



NEWSLETTER



2002, 2004-14



2003



2008, 2012
President's Award
for Most
Outstanding Chapter



2016 Regional Mini-Conference: Success!

The Central Arizona, Southern Arizona, San Diego, Los Angeles, and San Francisco Bay Area Chapters would like to thank the:

sponsors, exhibitors
panelists, presenters,
the innumerable volunteers, our hosts,
and, especially
those who attended
for making this conference
a success!



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The Regional Mini-Conference: a Summary

The 2016 Regional Mini-Conference was an impressive success and provided value for those who attended. “Value” came in many forms, starting with the presentations, and was quickly buttressed by the tutorials, formal presentations, and panel discussions. The contributions and efforts of the sponsors and exhibitors, combined with the hours of tireless effort on the part of the volunteers and the graciousness of our host – Loyola Marymount University – all resulted in the success of and satisfaction with the conference.

With its focus on “Systems Engineering Methods for the 21st Century,” the conference featured systems engineering professionals and students exchanging concepts and experiences in a forum designed to facilitate discussions of key topics related to the future of systems engineering. Thirty-two individual presentations were made, covering a broad spectrum of systems engineering topics and issues.

The many luminaries from within the systems engineering profession lent not only prestige to the conference but also contributed grist to the substantial intellectual mill of systems engineering discourse that was to become the essence of the conference.

An added attraction to the conference was the offering of two tutorials on Friday, the day before. Phyllis Marbach and Laurie Buss gave a tutorial and agile Friday morning and Rick Steiner gave a tutorial on model based systems engineering.

The conference itself opened Saturday morning with an opening plenary. Dr. Barclay Brown of IBM opened the conference with an upbeat discussion of the challenges faced by systems engineers. Dr. Brown included a challenge to a common perception, noting that many perceive a systems engineer as the same as brakeman on a train, a brakeman’s job being to stop things. Instead, systems engineering professionals need to cultivate the image of being the engineers on a train – the individual who gets things going.

Dr. Brown is the Global Solution Executive for the Aerospace and Defense industry for IBM Watson, IoT Continuous Engineering Solutions. A former chief engineer for IBM Global Business Services, he was the lead systems engineer for some of IBM’s largest development projects. He is co-author of the book Model Driven Systems Engineering with Rational Tools. Dr. Brown received his bachelor’s degree in Electrical Engineering with master’s degrees in Psychology and Business and a PhD in Industrial and Systems Engineering. He is a certified Expert Systems Engineering Professional, the former INCOSE Director for the Americas and an Adjunct Teaching Professor at Worcester Polytechnic Institute.

Dr. Brown’s opening remarks segued into the keynote address by Professor Azad Madni. Dr. Madni’s keynote address was titled “Models, Stories, and Immersive Experiences, Systems Engineering in the 21st. Century.”

(See “RMC Summary” on page 11)

Regional Mini-Conference 2016

By Dick Emerson, Co-Chairman

The concept of the regional conference was hatched at the 2014 International Symposium in Nevada. It was nurtured during the subsequent International Workshops and took flight at the 2015 symposium in Seattle. As with most fledglings, the first touch-and-go flights were touch and go. The concerted efforts of members from the five sponsoring chapters (San Francisco Bay Area, Los Angeles, San Diego, Central Arizona and Southern Arizona) created a conference that delivered 32 individual presentations and seven panel discussions to over 170 participants. The conference was supported by six sponsors and provided space for six exhibitors. Over 20 of the attendees were students from five universities. The students produced six poster presentations and contributed two talks.



Co-chairman Emerson Dick speaking to the conference.
Photo by Greg Bulla,
San Diego Chapter

The purpose of the conference was to advance the INCOSE mission: “The INCOSE 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 five chapters, located in roughly the south-west United States, worked together to further these aims by developing and producing a two-day mini-conference.

There were three purposes for doing it:

1. gather together practitioners, academics and students to mutually discover the future of systems engineering,
2. to develop communication and collaboration between the region's chapters, and
3. to pass on our combined knowledge of the process of developing and producing a technical conference to our next generation of INCOSE members.

“One of the tacit assumptions about systems engineers is that they are life-long learners. They take this position because, from the perspective of systems, all things are related, changing and evolving. They also take this position because the application of systems engineering is expanding into new industries and fields. Industries and fields that have now become complex and adaptive.

“This conference is dedicated to the engagement, education and expansion of Systems Engineers and those who have the potential to become Systems Engineers.”

The first purpose was clearly satisfied. The student participations far exceeded our expectations. Judging from their work and enthusiasm, INCOSE will have an infusion of young

(See “RMC Co-chairman” on page 10)

Models: A Love-Hate Relationship?

