Vol. 8, Issue No. 3 March 2010

NEWSLETTER

2002, 2004-08 2003

2008 President's Award for Most Outstanding Chapter

UPCOMING EVENTS

March Speaker Meeting

Network-Centric Architecture and Systems Engineering

Mr. Kenneth Cureton

WHEN: March 16, 2010

See page 2 for more information

March 26 — 27 Two-Day Tutorial

SOA Reference Architecture and Application Service Design

At Loyola Marymount University

See page 4 for more information and watch for an email Reflector notice

Fourth Annual IEEE Systems Conference

WHEN: April 5 — 8, 2010

WHERE: San Diego, California

See page 3 for more information

Los Angeles Mini-Conference

The Los Angeles Chapter has started work on another Mini-conference!

WHEN: October 16, 2010

See page 2 for more information

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

Inside This Issue

Honorees Selected for the President's Award and the Susan Ruth Award for 2009

By Past President Eric Belle

Each year the Los Angeles Chapter of INCOSE honors two of our own for their contributions to the Chapter and for their furtherance of the systems engineering profession. Our Chapter is graced with many volunteers who attend to the many behind-the-scenes details that bring home the success of our speaker meetings, tutorials, and special events.

The Susan C. Ruth award is named for the service Susan provided during the first ten years of the Chapter's existence — service in every way possible while never seeking anything other than the betterment of the Chapter. It is meant to recognize LA Chapter volunteers who have given a significant amount of volunteer service to the chapter for at least five years.

The President's Award was started in 2003 as a way to distinguish a member who provided service to the chapter while the immediate past president was in office. This award is to honor those who step up and do outstanding work even when they are not elected or appointed to the task.

Susan C. Ruth Award: Richard Emerson, Jet Propulsion Laboratory (ret.), INCOSE Member since 1995

Dick Emerson has a long history of service to INCOSE-LA, having served as one of key supporters for the JPL community for many years. Most recently Dick served as the Technical Chair of the successful 2009 INCOSE-LA Mini-Conference and has agreed to take on the role of Conference Chair for our upcoming conference planned for Fall 2010. Congratulations, Dick!

President's Award: Jorg Largent, Northrop Grumman (ret.), INCOSE Member since 2003

Since assuming the Newsletter Co-Editor position, Jorg has played a major role in elevating it to a status which has been cited by the INCOSE Executive Board as standard for other chapters to emulate. In the capable hands of Jorg and Co-Editor Edie Ung, the Chapter now has an informative communications tool that reaches its members at least 10 times per year. His editorial columns have also served to spark renewed interest and debate on our profession's best practices. Congratulations, Jorg!

MARCH SPEAKER MEETING

"Network-Centric Architecture and Systems Engineering"

Presenter: Mr. Kenneth Cureton,
Senior Engineering Manager for Information and Knowledge Systems, The Boeing Company

PARTICULARS

WHEN: Tuesday, March 16, 2010, 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 questions and answers

WHERE: Final details in work; watch for a *Reflector* notice in your email

Remote sites will be available

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

Substantial refreshments will be provided at the host site. (Refreshments may not be provided at remote sites, or may be provided at no charge. Contact Remote Site POCs for more information).

ABSTRACT: Net-centric systems comprise a diverse category of large and complex systems whose primary purpose is providing network-type services. Net-centric systems are also frequently called "net-enabled" or "collaborative systems" — systems built on the partially voluntary and uncontrolled interaction of complex elements in an *ad hoc* environment. This presentation addresses the intersection between network engineering and the needs of systems architecting and engineering.

BIOGRAPHY: Mr. Cureton is a Senior Engineering Manager for Information and Knowledge Systems, a business area of The Boeing Company's Defense, Space and Security Systems. In that role he supports the guidance for all Boeing systems in becoming net-enabled and interoperable. He was named to this position in November 2002 as part of the original Strategic Architecture Initiative.

Cureton, an industry lecturer at the University of Southern California, has presented Masters-level engineering classes in systems architecting and engineering since 1996.

He is currently assigned as the Technical Council Vice-Chair (becoming Chairman on April 1, 2010) in the Network-Centric Operations Industry Consortium. An active member since 2004, he has served in various capacities, including chairman of the Engineering Processes Functional Team, now known as the Systems Engineering and Integration Team.

