NEWSLETTER

INCOSE LOS ANGELES CHAPTER

LOS ANGELES

Vol. 7, Issue No. 9   **November 2009**

GOLD CIRCLE AWARD

SILVER CIRCLE AWARD

2002, 2004-08   2003

2008 President's Award for Most Outstanding Chapter

INCOSE
International Council on Systems Engineering

UPCOMING EVENTS

November Speaker Event
SpaceX Tour and Presentation
SPEAKER: Chris Bauer, Sale Director
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

Holiday Party
An annual event featuring good food, good company, and a little fun with your systems engineer colleagues
Plus Awards Ceremony and White Elephant Gift Exchange
Saturday, December 5, 3 p.m. to 7 p.m.
See page 2 for more information

December Speaker Meeting
"Application of SE to Emergency Preparedness and Management"
SPEAKER: Andre (AJ) Lee
WHEN: December 8, 2009
WHERE: Being established
More details to come in future editions of the Newsletter…

SAVE THE DATE!

INCOSE Webinar
"Architecting Resilient Systems"
SPEAKER: USC Lecturer Scott Jackson, INCOSE Fellow
WHEN: December 16, 2009
WHERE: On the internet at
http://www.incose.org/practice/webinars.aspx
Check the webpage or the next Newsletter for details

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

NOT A MEMBER? JOIN INCOSE!

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

SPACEX

November Speaker Meeting

SpaceX, an innovator of cost-effective commercial rocketry for space, will host the November speaker meeting. The meeting will be preceded by a tour of the SpaceX vehicle design, manufacture, and integration facility. SpaceX is developing launch vehicles that are intended to reduce the cost and to increase the reliability of space access for the emerging market of private and commercial space transport.

The tour will be followed by a presentation by Mr. Chris Bauer, the Sales Director for SpaceX.

Where: SpaceX, 1 Rocket Road, off Crenshaw Boulevard, next to Jack Northrop Airport in Hawthorne
When: Tuesday, November 10, 2009, 4:00-8:30 p.m.

Three Important Points!

1. **Space is limited** and is on a first-come-first-served basis. People interested in attending must register online at www.incose-la.org or by sending an email to registration@incose-la.org (please include "SpaceX" in subject line).
2. A **positive photo identification** issued by the United States Government or the State of California is an absolute must for admission to the facility. **Non-U.S. citizens** will need to provide their names (last, first, middle initial), date of birth, citizenship, place of birth (city and state) plus government ID and passport.
3. **Active INCOSE members will be given priority for registration and attendance** (lapsed members can renew their memberships by using the link on the INCOSE-LA website:
   http://www.incose-la.org/membership/join-incose-la.html

INCOSE-LA MAKING A DIFFERENCE: Community Service Day at the LA Regional Foodbank

Please join us on Saturday, Nov 14, 2009, from 8:45 a.m. to 12:00 noon for INCOSE-LA's "Community Impact Project." We will be volunteering our time at the Los Angeles Regional Foodbank, making food bags for over 7,000 women with infants, children, and senior citizens in Los Angeles County. The Los Angeles Regional Foodbank is a nonprofit charitable organization that has been serving the disadvantaged of our community for 35 years. The Foodbank is at the heart of a charitable food distribution network that includes nearly 900 charitable agency sites in Los Angeles County.

At the Foodbank, volunteers help to sort donated goods and to break down and repackage large pallets of canned and packaged goods into "kits" that are distributed to deserving beneficiaries within the Los Angeles area. These packages include canned fruit, canned vegetables, rice, cereal, and other non-perishable items from its USDA commodities donations.

> *By giving just a little of our time, we can make a big difference in our community.*

How to help:

INCOSE-LA members, families, and friends (minimum age 14) will have the opportunity to give a bit of their time to help their communities. For more information or to sign up (by Friday, November 6, 2009), email Elizabeth Deems at Elizabeth.C.Deems@jpl.nasa.gov. Participants will receive a free INCOSE-LA t-shirt for volunteering at this event!

A Letter to the Editor:

Systems Architecting and Engineering Program at USC

This note is intended to clarify a quote that was included in the September *Newsletter* and provide a brief update on the program. I had the opportunity to "build on the shoulders of giants" when I took the reins of USC's Systems Architecting and Engineering (SAE) Program. Dr. Eberhardt Rechtin created this unique program starting in 1988 following his retirement as CEO of The Aerospace Corporation. From 1994 through 2003 Dr. Elliot Axelband led the program and was the lead person in creating the unique arrangement with Boeing that we share with Missouri University of Science and Technology. This was a major step in establishing the program as a national leader in our field. I followed Elliot as director from 2003 until this summer. We were able to continue to build on the foundation laid by Drs. Rechtin and Axelband during these years. We are excited to have Dr. Azad Madni joining us as the director starting this fall. It is my hope that he will accelerate our efforts to a yet higher plain. I remain as the co-director to help attain that vision.

Dr. Stan Settles, IBM Chair Professor, Associate Chair and SAE Program Director, University of Southern California Viterbi School of Engineering and INCOSE Fellow

Annual Elections are coming up!