By Jorg Largent

There appears to be a consensus: advances in technology are resulting in projects which are sufficiently complex that the discipline of systems engineering cannot be implemented without tools – computer-aided systems engineering, as it were. A similar challenge was faced by the Flight Test community in the 1980s. Some of the systems being developed had capabilities which exceeded the ability of instrumentation systems to measure. The principles of measurement were unchanged, but the instrumentation technology was overwhelmed.

During the “MBSE: Making System Modeling Relevant” panel, Ryan Noguchi commented on trying to merge different modeling practices so as to take advantage of distributed efforts, but noted that an age-old fundamental remains: it is important to do a lot of our work at the beginning of the life cycle. IBM’s Dr. Barkley Brown commented on Model Based Engineering and that MBSE should be a part of Model Based Engineering. Dr. Brown also noted that we are aiming toward a new type of engineering: a model of model. For example, a model of an engine can be incorporated as a component into another model without sharing the details of engine. As an aside, modeling has been used: the B-1A was “sold” based on modeled performance and analyses of Flight Test data against a model that demonstrated a very high probability of survival. The analysts were satisfied. The crew dogs were a bit more enthusiastic.

Bjorn Cole commented on the vulnerability of models and the critical importance of the integrity of the data used to populate the model. Failing to maintain data integrity destroys trust in the model. In an echo of Dr. Azad Madni’s keynote address and his, “Model Based Storytelling.”

Stephen Guine made a compelling point regarding the intoxication of sophistication by grounding the conversation in reality: Funding makes the airplane fly; “no bucks, no Buck Rogers,” a quote Stephen attributed to Chuck Yeager, in the book, “The Right Stuff.”

Relevance was acknowledged as a challenge. One recommended strategy was, “defining value for your customer defines value for yourself,” coupled with “tool your approach to the customer.” In the same conversation, was an advocacy for applying a standard language in systems engineering. One of the challenges systems engineers face is “language the value,” “how am I going to describe the value of MBSE?”

Another challenge with respect to tools was the observation that the one-time-cat’s-meow of tooling, SysML, very strong on the left side of the requirements V but weak on the right side.

Dr. “Bo” Oppenheim interjected the observation that one of the consequences of current trends in systems engineering is we are becoming paper pushers: “engineering isn’t fun anymore.”

The thread of this theme and the discussion of these topics and related topics continued throughout the conference, leaving the attendees better educated, challenged, and armed with considerations that they could use in the facilitation of the systems engineering discipline.

Conference Sponsors and Exhibitors

The sponsors and exhibitors deserve a special thanks for their contributions to the success of the conference.



Loyola Marymount University’s facilitator Elmo Johnson, (left) and Professor of Systems Engineering, Dr. Bohdan Oppenheim.

Loyola Marymount University (LMU) was the host site of the conference, in addition to being a sponsor. The preparation and planning began months before the conference. An attentive staff worked behind the scenes to facilitate a seemingly seamless series of activities flowing from opening plenary through panel meetings, breaks, presentations, meals, and closing ceremony. The setting was every bit as attractive as expected; a spat of unusual-for-southern-California splattering of rain Saturday morning notwithstanding.

LMU, the LMU Student Division, and Dr. Oppenheim have been staunch supporters and participants in INCOSE and INCOSE-LA activities.

The INCOSE Student Division was a sponsor and was well represented, not only by the efforts of the Loyola Marymount University Student Division, but also by the students from as far away as the University of Arizona and the United States Air Force Academy. The Student Division poster presentations were popular and a hub of activity during breaks and meals.

The Student Division is INCOSE’s dedicated outreach to college students around the world. A Student Division is comprised of a group of undergraduate or graduate students who wish to become actively involved in INCOSE while enrolled in an accredited course of study at a college or university. Student Divisions are operated as a component of a nearby chartered INCOSE chapter.

The Aerospace Corporation contributed as a sponsor and was well represented by the many employees who contributed their time and efforts into the creation of the conference and by those who made presentations and participated in panels.

The Aerospace Corporation has long been active in supporting the development of the systems engineering profession and in supporting the Los Angeles Chapter. Historically, the Aerospace Corporation has provided independent technical and scientific research, development, and

(See “Conference Sponsors and Exhibitors,” on page 12)

Papers Presented at RMC16

Thirty-two papers were presented in twelve topical areas. The authors and the titles are listed below:

Requirements:

1. Wellington Olivera and Scott Jackson, "Developing Quality Aviation Systems"
2. Malcolm Currie, "How Can Requirements for Requirement Statements Be Satisfied?"
3. Bohdan Oppenheim, "The Faustian Bargain of Requirements Management"

Agile:

4. Phyllis Marbach et al, "The Role of SE in Large Scale Agile Projects"
5. Laurie Buss, "Six Thinking Hats® and Lateral Thinking® value to Systems Engineers and Business Leaders"
6. Phyllis Marbach and Laurie Buss, "Identify Value with Six Thinking Hats® in Agile Meetings"

Model Based Systems Engineering Research:

7. Heidi Davidz et al, "Linking Reliability Analysis to the Model-Based Ecosystem"
8. Randy Woolley, "Using SE to conduct Transportation Research"

Architecting Tradespace:

9. Michael Martin, "Architectural Structure and Ambiguity: The SE Vision 2025 Challenge"
10. Natalie Davila-Rendon, "Shoreline Surveillance and Defense Architecture Against Rockets"
11. Karen Grothe, "Applying the SE Process to a Conceptual Mercury CubeSat Mission"

Process:

12. Edward Dou, "Leveraging Automation in Complex Radar System Development"
13. Kamal Andrawis and Saeideh Fallah-Fini, "Process Improvement at Vinyl Technology Inc."
14. Andrew LeValley and Jeremy Homan, "Process Thinking in Small Systems"

Critical Infrastructure:

15. Scott Jackson, "Creating Resilient Systems in Crisis Environments"
16. Margaret Glasscoe et al, "Decision Support for Hazard Analysis and Disaster Response"

Big Data:

17. Dr. Kenneth Preston, "Big Data Analytics/Role of Analytics in Systems Engineering"
18. Mike Trelinski, "Big Data Analytics: Lean Thinking"

(See "Presentations," on page 10)

CSER Kick-off Meeting

Date: June 10, 2016 - 4:00 p.m. - 7:00 p.m.

Location: Crowne Plaza Redondo Beach and Marina

Registration: <http://events.constantcontact.com/register/event?llr=14ihvgeab&oeidk=a07ecoj2zso7b2cc134>

CSER 2017: It's Coming!

During the Strategic Planning Meeting (see article on page 2) the Chapter President Terry Rector led a discussion of a major activity for 2016: planning for the Conference on Systems Engineering (CSER) to be held March 23 — 25, 2017. As in the past, CSER 2017 will be lead by the team of INCOSE-LA and the University of Southern California (USC).

The Conference Managers are Terry Rector and Marilee Wheaton, both from the Aerospace Corporation. Also, as in the past, the Chairs for the conference will be from USC. The General Chairs are Prof Azad Madni and Prof Barry Boehm, and the Technical Chairs are Prof Roger Ghanem and Prof Daniel Erwin. The conference planners are seeking their support staff.

Interested in participating in this world class event?
Get in touch with terry.rector@aero.org.
Please have in mind what you would like to do.
All positions are open at this early stage.

CSER 2017 plans include sessions to address the following research topics:

- Formal Methods in Systems Engineering
- Engineered Resilient Systems
- Model Based Systems Engineering
- Systems and SoS Integration
- System Architecture and Complexity
- Trade-space Visualization and Analysis
- Cognitive Systems Engineering
- Cybersecurity Systems Engineering
- Lean and Agile Systems Engineering
- Cyber-Physical-Social Systems
- Systems Thinking and Complexity Management
- Infusion of System Science in Systems Engineering
- Uncertainty Quantification
- Smart Manufacturing
- Advancing Systems Engineering Education
- Systems Engineering and Decision Science

CSER 2017 plans include the following application areas:

- Autonomous Vehicle Networks
- Defense Systems and System-of-Systems
- Space and Aerospace Systems
- Financial Systems
- Global Supply Chains
- Healthcare Delivery
- Homeland Security
- Smart Manufacturing
- Medical Devices
- Sustainable Energy
- Transportation Systems
- Urban Systems and Infrastructure

Follow the progress to CSER2017 and opportunities to participate in future editions of the *Newsletter* and on the Chapter's website and social media.

Second Quarter Strategic Planning Meeting Or Meanwhile, Back in the Chapter...

The Chapter's second Strategic Planning Meeting was held Saturday, May 14, 2016 in the S Café at the Northrop Grumman facility in Redondo Beach. President Terry Rector, ably supported by Vice-president Phyllis Marbach and twelve leaders and members of the Chapter participated. The discussions included a review of the progress to date, a review of the goals for the year, and considerations of possible mid-course corrections that might be made. The goal of the leadership continues to be strengthening the value of INCOSE and, in particular, the Chapter for the members. One of the prime opportunities for members to find value in the Chapter is to volunteer, and there are multiple opportunities to do so.

One of the on-going objectives is to reach out to non-aerospace industries, with an open invitation to those in other fields to ask the Chapter leadership for tutorials, speaker meetings, and networking events oriented to their areas of interest. It was noted that the May speaker meeting discussed systems engineering in the medical field.

The Chapter will continue its practice of presenting speaker meetings, tutorials, and networking events. The concept of "career days" was also discussed.

One of the questions was the degree of engagement of organizations that are members of the INCOSE Corporate Advisory Board. Question: is there a way to work as ambassadors with Corporate Advisory Board members and bring a better understanding of the value of systems engineering to the work place. It was noted that there are opportunities to expand the appreciation for and understanding of systems engineering by reaching out to the several colleges and universities in the area and to other professional organizations. Toward the end Vice-president Marbach noted that she has a free one hour briefing available.

