Vol. 7, Issue No. 5 June 2009

NEWSLETTER

2002, 2004-08 2003

Please remember to renew your 2009 INCOSE membership!

UPCOMING EVENTS

June Speaker Meeting

"Disciplined Systems Engineering for a Chaotic Tsunami-Detection System Design"
Speaker: Jimmy H.T. Thai
June 9, 2009, 5:30 p.m.
The Aerospace Corporation
2350 E. El Segundo Blvd., El Segundo
Reservations Required
see page 2 for more details

July Speaker Meeting

There will be no speaker meeting in July

August Speaker Meeting

Topic and speaker in work

Tutorials

Topics and speakers in work

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* www.incose-la.org

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Learn more about becoming a member by clicking on: http://www.incose.org/membership/valueofmembership.aspx

Inside This Issue

A Gold Circle Award for 2008

A letter to our Chapter President, transcribed by Jorg Largent, Co-editor

Dear Eric:

On behalf of the International Council on Systems Engineering (INCOSE), we are pleased to recognize the Los Angles Chapter as a Gold Circle Award Chapter based upon its contributions and accomplishments in 2008. The Gold Circle Award recognizes chapters reaching the highest goals and standards established by our organization.

For many, chapters provide the primary day-to-day interface with INCOSE. Chapters organize technical and social programs, communicate key information about our organization and discipline, support technical activities, and enhance the member experience by facilitating an open, inviting environment where members receive valued products and services that enhance their careers. In fulfilling this mission, the Los Angles Chapter leaders and members have committed significant time and energy to further the goals of the organization.

To honor these efforts and achievements, this Gold Circle Award will be presented at the 2009 INCOSE International Symposium in Singapore. In doing so, INCOSE recognizes and celebrates the contributions and achievements of the Los Angeles Chapter, its leaders, and its sponsors.

High quality, vibrant chapters are essential in INCOSE's drive to enrich, educate, and enlighten the INCOSE membership while improving recognition of INCOSE and the systems engineering profession. The Member Board and INCOSE extend heartfelt thanks and appreciation to the Los Angeles Chapter for its contributions toward attaining these goals.

Signed,

Jonette Stecklein
Member Board Chair

MEMBERSHIP RENEWAL

For many of us, our memberships are up for renewal at this time of year. If you have received a renewal email or letter from INCOSE, please take this opportunity to do so. This is also a good time to go online and update your online information.

For online renewal and to learn more about the benefits of membership, go to:

http://www.incose.org/membership/benefits.aspx

June Speaker Meeting

"Disciplined Systems Engineering for a Chaotic Tsunami-Detection System Design "

Jimmy H.T. Thai

ABSTRACT: Tsunamis are a worldwide phenomenon and threat that have affected humankind for eons. As the world's population continues to grow and migrate toward the coast, this potential threat continues to terrorize. The United Nations estimates three-quarters of the world's population will be living in coastal areas by 2025. Over the past 15 years, 18 major destructive tsunamis have occurred, with 11 of these resulting in the deaths of nearly 5,400 people during the six-year period from 1992 through 1998. Although all of these events were extremely tragic in their own right, affecting the lives and livelihood of tens of thousands of people, nothing prepared the world for the tragic events of December 26, 2004, when the most deadly tsunami in recorded history took the lives of over 225,000 people, severely affected over 150 million more in the region, and triggered an economic impact of nearly $8 billion.

That tragic event spurred the Intergovernmental Oceanographic Commission to call for and to lead the development of a global tsunami warning and mitigation system. Under this leadership, 26 countries in the Indian Ocean region have formed a consortium called the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System. Unfortunately, this large body of nations faces more chaos than it can handle – from technical to political to environmental to financial challenges.

Armed with a disciplined systems engineering approach, the Scientific Applications International Corporation (SAIC) Tsunami Buoy program office was formed across four business units, and it raised $450K in internal research and development funds to design, build, test, and deploy a prototype Tsunami-Warning System. The project was completed under budget, finished ahead of schedule, and exceeded all technical specifications. To date, the program has signed multiple contracts to provide turnkey systems for Australia, China, Thailand, and Chile, and is negotiating with a dozen other countries. Do you want to know its secret? Simply put: Disciplined Members – Disciplined Processes – Disciplined Tools!

BIOGRAPHY: Jimmy Thai, Assistant Vice-president for Science and Technology, is an award-winning program manager for the Tsunami-Warning Systems program office with SAIC. He has 18 years of experience in systems engineering and program execution, specializing in disciplined processes and high performance organizations in both commercial and defense acquisition. His technical expertise includes RF applications, undersea surveillance, military and commercial SATCOM, and anti-terrorism force protection.

