



# NEWSLETTER



2004-14



2015-16



**2008, 2012  
President's Award  
for Most  
Outstanding  
Chapter**



## Dr. Elliot Axelband A Tribute

*By Dr. Azad Madni*

Dr. Azad Madni wrote an article memorializing the late Dr. Elliot Axelband, and included testimonials from professionals and colleagues from around the world. Dr. Madni's article was published in the INCOSE *Systems Engineering Journal*. The full article can be read at the following link: <http://onlinelibrary.wiley.com/doi/10.1002/sys.21391/full> from the INCOSE webpage. An abridged version follows below.

Elliot Axelband, INCOSE Fellow and a champion of systems engineering, passed away on May 14, 2017, two weeks shy of his 80th birthday. His passing created a void in our INCOSE community that will not be filled any time soon. Elliot was warm, genuine, and caring. Blessed with a sparkling sense of humor and a quick wit, Elliot was always fun to be around. A spirited debater, he could take a principled stand and hold his ground like no other. A born leader with considerable charm, Elliot was above all a doer. Several years ago, I remember meeting Mal Currie, former CEO of Hughes Aircraft Company, at a University of Southern California (USC) dinner. Elliot's name came up. I recall Mal saying that at Hughes when he really needed to get something important done, he turned to Elliot. And Elliot always got it done.

My fondest memories of Elliot were the many interactions that we had after I took over as the Director of USC's Systems Architecting and Engineering (SAE) Graduate Program in 2009.

*(See "Dr. Axelband," on page 14)*

## 2018 Elections Meet the Candidates

During the month of December the members of the Los Angeles Chapter of INCOSE are called on to select the new members of the Board of Directors.

The transition from 2017 to 2018 is approaching quickly. Your 2017 Board of Directors (BoD) calls on you, the members of the Chapter, to take time to read your slate of candidates for the 2018 Board of Directors. The officers to be elected this year are: President, Vice-President, Secretary, Treasurer, Programs Director, and Membership. These candidates are presented to you on the pages that follow.

The success of the Los Angeles Chapter is driven by two things: our officers and our members. INCOSE has acknowledged the Chapter with the Gold Circle Award every year since 2003 and with the Platinum Circle Award every year since its inception in 2015. However, more important than the awards are the services and value provided to and available to the Chapter members.

For those who are not familiar with the process of our Chapter elections, an explanation: the BoD consists of a voting body and an appointed body. The voting body consists of ten positions, five of which are the Executive Officers and five of which are the At-large Directors.

*(See "Candidates" continued on page 15)*

**Elections for 2018 are coming up! If you know of someone who would be interested in joining the leadership team, please contact Terry Rector at [terry.rector@engineer.com](mailto:terry.rector@engineer.com)**

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## OCTOBER SPEAKER MEETING

### A Systems Engineering Solution to Clean up the Oceans

#### ABSTRACT:

The 2017 INCOSE International Symposium (IS) Practitioner's Challenge Delivery Team was Nicole Hutchison, Robert Edson, Megan Clifford and Jaci Pratt. The team presented a problem and challenged the assembled systems engineers to work together to present a solution to the problem. This year's problem: About 19 billion tons of plastic waste end up in the oceans each year, and the amount of global trash is expected to increase every year for the next century. What can we do about this plastic trash problem?

Come to the next speaker meeting at the Aerospace Corporation on October 10, 2017 for an opportunity to learn how the systems engineers self organized, discussed the issues, and presented a way forward to clean up the plastic, reuse or dispose of the plastic, and prevent plastic from entering our oceans in the future .

#### ABOUT THE SPEAKER:

Phyllis Marbach is the current President of Los Angeles Chapter of INCOSE. She attended IS 2017 and participated in the Practitioner's Challenge with about a dozen engineers from multiple disciplines and countries. Phyllis retired from Boeing last year after 37 years working as a development, systems, software and project engineer as well as manager, depending on the job and skills needed. She was a Boeing Designated Expert in both Software Engineering and Systems Engineering as well as Agile Practices. She has presented numerous papers at conferences in the past 10 years, is a member of several INCOSE working groups, and is a Certified SAFe(R) Program Consultant and trainer.



## NOVEMBER SPEAKER MEETING

### Best Practices and Lessons Learned from MBSE Pilot Programs

#### ABSTRACT:

Model-Based Systems Engineering (MBSE) can offer significant benefits to organizations responsible for managing increasingly complex enterprises. However, implementing MBSE is not a straightforward task, and there are many pitfalls along the way.

An incremental approach, built on solid systems engineering architecting principles, focused on supporting major stakeholder decisions, and informed by best practices and lessons learned from previous efforts, offers the best chances of success. Five years of experience in working MBSE efforts at multiple levels have produced many lessons learned and recommended best practices. This report authored by Ryan Noguchi will be briefly summarized in his presentation.

#### ABOUT THE SPEAKER:

Ryan Noguchi is the Director of the Space Architecture Department in the Systems Engineering Division at The Aerospace Corporation. Ryan received a B.S. in Mechanical and Aerospace Engineering from Princeton University and an M.S. in Mechanical Engineering from the University of California, Berkeley. He has been with The Aerospace Corporation for 20 years, and led numerous system acquisition, development, integration, and mission assurance efforts. His current responsibilities focus on the refinement and application of methodologies for model-based systems engineering, and system-of-systems engineering.



## SPEAKER MEETING AND HOST SITE DETAILS

Cost: Speaker Meetings are free for members.  
There is a \$10.00 charge for non-members.  
The Speaker Meetings start at 5:30 p.m.  
and end at 7:30 p.m.

#### Agenda:

5:15-5:30 Sign-in and registration  
5:30-6:00 Networking and refreshments  
6:10-6:20 Introduction  
6:20-6:30 Working Group presentation  
6:30-7:30 Guest speaker presentation

The Aerospace Corporation facility:

NOTE: Registering to attend at the Aerospace facility is important! Aerospace, as a part of their hosting Speaker Meetings, needs to know the names of those in attendance.

The address:

Building D8/1010  
200 N. Aviation Boulevard  
El Segundo, California  
The facility is in the area south of the 105 freeway and west of the 405 freeway.  
The facility is on the east side of Aviation Boulevard, just north of El Segundo Boulevard.

Elections for 2018 are coming up! If you know of someone who would be interested in joining the leadership team, please contact Terry Rector at [terry.rector@engineer.com](mailto:terry.rector@engineer.com)

## Systems Thinking **Free** Tutorial October 14, 2017 Caltech

What is systems thinking? How does systems thinking, or the lack of it, affect you and your work? Come to our free *Systems Thinking Tutorial* to learn more about systems thinking from Dr. Rick Hefner, Program Director for the Caltech Center of Technology Management Education, and participate in a Systems Thinking Roundtable, facilitated by Dr. Sue Gabriele of Gabriele Educational Materials and Systems. The presentations will be followed by lunch and the opportunity to network with fellow INCOSE-LA members.

### **LOGISTICS:**

When: October 14, 2017, 9 a.m. until 2 p.m.

Where: California Institute of Technology (Powell-Booth building, room 120), 1200 E California Blvd., Pasadena, California. A campus map is provided on the registration link, below.

Visitors may park in any unreserved space. Parking permits are required between the hours of 7:00 a.m. and 5:00 p.m. Monday through Friday, and may be purchased from the machines in the lot or parking structure. Permits are not required on the weekend.

### **Cost: no charge**

### **AGENDA:**

- 9:00 a.m. – 10:55 a.m. Systems Thinking Introduction, Dr. Rick Hefner
- 10:55 a.m. - 11:05 a.m. Break
- 11:05 a.m. - noon Systems Thinking Roundtable, Dr. Sue Gabriele
- Noon – 1:00 p.m. Lunch and networking
- 1:00 p.m. – 2:00 p.m. Wrap-up, next steps

### **REGISTRATION:**

<http://events.r20.constantcontact.com/register/event?oeidk=a07eejw1c4la2c89235&llr=l4ihvgeab>

**QUESTIONS?** Contact [prmarbach@gmail.com](mailto:prmarbach@gmail.com) if additional information is needed.

### **SYSTEMS THINKING ABSTRACT**

Systems thinking is an approach to understanding a system by examining the interactions among its components and between the system and the external environment. Systems thinking is essential to proper systems engineering because it provides a framework for understanding and influencing the system's behavior. The ability to design a system relies on applying systems thinking rules to the definition of the system boundary, structure and interfaces to predict system performance.

This workshop will discuss the fundamental concepts, tools, and methods of systems thinking, and describe how their application distinguishes systems engineering from more traditional product development. Participants will apply these techniques to various systems engineering problems in this hands-on and interactive workshop.

