoming events in future newsletters!
INCOSE-LA Holiday Party
TBD in December at Roz Lewis's House

December Speaker Meeting
Systems Engineering Return on Investment
Presenter: Eric Honour
When: Tuesday, December 7, 2010 (tentative)

INCOSE-LA Tutorial
Model-Based Systems Engineering/SysML
Presenter: Sandy Friedenthal
When: February 4-5, 2011

CSER 2011: Conference on Systems Engineering Research
When: April 14-16, 2011
Where: Crowne Plaza Hotel, Redondo Beach, CA
Details on pages 2, 5, & 7

Inside This Edition

INCOSE-LA ELECTIONS NEXT MONTH!

By Jorg Largent

It is that time of year: baseballs are in the air — still —as are footballs, speculations about BCS standings, leaves, and off-year elections. Likewise, our own INCOSE-LA Chapter will soon be asking all of you valued members to vote on its 2011 Board of Directors (BoD).

In the coming weeks, the special December newsletter will introduce you to all of the running candidates. These are the selected members that the Nomination and Elections Committee believe will help advance systems engineering as a profession and will continue to contribute to the success and growth of this Chapter.

All INCOSE members who are affiliated with the Los Angeles Area Chapter have the opportunity to contribute to the Chapter by voting for your Board of Directors.

Please be on the lookout for your special Election Edition Newsletter so you can get to know the candidates for the 2011 Board of Directors. You are all encouraged to vote in the yearly elections that will take place in December.

If you are interested in doing more in the Los Angeles systems engineering community and would like to learn more about serving on the Board of Directors, you may reference officer duties on the INCOSE-LA website at: http://incose-la.org/chapter/governance/officer-duties.html. You may learn more about the Chapter's nomination and election process by referencing the by-laws at: http://incose-la.org/chapter/governance/by-laws.html.

If you would like additional information, please contact Eric Belle, Past President, (310) 647-2714, email eric_c_belle@raytheon.com; or Rosalind (Roz) Lewis, President, (310) 336-1805, email Rosalind.Lewis@aero.org

For up-to-the-minute event details:
♦ *Check future editions of the Newsletter*
♦ *Watch your email for the Reflector*
♦ *Visit the INCOSE-LA website at http://www.incose-la.org*

CSER 2011: Call for Papers—Deadline Extended to December 1
See page 5 for details

The Board of Directors wishes to welcome the following new members in the Los Angeles Chapter of INCOSE:

Note: The information listed below is from the member directory and is based upon your initial membership application. If the information is not correct or complete, then please access the member directory (at www.incose.org) to update your information.

Name	Title	Company
Paul Vaughn	Sr. Systems Engineer	Defense
Greg Sikes	Director	IBM
Alan Cullen	President	Westwood & Wilshire
Chenjia Yin	Student	University of Southern California
Daniel Nelson	Manager Systems Engineering	Northrop Grumman
Julius Shu	Sr. Systems Engineer (retired)	Boeing
Ruby Ramires	Consultant	Booz-Allen Hamilton
Roger Ghanem	Professor	University of Southern California
Scott Channell	Sr. Principal Multi-Discipline Engineer	Raytheon
Glenn Dahl	Systems Engineer	Northrop Grumman

CSER Conference: April 14-16, 2011
Calling All Sponsors and Exhibitors!!
by Jose Garcia and Terry Rector

The Conference on Systems Engineering Research (CSER), jointly managed by INCOSE-LA and USC, is scheduled for April 14-16, 2011. This is one of the premier conferences where systems engineering researchers and practitioners convene and collaborate on the latest breakthroughs and ideas in our field. The conference organizing committee, headed by Terry Rector (Terry.Rector@comdev-usa.com), has started meeting to ensure we the conference will be successful and enriching.

That being said, the finance and sponsor committees are calling for support from all potential exhibitors and sponsors! We need your support and involvement to make sure we are successful. CSER 2011 will be a perfect venue to exhibit your company and services, and most importantly, INCOSE and CSER 2011 appreciates sponsorship from companies, corporations, organizations, and individuals who believe in furthering research and collaboration in systems engineering. Your support is especially required in these challenging economic times.