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 Executive Board of Directors (BoD).

In the coming weeks a special newsletter will be sent to you all to introduce you to all of the running candidates. These are the 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 2009 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, please contact Eric Belle, (310) 647-2714, email eric_c_belle@raytheon.com; or Rosalind (Roz) Lewis, (310) 336-1805, email Rosalind.Lewis@aero.org

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*You are invited to the
INCOSE-LA Chapter
Holiday Party
December 5, 2008
3:00 p.m. to 7:00 p.m.
at Susan Ruth's house in Whittier*

**Great people   Fine food   Lots of Fun
A White Elephant gift exchange**

No cost for the INCOSE-LA member and one guest (bring a gag gift for the White Elephant gift exchange)

R.S.V.P.

registration@incose-la.org
with subject line
"INCOSE-LA Holiday Party"
Directions to Susan's home will be provided as an acknowledgement of your R.S.V.P.

Tailoring Systems Engineering for the Audience

By Jorg Largent

Are we being sufficiently deliberate and disciplined in our approach to advocating the systems engineering process?

Within the community of systems engineering professionals there is widespread agreement as to the essence and value of the systems engineering process. Our disagreements, while passionate at times, are mostly disagreements of style rather than substance.

Outside the community, however, the audience changes — oftentimes skeptical or unsure, not fully appreciative of how the systems engineering process is beneficial to them or to their goals. With this in mind, one consideration is that those within the profession need to tailor their advocacy to helping others by tailoring their advocacy to match the audience. Or, to use a comment from within the Intelligent Transportation and Transit Systems (ITTS) working group in late 2008: "Help SE on the inside translate SE lingo to customer lingo." Tailoring would then, at least in part, consist of:

1. Translating the lingo and
2. Showing the value of the systems engineering process from the perspective of the listener.

It would appear that there are three general audiences, each with unique needs based on their unique perspectives, needs that will determine the tailoring:

1. The executive,
2. The project leader or program manager, and
3. The implementers.

Using broad terms, these three audiences can be defined as follows:

1. The executive is responsible for the overall health and productivity of the organization. The executive is responsible for ensuring that the organization has the wherewithal to successfully accomplish the projects being pursued by the organization. And while the "profit motive" is different in the commercial world than it is in the non-commercial world, the executive is responsible for returning desired value to the stockholders or stakeholders, as the case may be.
2. The project leader or program manager is responsible for the execution of a given project and is the "designated worrier" for performance, cost, and schedule, although there are times when performance is subordinate to cost and schedule.
3. The implementers can be identified most easily with requirements development, requirements management and the requirements "V." It is in this arena that the engineers of varying levels of specialization are most fully engaged. However, it should be noted that the term "implementers" is much broader than the focus of engineers and the requirements "V" because the term "implementers" also includes maintainers and operators, to name but two.

Assuming that these definitions are adequate for further discussion, the question then becomes "how?" How should an advocacy be tailored to meet the needs of these respective audiences? An advocacy for the systems engineering process should be in the language of the audience. An advocacy for the systems engineering process complement the values of the audience. This second point can get rather dicey.

However, general values as broad as the terms above can be used as a basis for an equally broad look at the value systems a systems engineering process advocate might face.

1. The executive needs to see that following the systems engineering process contributes to the overall health and productivity of the organization. The executive needs to see that taking advantage of the systems engineering process will result in increased or surer profits for the owners or stakeholders of the organization, however it might be that "profit" is defined by the owners and stakeholders.
2. The challenge facing the project leader or program manager might be summed up as "herding cats" – balancing cost and schedule, along with balancing near-term goals and tasks, against the long-term objectives and goals of the project.
3. The implementers represent the widest spectrum of possible audiences for the systems engineering advocate. Even within the sub-spectrum of engineering there is a sufficiently wide variety to illustrate the potentially daunting nature of the communications challenge. While the primary focus on implementers is on engineers, there are more professions and functions than just engineering, as noted above. And while the requirements "V" discussed above is a clever tool to visualize the implementation of applied physics, the values of other professions a need to be considered, and those professions need to understand the process so that they can appreciate how the systems engineering process values their inputs and products.

Starting the Transition from Broad Generalities to Application: Complications

The transition from the generalities above to application, as with the transition from sophomore physics to upper division applications, is complicated by the challenges of the real world.

Perhaps the first challenge faced by the systems engineering advocate is to prove a negative. There are no identical, side-by-side projects in which the only difference is the application of the systems engineering process. The on-line INCOSE "Systems Engineering Handbook," (v. 3.1), Figures 2-3 "Committed Life Cycle Cost against Time" and 2-5 "Cost and schedule overruns correlated with systems engineering effort," illustrates the value and benefit of the systems engineering process. But the illustration can be viewed with skepticism by those who are shy of the necessary investment and paradigm shift.

An added, and complicating, dimension to the challenge facing the systems engineering advocate is the fact that the roles and even the players themselves can change, a significant consideration regarding the project manager and the implementers over the life cycle of the project. Maintainability, as used in some airplane systems, can be used as an illustration.