(See "Systems Thinking Tutorial," on page 17)

## The President's Corner

By Phyllis Mabach

INCOSE-LA's strategic direction for 2017 is "Encourage Systems Thinking for Wider Community Problems". To continue the conversation about systems thinking, there will be a Systems Thinking Tutorial consisting of a two-hour tutorial of Systems Thinking by Dr. Rick Hefner, a one-hour Systems Thinking Roundtable facilitated by Dr. Sue Gabriele, a one-hour networking lunch and an hour of wrap-up. The event will be held on October 14, 2017 (article to the left).

Besides the systems thinking tutorial, our Chapter has a number of other terrific educational opportunities in October and November. Friday, October 13, 2017 we have a Systems Engineering — Professional Development Day that will be a day-long webcast broadcast from the Great Lakes Regional Conference (GLRC). Our Chapter will be one of nine chapters joining GLRC in this day of professional development (article on page 5).

On Saturday, November 18, 2017 we will host an Model-Based System Engineering tutorial at The Aerospace Corporation.

Please plan to join us for one or all of these educational days to enhance your skills in systems engineering and network with others. See our webpage for links to the registrations for all these events, [www.incose.org/los-angeles](http://www.incose.org/los-angeles). Many thanks to Tony Magorno, INCOSE-LA's Systems Engineering Education Director.

Another article in this *Newsletter* describes our Strategic Planning Meeting that was held in Manhattan Beach on August 26 (page 12). We hope you will attend the next SPM on November 11, 2017 (proposed agenda below) to let us know your thoughts about how our Chapter can better serve you and our community.

### **Fourth Quarter Strategic Planning Meeting Agenda November 11, 2017 Mark Your Calendars and Join the Group!**

- Welcome/Intro/Objectives (9:15 a.m.)
  - INCOSE-LA 2017 Accomplishments, Plans and Vision
  - Communication Committee Report (10 a.m.)
    - ◊ Public Webpages layout and possible changes
  - Programs Committee Report (11 a.m.)
    - ◊ Speaker Meeting evaluations and changes and improvements for 2018
  - Ways and Means Committee Report (11:30 a.m.)
    - ◊ Election / Bylaws / Budget 2018
  - Lunch (noon)
  - Education Committee Report (12:30 p.m.)
  - Membership Committee Report (12:45 p.m.)
  - Roundtable on Systems Thinking and Community Problems (1 p.m.) (facilitator to be named later)
  - Look at 2017 Calendar and Action Item Review (2:00 p.m.)
- Subject to change as need. Inputs welcome; contact Phyllis at [prmarbach@gmail.com](mailto:prmarbach@gmail.com).



## August Speaker Meeting 3DEXperience Platform For Systems Engineering

The August Speakers Meeting featured Christopher Alain Jones who spoke on of Dessault Systèmes' 3DEXPERIENCE® Platform and Modelica.

Christopher graduated from the Germany's University of Paderborn in 2010 with an electrical engineering diploma. While matriculating at the University of Paderborn he focused on the numerical simulation of electro-magnetic waves and waveguides. Following that he spent two years researching plasmonics waveguides at the University of Hagen, also in Germany.

In 2013 he joined Modelon GmbH and started using MBSD and Modelica in different projects at various automotive original equipment manufacturers in Europe. In 2015 Modelon GmbH was acquired by Dassault Systèmes and, in the summer of 2016, Christopher relocated to Los Angeles to support the systems engineering and Modelica efforts in the North American market.

Christopher opened with a brief discussion of some of the recent changes in project management, commenting that Jaguar has banned PowerPoint from meetings.

His then discussed Dessault Systèmes' 3DEXPERIENCE® Platform, its history, and the announcement that, "Boeing has signed a billion-dollar contract with French industrial software company Dessault Systèmes to modernize its production system...."

The 3DEXPERIENCE® Platform is a, "...business experience platform. It provides software solutions for every organization in your company – from marketing to sales to engineering – that help you, in your value creation process, to create differentiating consumer experiences. With a single, easy-to-use interface, it powers Industry Solution Experiences – based on 3D design, analysis, simulation, and intelligence software in a collaborative, interactive environment. It is available on premise and on cloud."

Christopher cited five "key takeaways" about the 3DEXPERIENCE® Platform:

1. Object and model based
2. Collaborative Engineer
3. Digital continuity and traceability
4. No silos
5. Single version of the truth

The chart with this list was overlaid with a banner: "Systems Engineering."

Christopher said that one of the benefits of the system is that it "tears down the silo-walls" and that it provides centrally managed requirements, parameters, test cases.

Christopher explained that Modelica is open source software or language managed by Modelica Organization. He described one of the strengths of modelica as being the ability to model multiple factors and systems. He also described one of the powers of the tool set as being the availability to library-based information on components to be used as a part of the design of a system.

*(See "August Speaker Meeting," on page 14)*

## September Speaker Meeting The Connected Vehicle Revolution

*By Karen Grothe*

On September 12, Kay Das spoke to the Los Angeles Chapter of INCOSE. He discussed the current research and design efforts for electronic safety systems to improve safety on roads and highways. These systems include vehicle-based systems and infrastructure systems that communicate with each other and with personal mobile devices, working collaboratively in an intelligent and reconfigurable network environment. This environment contains multiple control loops, individual vehicle drivers and pedestrians, which are continuously moving.

Vehicles will not only communicate with other vehicles but also with infrastructure. Information flow will go in both directions, with the infrastructure receiving data about the vehicle speed, position, orientation, driver health, etc., while transmitting data on safety threats, traffic, and environmental conditions to the vehicle or pedestrian. In addition, vehicles will communicate between themselves as well, reducing latencies that may occur if vehicles only rely on the infrastructure to provide information. This brings up issues of what order communication should take place: should a car communicate with the infrastructure first or with other vehicles first?

This connected vehicle system of systems (of systems) provides new opportunities to many industries and institutions, such as car and electronics manufacturers, software and application developers, aftermarket product developers, map developers, insurance companies, health industry, and driver instruction. The connected vehicle revolution will require cheaper sensors, electromagnetic spectrum availability, integrated systems (which means more software), more accurate GPS/GNSS and more investment in terrestrial navigational methods, coordination between automobile industry and Silicon Valley system designers, information security protection and information integrity assurance, and product validation.

Mr. Das gave overviews of the automobile and the communication/consumer industries and compared the development of autonomous vehicles to the development of autopilot in the aviation industry. He proposed that the automobile industry is moving towards vehicles which are automated, electrified, and connected, which will impact pollution and big data, and require machine intelligence to handle machine-to-machine (M2M) communication.

Because human life is in the loop in vehicle systems, Mr. Das emphasized that safety is paramount. He pointed out that in the airline industry, two highly-trained pilots are required: the pilot who manipulates the controls and the co-pilot who monitors the automated systems. Because humans tend to be poor monitors, airliners also have extensive visual and aural warnings for "out of limit" conditions. Automobile automation will need to monitor the enforcement of road rules and speed limits.

Validation of autonomous vehicle systems is key because the cost of system failure is high with human life in the loop.

*(See "September Speaker Meeting," continued on page 16)*

# Why Be an Engineer?

## What is Your Answer to the Question a Fifteen-year-old Would Ask:

### “Why Should I Become an Engineer?”

**NOTE:** whatever, the answer, it must be appealing to the teenager, not the engineer.

#### Background:

At the Mars Rover Expo, (see pages 6 and 7) a science, technology, and Mathematics outreach, a teacher from the South Central area of Los Angeles approached the International Council on Systems Engineering table asked for help answering the question: why take physics and chemistry to become an engineer?

In terms of helping her students, which she really wanted to do, she did not know how to answer that question. Her challenge was summed up in her trying to tell students that they needed to take chemistry and physics, but their response was that they did not need chemistry and physics to “flip burgers.”

**NOTE:** a recent press release said a restaurant in Pasadena was using a robotic burger-flipper.

One of her questions was along the lines of, “what are the rewards of being an engineer?” As engineers we all have our easy answers – solving problems, designing systems and making them work for the first time, a rocket launch, a first flight, – but the challenge is to answer the teenager’s question with an answer that has meaning to the youngster, not to the engineer.

There were some good examples at the Expo. Some engineers from the Air Force Space Command whetted the students’ appetite with spherical robots in a maze. The students could “operate” the robots using a laptop and wifi. The real “hook” came when some of the students discovered that if they made a robot go fast enough it would jump the PVC pipe that made up the “walls” of the maze.

So too the Ozobots brought in by StellarXplores. The students drew multicolored paths for the Ozobots and the Ozobots, as they moved along a path, would change colors to match the color of the path underneath them.

A third activity that seemed to engender enthusiasm were straw rockets. The students built them and then launched them. There were protractors and a tape measure to measure distance so they students could determine the launch angle which would result in a maximum range, but that step in the process did not seem to engender the same enthusiasm.