Chapter President Terry Rector led a discussion of a major activity for 2016: planning for the Conference on Systems Engineering (CSER) to be held March 23 — 25, 2017. As in the past, CSER 2017 will be lead by the team of INCOSE-LA and the University of Southern California (USC). This is an opportunity for the Chapter and the members of the Chapter to get involved and to further contribute to our profession.

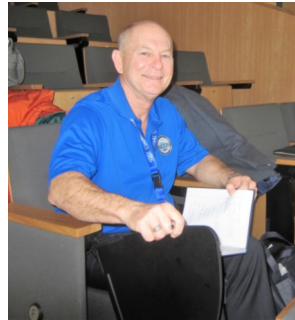


Member Sue Gabriele and Vice-president Phyllis Marbach working through lunch

An Arizona Respective on the RMC

By Joe Marvin, Central Arizona

The 2016 RMC is a perfect example of what can result when INCOSE chapters unite under a common objective to improve the state of systems engineering practice in their area of interest. Particularly in an area such as the southwest through to the west coast of the U.S. We have many reasons to share systems engineering knowledge from a full spectrum of industries and academia that span practical applications up to cutting-edge research.



For example, who better than Professor Azad Madni, of the University of Southern California, and Dr. Barclay R. Brown, ESEP, Global Solution Executive, IBM Watson Internet of Things, and former Director for the Americas, to open the conference and set the stage for two full days of collaboration on how to improve systems? Azad featuring his research

on systems visualization and model based story telling with Barclay launching us into the future of the cognitive Internet of Things infusing intelligence into the physical world.

The quaint setting on the campus of LMU offered a secluded and reflective environment just minutes away from LAX. Panel discussions such as "How to Make Systems Modeling Relevant" and the "Role of SE in large scale agile projects" drove home imperatives we are living daily in our professional lives. Integration of MBSE tools with the objective to link data underscored the need for us to address future system development in new ways. The challenges abound not only in the tsunami of data we all face, but also in the personal aspects as described in the six hats of lateral thinking. All these things combined remind us of the challenges ahead in meeting INCOSE Vision 2025. There isn't much time!

Perhaps one of the more engaging discussions happened at the closing Panel discussion on Systems Engineering and Project Management Interaction. Here is where it was pointed out that systems engineering has a serious problem in that, "we have failed to recognize the importance of critical information – and what do we do about that?" Only in a comfortable setting such as that created by the RMC, can we have this kind of open and honest discussion.

Diversity was also featured at the RMC. From coaxing the attending students to interact during sessions to women in engineering and management roles, the RMC has a session, panel and discussion on how to achieve greater results with a larger tent. The RMC went beyond chapter, domain and industry boundaries providing a first-ever event that got many of us in the region thinking, "maybe we could do something like this?" Thanks from Central Arizona Chapter to the Los Angeles Chapter for being the Big Brothers and showing us how this can be done.

NETWORKING: A Strategy for Every Stage of Career Development June Speaker Meeting

June speaker meeting

TOPIC: NETWORKING: A Strategy for Every Stage of Career Development.

PRESENTER: Kathleen Terry, Participative Management Systems.

WHEN: Tuesday, June 14, 2016.

TIME: 5:30 p.m. to 8:00 p.m.

WHERE: The Aerospace Corporation, El Segundo.

COST: Members: FREE. Non-members: \$10.

REGISTRATION: required.

See "PARTICULARS," below, for more details.



BIOGRAPHY:

Kathleen Terry is founder of Participative Management Systems and is well known for her high-impact seminars and workshops based on the most critical issues facing managers and employees within the workplace today. She has presented programs, both nationally and internationally, to organizations as diverse as high-tech firms, local and metropolitan city and county governments, leading defense/aerospace contractors and major health management organizations. She is a senior instructor at the Caltech Center for Technology and Management Education, and has taught within their Systems Engineering Program for many years.

ABSTRACT:

Networking can serve as a valuable strategy at each and every stage of your career development. Networking is about making connections and building enduring, mutually beneficial relationships. To be effective in networking, however, it needs to be a planned and ongoing effort. Successful networkers set goals, develop strategies for achieving them and take action. During this interactive presentation, we will look at what it takes to make your networking both in person and through social media easier, effective, and maybe even enjoyable. We will discuss common mistakes people make when networking, how to make your networking natural, and how to build upon the relationships established. We will also look at the importance of social media and how you can use it effectively as a networking technique. Remember to bring your business cards to this event.

PARTICULARS:

Host site: The Aerospace Corporation, Building D8, Room 1010, 200 N. Aviation Blvd., El Segundo, California 90245.

Refreshments will be provided at this site.

