



NEWSLETTER



2002, 2004-08



2003



2008 President's Award for Most Outstanding Chapter



UPCOMING EVENTS

October Speaker Meeting #1

“Technical Leadership and the Role of the Systems Engineer for Program Success”

SPEAKER: John Thomas, VP—Booz Allen Hamilton

WHEN: October 13, 2009, 5:30 p.m. to 8:00 p.m.

WHERE: The Aerospace Corporation, El Segundo
Remote sites will be available via webcast

COST: Members: free; non-members: suggested donation \$10

R.S.V.P. by October 9, 2009

See page 2 for more information

October Speaker Meeting #2

“Creating the Systems Engineering Body of Knowledge and Curriculum Guidelines for Graduate Degree Programs in Systems Engineering”

SPEAKER: Dr. Arthur Pyster, Stevens Institute of Technology

WHEN: October 29, 2009, 5:30 p.m. to 8:00 p.m.

WHERE: The Boeing Company, Huntington Beach
Live Meeting will be used in lieu of webcast

COST: Members: free; non-members: suggested donation \$10

R.S.V.P. by October 23, 2009

See page 3 for more information

November Speaker Event

SpaceX Tour and Presentation

SPEAKER: Christophe Bauer

WHEN: November 10, 2009, 4:00 p.m. to 8:30 p.m.

WHERE: SpaceX, Hawthorne

COST: Members: free; non-members: suggested donation \$10

See page 1 for more information

SAVE THE DATE!

December Speaker Event

“Application of SE to Emergency Preparedness and Management”

SPEAKER: Andre (AJ) Lee

WHEN: December 8, 2009

WHERE: The Aerospace Corporation, El Segundo

More details to come...

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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November Speaker Meeting SpaceX Tour

The November Speaker Meeting will feature a tour of SpaceX. SpaceX, located in Hawthorne, manufactures rockets for launching satellites. SpaceX is developing a family of launch vehicles that will ultimately reduce the cost and increase the reliability of space access for emerging market of private and commercial space transport.

Where: SpaceX, 1 Rocket Road off of Crenshaw, next to Jack Northrop Airport in Hawthorne.

When: Tuesday, November 10, 2009, 4:00-8:30 p.m.

Additional details are forthcoming.

RECAP: Professional Networking Event

By Nehal Patel and Eric Belle

The Second INCOSE-LA Professional Networking Event organized by Nehal Patel was held on Tuesday, September 22, at Finbars Italian Kitchen in Seal Beach. Members of the INCOSE-LA Board of Directors were in attendance along with a number of chapter members who live or work in the Orange County geographic area. Some of our newest members also participated in this event. All were quickly engaged in conversation, and an enjoyable time was had by all. Ideas were discussed on how we can continue to appeal to systems engineers who are spread throughout the L.A. metropolitan area and to those who work in industries where the term “systems engineer” is not widely utilized but many of the practices are. We will continue to reach out to our membership with these informal gatherings and look forward to engaging new members in many of our chapter’s activities.

NOT A MEMBER? JOIN INCOSE!

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

OCTOBER SPEAKER MEETING #1 **“Technical Leadership and the Role of the Systems Engineer for Program Success”**

**Presenter: Mr. John Thomas,
Vice-President, Booz Allen Hamilton**

PARTICULARS

WHEN: Tuesday, October 13, 2009, 5:30 p.m. to 8:00 p.m.

Meeting Schedule:

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 Q&A

WHERE: The Aerospace Corporation (host site)

2350 East El Segundo Boulevard

El Segundo, CA 90245

Remote sites will be available

COST: Members: FREE; Non-members: \$10.00

ABSTRACT: A strong leadership team often spells the success or failure for programs. In many instances, the strength of that team is evaluated by the quality of decisions made during the life of the program. These decisions constantly seek to maintain a well-published cost-and-schedule baseline while ensuring delivery of mission-relevant capability and performance. Quality decisions result from a decision-making process that is fed by good technical data. Good technical data require analytical rigor, strong peer review, and integrity with allocation of data to both 1) the lower level components within a design and 2) the management tools of the leadership team.