If you are interested in supporting this conference, or your organization would like to be a sponsor and/or an exhibitor at CSER 2011, please contact Jose Garcia at jose.garcia@incose.org or 714-833-2751.

November Speaker Meeting
Architecting Resilient Systems
Presenter: Scott Jackson, INCOSE Fellow

PARTICULARS
When: Tuesday, November 9, 2010, 5:30—8:30 p.m.
Where: Boeing, Huntington Beach
Remote sites will be available.
Cost: Members-*FREE*; Non-members-*$10.00*
R.S.V.P. Required

Meeting Agenda:
5:30 - 6:20 p.m. Registration, networking, refreshments
6:20 - 6:30 p.m. Welcome and announcements
6:30 - 7:45 p.m. Presentation followed by questions and answers
Substantial refreshments will be provided at the host site. (Contact Remote Site POCs for more information regarding refreshments at remote site locations.)

Abstract: Resilience is sometimes called the fourth dimension of system development, the first three being faster, better, and cheaper. The term resilience has been used in many fields, such as psychology, ecology, and materials science to describe the ability of an entity to recover from a disruption. With respect to human-made systems, the International Council on Systems Engineering's (INCOSE's) Resilient Systems Working Group has developed the following working definition: "Resilience is the capability of a system with specific characteristics before, during, and after a disruption to absorb the disruption, recover to an acceptable level of performance, and sustain that level for an acceptable period of time." Resilience is an emergent property of a system. Resilience is a knowledge area (KA) in the Systems Engineering Body of Knowledge (SEBoK) under development.

The disruption from which the system recovers can be either external or internal. External disruptions can be human-made, such as terrorist attacks, or natural events, such as hurricanes, tornadoes, earthquakes, or tsunamis. Internal disruptions can be failures of reliability, human error or software errors.

The design of a resilient system involves assuring that the system possesses four primary attributes: capacity, flexibility, tolerance, and cohesion. These four attributes can be achieved by implementing a set of heuristics, or design principles learned from experience. The implementation of these heuristics is called architecting, or the arranging of the elements of the system, their properties, and their relationships. Some of these heuristics will be discussed in this lecture. Scott has collected approximately 40 such heuristics.

Resilience architecting pertains to any kind of human-made system. Examples are technological systems, human-intensive systems, infrastructure systems, systems of systems, and socio-ecological systems. The Infrastructure Security Partnership (TISP), on which Scott represents both University of Southern California (USC) and INCOSE, is studying ways to make infrastructure systems resilient. These include, for example, electrical distribution systems, transportation systems, fire protection systems, law enforcement systems, healthcare systems, and water distribution systems.

Scott will comment on his current research to validate the resilience heuristics through statistics collected from the literature on twelve industrial domains.

Biography: Scott Jackson is an Adjunct Associate Professor at the USC in the Systems Architecting and Engineering Program where he teaches courses in systems engineering, systems engineering management, and the architecting of resilient systems.

Scott is the author of *Systems Engineering for Commercial Aircraft*, published by Ashgate Publishing Limited in 1997. He has also authored many papers for INCOSE, AIAA and IEEE. He is the author of *Architecting Resilient Systems: Accident Avoidance and Survival and Recovery from Disruptions*, published by John Wiley & Sons in 2010.

Scott is an INCOSE fellow. Within INCOSE, Scott is the chair of the Resilient Systems Working Group.

Scott represents both USC and INCOSE on TISP, a consortium of government, industry, universities, and professional societies looking for ways to make the national infrastructure resilient to human-made and natural disasters.

R.S.V.P.: R.S.V.P. by registering online at www.incose-la.org or by sending an email to registration@incose-la.org (please include "INCOSE-LA November Meeting" in subject line). Please indicate the site at which you will be attending. If you are uncertain whether or not you'll be able to attend, DO make a reservation and indicate that you're uncertain. Additional requirements for the different locations are below.

