



NEWSLETTER



2002, 2004-08



2003



UPCOMING EVENTS

AIAA SPACE 2009 Conference & Exposition

September 14—17, 2009
Pasadena Convention Center
Pasadena, California
Four days of in-depth discussions on space exploration
See page 2 for more information

Networking Event

September 22, 2009
Huntington Beach area

See page 7 for more information or go to: www.incose-la.org

SpaceX Factory Tour and Speaker Meeting

October 13, 2009 in Hawthorne

See page 7 for more information or go to: www.incose-la.org

More speaker meetings, tutorials and our annual holiday party are 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

MOST OUTSTANDING CHAPTER AWARD

By Eric Belle, President



It is with great pride that I announce that INCOSE-LA was presented with the President's Award as the "Most Outstanding Chapter" for 2008 at the International Symposium, IS09, in Singapore. Jonette Stecklein, INCOSE Member Board Chairwoman, cited the following reasons for the choice of our Chapter: "Along with a high point total and consistent Gold-Level performance since 2004, the Los Angeles Chapter demonstrated a strong and balanced performance across six of the seven categories. In addition, the Los Angeles Chapter is recognized for effective sharing of meeting speakers through web conferencing and effective use of other chapters' expertise." Her words serve to emphasize that this tribute came not only as a result of a successful year in 2008 under the leadership of David Boyd, but also in recognition of the hard work by the many dedicated individuals who have contributed their time and expertise over the past few years.

In representing INCOSE-LA in accepting both this award and another plaque for attaining another Gold Chapter Circle Award, I was asked to present to all the other regions a series of charts that illustrate the strengths of our Chapter and how we can be used as a model for other aspiring chapters. Assembled by David Boyd, Beth O'Donnell, and me, this presentation stressed the need to actively engage and create value for members and to ensure that the Chapter continues to challenge itself to respond to new needs and ideas. A key element was our extended Board of Directors to include those appointed positions that not only provide valuable services, but also serve as stepping-stones to elected positions. Many representatives from other chapters around the world were quite impressed with the range of activities in which we engage, and many were taken by surprise at one of our key strengths evident in the charts — the diversity of our membership.

Among the charts I was most proud of was the photo showing the past six INCOSE-LA presidents at the recent 2009 INCOSE-LA Mini-Conference. In a sense, those pictured (John Hsu, Dennis Schwarz, Gina Kostelecky-Shankle, Jim Manson, David Boyd, and me) can all take satisfaction in the recognition represented by this award. As mentioned in the closing of the presentation, however, the Chapter leaders are also well aware that we are continually faced with challenges and opportunities, so we shall not rest on our laurels as we seek to build upon our recent success.

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AIAA SPACE 2009 Conference & Exposition

September 14—17, 2009
Pasadena Convention Center
Pasadena, California

By Jorg Largent

The American Institute of Aeronautics and Astronautics (AIAA) has organized “SPACE 2009,” a conference and exposition being held in Pasadena September 14 through 17, 2009. NASA’s Jet Propulsion Laboratory and the U.S. Air Force Space and Missile Systems Center are leading the event. Boeing, Orbital Sciences Corporation, and Lockheed Martin Corporation are sponsoring the event. The AIAA Technical Activities Committee (TAC) Space and Missiles Group, The Aerospace Corporation, the California Space Authority, *Aerospace America*, and *Space News* are supporting the event.

The SPACE 2009 conference will be focused on the challenges of future space exploration in response to the United States government’s massive space modernization program, which has reached its apex, and the effects of a complex and dynamic globalized economy.

Conference topics will include:

- What will the second 50 years in space bring?
- What is the impact of the shift from manufacturing to a knowledge-based economy?
- A knowledge-based economy demands a workforce at ease with science, technology, and math. How can we win the war for talent?
- How do we best protect our space infrastructure? How do we meet the need for improved situational awareness and effective protection of space capabilities?
- What are the solutions to climate change?
- How is space uniquely suited to promote global understanding of environmental dynamics, and what are the opportunities for global cooperation?
- How can space technology contribute to new energy technologies and a reduced reliance on fossil fuels?
- What opportunities are there for cooperative investments in new technologies?
- What is the impact of design practices, standard interfaces, and materials research on our ability to lead in space?
- How will the convergence of existing capabilities, new technologies, global need, and economics drive emerging space technologies and applications?