The strength of a systems engineer's technical leadership is measured by the quality of those technical data. Those data are the basis for the ultimate credibility of cost and schedule estimates associated with the definition of the system during planning activities. Those data are also the foundation for the integrity of the technical metrics used to drive risk-reduction activities and evaluate progress once a program is in its implementation phase. This presentation addresses key attributes and perspectives of the technical leadership systems engineers must bring to the leadership team and to those who support them if technical data are key to supporting good decision-making during the delivery of a successful program.



BIOGRAPHY: Based in McLean, Virginia, John A. Thomas is a Vice-President at Booz Allen Hamilton who specializes in delivery of large-scale systems engineering and integration services. He assists in growing the firm's systems portfolio among U.S. Intelligence, Defense, and Homeland Security clients.

Mr. Thomas' key areas of expertise include:

- Systems engineering and integration
- System analysis
- Solutions delivery
- Coaching and facilitation

A combination of government and industry assignments has provided Mr. Thomas with more than three decades of comprehensive systems engineering and integration experience within the Department of Defense, intelligence, and homeland security communities. He is recognized for his domain and systems knowledge within the imagery intelligence and signals

intelligence environments. He has also helped frame new techniques for the integration of systems engineering with business analysis and program support services.

He now works with Booz Allen Hamilton cost-estimation and program-planning support experts to improve both the quality of planning and implementing of large-scale systems. He also works with the firm's organizational-development and change-management experts to align systems engineering with business-process analysis and organization-transformation activities to ensure clients' business objectives are supported - not driven - by system development.

Mr. Thomas joined the firm in 1991, after leaving Air Force active duty in 1985 and retiring as a major from the Air Force Reserves in 1998. His Air Force career included a tour of duty with the National Reconnaissance Office. His prior industry experience includes systems engineering and program management roles at E-Systems.

A frequent speaker at conferences and symposiums, Mr. Thomas is a member of and has held leadership positions in INCOSE. He is also a member of the Institute of Electrical and Electronics Engineers, the National Defense Industrial Association, the Program Management Institute, the Armed Forces Communications and Electronics Association, and the International Consortium for Coaching in Organizations.

He holds an M.S. degree from the Air Force Institute of Technology and a B.S. from Michigan State University, both in electrical engineering, and graduated *cum laude* from both institutions.

DIRECTIONS TO HOST SITE: From the 405 Freeway head west on El Segundo, turn left on Douglas, left into the first gate on the left and drive straight past the parking structure and park. Enter through the South Lobby (east of the large building ahead on the left as you enter the gate). The meeting will be in Dining Rooms A&B.

R.S.V.P.: R.S.V.P. by registering online at www.incose-la.org or via email to registration@incose-la.org (please include "INCOSE-LA October Meeting 1" in subject line). Additional requirements for the different locations are below.

Host Site, Aerospace Corporation: U.S. citizens and resident aliens must register by Friday, October 9, 2009. Foreign nationals must register by Tuesday, October 6, 2009. **You MUST R.S.V.P. to attend the host site. NO EXCEPTIONS.** If you are uncertain whether or not you'll be able to attend at the host site, DO make a reservation and indicate that you're uncertain. Please bring your picture identification (driver's license, passport, or green card) to the meeting.

Remote Sites:

---- Antelope Valley/Palmdale - no registration required. Contact Mike Wallace at 661-540-0290 or m.wallace@ngc.com. Or contact Jorg Largent, 661-947-6811 or jorg.largent@incose.org for directions.

---- Boeing, Huntington Beach - R.S.V.P. by one day prior to meeting. Refer to Boeing Southern California LTS internal website or contact Beth O'Donnell at elizabeth.l.o'donnell@boeing.com.