Jimmy tried to escape Vietnam 15 times and was captured twice before turning 17. Finally, he came to America with empty hands knowing only one English word. Today, Jimmy holds M.B.A. and M.S.E.E. degrees from the California State University and a B.S.E.E. from the University of California. He also graduated from the Defense Systems Management College and the Federal Executive Institute. In addition, he teaches systems engineering courses at SAIC University.

Particulars for June Speaker Meeting

Remote sites will be available
Cost for members and Boeing employees: FREE
Cost for non-members: $10.00

WHEN: Tuesday, June 9, 5:30 p.m. to 8:00 p.m.
Meeting Schedule:

- 5:30 - 6:20 p.m. Registration, networking
- 6:20 - 6:30 p.m. Welcome and announcements
- 6:30 - 7:45 p.m. Presentation followed by questions and answers

WHERE:
The Aerospace Corporation (host site)
2350 East El Segundo Boulevard, El Segundo.
DIRECTIONS:
From the 405 Freeway head west on El Segundo, left on Douglas, left into the first gate (Gate C) on the left and drive straight past the parking structure and park. Enter through the South Lobby (which is to the north and hard to see). Badge in through the South Lobby (east of the large building ahead on the left as you enter the gate); we meet in Dining Rooms A&B.
Site contact: Susan Ruth, phone 310-336-6765, email susan.c.ruth@aero.org

HOW: A reservation is required for individuals who would like to attend the speaker meeting at Aerospace. Note: Foreign nationals MUST register by June 2 to allow time for approval process. Attendees must bring picture identification (driver's license, passport, or green card). Registration is NOT required for the Antelope Valley remote site.
RSVP/Register for the host site or a remote site online at www.incose-la.org or email to registration@incose-la.org (please include "INCOSE-LA June Mtg" in subject line).
Remote sites:
---- Antelope Valley/Palmdale held at the Antelope Valley College - no deadline.
---- Boeing Anaheim - To be determined; check the INCOS-LA website at www.incose-la.org for details.
---- Boeing Huntington Beach - RSVP one day prior to meeting. Refer to Boeing Southern California LTS internal website or contact Denise Nelson at denise.j.nelson@boeing.com.

NOT A MEMBER? JOIN INCOSE!

Learn more about becoming a member by clicking on:
http://www.incose.org/membership/valueofmembership.aspx

Do not accept "no" from someone who does not have the authority to say "yes."

Nevada Northern Railroad

April Speaker Meeting

"Systems Engineering Revitalization"

Speaker: Dr. Doug Loverro

Compiled by Jorg Largent with inputs from Drew Christensen and Dick Emerson

Dr. Doug Loverro, Executive Director, SMC, Air Force Space Command – Los Angeles Air Force Base, CA, spoke on "Systems Engineering Revitalization" at the April 12, 2009 speaker meeting, hosted at the Aerospace Corporation. Two attendees shared their views of the evening in this article.

Drew Christensen, a student at Loyola Marymount, was one of 18 students who attended the speaker meeting. This meeting gave the students their first introduction to a professional engineering society and helped the students understand the importance of systems engineering, the nature of future jobs, and the challenges facing the industry today. Mr. Christensen expressed his thanks to INCOSE-LA, Dr. Bo Oppenheim, and the Aerospace Corporation for allowing him and the other students to attend this presentation, for the hosted dinner, and for the opportunity to take part in an interesting discussion about the future of the profession. Mr. Christensen took away the following insights:

> Dr. Doug Loverro spoke on "Systems Engineering Revitalization" and the role of systems engineers as problem solvers. Loverro spoke on the need for a revitalization of the field of systems engineering due to a shrinking workforce. The holistic approach to engineering taken by such engineers is crucial to the mission and future of space protection. An increase in the number of systems engineers would ensure the continued success of the U.S. as a leader in satellite and space technology. Loverro was also concerned with the difficulties encountered in government-customer collaboration. He spoke on the value of streamlining the process, avoiding over-constraint of the design requirements, and therefore facilitating the best possible solution to the problem.

Dr. Loverro discussed the topic from three points of view. First was a discussion of the situation we are in now and the past actions or inactions we as systems engineers have taken to arrive at this position. This section was brief and consisted mostly of statistics. The second section was a list, with illustrations, of "Systems Engineering Proverbs." The last section of the presentation addressed, again briefly, some of the action that will be necessary in the future to improve the performance of systems engineering.

The conclusion of the first section was that, in general, projects and programs are delivering less now for more time and money than they were in the '60's [a complementing point of tension with respect to some of the needs and challenges discussed in the May speaker meeting]. In part this results from not taking the time constraint as seriously as we should.