There will be two “poster sessions” focusing on systems engineering, both at 6:30 p.m. Tuesday evening. One is entitled “Tools and Solutions That Help Perform Systems Engineering” and the other “Space Systems Engineering II — Systems Engineering Processes, Implementation and Results.”

Of special interest will be this year’s William Pickering Lecture. This year’s lecture honors the International Year of Astronomy and the Hubble Space Telescope, Spitzer Space Telescope, and Galaxy Evolution Explorer missions. The lecture is open to the public.

(Continued on page 3)

Deploying the NASA Systems Engineering Framework

August 18, 2009 Speaker Meeting

By Jorg Largent

P. A. “Trisha” Jansma spoke on the NASA Systems Engineering Framework and provided an informative and comprehensive insight into NASA’s pursuit of systems engineering.

Trisha is the Lead for the NASA Systems Engineering Framework (SEF) Deployment Subgroup for the NASA Systems Engineering Working Group (SEWG) for the NASA Office of the Chief Engineer (OCE). She is also the Deployment Lead for the Systems Engineering Advancement (SEA) Project at the Jet Propulsion Laboratory (JPL).

The presentation was comprehensive, and the time limits of the speaker meeting were not an impediment to the message that NASA is deeply invested in the systems engineering process. Topics discussed included the NASA Systems Engineering Excellence Initiative, the Systems Engineering NASA Procedural Requirement (NPR) background and rationale, the NASA SE Framework, and the implementation and deployment of the NASA SE Framework. NASA has drawn from a wide spectrum of expertise, including Bill Curtis, Chief Process Officer, Borland, and Myers-Briggs Type Indicator personality inventories.

NASA has also addressed the science and art of systems engineering – “art” being an often overlooked or isolated element of a project’s life cycle and the systems engineering process.

NASA established its Systems Engineering Excellence Initiative in 2000 under the Office of the Chief Engineer. The Initiative has several goals. One is to stimulate and enable the development and advancement of a sound systems engineering capability necessary for success in fulfilling the challenging and ambitious goals of the NASA enterprises. Another is to address the need for consistency in the basic approach to systems engineering across the Agency and for a common systems engineering terminology.

Several noteworthy concepts were put forward.

- Processes should be repeatable.
- A common failing in applying a concept is to assume “If I build it they will come.” Not if it is a well-kept secret. Communication is important. In conjunction with the need for communication was a discussion of the need for training and the value of “home-grown” systems engineers.
- “Both art and science are necessary (to the proper execution of the systems engineering process) in order to avoid over-emphasis on process and procedures.”
- No one would think of developing a system and delivering it without testing it first. We should not develop a process without testing it first.

The presentation concluded with a question-and-answer period with questions from the audience at JPL as well as from the remote sites.

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
Beryl Bellman	Academic Director	FEAC Institute
Len R. Troncale	Professor, Director	California State Polytechnic University
Frank C. Belz	Senior Project Leader	The Aerospace Corporation
Michael E. Crowley	Senior Member of the Technical Staff	Software Engineering Institute
Morris Brill	Systems Architect	Northrop Grumman
William R. Boley	Member, Technical Staff	Northrop Grumman Corporation
Paula Baker		Northrop Grumman Corporation
Brad G. Weiskittel	Manager / C3N Electrical Engineering	The Boeing Company
David A. Imboden	Associate	Booz Allen Hamilton
Sharon Spielman	Principal	SE2-Spielman Engineering

A New INCOSE Fellow!
There is a new INCOSE Fellow in the
Los Angeles Chapter

By Rosalind Lewis, Chapter Vice-President



Marilee Wheaton was selected as an INCOSE Fellow, “for contributions to systems engineering for space systems in the areas of engineering economics, resource estimating, and engineering education.” Ms. Wheaton is the General Manager of the Systems Engineering Division at the Aerospace Corporation, where she leads efforts to support customers in space systems architecture and design, acquisition and planning, mission assurance, and system analysis and simulation.

Ms. Wheaton joined The Aerospace Corporation in 1980 and has held numerous positions, including Associate Director for Directorate H Ground and Communications, Systems Director for AFSCN Engineering and Integration, Principal Engineer in Directorate G, Principal Director of the Business and Operations Analysis Subdivision, and General Manager of the Computer Systems Division.