--- Pasadena, JPL - Please contact Chris Delp at 818-319-3251 or by email at christopher.l.delp@jpl.nasa.gov to register at least one day prior to the event.

OCTOBER SPEAKER MEETING #2

“Creating the Systems Engineering Body of Knowledge and Curriculum Guidelines for Graduate Degree Programs in Systems Engineering”

Speaker: Dr. Arthur Pyster, Stevens Institute of Technology

This talk will provide insight into the roots of the project to develop a “Systems Engineering Body of Knowledge” (SEBOK) and will discuss the plans for incrementally releasing versions of both the SEBOK and curriculum guidelines.

PARTICULARS

WHEN: Thursday, October 29, 2009, 5:30 p.m. to 8:00 p.m.

Meeting Schedule:

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 Q&A

WHERE: The Boeing Company

Building 17, Conference Room 109

14900 Bolsa Chica Road

Huntington Beach CA

COST: Members: FREE; Non-members: \$10.00

Abstract: Hallmarks of a mature discipline include a means to certify the competence of its practitioners, academic programs that award degrees in the discipline, professional societies that advance the discipline, and standards that define process and practice in the discipline. Systems engineering has all of those hallmarks, of course. For example, the INCOSE professional certification program has been active for several years, and there are many programs offering graduate and even undergraduate degrees in systems engineering around the world.

Ideally, all of these hallmarks would be built on a well-accepted, robust body of knowledge that contains the fundamental knowledge of the discipline organized in a way that facilitates understanding by the community. The discipline of software engineering has the Software Engineering Body of Knowledge (SWEBOK) published by the IEEE Computer Society in 2004. Software engineering certification programs and curriculum guidelines for graduate programs are built on the SWEBOK. Unfortunately, there is no robust analog to the SWEBOK in systems engineering. There have been isolated and incomplete efforts, but there is no Systems Engineering Body of Knowledge that the community has embraced.

A new project called “BKCASE” (Body of Knowledge and Curriculum to Advance Systems Engineering) is being led by Stevens Institute of Technology and co-led by the Naval Postgraduate School. The project will work collaboratively across the worldwide community to create a robust SEBOK and to build curriculum guidelines for graduate degree programs.

Ideally, BKCASE will have 30 to 40 authors from around the world, leveraging existing efforts to create and deploy competency models (such as those created by the INCOSEUK Chapter and the U.S. Federal Aviation Administration), efforts to create and deploy graduate curriculum guidelines (such as the INCOSE master's reference curriculum framework), and efforts to certify professionals (such as the INCOSE professional certification program). INCOSE has agreed to participate in

BKCASE with three authors. Additional authors and contributing organizations are being recruited.



Biography: Dr. Pyster is currently a Distinguished Research Professor at Stevens Institute of Technology and the Deputy Executive Director of the Systems Engineering Research Center, which is the Department of Defense's only university-affiliated research center for systems engineering research.

Most recently he served as the Senior Vice-President and Director of Systems Engineering and Integration for SAIC. Before that, Dr. Pyster was the Deputy Chief Information Officer for the U.S. Federal Aviation Administration, where he oversaw information technology investment and policy, created and operated the agency's information security program, created the agency's enterprise architecture, and operated their process improvement program.

Earlier assignments included being the Chief Scientist for Software Engineering for the Federal Aviation Administration, Chief Technical Officer for the Software Productivity Consortium, Manager of Systems Engineering at TRW, and Assistant Professor of Computer Science at the University of California at Santa Barbara.

Dr. Pyster directed the creation of three Capability Maturity Models (Systems Engineering CMM, Integrated Product Development CMM, and the FAA Integrated CMM), oversaw more than \$10 billion in investment, directed the creation of several systems and software engineering methods, delivered commercial telecommunications systems with extremely low defects, and managed training programs for thousands of engineers and managers.