So how do we lead them to the transition from the novelty of building and launching a straw rocket to Newtonian mechanics and relative maximums and minimums (plus all those other studies)?

So how do we support this teacher and her students? We talk about our outreach, so let’s go to South Central, or wherever we are needed, and encourage those students. But when we get there, what shall we say?

## INCOSE-LA Systems Engineering Professional Development Day The Details

**What:** The eleventh annual INCOSE Great Lakes Regional Conference is being held from October 11 to 14, 2017. On Friday, October 13, 2017, the conference is hosting a video broadcast “Professional Development Day.” The Los Angeles Chapter is happy to be participating as one of nine remote sites. The conference theme is “Superior System Solutions for Today’s Complex Environments.” Topics and speakers are shown in the agenda below. Times shown are adjusted to pacific time. Please note that our agenda puts their first 2 hours at the end of our day.

**When:** October 13, 2017, 8 a.m. until 6 p.m.

**Where:** California Institute of Technology, 1200 E. California Boulevard, Pasadena, California, Powell-Booth Building, room 120. Visitors may park in any unreserved space. Permits are required between the hours of 7:00 a.m. and 5:00 p.m., Monday through Friday, and may be purchased from the machine in the lot or parking structure. Permits are not required on the weekend.

**Cost:** \$30.00 for INCOSE members (see the registration page for non-member and other options).

#### Registration:

[http://www.incose.org/glrc11/program/SE\\_PDD](http://www.incose.org/glrc11/program/SE_PDD)

From this page click on the link for the Los Angeles Chapter at Caltech in Pasadena to register.

#### Agenda:

- 8:00 a.m. – 8:30 a.m., arrive, sign-in, welcoming remarks from our Caltech host, Dr. Hefner.
- 8:30 a.m. – 9:10 a.m. , “What Every SE and PM Needs to Know About the Update to International Risk Management Standard INCOSE/IEC/IEEE 16085.” Presenters: Jack Stein, Mary Beth Chrisses and Paul Heininger
- 9:15 a.m. – 9:55 a.m. “Cyber-Physical Systems Engineering Mission Risk Analysis.” Presenter: David Flanagan.
- 10:00 a.m. – 11:00 a.m. break, networking, and an opportunity to purchase lunch from the Caltech cafeteria.
- 11:00 a.m. – 11:15 a.m. “Platinum Plus Sponsor Address. Presenter: NoMagic
- 11:15 a.m. – 11:55 a.m. Sigma Theta Mu Lecture – “Reimagining Systems Engineering.” Presenter: David Long
- 12:00 p.m. – 12:40 p.m. “Learning from Nature’s Methods of System Architecting and Engineering.” Presenter: John Gill.
- 12:45 p.m. – 1:25 p.m. “Risk Analysis of Medical Device System of Systems.” Presenters: Rand Whillock, John Hatchliff, and Paul Jones.
- 1:30 p.m. – 2:00 p.m. break, networking, visit the Cafeteria if still hungry.
- 2:00 p.m. – 2:40 p.m., “Testing Mettle: Demonstrating the Capability and Benefit of Model Based Systems Engineering.” Presenter: Matthew Sease.

(See “Professional Development,” on page 13)



## Science, Mathematics, Engineering, and Technology, plus Mars and Saturn An Expo Reaching out to the Future of the Profession

Members of several professional societies met at the S Café of the Northrop Grumman Corporation (NGC) in Redondo Beach on Saturday September 16 to talk with middle school, high school, college and university students about science, technology, engineering and mathematics (STEM) career opportunities.

The event was attended by at least 200 students, parents, teachers and exhibitors. This annual event was also an opportunity for the professional organizations to share with students their STEM career options, while the adults in attendance could learn about these societies and become new members (and even future volunteers).

The afternoon event kicked off with a tour of NGC's museum followed by opening remarks from Fred Lawler, the event organizer. Students visited displays provided by the professional societies, participated in operating robots through a maze and assembled a rocket from straws. The outside STEM activities were courtesy of Lieutenant Colonel Alec Porter of the United States Air Force Space and Missile Systems Command STEM Outreach Contact.

Highlights of the event included a presentation from Dr. Jon Arenberg, the Chief Engineer of the James Webb Space Telescope (JWST). He described the telescope mission and design details to accomplish that mission. See <https://m.youtube.com/watch?v=v6ihVeEodo#> for a current video about the future launch and deployment of the telescope. Tours were given through the JWST high bay where the solar shields and support structure await the telescope return for final testing. Another highlight was remarks from Charles Baker, NASA-JPL Curiosity Mission Engineer who described not only the Curiosity mission and accomplishments on Mars but also the latest pictures sent from Cassini before it plunged into the atmosphere of Saturn.

INCOSE and the students and professional societies throughout southern California region give a big "Thank You" to our host, NGC, and to Stephen Guine, for their support and dedication to this STEM outreach event. Thanks also go to Fred Lawler for his tireless coordination of this event, now having completed its sixth year.



Dr. Jon Arenberg, above, sharing with two of the many in attendance. Stephen Guine a past President of the Chapter, below, visiting the INCOSE-LA table, and Phyllis Marbach, current President of the Chapter hosting the Chapter's table (lower left) — the fidget spinners were popular with the children.





## The professional organizations and societies that made the Mars Expo and STEM Event Happen!

- The Armed Forces Communications & Electronics Association (AFCEA)
- American Institute for Aeronautics & Astronautics (AIAA)
- A-MAN (STEM Science Center)
- Association of Information Technology Professionals (AITP)
- American Society of Mechanical Engineers (ASME)
- EnCorps (STEM Teachers Credentials Program)
- Engineering Council (OC)
- Heritage Center (STEM Outreach at SMC, LA-AFB)
- Institute of Engineering & Technology (IET)
- Institute of Industrial & Systems Engineering (IISE)
- Institute of Electrical & Electronics Engineers (IEEE)-CSULB Student Chapter
- International Council on Systems Engineering (INCOSI)
- Investors Forum
- Information Systems Security Association (ISSA)
- National Space Society (NSS)
- Open Tech Initiative
- Optical Society of SoCA (OSSC) (in conjunction with Irvine Valley College (IVC))
- Society of Hispanic Professional Engineers (SHPE)
- Society of Women Engineers (SWE)
- The Planetary Society

The personnel from the Jet Propulsion Laboratory (JPL), and the National Aeronautics and Space Administration (NASA) deserve special recognition for their “providing” the star of the show, the Mars Rover, “Curiosity”, and a special added attraction, near-real-time pictures from the Cassini satellite as it concluded its mission to Saturn.

Our thanks to these fine organizations and to the Northrop Grumman Corporation for hosting this event.



But still try, for who knows what is possible?  
Michael Faraday



OUR FUTURE  
SYSTEMS ENGINEERS  
ENJOYING THE MARS EXPO AND  
VISITING THE INCOSI-LA TABLE



## INCOSI-LA Chapter NEWSLETTER

Vol. 15: Issue 5, October — November 2017

## Free Training on INCOSE Systems Engineering Handbook V4

The INCOSE Training Working Group and the INCOSE Los Angeles Chapter are presenting free training webinars on the INCOSE Systems Engineering Handbook V4. This training is available for all INCOSE members and employees of INCOSE Corporate Advisory Board organizations. This weekly series will begin on Thursday, October 5, 2017 and will run through April, 2018. The training starts at 5 p.m. Pacific time.

Log-in to INCOSE Connect using your INCOSE username and password.

Click on: <https://connect.incose.org/Library/Tutorials/training/SitePages/Home.aspx>

Scroll down left hand column to SE Handbook V4.0 Tutorial.

Click on Tutorial ID: 01\_October 2015

A list of "Tutorial Sessions" will be displayed. Click on the desired session and download the files. Read the READ ME file in the Tutorial Session: 00\_Shared Documents area to access the webinar or telecon.

The SE Handbook V4.0 tutorial also provides tips and personal help in systems engineering. A certificate of completion is provided on request. The tutorial consists of weekly (twice a week Feb-Apr) 90-minute sessions.

If you plan to attend the Rockwell Collins on-site training sessions please register at the link provided above. Otherwise, there is no need to register, just join in.

Reading of the applicable sections of the INCOSE Systems Engineering Handbook V4.0 before each session is strongly recommended. Course materials include the shared documents, tutorial slides, and questions. Most slides contain speaker notes in the PowerPoint Notes View. Phyllis Marbach, current President of INCOSE-LA, will be facilitating the sessions. Phyllis will collect questions and reach out to our systems engineering professional (ESEP/CSEP/ASEP) community within INCOSE-LA for answers to those questions.

Questions? Contact [prmarbach@gmail.com](mailto:prmarbach@gmail.com) if additional information is needed.