The Proverbs addressed other aspects of the gap in performance. The following Proverbs were noted by Dick:

Proverb 1: Good architecture is expensive and bad architecture is even more expensive. It is difficult to address a project in the abstract terms demanded by architectural viewpoints. As a result the project often runs off chasing a solution thinking that it *is* the solution only, to find it — the project — has painted itself into a corner or, worse yet, solved the wrong problem. Typically ~75% of the cost of a system is in the implementations and operations phases. Design, including architecture, is left with only about 25%. Several factors make designing more fun and profitable (to one's career) than architecting. First and foremost, design results in much more tangible products. Second, our education is discipline-specific and our career rewards come from excelling in one or a few disciplines.

Proverb 2: Systems architectures are increasingly more complex, both internally and externally.

Proverb 3: Systems other than the one under development are developing dependencies with the new system just by the development and deployment of the new system. This increases the cost of failure. In turn, the new system becomes dependent upon the external systems. The symbiosis is another increase in complexity.

Proverb 4: Given eight hours to chop down a tree, spend six hours sharpening the ax. OR work smarter, not harder. Flailing away looks productive, until you realize that the tree is still there and all the bushes are splintered, scattered, and disorganized.

Proverb 5: The speed of change today makes the Schedule Requirement (Constraint) more important. An excellent system late is unfortunate.

Proverb 6: Tests trump opinions. [The owners of some opinions have been known to deny the validity of the test results.]

Proverb 7: A clever person solves the problem; a wise person avoids it.

The challenges of systems engineering were illustrated with the Space Systems Launch and Range operations infrastructure — in particular Space System Protection. After considering the threats, number of affected systems, and vulnerabilities, strategies for protection need to be developed. Some of the strategies include: protection (hardening) against the threat, avoidance of threat, hiding from it, defending against it, deterring it (actively preventing it), developing an alternative so that the aggregate is immune, or nearly so, to the threats, and producing systems that reconstitute themselves (self-healing).

During the question-and-answer portion of the meeting Dr. Loverro touched on such elements as Test-as-you-fly and the process for developing a systems engineer — start at the back end, testing (where you learn what to avoid), proceed through design, (where you learn what is possible), and finally, proceed to systems engineering, where you develop an understanding of the big picture.

One value of the disciplined systems engineering process, as opposed to "native" or "intuitive" systems engineering, is minimizing the duplication of effort: following the rigor of the disciplined process ensures that the correct disciplines, and only the correct disciplines, develop a product that satisfies a given requirement. Multiple — and possibly conflicting — solutions are a variation of requirements creep.

May Speaker Meeting

"Top Technology Challenges in Human Systems Integration"
Speaker: Elaine M. Thorpe

By Jorg Largent with inputs by Ricardo Arteaga

Elaine Thorpe, a Boeing Technical Fellow in Human Systems Integration (HSI), spoke to the Chapter at the May Speaker Meeting. Her presentation reflected her leadership of the HSI Functional Skill Team and her 23 years with the Boeing Company.

Elaine's presentation covered the waterfront of technical challenges facing the HSI professionals in the aerospace industry — challenges that impact the application of the systems engineering process. The presentation explored operator interface design from its traditional focus on ergonomics and cockpit "knob and dial design" to the difficult problems that challenge HSI practitioners today. The challenge is wrought by changes in the definition of HSI brought on by the expanding system complexity and increasing demand for reduced human involvement. Software modeling is an important tool in addressing this challenge. Blended into this challenge is the perennial challenge to reduce system and development costs in the face of a trend of projects delivering less, costing more, and taking longer [see article on the April Speaker Meeting].

Complications include information and knowledge management, balancing situation awareness with human workload and performance constraints, expanding mission complexity on shrinking crew complements, and software modeling of human behavior.

The emergency landing of US Airways Flight 1549 in the Hudson River was cited as something that went well and as an illustration of the challenge to the proper execution of the systems engineering process. One perspective of the challenge to the execution of the systems engineering process is to execute the systems engineering process in a manner that will produce systems that perform in a manner similar to the performance of the "system" of an Airbus 320 and the crew that successfully executed the water landing after a catastrophic loss of all engine power. As the aerospace industry moves forward to a time when software controls much of what is done on aircraft, we must ensure that the way humans evaluate the situation and make critical decisions is built into the software.

Can software model an emergency landing on a river?

HSI is a combination of skills working within a systems engineering environment to apply human cognitive characteristics to the development of military, commercial and space vehicles. Some of the skills are human factors, psychology, bio-medical, and aerospace engineering.

A new challenge is found in the expectations of a "tech-savvy" population — a population of people who will be using future systems but who will bring with them experiences and expectations based on the technology of cell phones, video game controllers, and computers that they are using today. In some respects, the architecture of future systems is being determined by experiences of future users as they text-message and otherwise use computers today.

Hardware, software, firmware… humans can be thought of as "live-ware."