Currently, he is leading an international effort that is creating *Graduate Software Engineering 2009: Curriculum Guidelines for Graduate Degree Programs in Software Engineering* with sponsorship from the U.S. Department of Defense and active participation from INCOSE, among others.

Dr. Pyster has authored many papers and one textbook – *Compiler Design and Construction*. He is a Fellow of INCOSE, the Chairman of the INCOSE Corporate Advisory Board, a member of the INCOSE Board of Directors, and a Senior Member of the IEEE Computer Society. Dr. Pyster received a Ph.D. in Computer and Information Sciences from Ohio State University.

Directions to the host site: From the southbound 405, after passing the 605, stay in the right lane of the 405, which merges into the Garden Grove Freeway, and immediately exit south on to Bolsa Chica Road. Go south about 1.5 miles and the facility will be on the left.

From the northbound 405, exit at Bolsa Avenue and go west to Bolsa Chica Road (approximately two miles); turn right and the facility will be on the right.

R.S.V.P.: R.S.V.P. by registering online at www.incose-la.org or via email to registration@incose-la.org (please include "INCOSE-LA October Meeting 2" in subject line).

Live Meeting: Join the meeting from your desk or at home. Details will be provided on the INCOSE-LA website (www.incose-la.org) and in the Reflector Notice.

Architecting Simplified

By Jorg Largent

Young students in junior high school provide an interesting laboratory to observe architecting without the bells and whistles of large quantities of money and without the sophistication of complicated and advanced technologies.

- The setting: twenty students attending a one-week “engineering camp” in the summer.
- The challenge: win a contest hurling a Ping-Pong ball the farthest. They had only a few classroom hours to solve the problem — the competition was the next day.
- The task: form teams of two and build a catapult with the materials provided.

The materials provided to each team were paper, sheets of balsa wood, balsa dowels, a mouse trap, and an assortment of rubber bands, plus glue, knives, and saws – supplies such as one might find in a hobby shop, save the mouse trap.

They’re Off! All of the teams, with one exception, were drawn to the mousetrap in their supplies. The mousetraps were not simply “fancy” in terms of their relative mechanical complexity; the bait pad on the mousetrap was a bright yellow, whereas everything else was a drab, beige color. Setting and triggering the mousetrap became a major activity, especially since a mentor was the one who got his finger caught (and he was glad it was not a rattrap). They settled on the mousetrap as the source of the kinetic energy for the ball. The teams made this architectural decision somewhat independently of the adults and the other teams; their decisions were based on the attributes of resources provided, and their understandings of catapults.

The team that was an exception had different understanding of catapults, and chose to use the mousetrap only as a base for a design that used the rubber bands as their energy source – a design somewhat akin to a medieval catapult.

Fly-Fix-Fly. The individual efforts shifted to wondering what the other teams were doing. As a consequence, the architecture of the designs, except for the medieval catapult, started to look the same. This phenomenon was influenced by what worked. One challenge the students found was that the mousetrap moved when triggered. The teacher added the importance of consistency from one shot to the next. The teams quickly got into a cycle of trying to figure out how to make the mousetrap stay in place, guessing, making modifications, looking at what the other students were doing, and testing the new product. The medieval catapult team had a similar problem and started sneaking a peek or two at the more pedestrian designs. The teams quickly learned that direction was not a requirement, but, due to the layout of the “test range” (a wide aisle along the side of the shop), there was a directional stability requirement derived from the testability requirement.

Postflight Debrief. The students were asked to describe their experiences and what happened. Without using the terminology of systems engineering, they made several points, all of which should be familiar to the veteran in the real world. There were limitations, which impacted their design and the architecture of their system. They were limited by the materials provided. They were limited by the tools and their ability to use them (one nicked finger). They were limited by the workspace. They were limited by schedule in that they ran out of time. The time limitation was particularly the lament of the team trying to build the fancy, scaled-down version of a medieval catapult.