Read Me - Webinar Connection Information

There are 2 methods to connect to the Webinar:

1. INCOSE GlobalMeet:

a. VIDEO

<https://incose.pgimeet.com/GlobalmeetOne>

The INCOSE GlobalMeet and Telecon combined infrastructure has been set to handle up to a total of 300 participants. The INCOSE GlobalMeet site will be open approximately 30 minutes before the start time. If the INCOSE GlobalMeet method does not function correctly, use the INCOSE Download method.

b. AUDIO

1. Call My Computer (recommended):

a) Tell GlobalMeet to call your computer.

b) You will either need speakers and a microphone, or a headset. Alternatively, you can tell GlobalMeet to call your phone.

c) Mute your microphone!

2. Call My Phone:

a) Tell GlobalMeet to call your phone number.

b) Alternatively, download and open the READ ME - Telecon Connection Information file to view the telecon

numbers and the participant passcode number then dial the telecon.

c) Mute your phone! (the Mute on/off code is: \*6)

d) For Operator assistance: \*0

e) The INCOSE GlobalMeet audio capacity has been enabled for up to 125 global callers. GlobalMeet use of Call My Computer is highly recommended to avoid costs.

• c. FIRST-TIME USERS

To save time before the meeting, check your system to make sure it is ready to use GlobalMeet.

• d. TROUBLESHOOTING

Unable to join the meeting? Follow these steps:

♦ 1. Copy this address and paste it into your web browser:

<https://incose.pgimeet.com/GlobalmeetOne>

♦ 2. If you still cannot enter the meeting, contact support:

Premiere Global Help: 1-888-569-3848 or 1-719-389-0133 or:

e. NOTICE

GlobalMeet can be used to **record** meetings. By participating in this meeting, you agree that your communications may be monitored or recorded at any time during the meeting.

2. INCOSE Download:

• a. Download the slides from the INCOSE tutorial site.

• b. The INCOSE GlobalMeet Call My Computer or toll telecon number are the preferred methods. Refer to the READ ME - Telecon Connection Information file.

• c. Follow along the audio using the slide numbers.

Please use Call My Computer due to the high costs incurred using the telecon. Use the INCOSE telecon numbers only if needed. Mute your phone! (the Mute on/off code is: \*6)

Read Me - Telecon Connection Information

Login and Meeting Details:

<https://incose.pgimeet.com/GlobalmeetOne>

Call My Computer or telecon toll numbers are preferred to save INCOSE telecon costs.

Use the telecon only if Call My Computer is not available.

Guest Passcode: 690 424 1038

Dial-in Numbers:

USA /Canada (toll free): 1-866-546-3377

USA/Canada: 1-719-234-7872

Participant Features:

Mute and Un-mute	toggle *6
Increase volume	*4
Decrease volume	*7
Increase microphone	*5
Decrease microphone	*8
Help menu	*1
Reservationist	*0

Past pre-recorded tutorial sessions include: SE Handbook v3.2.2 (Tutorial ID: 02\_October 2014), SE Fundamentals (Tutorial ID: 02\_October 2014), and Leadership Skills (Tutorial ID: 01 thru 04).

These webinars were created by and recorded when John Clark presented the course in 2015/2016. GlobalMeet information has been included in this email for convenience. The information provided here is available in CONNECT in the file names provided above.



## INCOSE San Diego

# STEM Night 2017

Friday, November 17th 2017

5:45pm – 9pm

@ SEA LIFE Aquarium  
LEGOLAND California Resort, Carlsbad, CA  
([www.visitsealife.com/california](http://www.visitsealife.com/california))

### Including

- Buffet Dinner
- Entrance to Aquarium
- Shark and Ray Feeding Show
- Professional Networking
- STEM Demos
- Guided Tours
- Free Parking
- 50-50 STEM Raffle

★ **Come Join Us** on Nov 17th for a fun night at the Legoland Aquarium in Carlsbad, CA.

★ This event showcases the teachers and their students who have received INCOSE San Diego's Science-Technology-Engineering-Math (STEM) grants, and allows them to demonstrate their projects.

★ **Discounts** on full day Legoland tickets for that Friday! (see website for details)

★ Price: \$30 Adult / \$20 Children (through Middle School) / \$100 Family. See our website at [sdincose.org](http://sdincose.org) for full details and signup.

★ This year, INCOSE is also accepting event sponsorships for STEM grant teachers and students. Please help support STEM recipient school teams - the teacher and 2 students - to attend this event free. You can sponsor a teacher or student for \$25. Your help is appreciated. Thank You!



Signup at:  
[sdincose.org](http://sdincose.org)

INCOSE  
San Diego

Everyone is welcome. Please share with family and friends. See you there!



## 11<sup>th</sup> Annual INCOSE Great Lakes Regional Conference

**SUPERIOR SYSTEM SOLUTIONS FOR  
TODAY'S COMPLEX ENVIRONMENTS**

11 - 14 October 2017 | Twin Cities, Minnesota

## Attend GLRC11 at an SE PDD Site – 13 Oct 2017!

Initiating the second decade of successful Systems Engineering (SE) conferences in the Great Lakes region, GLRC11 will have featured presentations from SE thought leaders and papers from SE practitioners and academia on important SE topics.

Building upon last year's conference, GLRC11 again features an INCOSE **Systems Engineering Professional Development Day (SE PDD)**. The SE PDD is a virtual extension of the conference, with featured sessions broadcast from the host site in Minnesota exclusively to several satellite sites on **Friday the 13th of October**. The objective is to create mini-satellite conferences that give a portion of the GLRC experience without having to travel, thus expanding the impact and value of the conference to the entire region.

## This Year's SE PDD Program will Feature:

*Sigma Theta Mu Lecture by David Long, Vitech and INCOSE Past President*

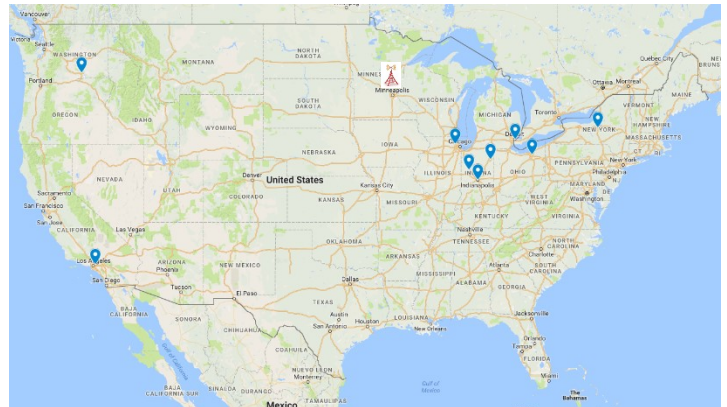
*8 Technical Presentations*

*Networking with local systems engineering professionals*

## Where can I Participate?

Hosted by INCOSE Chapters, we currently have nine satellite SE PDD sites across the USA:

Cascade Chapter at PNNL in Richland, WA  
 Chicagoland Chapter at IBM in Schaumburg, IL  
 Cleveland-NO Chapter at Reliability First in Cleveland, OH  
 CoA Chapter at IPFW in Fort Wayne, IN  
 CoA Chapter at IUPUI in Indianapolis, IN  
 CoA Chapter at Purdue in West Lafayette, IN  
 Finger Lakes Chapter at SRC in Syracuse, NY  
 LA Chapter at Caltech in Pasadena, CA  
 Michigan Chapter at ESD in Detroit, MI  
 If you are not able to join us in Minnesota, go to the GLRC11 website to register for an SE PDD site near you!



**NOTE: SE PDD SITES REQUIRE REGISTRATION AHEAD OF TIME  
SEE DETAILS ON PAGE 5**



## Important GLRC11 SE PDD Dates

7 August 2017	Early Registration Begins
17 September 2017	Early Registration Ends
13 October 2017	GLRC11 SE PDD Live Virtual Broadcasts of Technical and Plenary Sessions to Satellite Sites

For questions and comments, please contact the GLRC11 Satellite Sites Co-chair:  
 Gary Houchin-Miller: [gary.houchin-miller@jci.com](mailto:gary.houchin-miller@jci.com).



# 2018 Five Day Course Schedule

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*"The course was really excellent and the degree of learning was outstanding. We are applying the concepts learned extensively"* - Delegate



### Systems Engineering

22 Jan - 26 Jan Las Vegas, NV  
20 Aug - 24 Aug Washington, DC  
24 Sep - 28 Sep Las Vegas, NV  
15 Oct - 19 Oct New York, NY



### Software Engineering

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01 Oct - 05 Oct Chantilly, VA

New & improved course



### Requirements Analysis & Specification Writing

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29 Oct - 02 Nov Portland, OR



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## ASEP | CSEP PREPARATION TRAINING

### 2018 Five Day Courses

>>> 29 Jan - 02 Feb	Laurel, MD
>>> 26 Feb - 02 Mar	Las Vegas, NV
>>> 02 Apr - 06 Apr	Denver, CO
>>> 23 Apr - 27 Apr	New York, NY
>>> 21 May - 25 May	Austin, TX
>>> 18 Jun - 22 Jun	Orlando, FL
>>> 10 Sep - 14 Sep	San Diego, CA
>>> 15 Oct - 19 Oct	Albuquerque, NM
>>> 05 Nov - 09 Nov	Los Angeles, CA
>>> 03 Dec - 07 Dec	Atlanta, GA



CTI's learning approach is based on over 20 years of sound experience. Instead of presenting a lot of content and hoping that something will 'stick', the course utilizes adult learning techniques optimized for the type of content that needs to be mastered.