Host Site
Boeing, Huntington Beach: R.S.V.P. by November 5, 2010. Attendance at the host site is limited to U. S. citizens and resident aliens; we regret that foreign nationals will not be able to attend at the host site. You MUST R.S.V.P. to attend. NO EXCEPTIONS. Please bring your picture identification (driver's license, passport, or green card) to the meeting. The host site is located at Building 17, Room 109, 14900 Bolsa Chica Road, Huntington Beach.
Host site contact: Beth O'Donnell, phone 714-837-6924 or email elizabeth.l.o'donnell@boeing.com.)

Remote/Webcast Sites
The Aerospace Corporation, 200 North Aviation Blvd, El Segundo, Building D8, Room 1010: Please complete R.S.V.P. (U.S. citizens and resident aliens) by November 5, 2010 (foreign nationals by November 2, 2010). You MUST R.S.V.P. to attend at this site. NO EXCEPTIONS. Please bring your picture identification (driver's license, passport, or green card) to the meeting. Directions on page 4. *Site contact:* Susan Ruth, phone 310-336-6765, e-mail susan.c.ruth@aero.org

Antelope Valley/Palmdale: Open to all. ***Site contact:*** Mike Wallace, phone: 661-540-0290, e-mail: m.wallace@ngc.com.

November Tutorial
Enterprise Engineering :
1-Day Executive Overview

Presenters: Walter L Wilson, Sunil Malik, Brae Irwin,
Lockheed Martin Center for Enterprise Engineering Excellence

PARTICULARS:
When: November 12, 2010, 8:00 a.m. – 5:00 p.m.
Where: The Aerospace Corporation
Building D8, Room 1010
200 North Aviation Blvd, El Segundo, CA
Cost: Members: $130; Non-Members: $155;
Students/Seniors/Unemployed: $95
Includes continental breakfast, lunch, and presentation materials

Abstract: Enterprises and the Organizations that comprise them are constantly seeking ways to lower Total Cost of Ownership (TCO) in response to high-level mandates or driven by the need to be cost-effective, efficient, or responsive. An understanding of Enterprise Engineering, Enterprise Architecture, and the application of the key principles that guide the standards, practices, and conventions, will assure the success of any enterprise initiative designed to deliver agility, interoperability, flexibility, and responsiveness. The principles of Enterprise Engineering are required to maximize enterprise productivity, performance, and efficiency in a holistic manner.

This one-day workshop is targeted towards Enterprise architects, architectural engineers, systems engineers, software engineers, project managers, technical team leads, others with need to understand enterprise engineering.

Participants will gain the skills and knowledge necessary to understand what principles are required to successfully perform full enterprise lifecycle management – from concept initiatives to retirement and decommissioning initiatives. It also provides participants with a conceptual framework for understanding the concepts and principles of Enterprise Engineering. It provides Executive Level exposure and introduction to the principles of Enterprise Engineering and Architecture.

For more information, contact Shirley Tseng, (714) 832-5373 or shirleytseng@earthlink.net.

Biographies: Walter Wilson is an enterprise architect with Lockheed Martin with 14 years of practical experience and is a Federal Enterprise Architecture Certification Institute faculty member. He leads the development of enterprise architecture analytical frameworks and analysis patterns for Lockheed Martin and industry. In addition, he is the president of the Association of Enterprise Architects California Chapter.

He has led a number of enterprise architecture efforts including those for the Multi-Mission Satellite Operations Center (MMSOC), Joint Force Protection, Prompt Global Strike, Spacelift Range, and Air Force Satellite Control Network. Walter has also led the development of Air Force Space Command's Open Systems Management.

To ensure the dissemination and sharing Enterprise Engineering knowledge, he leads mentoring and knowledge-sharing activities within Lockheed and the industry.

Sunil Malik works as Lockheed Martin as an Enterprise Architect. He has also been a software architect designing and executing next generation ground systems for the Department of Defense.

In his current role, Sunil's main duties include designing, executing, and training on enterprise engineering processes and procedures to support cost effective acquisition, operations, and development activities.

Brae Irwin is an enterprise architect for Lockheed Martin with four years practical experience in defense and commercial domains. He is an officer of a leading chapter of the Association of Enterprise Architects and has educated several defense industry organizations on enterprise architecture and engineering.