In the early stages of a project the focus is in the definition of and decomposition of the maintainability requirements into the design of the system. Later, "tech order verification and validation," to use some Air Force terminology, occurs, which is followed by the operations phase of the life cycle. At this latter stage of the life cycle, "maintainability" has become routine and anticipated activities are being accomplished by the maintainers.

The Metrics/Value Proposition Sub-Group of the Intelligent Transit and Transportation Systems Working Group, in its October 13, 2009 meeting, commented on some of the challenges. Linda Martinez of SYSTRA Engineering commented that a problem to be overcome was that some people assumed that they already do systems engineering when in fact they do not, at least not completely. She considered that there was a need to sell to a whole organisation including specialists in other engineering fields and in non-engineering fields, such as quality, management, planning, and architecture.

In a similar vein, the "systems engineering" answer with which most systems engineering advocates would be comfortable is not always the correct answer under all circumstances. If the organization gains the most profit from inefficiency and if the customer (or customers) is the most satisfied when dealing with inefficiencies, then an off-nominal approximation of the systems engineering process (a de jure or du jour variant) might be sufficient.

Real-time pressures at critical junctures can result in decisions based on expediency. Performance, often being of particular interest during the initial selling of a project and during audits towards the end of a project, is sometimes sacrificed for cost and schedule. The analysis of new risks, as they arise in the heat of battle, can be minimalized.

A metric of success, particularly in communicating at the executive level, is the investment – time and money – an organization makes in the systems engineering process. However, an executive who subscribes to the value of the systems engineering process and is willing to invest in the necessary training and paradigm shift may have second thoughts if there is a risk of competitors poaching employees once the successful paradigm shift has occurred.

Another metric of success is codification. This is particularly the case as organizations become larger and as projects become more elaborate and complex. Codification too, however, has some risks. A well-written procedure is worthless if it is not followed (a point which couples back into whether or not an organization is willing to invest in training). As with almost anything, codification is vulnerable to the common mistake of thinking that if a little bit of something is a good thing, then a lot is better. Indeed there may well be a tipping point at which an organization's procedures pass through necessary and sufficient, and continue the "more is better" growth until codification becomes calcification. Codification carries the risk of "following procedures" replacing the original mission or goals of an organization. Carly Fiorina, a former CEO of Hewlett-Packard, illustrated the point at The Leadership Summit August 7-9, 2007, hosted by Willow Creek Association.

The discussion above is not comprehensive. Rather it is intended to provide a snapshot of one of the challenges faced by

OCTOBER SPEAKER MEETING #1
"Technical Leadership and the Role of the Systems Engineer for Program Success"
By Paul Cudney and John Silvas

John Thomas, Sr. Vice President at Booz Allen Hamilton and candidate for President of INCOSE, shared his views on the value systems engineers (SE) add to large programs. Successful programs excel in three team roles: management, build component, and definition and integration. Leadership exercised by the systems engineer, based on compelling technical mastery, is the key to successful execution of each team. However, technical prowess does not ensure success. The systems engineer has a key responsibility to lead decision makers to successful decisions bounded by schedule and budget. Mr. Thomas offered several vivid examples during his presentation. In each case, communication skills appropriate to each team's role were critical to resolving technical issues – the SE presented decision options and risks in terms relevant to the scope and responsibilities of the team. Wrong team decisions will eventually limit the effectiveness of the systems engineer.

Mr. Thomas' leadership perspective from the top generated challenging questions and cogent observations from the audience at Aerospace and three remote sites: Boeing Huntington Beach, JPL, and Palmdale. If you missed this meeting, you may have missed the leadership insight needed for your next team challenge.

One set of key take-aways was:
1. SE with strong leadership and communication skills with an ability to traverse different viewpoints, perceptions, and expectations of the different program players (management, builders, and SE&I). He provided specific guiding tenets for interaction with each of these teams as an effective technical leader and SE.
2. He provided a technical leadership example that illustrated the challenge for the SE given different perspectives on the desired product or outcome as you go through the lifecycle.
3. Overarching responsibility for SE is to ensure management team understands technical implications of capability, cost, and schedule constraints.
4. The audience resonated with this perspective of the SE role and stated that there is an inadequate amount of training on this topic in current college curriculums and available training classes today.
5. The audience added that more cost, performance, schedule, and risk trade study insight, methods, and best practices were required in the next generation of INCOSE SE handbook.

those of us in the systems engineering profession. For another perspective, see the article above from the first October 2009 speaker meeting. Comments and differing perspectives are welcome. Please send your comments to Jorg Largent, jorg.largent@incose.org.

To be continued…

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**
Dan Makiewicz	Systems Engineer	Northrop Grumman
Dennis Coyne	LIGO Chief Engineer	California Institute of Technology

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:

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2009 Board of Directors and Appointed Positions

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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	ma1teez@yahoo.com	or	communications@incose-la.org

Appointed Positions

Newsletter Co-editors:	Edie Ung, Jorg Largent	ma1teez@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