Courses are facilitated by expert leaders, who are highly experienced and knowledgeable in dealing with all aspects of the ASEP, CSEP and ESEP application process.

This interactive course will place you in the best position to pass the INCOSE knowledge examination on the first attempt.

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## The Third Quarter Strategic Planning Meeting

President Phyllis Marbach opened the third Strategic Planning Meeting with a warm welcome, introductions, and a review of the objectives of the meeting. The meeting was held on August 23, 2017 in the Manhattan Beach Community Church.

After the opening pleasantries the group got to work. President Marbach reviewed the accomplishments to date and the plans and vision as they played out over the remainder of the year.

The group invested some time in training on “Trello.” Trello is a project management tool that is receiving rave reviews and is being used to track activities and tasks within the Chapter.

The editor of the *Newsletter* presented an off-the-cuff discussion of how to write an article, and illustrated the importance of proper preparation.

The Board discussed upcoming events for the remainder of the year, including a tutorial to have been hosted by Mitre in September, and the participation of Rockwell Collins personnel in the September speaker meeting as a remote site. Planning for the speaker meetings through the end of the year and the Systems Thinking to be held in October were discussed.

One “future event” of note is a Western States Regional Conference to be held in September 2018. Although that is a year away, the Los Angeles Chapter will be making a significant contribution, and there are many opportunities to volunteer and to participate. As details become available, they will be shared in Speaker Meetings and in future editions of the *Newsletter*.

Fourier is a mathematical poem.

Lord Kelvin



The participants in the third Strategic Planning meeting, above, from left to right: Eric Belle, Shirley Tseng, Paul Cudney, Tony Magono, Don Latterman, Andrew Murrell and Jorg Largent. Knelling, from left to right are Rick Hefner, Phyllis Marbach, and Lin Yi

Elections for 2018 are coming up! If you know of someone who would be interested in joining the leadership team, please contact Terry Rector at [terry.rector@att.net](mailto:terry.rector@att.net)

**INCOSE-LA Chapter NEWSLETTER**

Vol. 15: Issue 5, October — November 2017



## Volunteerism – A Win-Win Relationship

By Terry Rector, Past-President

Greetings INCOSE-LA family, as you all know the leadership positions are all volunteers, and once again it's time for the Chapter's 2018 Elections. Please allow me a few minutes of your time to discuss the benefits of volunteering. Many organization such as INCOSE-LA, would not exist today if not for volunteers. I'm sure you've heard of the many benefits of volunteering and how volunteering enriches not just the chapter but the volunteers in many ways. So, let's skip to some of the lesser considered benefits of being a volunteer in any professional organization.

One of the largest benefits is an opportunity to expand your professional and personal networks by teaching, learning and sharing experiences with like-minded people. By doing so, our membership at large is provided the opportunity for cross talk to discuss project and engineering successes as well as failures and lessons learned. A great deal of back and forth discussions occur at all INCOSE-LA events and as a volunteer you will be directly engaged in beneficial discussions. Collectively our chapter is as strong as we all are together, so take time to volunteer by attending chapter events, you and the chapter will benefit. We learn constantly from each other, no matter the duration or reoccurrences, volunteering is another opportunity to learn and teach, and volunteering in a chapter leadership position allows both the chapter as well as you to grow and develop, you will be engorged with opportunities to participate with other chapter members, not only within INCOSE-LA chapter, but engaging with National and International chapters. This is a huge opportunity to network. No matter if you are interested in chapter leadership, supporting the chapter activities, or by attending one of the chapter's local events. Being a volunteer is a win-win situation for you and the our chapter.

Are you interested in developing speaking, managing resources, being a leader, hosting a monthly event, workshop, or planning a conference? Then INCOSE-LA has opportunities for you to learn in a team environment, a perfect opportunity to learn and to grow with no fear of failure. Being an INCOSE-LA volunteer is the best place to develop managing and leadership skills outside your regular job. If you want to learn, take that small step, and attend one of the chapter's many meetings, the Chapter's members will gladly mentor, teach and support (see one, do one, teach one).

Lastly, let me share a short true story; after relocating to the LA area from the Northeast for a new position at one of our local companies, I became bored with my daily activities and decided to join INCOSE-LA to get involved in the chapter's activities and get to meet people involved in similar work. The INCOSE-LA Chapter president needed a volunteer to manage a conference, I volunteered and over the past 11 years I have worked with, learn from and taught many wonderful people, many lifelong good friends, who continue sharing successes and failures today.

*(Concluded to the right)*



As mentioned in the first paragraph, our INCOSE-LA is seeking volunteers for our 2018 Officers, we some open positions for the right people. Do you have an interest of growing in your profession, giving back, mentoring, teaching or learning from others? Give one of us a call or send an email (our email addresses are on the back of this newsletter). We look forward to meeting new people who enjoy our industry as much as well do.

## An Opportunity to Lead Cal Poly Pomona Student Division Speaker Opportunities

Are you interested in sharing your Systems Engineering experience with one of our local student divisions? The Cal Poly Pomona division is seeking volunteers to share career advice and unique experiences we systems engineers enjoy in the industry. Fall quarter lunch events are scheduled on several Tuesdays and Thursdays in October and November on the Cal Poly Pomona campus. Please contact Audrey Doan (CPP Division President) at [president.cppincose@gmail.com](mailto:president.cppincose@gmail.com) if interested!

When you are face to face with a difficulty, you are up against a discovery.

Lord Kelvin

The five essential entrepreneurial skills for success are:

1. Concentration
2. Discrimination
3. Organization
4. Innovation, and
5. Communication.

Michael Faraday

*(Professional Development, continued from page 5)*

- 2:45 p.m. – 3:25 p.m. “Feature-Based Product Line Engineering: ISO Standards Initiative and Recent Industry Experience.” Presenter: Charles Krueger
- 3:30 p.m. – 3:40 p.m. Announcements and Recognitions
- 3:40 p.m. – 3:50 p.m. GLRC12 Preview; William Schindel
- 3:50 p.m. – 4:00 p.m. SE-PDD Wrap-up
- 4:00 p.m. – 4:10 p.m. Break
- 4:10 p.m. – 4:50 p.m. Back to Basics: The Alphabet Soup of Systems Engineering Development Models; David Walden
- 4:55 p.m. – 5:35 p.m. INCOSE's Transformation Strategic Objective; Troy Peterson
- 5:35 p.m. – 5:45 p.m. Wrap-up

*(Dr. Axelband, continued from page 1)*

Elliot and I would collaborate on how best we could serve the defense and aerospace community, how best we could serve our students, and how best we could meet the demands of the defense and aerospace industry.

Before his health took a turn for the worse, Elliot would routinely stop by my office to chat about developments on the national front and their potential impact on the engineering workforce and our engineering curriculum. Elliot understood culture and politics, research and education, acquisition and engineering, and people and personalities. I will forever cherish the moments we spent together trying to make sense of how to make a better world, especially for aspiring and practicing engineers. Elliot will continue to live on in our hearts and minds, through the innumerable Elliot stories that INCOSE, USC, and aerospace colleagues have to share. With his passing, INCOSE lost a leader and friend, and the aerospace and defense community lost a great American engineer.

Born in Brooklyn, New York, Elliot earned his BS degree in Electrical Engineering from Cooper Union on a full scholarship. He then moved to Los Angeles to begin a long and illustrious career with Hughes Aircraft Company. While working full time, he earned a Master's of Science in Electrical Engineering from USC, and a Doctorate in Control Theory and Applied Mathematics from the University of California, Los Angeles.

Early in his career at Hughes Aircraft, he worked on communications satellites and on the motion control of the Surveyor, the first craft to soft land on the Moon, a precursor to the Apollo program. Elliot had a distinguished career in the defense and aerospace industry and academia. He was the President of the IEEE Controls Society in 1977 and a recipient of the Air Force Meritorious Civilian Service Award. He worked at Hughes for 35 years retiring as a Vice President and General Manager. In his "retirement," he served as the Associate Dean and Professor of Engineering at USC, a senior researcher at RAND Corporation, and Director and part owner of Legacy Engineering. Elliot is survived by his wife, Barbara, three children, and six grandchildren.