When asked why not just throw the Ping-Pong ball, they had no answer beyond thinking they were obliged to use the materials provided as a part of winning the contest. Besides, just throwing the ball seemed too simple. They overlooked an obvious point: the “materials provided” included themselves.

An Aside from Which We All Can Learn. Later in the week the students were taught to design using a program on the computers in the lab. The program had limitations, and the students learned that the program was no match for their imaginations: their designs were limited by the tool.

In the Real World of Six-Figure Salaries, So What? There are lessons to be learned about both architecting and requirements development in this discourse.

- Architecture and requirements development are interwoven.
- Neither architecture nor requirements are a starting point; in this case the challenge was to win the contest. The starting point was a mission statement. For these students the mission statement was to hurl a Ping-Pong ball further than any of the other teams. This mission statement was not formalized, but it was clearly understood. An aside: “clearly understood” versus “fraught with soaring rhetoric” is an important attribute of a mission statement.
- A concept of operations and consequential functional analysis are essential parts of the process, be they formal or informal.
- Keep it simple. The most elaborate design did not fare well. The simplest solution – just throw the ball – would have been the winner, but it was not attempted.
- Don’t overlook the obvious.
- “Attractive,” as in the color, action, and the exciting potential risk of a pinched finger associated with the mousetrap, or “attractive,” as in a pitch from marketing, is a poor and limiting basis for architecture.
- Not all requirements are known at the beginning; hence, derived requirements. The students learned that resources, producibility, and testability were sources of requirements that influenced their design.
- Presumed knowledge from before the project and sneaking a peek at the competition are of limited worth in that they can help solve a problem more quickly, but, at the same time, they can prevent consideration of a more appropriate solution. A corollary is the trap of what one of our colleagues has called “pet rock technology” being pursued by a strong-willed advocate.
- There are constraints such as resources, time, and capabilities. These are in addition to the occasionally overlooked laws of physics.
- Some constraints or limitations are voluntary but unnecessary, as they are the consequence of things such as poor tool selection.

The activities above and the points they illustrate are common to the real world. There is wisdom to be gleaned from the adventures of these young students. Increasing the complexity of the system, the number of requirements, and the sophistication of the technology may well increase the need for formality, but it does not negate what there is to be learned from this scaled-down version of what is done in the “real world.”

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
Daniel Winton	Sr. Engineering Specialist	Aerospace Corporation
Paul Donohoe	Director Integrated Technical Solutions	Control Point Corporation
Charles Mike Brockmeier	Sr. Vice President	Brockmeier Consulting Engineers, Inc.
Matt Ward	Subcontract Manager	Nothrop Grumman
Kristopher Woods	Test Engineer	DCX-Chol Enterprises
Jack O'Dell	Project Eng/Director	Curtiss-Wright
Kathryn Kosaka	Systems Engineer	The Boeing 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 skills. 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.org
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
Membership:	Paul Cudney	paul.cudney@incose.org	or membership@incose-la.org
Programs/Speakers:	John Silvas	Silvas_john@bah.com	or programs@incose-la.org
Tutorials/Education:	Shirley Tseng	shirleytseng@earthlink.net	or setraining@incose-la.org
Ways and Means:	Dana Pugh	dana.pugh@incose.org	or waysandmeans@incose-la.org
Communications:	Edie Ung	malteez@yahoo.com	or communications@incose-la.org

Appointed Positions

Newsletter Co-editors:	Edie Ung, Jorg Largent	malteez@yahoo.com	or jorg.largent@incose.org
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	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.

Return Address:

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

Forwarding Address Requested

**Do you have a message for 400 +
systems engineering professionals?**

The INCOSE-LA chapter is accepting advertisements from consultants, other professional organizations, organizers of professional conferences, companies seeking to employ systems engineers, and academic organizations. Please contact the Chapter Communications Director, Edie Ung at ma1teez@yahoo.com or Co-editor Jorg Largent at jorg.largent@incose.com.

Your message to systems engineers could be here!