Prior to rejoining Aerospace in 2002, Ms. Wheaton was a director at TRW Systems (now Northrop Grumman Information Systems), providing leadership for cost estimation, metrics, and quantitative management goals. She is a trained CMMI appraiser and also led process improvements as a Six Sigma Black Belt.

Ms. Wheaton has a B.A. degree in mathematics, magna cum laude, from California Lutheran University, and an M.S. degree in systems engineering from the University of Southern California. In addition, she is a graduate of the UCLA Executive

Program in Management. Ms. Wheaton serves as an instructor for The Aerospace Institute and is an adjunct associate professor at USC. She is a Fellow of the AIAA and Chair of the AIAA Technical Committee on Economics. Ms. Wheaton is a Fellow and a life member of the Society of Women Engineers (SWE) and a past president of SWE’s Los Angeles Section. She is a member and past board of directors chair of the International Society of Parametric Analysts (ISPA) and was recognized as ISPA’s parametrician of the year in 1991.

NOT A MEMBER? JOIN INCOSE!

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

(Continued from page 2)

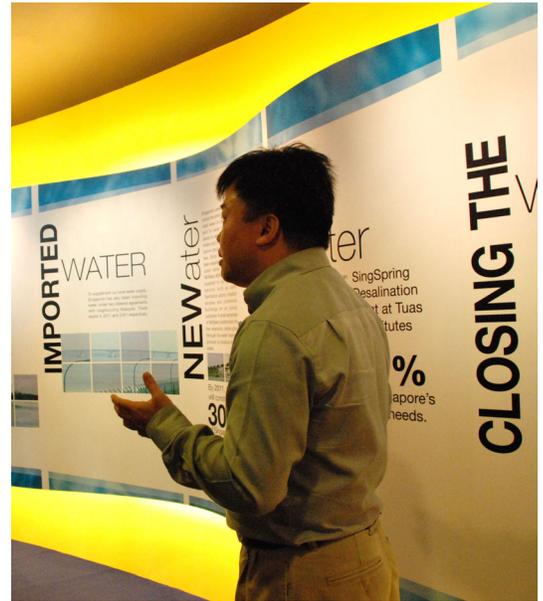
AIAA SPACE 2009 Conference & Exposition

Another supplemental event is the “Engineers as Educators” workshop for engineers who want to reach out to pre-college students and to encourage them to become engineers. The workshop is intended to teach how to:

- connect your work to classroom objectives
- start and end with memorable experiences
- use simple and clear vocabulary
- and build hands-on experiences into your presentations.

To learn more and to register for the conference, go to the website below:

<https://www.aiaa.org/content.cfm?pageid=230&lumeetingid=2074&viewcon=register>



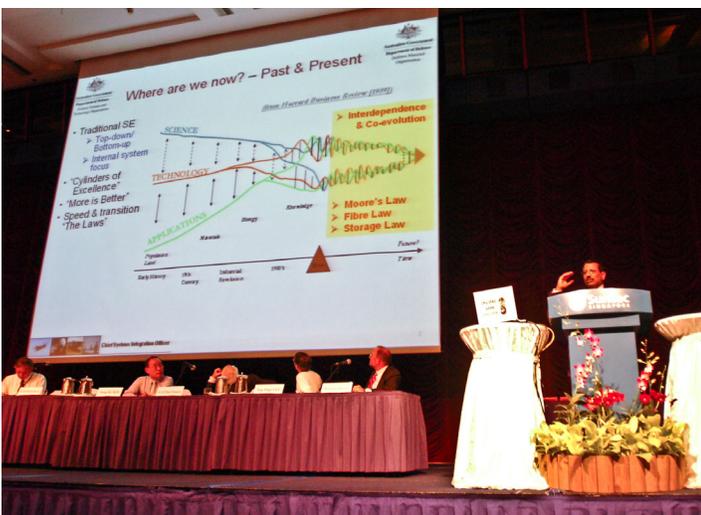
The INCOSE 2009 Symposium

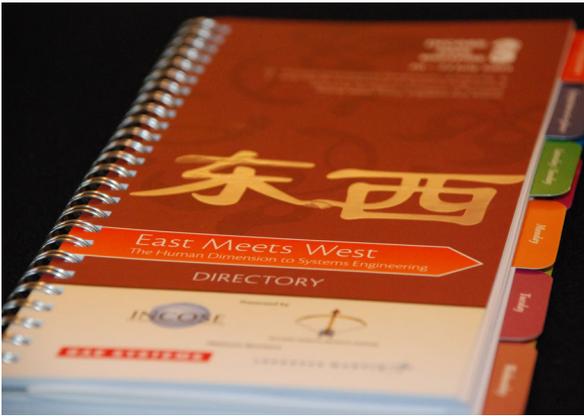
People, concepts, applications, and models, all leading to “...the goal of providing a quality product that meets the user needs (INCOSE Systems Engineering Handbook).”



Left to right in the photo above: Russians Anatoly Kozlov and Alexander Prosvirnov dine with Timo Giling, the Dutch President elect.

“An intense, eye-opening, and most pleasant experience. Perfectly organized conference in a perfectly organized city-state. Humbling to observe how competitive and hardworking the Singapore people are, and how much attention they place on education, order, discipline, and long-term thinking, including systems thinking, about the common good.” - Bo Oppenheim, LMU.





Above: the directory for the symposium.



Above: the symbol of Singapore: the "Merlion." Legend has it that a sultan once spotted a lion swimming near Singapore before it was inhabited, which led to its present name ("mermaid", less the "maid," and "lion").



In the photo at left: dancers representing the three main ethnic groups of Singapore: Chinese, Malay and Indian. On the far right of the photo, Norm Augustine, the keynote speaker for the symposium.

In the photo below: Bo Oppenheim, Loyola Marymount, left, and Stan Settles, University of Southern California, right, congratulated Eric Belle, INCOSE-LA Chapter President, who accepted the President's Award as the "Most Outstanding Chapter" for 2008.

John Hsu, Chapter President in 2004, attended the conference, moderated a panel and presented a paper. His paper, "Agent-Based Modeling the Emergent Behavior of a System-of-Systems" was well received. Basilyn Bunting, Chief Systems Engineer, was quoted as saying that John's paper was the best paper in the conference. John brought home an electronic copy of the panel report.



Is the Systems Engineering Process Inherently Flawed?

By Jorg Largent

The on-line INCOSE “Systems Engineering Handbook” defines systems engineering as three things: a profession, a process, and a perspective. The process portion of that triad has a built-in flaw. The “flaw” is not in the INCOSE definition; it is an intrinsic part of the process.

In the minds of most, a process has a starting point, a step one, a t_0 . The systems engineering process, as applied to any given project, does not have a starting point. Any given project has a starting point, but the application of the systems engineering process does not.

In part this is due to the fact that there are no projects that are 100% new. It is not beyond the realm of reason to say that there could be a completely novel project, but, typically, the technologies and architectures of a project are built on technologies and architectures that existed prior to the project’s initiation. Examples abound.

Heavier-than-air powered flight began with the Wright brothers at Kitty Hawk on December 17, 1903. (History has snubbed New Zealand’s Richard Pearse.) While that is a convenient t_0 for those of us in the aerospace industry, that is not the beginning. The Wright brothers’ flight was a convergence of established technologies, gliders and the internal combustion engine being two of major note. The works of Cayley, Lilienthal, Chanute, and Langley illustrate the maturation of the technology available to the Wright brothers. These predecessor works also drove the architecture of their system. These facts from history do not detract from the creativity, industry, and inventiveness of the Wright brothers; they simply illustrate the fact that significant portions of the requirements and architecture were in place before they began their project.

Similarly, the technology and architecture of railroads, one of the most established systems of systems, date back thousands of years. Wooden-planked progenitors of the modern steel rail date from Roman times. In addition, the Romans are well known for their roads, bridges, and aqueducts. In parallel with these advances in technology are the oft-unheralded advances in metallurgy that led to the economical manufacture of the steels necessary to the manufacture of rails, locomotives, bridges, and rolling stock. Heron of Alexandria is credited with several inventions, including a steam engine, a piston pump, and a fire-powered pneumatic device to open doors. While the exact details of his works have been blurred a bit over the intervening 2,000 years, the influence of his work upon the technologies of using heat to a mechanical advantage are self-evident.