Some of Elliot's INCOSE friends and colleagues wrote to share their memories. They characterized him as a truly accomplished systems engineer, mentor, and teacher. They extolled his honesty, integrity, and commitment to the engineering profession.

With the outpouring of respect, admiration, and affection from INCOSE colleagues, I would like to just say that we are all very fortunate to have known Elliot. In one way or another, he touched our lives, and we are all the better for it. Farewell, Elliot! You will always be remembered for your selfless, dedicated service to our profession, our colleagues in industry and academia, our students, and our community.

**Lectures which really teach will never be popular;  
lectures which are popular will never really teach.**

Michael Faraday



The late Dr. Elliot Axelband

In what is almost a footnote to Dr. Axelband's distinguished career are his contributions to and the founding of the Los Angeles Chapter. The success of the Chapter in its support of and contributions to the community of systems engineering professionals throughout the Los Angeles area is but one testimony to Dr. Axelband, and the many honors bestowed upon the Chapter can be credited to the foundations he laid and the contributions he has made. The INCOSE-LA Board of Directors shares in the eloquent message of Dr. Madni and in the sense of loss felt throughout the profession.

*(August Speaker Meeting, continued from page 4)*

There was some uncertainty as to whether or not this was a priori data or if it could be tailored.

The evening concluded with the traditional questions and answers.

The presentation is available on INCOSE Connect in the Los Angeles Chapter folder. To view that presentation tier down to the 2017-CHAPTER-Folder, 2017\_Speaker-Meetings, and then into the o8-Aug folder.

The presentation slides are worth reviewing and can be downloaded at the INCOSE-LA Library tab: <http://www.incose.org/ChaptersGroups/Chapters/ChapterSites/los-angeles/library-and-resources>.

The longhand path description: INCOSE website, the Chapters and Groups pull down menu, INCOSE Chapters, and click on the Americas Sector. Scroll down to the California "territory" and click on the Los Angeles url. Click on Library and Resources and scroll down to the topic of interest.



(Candidates, continued from page 1)

The Executive Officers hold one-year terms while the At-large Directors hold two-year terms. The two-year terms are staggered to preserve Chapter knowledge from year to year.

The appointed body consists of managers and chairpersons who are recruited to execute specific functions such as producing the *Newsletter* or the Reflector.

Each functional area generally falls under the oversight of one of the directors. We want to stress the importance of the appointed body: it is the primary method for someone to engage in the operations of the Chapter and to progress into a position of the voting body.

It is now up to you, our members, to vote for the 2016 BoD. We proudly introduce to you our slate of candidates for next year's Board of Directors.

**President (one year term):**

**Rick Hefner, Ph.D.**, specializes in systems development and maintenance; project management; Lean Six Sigma; process improvement, technology transfer; and risk management. His experience spans over 40 years. He has served as INCOSE-LA as Programs Chair (2016) and Vice President (2017).



He served as director of process management at Northrop Grumman Corporation, where he managed corporate process initiatives related to Lean Six Sigma and program management. Positions at Northrop Grumman (formerly TRW) included managing technology process initiatives and helping to establish the corporate engineering and program management processes. At Aerospace Corporation, Dr. Hefner was the director of their software development department. He served as an engineer, technical specialist, project manager, and section manager.

Dr. Hefner has also worked with companies in the aerospace, communications, electronics, and health sciences industries: including AeroVironment, Applied Physics Laboratory, Applied Materials, Ares Management, Boeing, DRS Technologies, Halliburton, Herbalife, Honeywell, Jet Propulsion Laboratory, John Deere, L-3 WESCAM, Maytag, Motorola, Pacific Bell, Raytheon, Schlumberger, Southern California Edison, St. Jude Medical, Toshiba, U.S. Navy, and Xerox.

Dr. Hefner is credited with over 200 publications and presentations. He earned his PhD from the University of California, Los Angeles, in applied dynamic systems control. He received his bachelor's and master's from Purdue University in interdisciplinary engineering.

**Vice-President (one year term):**

This opportunity was still open when the *Newsletter* went to press.

(See "More Candidates" on page 18)

## Are We Rushing Through Step One of Our Process?

By Jorg Largent

The September speaker meeting addressed a vision of the future, a presentation that could illustrate one of the challenges facing the systems engineering profession: are the advocates of a new system – autonomous automobiles in this case – premature by incorporating solutions in their envisioning of the "system-of-systems-of-systems?"

Consider using the Global Positioning System (GPS) to determine position.

As with the current automobiles, there is a need to know the location of the automobile relative to the destination and the surrounding environment – things such as other automobiles, the edges of the lanes, the edges of the pavement, and obstacles, to name a few.

The challenge for the autonomous automobile, from the perspective of applying the science of systems engineering, comes with the embedded design decision to use GPS.

GPS is the wunderkind of navigation. Particularly beneficial for aircraft making long flights over the open ocean, GPS has become inexpensive, easy to use, and accurate, so much so that it is common place and can be found in almost every mobile phone.

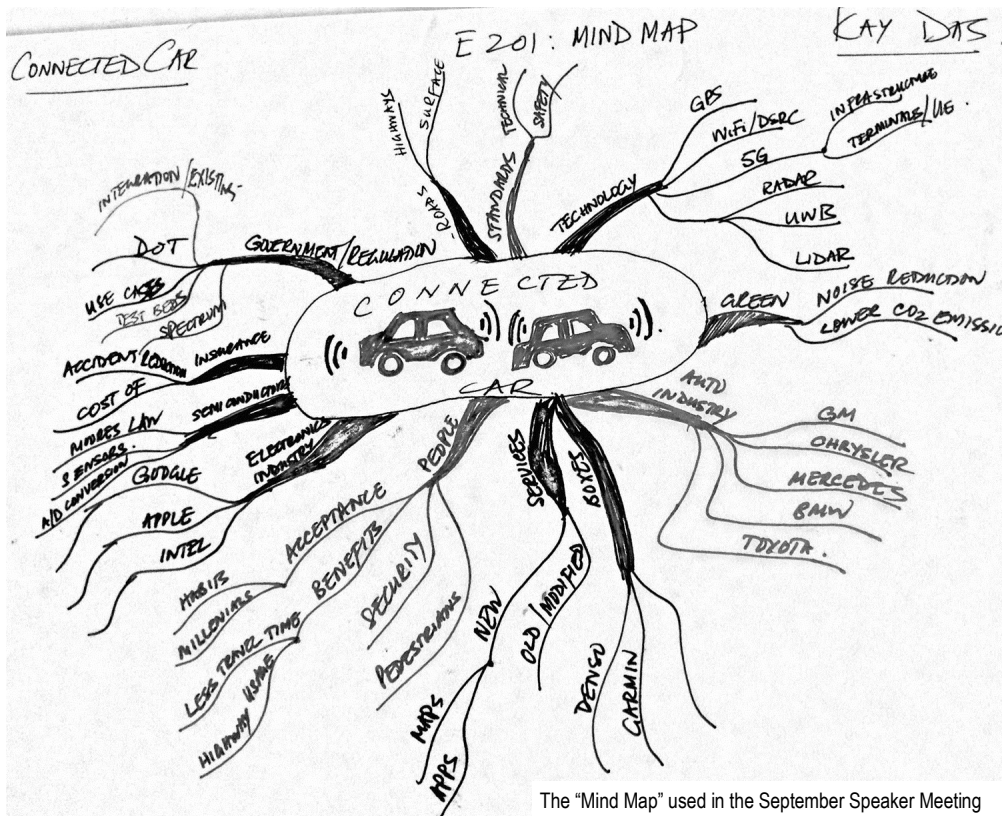
In the solution space of maintaining a safe distance between an automobile and things in its environment (another car) which might impede progress, GPS, even GPS augmented by triangulation with respect to cell towers, has limitations. A system that uses GPS to determine the relative position of two automobiles must first determine their location of the automobiles on the earth. Note that this is a three-dimensional determination in spherical geometry. The system must then determine the difference between the two solutions in all three dimensions (the latitude and longitude of an automobile on an overpass will be identical to latitude and longitude of an automobile passing safely on the roadway underneath the overpass).

GPS is a well-known and mature system, and the attendant subject matter experts are well aware of the error sources. With this understanding, and recognizing the resolution required for the safe operation of autonomous automobiles, work is under way to determine the feasibility of "DGPS" – differential GPS. DGPS has the potential of shrinking position error from fifteen meters to 10 centimeters.

Might not this be the point at which the systems engineer challenges an assumption – the assumption that the zero-reference plane (in rectilinear,  $z = 0$ ) is Mean Sea Level, as used by GPS. What if the "zero-reference" plane was the surface of the highway itself?

Railroads provide a parallel. Position is relative in two perspectives. One perspective is the location of a train (and, possibly, the cars in the train) relative to the railroad itself and, when trains get close to one another, the relative position of the trains with respect to each other.