Elaine noted that one challenge is the development of tools that help engineers perform the effective allocation of functions in complex systems, and metrics that allow the engineers to know if the allocation is correct.

The evening was highly informative and educational in term of Human Systems Integration and the challenges faced by the aerospace industry. Indeed, there are broader challenges beyond the aerospace industry, and this evening's presentation offered some deep insights into the HSI challenge to the application of the systems engineering process.

Professional Networking Event

By Jorg Largent with inputs from Nehal Patel

On April 23 the Chapter hosted its first professional networking event. The event was organized by Nehal Patel and was intended to welcome new members to the Chapter and to tell them about the activities and accomplishments of our Chapter. It also provided an opportunity for our new members to get to know one another and to develop networks with other systems engineering professionals in the Los Angeles area.

A large number of new and veteran members attended the event and shared experiences and expectations as systems engineers.

It is the Chapter's intent to host similar events in the future on a quarterly basis, providing the same opportunity for future new members to learn more about the Chapter and the profession and to develop networks within the profession.

Two Days in San Luis Obispo

Cal Poly Engineering Summer Academy
Systems Engineering Fundamentals
Instructors: Dr. Kurt Colvin and Dr. Robert Crockett

By Jorg Largent

Cal Poly San Luis Obispo is offering a summer full of three-day courses on a wide range of engineering topics. Of particular note is the class, "Systems Engineering Fundamentals," taught by Drs. Colvin and Crockett. This particular class will be offered at the end of July, but they recommend signing up before June 1. The course objectives are to:

- improve awareness of systems engineering relevancy to business goals and industry norms
- improve understanding of systems engineering practice, processes and objectives
- increase awareness of systems engineering roles and responsibilities
- identify targets for more in-depth learning opportunities

For more information go online to the following site:
http://eng-academy.calpoly.edu/courses/systems-

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
Jim Quiggle	Director	Prosum Technology Services. Prosum Consulting
Craig Schillhahn	Vice-President	Schillhahn Associates, Inc.
Maddalena Jackson	Systems Engineer	Jet Propulsion Laboratory
Travis Wilcox	Student	
Andrew Sullivan	Program Manager	Northrop Grumman
Tim Diep	Consultant	GPSW/Systems Engineering & Integration
Roger Diehl	Manager	Jet Propulsion Laboratory
Brian Wier	Senior Consultant	Booz Allen Hamilton
Janelle Wang	Sr. System Engineer II	Raytheon Company

The International Council on Systems Engineering (INCOSE) is a not-for-profit membership organization founded in 1990. 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 (INCOSE-LA) meets several times per year for dinner meetings and speaker meetings affording systems engineering professionals an opportunity to network and to strengthen their skill. In addition, the chapter sponsors tutorials, conferences, and other activities of interest to those in the systems engineering field or related fields. Chapter officers are as follows:

2009 Board of Directors and Appointed Positions

Elected Officers

President:	Eric Belle	eric_c_belle@raytheon.com	or	president@incose-la.org
Vice-President:	Rosalind Lewis	rosalind.lewis@aero.org	or	vicepresident@incose-la.org
Past President:	John David Boyd	john.boyd@incose.org	or	pastpresident@incose-la.com
Secretary:	Beth O'Donnell	elizabeth.l.o'donnell@boeing.com	or	secretary@incose-la.org
Treasurer:	Marsha Weiskopf	Marsha.V.Weiskopf@aero.com	or	treasurer@incose-la.org

Elected-At-Large Directors

Membership:	Paul Cudney	paul.f.cudney@lmco.com	or	membership@incose-la.org
Programs/Speakers:	John Silvas	Silvas_john@bah.com	or	programs@incose-la.org
Tutorials/Education:	Shirley Tseng	shirleytesng@earthlink.net	or	setraining@incose-la.org
Ways and Means:	Dana Pugh	dana.pugh@incose.org	or	waysandmeans@incose-la.org
Communications:	Edie Ung	edie@raytheon.com	or	communications@incose-la.org

Appointed Positions

Newsletter Co-editors:	Edie Ung, Jorg Largent	ma1teez@yahoo.com	or	jorg.largent@incose.com
Newsletter Production Manager:	Lee-Ann Seeling	LSSeeling@aol.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	ehcrisk@yahoo.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 Content Manager:	Lee-Ann Seeling	LSSeeling@aol.com		
Website Technical Manager:	Benjamin Luong	Benjamin.Q.Luong@boeing.com		
2009 Mini-conference Chairman:	Shah Selbe	shah.selbe@boeing.com		
2009 Mini-conference Technical Program Chair	Dick Emerson	remerson9@gmail.com		
Venue Chair	Shah Shelbe	shah.selbe@boeing.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 email distribution, please contact Susan Ruth - susan.c.ruth@aero.org.

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Redondo Beach, CA 90277

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