Recently, he has contributed to the development of the MMSOC architecture and a published approach for Open Systems Management Air Force Space Command. Brae has produced several architectural concepts that have contributed to the Object Management Group and IEEE standards activities and are leading the field and practice of enterprise architecture.

R.S.V.P.: R.S.V.P. by registering online at *http://www.incose-la.org* or by sending an email to registration@incose-la.org (please include "INCOSE-LA November Tutorial" in subject line). Please be certain to indicate the site at which you will be attending. R.S.V.P. to attend. NO EXCEPTIONS for Aerospace and Boeing sites. If you are uncertain whether or not you'll be able to attend, DO make a reservation. Additional requirements for the different locations are below.

Location—The Aerospace Corporation, El Segundo: Please complete R.S.V.P. (U.S. citizens and resident aliens by September 8, foreign nationals by November 5). Please bring your picture identification (driver's license, passport, or green card) to the meeting. **Site contact:** Susan Ruth, phone 310-336-6765, e-mail susan.c.ruth@aero.org

Directions: From the 405, head west on El Segundo Boulevard, and turn right on Aviation Boulevard (north). Building D8 is less than 1/4 mile on the right.

On solutions: "You cannot cure cancer by a majority. What is wanted is a remedy."
On problems: "In critical and baffling situations, it is always best to return to first principle and then simple action."
Sir Winston Churchill
Per James C. Humes, *The wit & Wisdom of Winston Churchill*, 1994

CSER 2011
CONFERENCE ON SYSTEMS ENGINEERING RESEARCH
An International Conference

Call for Papers
Ninth Annual Conference on Systems Engineering Research
April 14-16, 2011
Crowne Plaza Redondo Beach & Marina Hotel
Redondo Beach, California
http://www.incose-la.org/cser2011/

■ Topics

We invite original research papers addressing the conception, design and architecting, development, modeling and simulating, production, operation and support of systems; definition of metrics of performance, and improvement methods; assessment and mitigation of risks; definition of critical success factors, and best practices. The research papers at the conference will be complemented with invited talks. Papers are invited in the following broad areas:

- Model-based Systems Engineering
- Value-based, Lean, Agile Systems Engineering
- System Security Engineering
- Integration of Physics-based and Information-based Models
- Social Networks and Graph Theory
- Early Stage Design Concepts and Economic Value of Ilities
- Uncertainty and Complexity Management
- Systems Architecting and Architecture Tradeoff Analysis
- Cognitive Engineering and Human-Systems Integration

■ Abstracts

Abstracts must include:
1. A Title
2. Full Author Name and Affiliations
3. Complete Address for the Corresponding Author

Doctoral candidates pursuing systems engineering related research are specially encouraged to submit abstracts. One technical track at the CSER'11 will be devoted to abstracts by doctoral candidates. Please submit your abstracts electronically in Microsoft Word (not to exceed 800 words) to: http://venus.usc.edu/cser2011.

Conference Honorary Chair:
George Friedman, USC
Conference General Co-Chairs:
Azad Madni (USC) and Elliot Axelband (RAND)
Technical Program Co-Chairs:
Roger Ghanem (USC) and Marilee Wheaton (Aerospace Corporation)
Conference Management Chair:
Terry Rector (COM DEV – USA)

The University of Southern California in collaboration with Stevens Institute of Technology presents the 9th annual Conference on Systems Engineering Research.

The primary conference objective is to provide practitioners and researchers in academia, industry, and government a common platform to present, discuss and influence Systems Engineering research with the intent to enhance Systems Engineering practice and education. Papers are solicited pertaining to research in all these areas.

Organized by the University of Southern California (USC) *in collaboration with* Stevens Institute of Technology, *managed* by the Los Angeles Chapter of the International Council on Systems Engineering (INCOSE) and additionally, co-sponsored by others.