(See "Too quick too soon?," page 16)



President Phyllis Marbach presenting a thank you gift to Kay Das, speaker at the September Speaker Meeting and creator of the "mind map" at the left.

The "Mind Map" used in the September Speaker Meeting

(Too quick too soon? from page 15)

Several activities associated with railroading, such as marshaling, calling crews, providing motive power, and servicing are functions of "when" a train arrives at the facilities that perform these functions, but the determination of when is, of course, coupled to the answer to the "where" question: where is it now? A derived question: how much lead time is needed? The lead time requirement decomposes into the positional accuracy requirement.

The "where and when" questions arose as soon as railroads started operating a second train on the same track. An aside with respect to railroads: as a part of the construction of their tracks, railroads precisely surveyed their location; as a result the a priori data regarding "where" the hypothesized zero reference plane is well known.

Advances in technology, such as telegraphy, and labor-intensive direct observation, allowed the railroads to operate more trains and to operate them faster; to improve the throughput, so to speak. Radios, automatic sensing circuits and signals, along with other advances, enabled safer operation, greater throughput, and reductions in the amount of hands-on-labor. At the same, there have been advances in technology that have created cheap, reliable, and accurate systems for measuring position, particularly on a tightly controlled and well defined "surface" such as railroad tracks.

Railroading also provides a datum with respect to GPS. Speed control is critical to safe operation. GPS is a good way to measure velocity. In terms of acquisition and maintenance, it is inexpensive, inexpensive to the point that it could be cheaper than the old fashioned mechanical speedometer connected to a wheel.

The downside is that it can be disconcerting to lose that velocity display when the locomotive goes into a tunnel because GPS does not work in tunnels.

This circles back to the question: why GPS (or DGPS) for autonomous automobiles? Would following the systems engineering discipline require a moment's pause to consider the ramifications of embedding a design decision in the concept development phase of the project?

(September Speaker Meeting, continued from page 4)

Systems need to have high reliability and will require multiple technologies such as laser, imaging, radar, cellular, WiFi, and GPS. Thus, system complexity is very high. There are currently two validation approaches: real life-sized test beds with real vehicles and computer-based modeling and simulations of use cases. While there are several large and very expensive test beds currently in existence, Mr. Das presented a proposal for the Aquarius test bed, a cheaper solution which would have reduced-scale models of vehicles, lanes and highways, roads and slip-roads, buildings, and pedestrians. Aquarius would have an integrated communications and control center to allow observation of Dedicated Short Range Communication technology in action using use cases to test existing and new products.

This presentation was too long for the time allotted, so some subjects got short-shrift. I suspect Mr. Das piqued interest enough that he will get asked to come back for another presentation to expand some section(s) of this one. The presentation slides are worth reviewing and can be downloaded at the INCOSE LA Library tab: <http://www.incose.org/ChaptersGroups/Chapters/ChapterSites/los-angeles/library-and-resources>.



## SYSTEMS THINKING ROUNDTABLE ABSTRACT

Over the last twenty years, colleagues and I have been introducing a new multifunctional activity in workplaces and schools within their existing ongoing meetings. Called the “Co-operated RoundTable,” this activity is a proven new way to increase communication and an engaging way to deliver and develop the users’ agenda. It is based on research in education and organizational change as well as time-tested successful models. It was field-tested in two international conferences: the International Systems Institute ([isiconversations.org](http://isiconversations.org)) and the International Society for the System Sciences ([iss.org](http://iss.org)). After the field testing, the Co-operated RoundTable was developed in four fourth grade classrooms in Los Angeles County – at Pennekamp School in Manhattan Beach, and at Foster School in Santa Clarita. Results surpassed our expectations. The RoundTable was found promising as a user-friendly program suitable for schools, workplaces, and other social systems, capable of fostering systemic renewal. Systemic renewal is defined as: first, awakening new energy in people and social systems; second, possessing three minimum sufficient conditions for systemic change/renewal: (i.e., ICE or inclusive--of everyone in the system; continuing--e.g. weekly, monthly; and emancipatory--accelerating positive learning. We propose that: just as we break the sound barrier when we travel faster than the speed of sound, we break the communication barrier when we hear 30 authentic viewpoints in 30 minutes.

RoundTable sessions last 30 or 60 minutes, users’ choice. A 60-minute RoundTable consists of 5 minutes of readings or scripts including a topic of the day, followed by 55 minutes of individual comments or learning reports--time distributed equally among all present. Once established, a different volunteering participant facilitates each session.

In 2016, the RoundTable was renamed the Systems Thinking RoundTable and held daily at the INCOSE IW in Torrance, California, by the Systems Science Working Group. In 2017, it was convened in the INCOSE IW in Torrance and the INCOSE Symposium in Adelaide, Australia.

### BIOGRAPHIES:

Rick Hefner, PhD, currently works at the Caltech Center for Technology and Management Education (<http://ctme.caltech.edu>), where he helps industry professionals and high-tech companies understand and apply systems engineering concepts. He has over 40 years of experience in the aerospace, communications, electronics, and health sciences industries. This includes work with AeroVironment, Applied Physics Laboratory, Applied Materials, Ares Management, Boeing, DRS Technologies, Halliburton, Herbalife, Honeywell, Jet Propulsion Laboratory, John Deere, L-3 WESCAM, Maytag, Motorola, Pacific Bell, Raytheon, Schlumberger, Southern California Edison, St. Jude Medical, Toshiba, U.S. Navy, and Xerox.

Dr. Hefner is credited with over 100 publications and presentations. He earned his PhD from the University of California, Los Angeles, in applied dynamic systems control, and his MS and BS from Purdue University in interdisciplinary engineering.

Dr. Sue Gabriele of Gabriele Educational Materials and Systems ([gemslearning.net](http://gemslearning.net)) is an innovator and consultant in systemic school and workplace renewal. Her expertise builds on twenty-years as a high school teacher. Following her teaching career, she turned to graduate school seeking answers to problems in public education. Finding solutions in general systems theory and control systems, she earned her PhD in “Human Science: Social and Institutional Change” by creating and researching the “RoundTable” as a seed for social system renewal. GEMS RoundTables are currently being convened in many organizations: weekly by fourth grade teachers at Pennekamp in Manhattan Beach since 2000; daily in week-long conferences of the International Society for the Systems Sciences (ISSS) since 1998, and the International Council on Systems Engineering since 2016; and monthly with the Association for Talent Development (ATDLA) and the International Society for Performance Improvement (ISPI-LA) since 2012—which is convened at American Honda in Torrance.

## MINI-CONFERENCE IN SAN DIEGO

Hosted by the San Diego Chapter of INCOSE

**When:** Saturday, December 2, 2017, 8:00 a.m. to 4:30 p.m.

**Location:** University of California San Diego Extension University City, 6256 Greenwich Dr. San Diego, California, 92122

**Pricing:** Early bird price (until Nov 25) is \$50 INCOSE Members / \$60 Non-INCOSE Members / \$25 Students. After Nov 25 and at the door, the price is \$60 INCOSE Members / \$70 Non-INCOSE Members / \$35 Students.

**Refreshments:** A continental breakfast as well as a lunch of sandwiches and drinks will be provided, and are included in the registration fee. Please state vegetarian preferences with your registration.

Join us for a day of stimulating thought and discussion with fellow professional systems engineers, system engineers in law, and Big Data scientists. The conference is centered on the crucial role of system engineering in practice and more topics as follows:

- System of Systems System Engineering
- Systems Engineering Interoperability Best Practices
- Agility and Incremental Commitment Spiral Model
- Science of Laws in System Engineering
- Big Data Visualization of Molecular Structure
- Big Data Analytics Visualizations of Uncertainties
- and MORE

Please see the following URL for more information and signup:

<https://sdincose.org/rsvpmaker/2017-incose-san-diego-mini-conference-2017-12-02/>



(More Candidates, continued from page 15)

### **Treasurer (one-year term):**

**Lin Yi** is a level III technologist at Jet Propulsion Laboratory, California Institute of Technology. He is responsible for scientific research, technical leadership, system engineering and project management in multiple precision timing and frequency related projects/missions of NASA and DARPA. His expertise lies in areas of atomic clocks, GNSS and deep space navigation, ultra-fast and deep UV laser engineering, precision instrumentation and measurement, software engineering, embedded system architecture, frequency and timing metrology, atomic, molecular, optical and plasma physics. Dr. Yi has published more than 30 peer-reviewed journal articles and conference papers. Dr. Yi holds leadership positions in professional organizations such as IEEE, IEEE-UFFC-S, INCOSE-LA. Dr. Yi serves as technical reviewer for NSF, NASA, OSA, IEEE, AIP, IOP, USRA.