In his prior role, Cureton managed Strategic Architecture development efforts, including systems engineering and ongoing development of a common interoperable, network-centric architectural reference model that was to be used across all Boeing programs.

Before that he supported the conversion of aerospace and defense systems for Emergency Management System applications, with special emphasis on analysis and design of computer hardware, software, and data/voice communication systems for wild lands firefighting.

Previous Boeing assignments also included systems engineering, design, and analysis of various digital avionics systems, components, and software for space flight systems, including the Space Shuttle, Advanced Launch System, Single-Stage-to-Orbit, and Assured Crew Return Vehicle (a.k.a. Space Station lifeboats).

Cureton earned a Bachelor of Science degree in Physics from California State University, Los Angeles in 1988.

R.S.V.P.: R.S.V.P. by registering online at www.incose-la.org or by sending an email to registration@incose-la.org (please include "INCOSE-LA March Meeting" in subject line). Please be certain to indicate the site at which you will be attending. Additional requirements for the different locations are below.

Aerospace: Please complete R.S.V.P. (U.S. citizens and resident aliens) by Friday, March 12, 2010 (foreign nationals by Tuesday, March 9, 2010). You MUST R.S.V.P. to attend. NO EXCEPTIONS. If you are uncertain whether or not you'll be able to attend, DO make a reservation and indicate that you're uncertain. Please bring your picture identification (driver's license, passport and/or green card) to the meeting.

Boeing, Huntington Beach (for Boeing employees): 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.

Antelope Valley/Palmdale: open to all. Contact Mike Wallace, phone: 661-540-0290, email: m.wallace@ngc.com.

Pasadena – JPL: open to all. R.S.V.P. by one day prior to meeting. Contact Chris Delp, phone 818-319-3251, email: christopher.l.delp@jpl.nasa.gov

2010 Mini-Conference Coming This Fall to Los Angeles

By Dick Emerson

The Los Angeles Chapter of INCOSE is hosting another Mini-Conference on October 16, 2010. The Board of Directors is working on the details. Inputs and volunteers from the Chapter members are essential to launch another successful Mini-Conference. Suggestions for a theme are welcome; we are looking for topics that have been neglected or under-emphasized. Possible themes were discussed during the International Workshop in Mesa, and "Architecture – How Good is Yours?" was one suggestion. Dick Emerson, Technical Program Chair of the 2009 Mini-Conference last February, is returning as the General Chairman for this conference. Last year proved once again that volunteers are the key to a great conference. Individuals interested in serving as **Technical Chair** (establish the theme, coordinate presenters, and act as master of ceremonies), **Finance Chair** (establish a budget and coordinate finances), **Venue Chair** (obtain a venue and food service and coordinate interactions with the venue staff), or **Promotions and Communications Chair** (get the word out) should contact Dick Emerson at remerson9@gmail.com by March 22, 2010. The work level is moderate, and the rewards are great. Just one comment, "I learned so much…," justifies the meetings. It's also a great addition to your resumé.

Fourth Annual Systems Conference Hosted by the Institute of Electrical and Electronic Engineers (IEEE)

The IEEE and INCOSE have established an INCOSE track at the IEEE Systems Conference.

THEME: The theme of the IEEE Systems Conference is "Engineering Complex Integrated Systems and Systems-of-systems Implications for Systems Engineering, Systems Integration, and Systems Thinking."

CONFERENCE OBJECTIVES: This conference seeks to create an interactive forum for the advancement of the practice of system design, development, and management across the multiple disciplines and specialty areas associated with the engineering of systems. The conference will provide a venue for systems engineering practitioners, managers, researchers, and educators to exchange innovative concepts, ideas, applications, and lessons learned addressing:

- Applications-oriented topics on large-scale systems and systems-of-systems in the topics noted below
- Systems engineering, education, standards, processes, and methodologies for the systems-of-systems environment
- Research opportunities and results relating to systems-of-systems

John O. Clark of Northrop Grumman Mission Systems, an INCOSE Certified Systems Engineering Professional and a past president of the Hampton Roads Area Chapter of INCOSE is a technical program co-chair.