■ Milestones

Abstract submission: Dec 1, 2010
Acceptance notification: Jan. 19, 2011
Camera ready copy due: Feb. 19, 2011

USC UNIVERSITY OF SOUTHERN CALIFORNIA

STEVENS Institute of Technology

AEROSPACE
Assuring Space Mission Success

INCOSE
LOS ANGELES CHAPTER
LOS ANGELES
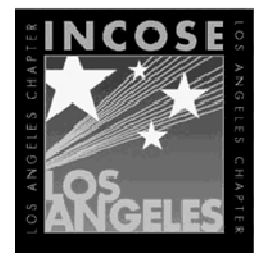
INCOSE-LA Member Receives Shingo Prize for Lean Systems Engineering

Bo Oppenheim, Professor of Systems Engineering at Loyola Marymount University and two of his colleagues, Dr. Earll Murman of MIT and Deb Secor of Rockwell Collins, have been honored with the Shingo Award for Research and Publication and Research for their paper, *Lean Enablers for Systems Engineering* (LEfSE). This is the most prestigious award available in the Lean field. Earlier this year the team, together with the INCOSE Lean Systems Engineering Working Group, was honored with the INCOSE Best Product award.

Lean Enablers for Systems Engineering is a collection of 147 comprehensive practices describing the best do's and don'ts of systems engineering and related aspects of product development, enterprise management, and supply chain management. The LEfSE practices have been designed by 14 experts from industry, academia, and government (the USA, the UK, Israel, France, and the Netherlands). These experts were assisted by the 174-member Lean Systems Engineering Working Group of INCOSE (the fastest growing working group). The Enablers focus on value creation while eliminating waste.

Lean Systems Engineering represents a synergy of the traditional systems process and Lean Thinking. Lean Thinking is the dynamic, knowledge-driven, and customer-focused process through which an enterprise continuously eliminates waste and creates value. Traditional systems engineering is a sound practice leading to technical success when practiced and funded properly. However the traditional process is often burdened with inefficiencies, hence the development of Lean systems engineering; a development that will amplify the value of traditional systems engineering process – enhancing it with the wisdom of Lean Thinking. To paraphrase the webpage, Lean systems engineering does not mean *less* systems engineering, rather it means *better* systems engineering. Lean systems engineering accomplishes this improvement through:

1. better preparation of the enterprise processes, people and tools
2. better program planning and frontloading
3. better workflow management
4. better program management with higher responsibility, authority, and accountability.

The enhancements lead to better, waste-free, predictable and robust workflow with better creation of value to the customer. Under the Lean systems engineering philosophy none of the tasks needed would be cut. Instead, product success and mission assurance will be treated as non-negotiable values. All tasks which are value added will be included, will be well planned and coordinated, and executed with minimal waste. In other words, the Enablers promote *engineering the system* rather than a *bureaucracy of artifacts*.

Lean Enablers for Systems Engineering has been validated by a survey of the systems engineering community of practice, which ranked the practices and both important and needed. The LEfSE has been validated by benchmarking with NASA and GAO program enablers and best practices. Early implementation attempts at Rockwell Collins, Thales Aerospace in France, Thales UK, Rafael in Israel, and ADS (European) indicate excellent results, saving program time and cost, and improving quality.

More information about Lean systems engineering and Lean Enablers of systems engineering is available from the INCOSE Lean Systems Engineering Working Group public website, www.incose.org/practice/techactivities/wg/leansewg/. All of the materials available through the website are free.

The Shingo Prize was established in 1988 to educate, assess and recognize world-class organizations for creating a culture of continuous improvement through employee-empowerment and effective leadership. The philosophy of The Shingo Prize is that a culture of continuous improvement is achieved by focusing on principles of operational excellence, aligning management systems and implementing improvement techniques throughout an entire organization.

Volunteer Opportunities: CSER Wants YOU!

Thinking about getting more involved with INCOSE-LA? Here's your chance!

We are currently staffing volunteer positions to help with the upcoming Conference for Systems Engineering Research (CSER) to be held April 14-16, 2011, in Redondo Beach. Planning is now underway.

As our Chapter has commenced event planning activities, we are seeking volunteers to fill the following positions : Registrar, Publicity Chair, Finance Chair, Inter-organizational Liaison, Publications, Exhibits, Audio-Visual, Website-execution, and Website-content.

If any of these jobs sound interesting and if you want to become a more active member, please contact Conference Chair Terry Rector at terry.rector@comdev-usa.com or INCOSE-LA President Rosalind Lewis at rosalind.lewis@aero.org.