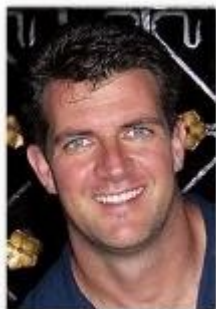
### **Secretary (one-year term):**

**Phyllis Marbach** is the current President of INCOSE-LA. She attended IS 2017 and participated in the Practitioner's Challenge with about a dozen engineers from multiple disciplines and countries. Phyllis retired from Boeing last year after 37 years working as a development, systems, software and project engineer as well as manager, depending on the job and skills needed. She was a Boeing Designated Expert in both Software Engineering and Systems Engineering as well as Agile Practices. She has presented numerous papers at conferences in the past 10 years, is a member of several INCOSE working groups, and is a Certified SAFe(R) Program Consultant and trainer.



### **Program Director (one year term):**

**Mark TenEyck** is an accomplished business executive with 30 years of experience in management, design, fabrication and building. He started his first business at the age of 19 in residential home building and design. He transitioned to an 18-year tenure with Dassault Systemes in management selling innovative engineering solutions. He also co-founded The Inspire Projects, a 501c3 dedicated to rebuilding homes for veterans, is on the Advisory Board at Cerritos College and teaches computer aided design (CATIA) at Roosevelt High School. TenEyck has championed innovative methods for reduction of cost, scrap and environmental impact in product development. He is distinguished by his passion for business, focus on collaborative team building and commitment to delivering results.



His contagious enthusiasm instills him and his team members with extraordinary energy and dedication in an environment where creativity and innovation are encouraged. A dynamic public speaker, teacher and mentor, Mark is a sought after presenter at meetings, team building events and conferences. He transmits key concepts in business innovation supported by smart adoption of technology to enable business to continually improve their products and processes while reducing their overall costs. Mark is passionate about his work and enjoys encouraging others to experience the dynamic of design and fabrication. He donates his time teaching in Boyle Heights and mentoring First Robotics Teams.

### **Membership Director (one year term):**

**Karen Grothe** is the candidate for Membership Director.

Our Chapter has a rich tradition and history of members stepping up and serving the membership. Their efforts over the years have resulted in the many services offered to the members, services such as speaker meetings, training opportunities by leading experts in the profession, and networking events throughout the Los Angeles metropolitan area. Members of the leadership team are often recognized internationally by INCOSE at the annual International Symposium. The contributions of past teams are reflected by the numerous awards cited in the masthead of the *Newsletter* (top of page 1).

## **Sponsorship and Business Development Opportunity**

Ambassador, coordinator, manager, any one, if not all three titles would fit this new role. Regardless, recent increases in interest in the Chapter has opened up an opportunity to broaden one's experience base and to support the mission of service to the membership.

The Board of Directors has created a new position. The purpose of this position is to acquire new sponsors for events and companies who would like to advertise in our publications as well as maintain relationships with our current customers. This position will help balance our annual budget and increase our capabilities to serve our members.

Primary responsibilities:

- Identifying new leads
- Pitching sponsorship and advertisement opportunities
- Provide proposals/ quotes for these opportunities
- Maintaining fruitful relationships with existing customers
- Aligning initiatives with our fiscal requirements
- Attending quarterly chapter board meetings (SPMs)
- Presenting ideas, challenges, goal and achievements at the Strategic Planning Meetings

Interested? Please contact Karen Miller, our Volunteer Coordinator, [karmill888@aol.com](mailto:karmill888@aol.com)

# You are invited to the INCOSE-LA Chapter Holiday Party!



**Saturday evening,**

**5:30 p.m. December 9, 2017**

**Location same as last year, at the elegant**

**Del Rey Yacht Club,**

**13900 Palawan Way**

**Marina Del Rey**

**\$10 members**

**\$40 for guests and non-members**

**Great people \* Fine food \* Lots of Fun**

**An INCOSE-LA Tradition!**

**Registration Required Attendance is limited!**

**Standby for a Reflector Notice  
and more details in the next edition of the *Newsletter***



**The Board of Directors wishes to welcome the following new members to 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](http://www.incose.org)) to update your information.

Name	Organization
Stephanie Trobetta	SAIC
George Elkess	
Trey Hazama	Cal Poly Pomona Student Division
Mohammed Shafir	Abbot Laboratories
Mary McGeeney	Cal Poly Pomona Student Division
Michael Van Antwerp	Northrop Grumman

## 2017 Board of Directors

Elected Officers			Elected At-large Directors		
President	Phyllis Marbach	prmarbach@gmail.com	Membership	Mark TenEyck	Mark.teneyck@3ds.com
Vice-president	Rick Hefner	rhefner@caltech.edu	Programs	Michael Do	michael.do@comcast.net
Immediate Past President	Terry Rector	terry.rector@engineer.com	Systems Engineering Education	Tony Magorno	tmagorno@gmail.com
Secretary	Jeffrey Willis	raptor0089@aol.com	Ways and Means	Stephen Guine	Stephen.Guine@ngc.com
Treasurer	Lin Yi	Lin.yi.dr@ieee.org	Communications	Neil Wigner	Neil.wigner@ngc.com
Appointed Positions			Student Division Ambassadors	Scott Birtalan	scott.birtalan@ngc.com
Newsletter Editor	Jorg Largent	jorg.largent@incose.org	Reflector Manager	Deborah Cannon	Deborah.a.cannon@aero.org
Technical Society Liaison	Shirley Tseng	shirleytseng@earthlink.net	Social Media Manager	Doris Gebelein	doris.gebelein@lmco.com
Chapter Awards Manager	Rick Hefner	rhefner@caltech.edu	New Member Ambassador	Collette Kurtz	kurtz905@aol.com
Professional Networking Chair	Scott Birtalan	scott.birtalan@ngc.com	Volunteer Coordinator	Karen Miller	karmill888@aol.com
Representative to the SF Valley Engineer's Council	Stephen Guine	Stephen.Guine@ngc.com			

## INCOSE-LA Chapter NEWSLETTER

Vol. 15: Issue 5, October — November 2017

# INCOSE-LA Chapter      NEWSLETTER

Vol. 15: Issue 5, October — November, 2017

Return Address:

**PO Box 10969  
Westminster, CA 92685-0969**

## Forwarding Service Requested

The International Council on Systems Engineering (INCOSE) is a not-for-profit membership organization founded to develop and disseminate the interdisciplinary principles and practices that enable the realization of successful systems. INCOSE's mission is to share, promote, and advance the best of systems engineering from across the globe for the benefit of humanity and the planet.

The Los Angeles Chapter meets several times per year for speaker meetings and, in addition, sponsors tutorials, mini-conferences and other activities of interest to those in systems engineering or related fields.

## UPCOMING EVENTS

For more information on these and other events of interest in the Los Angeles area, look for a Reflector Notice in your email, and check the Chapter website: [www.incose.org/los-angeles](http://www.incose.org/los-angeles). Like us on Facebook

### SE Handbook v4.0 Training

October 5, 2017

Training is on-line

*See article on page 8; check your email for a Reflector Notice*

### October Speaker Meeting

A Systems Engineering Solution to Clean up the Oceans

Tuesday, October 10, 2017

5:30 p.m. - 8:30 p.m.

The Aerospace Corporation

El Segundo, California

*See article on page 2; check your email for a Reflector Notice*

### Systems Engineer Professional Development Day

Date: Friday, October 13, 2017

8:00 a.m. - 6:00 p.m.

\$30 for INCOSE members; see their registration page for details

*See article on page 5; check your email for a Reflector Notice*

### Systems Thinking Tutorial

Saturday, October 14, 2017

9:00 a.m. to 2:00 p.m.

Caltech campus in Pasadena

Cost: no charge

*Details on page 3; check your email for a Reflector Notice*

### Young Professionals Event

October 31

*Details are in work; a Reflector Notice will be sent*

### December: Election of Chapter Officers for 2018

### November Speaker Meeting

Best Practices and Lessons Learned from MBSE Pilot Programs

Ryan Noguchi

Tuesday, November 14, 2017

5:30 p.m.—8:30 p.m.

The Aerospace Corporation

El Segundo, California

*See article on page 2; check your email for a Reflector Notice*

### Fourth Quarter SPM

November 11, 2017

Manhattan Beach Community Church

*See article on page 3; check your email for a Reflector Notice*

### MBSE Tutorial

Presented by Mark McKelvin

Saturday, November 18, 2017

*Details are in work; a Reflector Notice will be sent*

### Chapter Holiday Party!

Date: Saturday, December 9, 2017

5:30 p.m. - 9:00 p.m.

Venue: Marina del Rey Yacht Club

Location: 13900 Palawan Way

*See page 15; a Reflector Notice will be sent*

### Western States Regional Conference

Seattle, Washington

September, 2018

*Details in work; watch for future articles and check the website for opportunities and important dates*