Papers will be presented, drawing from the following topics:

- Systems architecture
- Engineering systems-of-systems
- Risk management of complex systems
- Systems reliability
- Engineering processes for complex systems
- Service-oriented architecture
- Comprehensive cyber-security approaches to systems engineering
- Enterprise systems engineering
- Agile development methods of systems-of-systems
- Systems engineering quality management
- Systems modeling and simulation
- Systems verification and validation
- Systems engineering education and training
- Program/project management for systems-of-systems
- Systems-thinking benefits
- Technology transfer between academia and industry
- Societal and political impacts of systems and systems design
- The impact of systems engineering on other engineering fields
- Systems considerations such as:
  - Disaster response
  - Energy management & sustainability, including renewable energy
  - Communications systems
  - Medical systems
  - Gaming and entertainment systems
  - Transportation systems
  - Global Earth Observation
  - Sensors integration and application for a net-centric environment
  - Large-scale systems integration in any application area

WHO SHOULD ATTEND: As this conference addresses systems-of-systems, systems engineering, and systems of significant national and global impact, it will provide an informative, highly interactive, and educational venue for systems engineering practitioners, managers, researchers, and educators to exchange valuable information and develop new synergies to address the complex issues and problems of complex systems and systems-of-systems.

WHEN: April 5 — 8, 2010

WHERE: Hyatt Regency Mission Bay and Marina, San Diego, California

COST: $795 (includes entrance to all sessions, one copy of the proceedings on CD, all coffee breaks, luncheons, and the Tuesday Welcome Reception.)

REGISTRATION and INFORMATION: For more information about the conference, or to register, go to:
http://ieeesystemscouncil.org/index.php?option=com_content&view=article&id=24&Itemid=32.

For information on the host site, the Hyatt Regency Mission Bay Spa and Marina, go to:
http://missionbay.hyatt.com/hyatt/hotels/index.jsp

High School Rocket Science and a Single-Cycle Viscous Damper

By Jorg Largent

A team of students demonstrated intuitively-applied systems engineering in the use of a viscous medium. Their challenge: to build a rocket that would carry an egg to a specified height and come back down without breaking the egg. A design constraint: they could not use a parachute to slow the descent, although a streamer was permissible. Protecting the egg against the impact of landing became a challenge, and, unaware of terminology such as "viscosity," they developed two solutions. One solution was to encase the egg in peanut butter, and the other was to encase the egg in a mixture of cornstarch and water. Both solutions worked in tests that simulated the impact of landing.

A problem arose, as is the case with almost every project. Both solutions resulted in too much weight, so it was back to the drawing boards, figuratively, to find a solution that was lighter, functionally equivalent to their peanut-butter and cornstarch-mixture successes, and within the limits of their meager budget, all the while not jeopardizing the timeline to qualify for the national competition.

Sound familiar?

March Two-Day Tutorial
SOA Reference Architecture and Application Service Design
Dr. Steven P. Fonseca

ABSTRACT: The service-oriented architecture (SOA) style is the result of information technology best practices evolving to achieve highly-valued, system-quality attributes, including flexibility to respond quickly to changing business requirements, reusability to leverage software capabilities across the enterprise for cost avoidance, maintainability to reduce total cost of ownership, and interoperability to integrate software across technical silos for added business value. SOA codifies many of its best practices in the definition of complementary and integrated processes, information, and software architectures. These architectures are fundamental to a successful SOA initiative, and more broadly, are illustrative of the role that architecture plays in modern, large-scale software development. Using the SOA style as a case study, the first day of this tutorial provides instruction on how to create a set of interrelated architecture definitions that can serve as the foundation for architecture-driven software development. The second day of instruction covers best practices for achieving interoperability, including enterprise-integration design patterns and techniques for governing communication.

TARGET AUDIENCE: The course is primarily for senior system software engineers and architects that have or will have significant design responsibilities. Managers with technical backgrounds will find the course useful for understanding modern approaches in software design. In addition, SOA should be of interest to a large base of systems engineers in any enterprise.

INSTRUCTOR BIOGRAPHY: Dr. Fonseca is a chief software architect with 12 years of experience helping organizations achieve state-of-the-practice results for software development with a focus on distributed systems middleware and applications in mission-critical and applied R&D contexts. He has held positions at the Jet Propulsion Laboratory, Hewlett-Packard Labs, British Telecommunications Labs, Intel, and NASA Ames Research Center. His technical interests include service-oriented architecture, ontologically-based information systems, enterprise-class middleware, the dynamics of organizational change, and R&D technology transfer. Steven completed his Ph.D. in Computer Science from UC Santa Cruz in collaboration with HP Labs. Steven completed an M.S. in Computer Science from UC Santa Cruz and a B.S. in Computer Engineering from UC Davis. He is currently pursuing an M.B.A. at UCLA.