International Symposium 2011: Call for Papers Deadline Nov. 3

Denver, Colorado is the site for the 21st annual INCOSE International Symposium scheduled for June 20-23, 2011. In more ways than one, the city of Denver itself will bring our symposium to new heights.

The organizing project team, composed of people from Colorado and the region stretching to California, are already hard at work to present an excellent symposium for you.

However, the symposium depends on YOU! Please submit your papers, panels, and tutorials by November 3, 2010. Deadline will not be extended.

Plan now to attend the premier Systems Engineering gathering of 2011!

RECAP: INCOSE-LA Mini-Conference

By Paul Cudney, Richard Emerson, and Jorg Largent

The latest in a series of Mini-Conferences, hosted by the INCOSE-LA Chapter, was held on October 16th at Loyola Marymount University. It was attended by over 70 participants. The conference was lively, informative, and well received, judging by the audience responsiveness and participation.

Rosalind Lewis, President of INCOSE-LA, opened the conference with a few words of welcome and an invitation to join in the work of the Los Angeles Chapter. Richard Emerson, the general chair of the conference added his welcome to all participants and briefly introduced the theme: "Increasing the Value of Systems Engineering's Portfolio to Our Stakeholders." The conference was made up of excellent presentations, interesting and challenging speakers, and a panel of veteran systems engineers.

Richard Cline, technical program chair, introduced Dr. Jack Murphy, (VP and Senior Chief Engineer Systems of Systems and Systems Engineering, VP of Mission Assurance, Boeing Defense, Space & Security) the morning session's keynote speaker and the first speaker of the day. He discussed the history of systems engineering, using his career as an illustration. Dr. Murphy noted that he did "model based systems engineering" (using FORTRAN) before the term

Roz Lewis, INCOSE-LA President with keynote speaker Dr. Jack Murphy

was invented, as had many of his colleagues and contemporaries. A few members of the audience admitted to having used FORTRAN themselves. Mr. James van Gaasbeek, a veteran systems engineer from Northrop Grumman, commented later that modeling, in one form or another, dated back to the middle ages and illustrated the point by citing the use of models

> ## The chief engineer should be the chief *systems* engineer.

in selecting a design for the Duomo. Dr. Murphy noted that "systems engineering" was used on the Shuttle program circa 1973, commenting that systems engineering, "was not [yet] on the horizon." As a conclusion to his presentation, Dr. Murphy challenged the systems engineers to take ownership of the product under development.

Mr. van Gaasbeek, followed Dr. Murphy with a complementing discussion of model based systems engineering (MBSE). Mr. van Gaasbeek's presentation was based on discussions which occurred at the International Symposium 2010 (IS2010) in Chicago. One question from IS2010 was whether on not the current state of MBSE reflected a "tectonic"

> "Systems engineer" is a term that is (and has been) a term that is not universally defined. Many definitions in industry are vestigial reflections of their heritage – the original organization before the company was merged into (or absorbed by) another company.

shift. Mr. van Gaasbeek's response: No. MBSE has been used in one form or another for a long time and that what the profession is seeing in recent years are the benefits of academic discipline and advances in technology and increased computational power (mainframe to PC's). Mr. van Gaasbeek noted that there is no such thing as non-model based systems engineering.

Dr. Sylvia Kohn-Rich, a Senior Project Engineer at the Program Management Assistance Group, gave a presentation titled "Risk Based Technical Baseline Review." Her presentation emphasized several points, including the early involvement of systems engineering in a project. Also discussed was the insight that seeking root causes should consider inadequacies in the defining documentation and the technical and management processes as potential root causes.

Mr. Frank Alvidrez discussed MBSE from the Flight Test perspective, noting the potential for improving the execution of a test program by taking advantage of MBSE. Mr. Alvidrez also noted the importance of Flight Test being involved in a project early in the lifecycle. This will facilitate validating the verification methods for the top-level requirements and support the lead-time needed to ensure that Flight Test will be ready when the first test article is delivered.

Dr. "Bo" Oppenheim discussed lean systems engineering and asked the question, "can we ignore lean systems engineering and give up on U.S. competitiveness?" Dr. Oppenheim illustrated his advocacy by noting that the DoD is looking for a 2-3% improvement in performance with no increase in cost. Lean systems engineering can and has improve performance 20 to 30%.