HOST SITE REGISTRATION REQUIRED

In order to attend the speaker meeting at the host site, go on line to register. The registration website address is:

<http://events.constantcontact.com/register/event?llr=14ihvgeab&oeidk=a07eco43jqbb153822>

Remote Sites (potential): AV College in Lancaster; Boeing in Huntington Beach, Capstone Turbine in Chatsworth, JPL in La Canada, Control Point Corp in Goleta, NGC (employees only) in Azusa.

Webcast virtual site (Global Meet): Register as an individual virtual participant. (You must RSVP by Monday noon June 13, 2016.)

See below for directions to the host site, and how to RSVP for a remote webcast site.

Please RSVP by Tues, June 7, 2016 to facilitate event registration and planning, particularly at the host site:

AGENDA:

5:30 – 6:20 p.m.: registration, networking, refreshments

6:20 – 6:30 p.m.: welcome and announcements

6:30 – 8:00 p.m.: formal meeting followed by questions and answers

DIRECTIONS TO AEROSPACE CORPORATION

Location: between Imperial and El Segundo Blvd (north to south), between the 405 Freeway and Sepulveda (east to west).

From the San Diego (405) Freeway heading SOUTH:

Take the exit towards El Segundo Blvd.

Turn Left onto S La Cienega Blvd.

Take the 1st Right onto W El Segundo Blvd.

Take the 2nd Right onto N Aviation Blvd.

Bldg. D8 will be on the third building on the Right, just past the discount bakery.

From the San Diego (405) Freeway traveling NORTH:

Take the El Segundo Blvd exit, Exit 44.

Turn Left onto W El Segundo Blvd.

Turn Right (North) on N Aviation Blvd.

Bldg. D8 will be on the third building on the Right, just past the discount bakery.

From the 105 Freeway traveling WEST:

Take the exit towards 405 South

Before getting onto the 405 Freeway, take the El Segundo Blvd exit

At the bottom of the ramp, turn left (west)

Turn right on Aviation Blvd.

Bldg. D8 will be on the third building on the Right, just past the discount bakery.

IEEE GameSIG and Systems Engineering

By John Silvas

In the “Process and Integration” stream on the second day of the Regional Mini-Conference, former INCOSE-LA President (2012) and senior advisor of Creativita Institute, Mr. John Silvas of Booz Allen Hamilton, brought forth an exciting educational collaboration topic to the session. In this new cross-organizational initiative, Mr. Silvas briefed the audience on the status of the recent INCOSE volunteers’ interactions with the IEEE Game Special Interest Group (SIG) and a joint effort to introduce Systems Thinking to the IEEE’s yearly gaming showcase and competition. A high school student representative, Robert Chang, from Northwood High School Irvine, presented how SE principles were adopted by the student team to develop their interactive game in preparation for the 2016 competition. Mr. Silvas concluded the presentation with an invitation to the chapter members for establishing a working group to develop a student level SE reference material and judgment criteria to be utilized as a new competition category for the upcoming IEEE Game SIG event starting in 2017.

The Los Angeles Chapter has a long history of encouraging members to volunteer in supporting Science, Technology, Engineering and Mathematics (STEM) related educational events such as robotics and science competitions. The objective of these sponsorships is to motivate students and educators to adopt the mindset of System Thinking in preparation for future interests in the knowledge domains of Systems Engineering, innovation, and similar areas. As disclosed by Mr. John Silvas at the 2016 Regional Mini Conference, many STEM competitions have been traditionally focused on team building, rule compliance, object development, troubleshooting, and presentations. In other words, they are essentially objective driven, with an emphasis on following given designs and implementation rules in order to build a predetermined target product effectively. Creativity in such application is limited to troubleshooting and presentations. Furthermore, because of the lacking supporting artifacts and curricula, the majority of engineering educators must develop their own home-grown principles to help students collaborate on cross-functional tasks while building these projects. If the value added, proven methods associated with software and systems engineering were more explicitly embedded and made practical for students, it would greatly help the educators focus more on passing down their knowledge and experience rather than worrying about trying to provide meaningful project guidance. To respond to this call, a small group of INCOSE-LA Chapter experts worked together in 2014 to produce a “Junior Systems Engineering Handbook” based largely on the INCOSE SE Handbook. The Junior SE Handbook will be available via the Chapter Web Site as well as the IEEE GameSIG web site for student access in the May/June 2016 timeframe.

In the meantime, this SME team also reached out to national professional organizations in search of events that are

most intriguing to students. An idea event must have embedded characteristic of “system vs. components” diversification and require a “big picture” view, cross-functional collaboration, and some sort of project management.