WHERE: Loyola Marymount University (north of LAX in Westchester).

COST: INCOSE members, $175; non-members, $225 (includes continental breakfast and lunch)

WHEN: March 26 — 27, 2010

REGISTRATION: Register using the website at www.incose-la.org, which leads to Paypal for payment. If preferred, send an email to registration@incose-la.org (please include "INCOSE-LA March Tutorial" in the subject line) and mail a check payable to INCOSE-LA to Shirley Tseng, 10 Rutherford, Irvine, California 92602.

If evolution really works, how come mothers only have two hands? Milton Berle

February Speaker Meeting in Retrospect

by Jennifer P Arroyo

Robert Karban, a Software Engineer at the European Southern Observatory (ESO), spoke to the Chapter at the February Speaker Meeting. He discussed the use of Model-Based Systems Engineering (MBSE) and Systems Modeling Language (SysML) in the creation of telescopes. Robert gave an overview of the SE^2 telescope model and shared some of the team's triumphs and struggles.

In 2007 a handful of teams embarked on a MBSE challenge. Their goal was to apply MBSE principles to real-world, non-trivial problems. In many ways these teams were trail-blazing, demonstrating that SysML is a viable modeling language. Currently, only two active challenge teams remain, Space Systems and SE^2. Robert is a member of the SE^2 team.

The SE^2 team created their first system model by reverse engineering the documentation completed for the Active Phasing Experiment (APE). Following this activity the team leveraged their APE SysML model to jumpstart an MBSE endeavor for the European Extremely Large Telescope (E-ELT) The E-ELT has a diameter of 42 meters and is composed of nearly 1,000 hexagonal segments. The APE provided the groundwork to successfully control individual segments to produce a continuous mirror surface. This model captures requirements, interfaces, behavior, structure, data, performance, and verification.

Robert provided a live demonstration of the E-ELT model and answered the group's questions. He admitted that creating the initial APE SysML model was challenging. The team encountered difficulties when determining the level of detail and type of formal systems engineering method to employ. The SE^2 team also wrestled with the appropriate level of abstraction, how to display different viewpoints, and the best method for modeling different contexts. Fortunately, the creation of the E-ELT model is progressing faster than the APE model. It is encouraging to know that the MBSE learning curve eventually tapers off.

The SE^2 website (http://mbse.gfse.de/) is a valuable resource for additional data on the SE^2 activities. It does a terrific job documenting its work and publishing results. One can find a list of best practices and guidelines located in the SE^2 Cookbook. There is also an online tour of the APE model. Those who were not able to attend the February meeting can catch up by downloading Robert's presentation from the INCOSE-LA website (www.incose-la.org).

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
Ronald Becker	Process Specialist	Science Applications International Corp.
Gerald Mulvey	Systems Engineer	Northrop Grumman Aerospace Systems
David Lin	SEIT Engineer	Northrop Grumman Corp
Bret Kraidman	Senior Systems Engineer	SAIC, Inc.
Jason Allami	Clinical Systems Engineer	St. Jude Medical
Michael Broadwater	Sr. Oracle DBA	Cedars Sinai Medical Ctr
David Parsley	Program Manager	Northrop-Grumman Corporation
Steven Meagher	Structural/Mechanical Design Engineer	Boeing
Kathryn Borrud	Systems Engineer	Raytheon

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:

2010 Board of Directors and Appointed Positions

Elected Officers

President:	Rosalind Lewis	rosalind.lewis@aero.org	or	president@incose-la.org
Vice-President	Beth O'Donnell	elizabeth.l.o'donnell@boeing.com	or	vicepresident@incose-la.org
Past President	Eric Belle	eric_c_belle@raytheon.com	or	pastpresident@incose-la.org
Secretary	Josh Sparber	joshua.sparber@dcma.mil	or	secretary@incose-la.org
Treasurer	Marsha Weiskopf	Marsha.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:	Shah Shelbe	shah.selbe@boeing.com	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		
Venue Chair	Shah Shelbe	shah.selbe@boeing.com		
Representative to San Fernando Valley Engineers' Council	Stephen Guine	Stephen.Guine@ngc.com		
Professional Networking Manager	Nehal Patel	Nehal_P1_Patel@raytheon.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