Dr. Len Troncale, Professor of Biology at California State Polytechnic University, Pomona, concluded the day's presentations with a discussion of systems engineering from an "outside of aerospace" perspective: medicine. Addressing "Would A Rigorous Knowledge Base in 'Systems Pathology' Add to the S.E. Portfolio?", Dr. Troncale contended that the description and naming of specific "diseases" is as important to systems engineering as it is to medicine and its dealing with the "system of systems" that is the human body. Among the pathologies he cited are Cyberpathologies (errors in feedback) Rheopathologies (errors in flows), Cyclopathologies (errors in cycling, oscillation) Heteropathologies (errors in modular structure), and Hapsopathologies (errors in network structure

Mini-Conference attendees network over lunch and discuss morning speakers.

and dynamics). The question and answer period included tough questions and good answers, mixed in with some humor – an excellent close to the presentations portion of the conference.

Some Common Themes From the Conference

Modeling Human Beings Several presentations discussed to role of the human being in the modeling and development of a system. Dr. Azad Madni a professor of systems architecture and engineering at USC ("Technical Challenges and a Research Agenda") discussed the attributes of human beings that need to be considered in modeling. Dr. Madni spoke of human roles changing from that of an operator outside the system to an agent within the system.

Humans note that in the "systems engineering mindset" humans are suboptimal job performers

Rick Cline (left), technical program chair, thanks Dr. Azad Madnii, afternoon keynote speaker for his participation.

that need to be shored up; a mindset that fails to capitalize on human ingenuity and creativity. This mindset leads to inherently incompatible systems relative to human conceptualization of and an inevitable mismatch within the system.

Referring to several studies of human performance and limitations, Dr. Madni challenged the audience to develop systems that truly augment the human capabilities. He noted that as the complexity of Systems of Systems increases, the need to include human interactions in the overall design also increases. Mr. J.R. Richardson, Principal Systems Engineer with Raytheon, ("A Safety Application Certification Framework") noted that systems, in order to better pedestrian safety, need to model human behavior. Mr. van Gaasbeek described the increasing role of humans in models, noting that they can be: constructive ("batch" processing, faster than real time), virtual (real time operator in the loop in a ground-based setting), or live (Virtual model being executed in cooperation with one or more real assets).

As an aside, Mr. Richardson discussed some of the political consideration from the perspective of highway safety and Dr. Kohn-Rich discussed similar issues from the perspective of Department of Defense project.

Communications is a challenge – Upfront definitions: An often-repeated concern was the need to define the terminology early in a project. Dr. Murphy discussed some of the challenges to finding a common understanding among organizations that have different heritages. Many of the definitions in industry are vestigial reflections of their heritage – the original organization before the company was merged into (or absorbed by) another company (a phenomenon not limited to non-governmental organizations). INCOSE Fellow Jack Ring has been quoted as saying, "language is the problem."

Another observation is that "systems engineer" is a term that is (and has been) a term that is not universally defined.


Mini-Conference panel discussion members prepare to field questions from Moderator Roz Lewis. From left to right: Jack Ring, Dr. Azad Madni, Biju Chandrasekharan, Ed Conrow, and Dr. Jack Murphy.

Under some circumstances it might be wise to avoid the term "systems engineering," because the term suggests, to some, the DoD and a suspicion that there will be a large amount of paperwork.

Dr. Kohn-Rich highlighted the importance and results of effective technical reviews, connecting risk to the review process. She challenged us to have the courage to elevate risk when necessary and to be well connected with program management for the planning and scheduling.

Thank You to Our Sponsors!