For instance, making complex games is not merely a software development activity, it is like making a movie. Story, music, art, technology, and other supporting elements all contribute to the completion of a basic gaming product. With these multiple elements, a game development competition can potentially offer an open-minded project framework demanding the competing teams to creatively integrate a variety of components within a reasonable short timeframe. Its short yet complete life-cycle can explicitly map to the INCOSE’s SE model. As one of the results, this SME team has established an early agreement with the Institute of Electrical and Electronics Engineers (IEEE) Game Engineering Special Interest Group (SIG) to execute a pilot project that will formally integrate SE concepts into their computer game development competition starting from 2017. In order to provide a sufficient knowledge base for the competing teams at both the college and high school levels, the SME team is calling for your support and participation in the following areas: (1) refining the current Junior SE Handbook to align with this type of competition, (2) selecting appropriate SE artifacts and instructions to be

Associate Systems Engineering Professional Event

Stephen Guine, immediate Past-President of INCOSE-LA, conducted a review of the Systems Engineering Professional material at Loyola Marymount University on April 19, 2016. This review was conducted to help the participants prepare for the certification exam. The exam is the same for Associate and Certified Systems Engineering Professionals, ASEP and CSEP. Certification is a formal process whereby a community of knowledgeable, experienced, and skilled representatives of an organization, such as INCOSE, provides confirmation of an individual's competency (demonstrated knowledge, education, and experience) in a specified profession. CSEP requires a minimum of 5 years of experience and other requirements found here: <http://www.incose.org/certification/CertWhichOne>. ASEP has no experience requirements and is appropriate for Systems Engineering students and recent graduates.

Members of the Systems Engineering LMU SELP 500 course were present as well as early professionals from local companies. Some members of INCOSE-LA were present to provide refreshments and lend their support during discussions regarding the exam content. The review was held like a game of Jeopardy where categories such as: How We Do It, Core Definitions, Facts of Life, Technical Processes and Dates are available with points ranging from 100 to 500. The participants select a category and point value where an answer is provided and the participant gives the question. Points are earned for each correct answer. Everyone who attended was a winner and had

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 your INCOSE profile (at www.incose.org) to update your information.

Name	Primary Organization Name	Division/Department
Abdulaziz Alothman		
Ted Valencia	CognoSeer Technologies	
Monica Jan	LightSpeed Innovations	
Kristopher Scher	Scitor Corporation	
James Hartney	Loyola Marymount University	
Sophan Im	Boeing Company, The	
Matthew Beck	Loyola Marymount University	
Mohammed Almoslut	Loyola Marymount University	
Bill Kaneshiro	Scitor Corporation	
Scott Boller	Aerojet Rocketdyne	Systems Engineering
Dr. Shane Dultz	Stratec Biomedical USA, Inc.	
Kurt Joob	Loyola Marymount University	
Osama Asiri	Loyola Marymount University	
Dr. Toni Boadi	California State University Dominguez Hills	Physics/Systems Engineering
Adam Contos	Giant Magellan Telescope Organization	
CRAIG ESTRIDGE	The George Washington University	Lockheed Martin Corporation
Daniel Lukasik		Parsons
Mr. John Rosica	NVIS/Barrett Communications LLC.	
James Humann	University of Southern California	1989
Thomas Brennan	Raytheon Corporation	
Bryon Berryhill		
Justen Harper		

Maximum weight and Dimensions of Packages Accepted for Dispatch.—Over the Broad and Metre Gauge lines no package exceeding five maunds in weight or 8 feet by 5 feet by 4 feet in outside measurement and over the Narrow Gauge lines no package exceeding three maunds in weight or 4½ feet by 3½ feet by 3 feet in outside measurement will be accepted for carriage except by previous arrangement.

Western Railway of India Time Table July 1956

Check out the INCOSE-LA Facebook page for the latest updates!

Stand up, be recognized for the work you do!

Volunteer!
You will learn something you never knew you needed to know

Not a member? Join INCOSE!

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

In keeping with the traditions of the test community, there was, or so the story goes, a laser test which was not going exactly as planned. Seems a lens cap had been left on the lens. After its discrete removal the test went well, with the only explanation, outside the test community, being, "he laid hands on it."

INCOSE-LA Chapter NEWSLETTER

Vol. 14: Issue 3, June -- July 2016



Architectural Design

5-Day Course

This new five day course addresses the principles and methods of designing, regardless of what is being designed. The course provides an integrated approach to the set of technical design process disciplines that combine with technology knowledge and creativity to satisfy requirements and maximise system effectiveness.

20 - 24 March 2017 | Las Vegas, NV

For the complete course description or more information please visit our website:

www.ppi-int.com

Stand out from the crowd

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CTI's CSEP preparation course will equip you with essential understandings, tools and tips to maximize your likelihood of passing the exam.