Elaine Thorpe, a Boeing Technical Fellow in Human Systems Integration (HSI), spoke to the Chapter at the May Speaker Meeting. Her presentation included the insightful recognition that the architecture of future systems is, in part, being defined in the expectations of a “tech-savvy” population — a population of young people who will be using future systems but who will bring with them experiences and expectations based on the technology of cell phones, video games, and other devices in their world today.

Stan Settles Wins Frank and Lillian Gilbreth Industrial Engineering Award

From USC Viterbi School of Engineering Announcement



Stan Settles, IBM Engineering Management Professor and Director of Systems Architecting and Engineering at the Viterbi School of Engineering, has received the Institute of Industrial Engineers’ highest honor. Stan is also an INCOSE-LA Fellow and L.A. Chapter member.

The Frank and Lillian Gilbreth Industrial Engineering Award “recognizes those who have distinguished themselves through contributions to the welfare of mankind in the field of industrial engineering. The contributions are of the highest caliber and nationally or internationally recognized.”

James Moore, Chairman of the Epstein Department of Industrial and Systems Engineering, said the impact of Settles on USC had been remarkable. “His time at USC has been characterized by a marked, purposeful selflessness focused almost exclusively on the ascent of the institution and the welfare of our students. With 30 years of industry experience and membership in the National Academy of Engineering, he is like a drop of ink in a glass of water. His effect on the Epstein ISE Department, indeed on the entire Viterbi School, is pervasive and perceptible.

“Stan arrived in 1994 at a critical point in the life of the Epstein ISE Department and served two terms as department chair, preceding Randolph Hall. He took the helm of the Systems Architecting and Engineering program in 2004, succeeding Elliot Axelband, and turned the Viterbi School’s modest program into the nation leader.”

Congratulations, Stan!

However, even good things can be abused. Using computers, people have tried to make plans about the future. What is fed into the computer is often a set of not very reliable assumptions. The result of this planning is aptly described “as garbage in – garbage out.” The worst consequence is that once a computer has spoken, the customer believes it. In Herman Kahn’s words, “garbage in – gospel out.”

Dr. Edward Teller, *The Pursuit of Simplicity*

Engaging the systems engineering process at the beginning of a project is akin to letting out the clutch on an automobile with a manual transmission and the engine running. The importance of a smooth start and of properly engaging the systems engineering process at the startup of a process is illustrated in Figure 2-3, “Committed Life Cycle Cost against Time,” of the on-line “SE Handbook v3.1.” The figure illustrates the sensitivity of a project’s success to activities in the beginning: 70% of the cost is committed during the first 8% of a project.

Therein lies the challenge for the systems engineering profession: properly engaging the process at the beginning of a project.

The next challenge: if the process has no beginning, does it also have no end?

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

Elected Officers

Membership:	Paul Cudney	paul.f.cudney@incose.org	or	membership@incose-la.org
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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:	Edi Ung	ma1teez@yahoo.com	or	communications@incose-la.org

Appointed Positions

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Reflector Manager:	Susan Ruth	susan.c.ruth@aero.org	
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Webcast Event Manager	Chris Delp	cdelp@jpl.nasa.gov	
Website Content Manager			
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.shelbe@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.

Professional Networking Event

Tuesday, September 22, 2009

Huntington Beach area

By Nehal Patel

INCOSE-LA is planning the second Professional Networking event. This event is being planned for September 22, 2009 in the Huntington Beach area. The purpose of the gathering is to welcome new members and to provide an opportunity for Chapter members to gather in an informal setting and to network with other professionals. This will be a great way to meet other members of the INCOSE-LA Chapter and systems engineering profession.

Look for more details to come on the Chapter website at www.incose-la.org, via our Chapter Reflector email, or send an email to Nehal Patel (nehal_p1_patel@raytheon.com).



October Speaker Meeting

The October Speaker Meeting will have a special 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 the emerging market of private and commercial space transport.

The particulars are in work, but where and when are defined:

Where: SpaceX, 1 Rocket Road, Hawthorne, next to Jack Northrop Airport.

When: Tuesday, October 13, 2009, 4:00 p.m. tour registration, 5:30 p.m. meeting sign-in; 6:30 – 8:30 p.m. Speaker Meeting.

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!