The Chapter thanks all the sponsors for their contributions to the 2010 Mini-Conference.
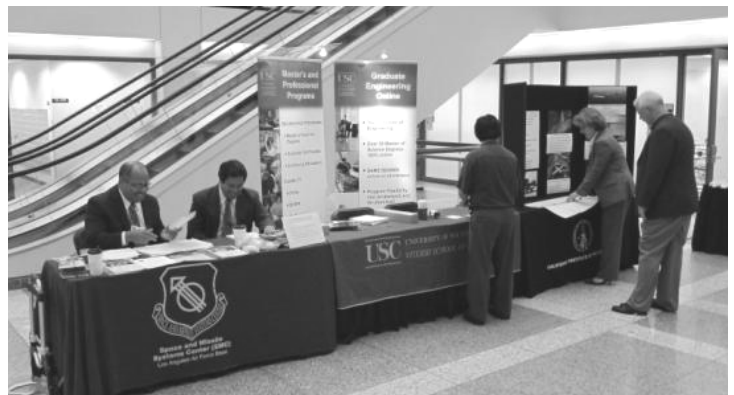
Attendees browse the sponsor tables and chat with exhibitors throughout the Mini-Conference held at Loyola Marymount University on Saturday, October 16, 2010.

Return Address:

800 S. Pacific Coast Hwy. #8-205
Redondo Beach, CA   90277

Forwarding Address Requested

The International Council on Systems Engineering (INCOSE) is an organization formed for the purpose of advancing the art and science of systems engineering in various areas of the public and private sectors. . Our mission is to advance the state of the art and practice of systems engineering in industry, academia, and government by promoting interdisciplinary, scalable approaches to produce technologically appropriate solutions that meet societal needs.

The Los Angeles Chapter meets several times per year for dinner meetings, and additionally sponsors tutorials and other activities of interest to those in the systems engineering field or related fields. L. A. Chapter officers are as follows:

2010 Board of Directors and Appointed Positions

Elected Officers

President:	Rosalind Lewis	rosalind.lewis@aero.org	or	president@incose-la.org
Vice-President:	Beth O'Donnell	elizabeth.l.o'donnell@boeing.com	or	vicepresident@incose-la.org
Past President:	Eric Belle	eric_c_belle@raytheon.com	or	pastpresident@incose-la.org
Secretary:	Josh Sparber	joshua.sparber@dcma.mil	or	secretary@incose-la.org
Treasurer:	Marsha Weiskopf	marsha.weiskopf@aero.org	or	treasurer@incose-la.org

Elected At-Large Directors

Membership:	Paul Cudney	paul.cudney@incose.org	or	membership@incose-la.org
Programs:	John Silvas	silvas_john@bah.com	or	programs@incose-la.org
Systems Engineering Education:	Shirley Tseng	shirleytseng@earthlink.net	or	setraining@incose-la.org
Ways and Means:	**Open**			
Communications:	Edie Ung	ma1teez@yahoo.com	or	communications@incose-la.org

Appointed Positions

Newsletter Co-editors:	Edie Ung, Jorg Largent	ma1teez@yahoo.com	or	Palmdalejorg@aol.com
Newsletter Production Manager:	Lee-Ann Seeling	Lee-Ann.S.Seeling@raytheon.com		
Reflector Manager:	Susan Ruth	susan.c.ruth@aero.org		
Industrial Relations Manager:	Jose Garcia, Jr.	jose.s.garcia-jr@boeing.com		
Technical Society Liaison:	Edmund Conrow	info@risk-services.com		
Chapter Recognition Manager:	Michael Maar	michael.c.maar@boeing.com		
Lead Site Coordinator:	Anna Warner	anna.warner@boeing.com		
Webcast Event Manager:	Chris Delp	cldelp@jpl.nasa.gov		
Website Technical Manager:	Michael Kim	kim_michael_l@bah.com		
Professional Networking Chair:	Nehal Patel	nehal_p1_patel@raytheon.com		
2010 Mini-Conference Chair:	Richard (Dick) Emerson	remerson9@gmail.com		
2010 Mini-Conference Technical Program Chair:	Rick Cline	richard.g.cline@boeing.com		
2011 CSER Chair:	Terry Rector	Terry.Rector@comdev.com		
Representative to San Fernando Valley Engineers' Council:	Stephen Guine	Stephen.Guine@ngc.com		

Those interested in INCOSE membership please contact Paul Cudney - paul.cudney@incose.org. If you wish to be placed on our E-mail distribution, please contact Susan Ruth – susan.c.ruth@aero.org.