Register today at: **www.certificationtraining-int.com**

Pasadena Networking Event

A good time was had by all who joined INCOSE-LA Networking at the King's Row Gastropub in Pasadena on April 20, 2016. Fourteen of us gathered outside on the patio, around the new tabletop banner, to meet and chat with members and guests who attended. INCOSE-LA provided non-alcoholic drinks and the delicious food which included sliders, fish and chips, veggie blends, and other tasty fresh fare. Attendees included members from the Giant Magellan Telescope Organization, Lockheed Martin, Medtronic, The Aerospace Corporation, the Thirty Meter Telescope Observatory Corporation, the Gemini Observatory, the Association of Universities for Research in Astronomy, and NASA Jet Propulsion Laboratory. As you can imagine, the conversation was "out of this world". Hope to see you at the next networking event in your area!

(Presentations, continued from page 4)

Best Practices

19. Richard Emerson, "Infrastructure Systems Characteristics and Implications"
20. Geraldine Chaudhri and Gail Johnson-Roth, "Best SE Practices for Ground Segment Acquisition"
21. Melody Schiffano et al, "A Systems Approach to Predicting Healthcare Failures"

Human Systems Engineering:

22. Susan Gabriele, "Advancing Human Systems Engineering"
23. Susan Gabriele, "The Hard Facts of Soft Social Systems"
24. Jorg Largent, "Systems Engineering Xenophobia: the Cure"

SysML:

25. Rick Steiner, "The Future of Modeling Requirements in SysML"
26. John Wood and David Schrunk, "A New Application for SE: The Science of Laws"

Agile:

27. Laurie Buss, "GROUP FLOW: The Genesis of Innovation"
28. Adriana Posadas et al, "Value Based, Lean, Agile SE for Captive Machine Shop Operations"
29. Greg Placentia, "Adapting Systems Engineering to the Legal System"

Process, Integration:

30. John Silvas et al, "The Enterprise Integration Process"
31. William Chang et al, "SE Practice on Gaming Development"
32. Julia White, "Introduction to Test Like You Fly (TLTF)Process"

The Application of Systems Engineering in Medicine A Report from the May Speaker Meeting

The presenter for the May Speaker Meeting was Steven W. Badelt, PhD, Managing Principle, Suttons Creek. His topic was "The Application of Systems Engineering in Medicine."

Steven W. Badelt, PhD. is a seasoned expert in product development, engineering management, business development, and systems engineering. He has over 20 years of experience in the design and launch of combination products and medical devices, including mechanical auto injectors, electromechanical patch injectors, and insulin-pumps.

Steve holds a BS in Electrical Engineering from Carnegie Mellon University, an MS in Biomedical Engineering from UCLA, and a PhD in Neuroengineering from UCLA. He has been awarded multiple awards for writing business plans (Tech Coast Angels), research (Yahoo!, The Smithsonian), and leadership (Carnegie Mellon, industry).

Steve is Managing Principle of the biotech consulting firm Suttons Creek, Inc. He is an advisory board member for the Los Angeles-based Greenwings seed-capital investment fund. Steve is also an Industry Ambassador for the Healthcare Working Group of INCOSE.

(RMC Co-chairman, Continued from page 2)

and spirited new systems engineers. The panel discussions on "Career Path", "Empowering Women" and "PM-SE interactions" were particularly relevant (see other articles for further details).

As stated above, the conference development team was drawn from all five chapters. The organizing team met virtually. Virtual meetings are difficult to manage because of the lack of visual feedback. However, during these weekly meetings, the leadership team was able to develop mutual trust and accomplish all the tasks. The team was successful with the second purpose.

We are still in the process of evaluation the process and hope to report on it soon. I will say that I learned much from this experience, unfortunately I'm one of the grey beards. (literally and figuratively.)

At the end of events such as this individually we ask ourselves, "Was it worth it?" For me the answer is, "A resounding yes."

A hearty **Thank You** to all who made this conference possible: organizing team, volunteers, speakers, dignitaries, panelists, panel moderators, and attendees. Your support shows that INCOSE's mission is alive and well here.

(RMC Summary, continued from page 2)

The context for the keynote presentation was, “today’s hyper-connected world that is characterized by:

- ◆ increasing system complexity
- ◆ unprecedented technological advances and,
- ◆ unexpected and often undesirable consequences of new technology introduction into work and social settings.”

This is the subject of Dr. Madni’s forthcoming book entitled, “Transdisciplinary Systems Engineering: Exploiting Convergence in a Hyper-connected World.”

In his keynote, Dr. Madni suggested that systems engineering is in the midst of a much-needed transformation and argued for a new mindset that embraces holism, self-organization, agility and resilience, and disciplinary convergence. He emphasizes ongoing disciplinary convergence as a movement that needs to be exploited to attack problems that are deemed intractable today. He concludes with projections of how convergence in systems engineering is likely to unfold in the future, centered around Model Based Storytelling.

Dr. Madni is an INCOSE Fellow and a Professor in the Daniel J. Epstein Department of Industrial and Systems Engineering in the Viterbi School of Engineering of the University of Southern California. In addition to his many other honors, he has recently been recognized as a Distinguished Engineering Educator.

Saturday morning concluded with a panel discussion: “MBSE: Making System Modeling Relevant.” Rick Steiner of the San Diego Chapter served as moderator and the panel members were Dr. Barclay Brown, Dr. Heidi Davidz, Ryan Noguchi, Bjorn Cole, Stephen Guine, and Stephanie Sharo-Chiesi.

Saturday afternoon activities began with the first block of presentations, fourteen in all, followed by panel discussion on “SE Career Path (Student and Early to Mid-Career).” This panel was moderated by Stephanie Sharo Chiesi of the Central Arizona Chapter, and the panel members were Cheryl Dematteis, Rick Hefner, Edwin Ordoukhanian, and United States Air Force Captain Jeremy Homan.

Saturday concluded with a reception and a student poster session. The quality of the student posters and the intelligence, inquisitiveness, and enthusiasm of the members of the Student Divisions were the perfect complement to the day’s proceedings.

Activities on Sunday picked up where Saturday’s activities left off. The morning started with a panel discussion, “Integration of MBSE Tools.” The moderator was Dr. Mark McKelvin, and the panel members were Dr. Curtis Iwata, James Horejsi, Steven Jenkins, and Dr. Barclay Brown. Dr. McKelvin’s opening remarks set a lively and challenging basis for the discussion. Several insights with respect to the utility – and limitations – of tools were shared and discussed.

Dr. Mark L. McKelvin, Jr. is an Engineering Specialist in the area of model-based systems and software engineering at the Aerospace Corporation. Prior to this recent move to the Aerospace Corporation, Dr. McKelvin was the technical lead for the development and infusion of model-based engineering methodologies and tools to support space system development at the California Institute of Technology Jet Propulsion Lab. He is also a lecturer in the System Architecting and Engineering Program at the University of Southern California Viterbi School of Engineering. His interests are in the application of modeling, analysis, and design of engineered systems, including cyber-physical, embedded, and software systems. He holds a Ph.D. in Electrical Engineering and Computer Sciences from the University of California, Berkeley with an emphasis in Electronic Design Automation.

The opening panel discussion was followed by a group of ten presentations in parallel with a panel discussion on “Empowering Women in Systems Engineering and INCOSE,” conducted by Stephanie Sharo Chiesi, Phyllis Marbach and Roz Lewis.

After lunch on Sunday, the conference continued with eight presentations and two panels: “Agile Software Development for Intelligent Transportation Systems,” led by Jesse Glazer of the Federal Highway Administration, Phyllis Marbach, and Randy Woolley, and “Using SE in the commercial UAV industry, development of commercial UAVs,” led by Andy Von Stauffenberg, Harrison Wolf and Ryan Moriarty.

The conference closed with a panel, “Systems Engineering and Project Management Interaction,” moderated by Marilee Wheaton of the Aerospace Corporation, and followed by closing remarks and thankyou’s by Terry Rector and Dick Emerson.



Keynote speaker Dr. Azad Madni, of the University of Southern California, above, and Intergration of MBSE Tools panel moderator, Dr. Mark Mckelvin of the Aerospace Corporation, below. Photos by Greg Bulla, of the San Diego Chapter



advisory services to national security space (NSS) programs since 1960. They operate a federally funded research and development center for the United States Air Force's Space and Missile Systems Center and the National Reconnaissance Office. The corporation also applies more than 55 years of space systems experience to projects in the national interest for civil agencies such as NASA, the National Oceanic and Atmospheric Administration, commercial companies, universities, and international organizations.

The Aerospace Corporation functions as the nation's independent testing, assessment, and research center for national security space systems, specializing in advanced military space systems. Along with supporting the effective and timely development and operation of national security systems through rigorous scientific research and application of advanced technology, our technical teams also focus on developing and integrating new technologies to enhance existing space systems.

IBM is a well known industry leader and advocate for systems engineering. The growth and innovation associated throughout IBM's history has continued into the Twenty-first Century with a broad spectrum of hardware and software products that serve virtually all aspects of modern life. IBM produces several families of software products including security, cognitive (Watson), analytics, business solutions, mobile and social and IT infrastructure, the latter including Rational DOORS.

The University of California Irvine Extension was established in 1962 and has been offering continuing education for adult learners in Orange County for over half a century. Today they maintain over 30,000 enrollments from students worldwide each year and offer hundreds of courses and programs to local, regional and global constituencies. UCI Extension offers over 60 convenient certificates and specialized studies programs on campus and online designed for the working professional who seeks career advancement and personal enrichment. They offer a Systems Engineering Certificate Program as well as courses in Systems Engineering and Embedded Systems Engineering.

The California Institute of Technology (Caltech) is a world-renowned science and engineering research and education institution, where extraordinary faculty and students seek answers to complex questions, discover new knowledge, lead innovation, and transform our future. Caltech is based in Pasadena, California, with facilities located around the globe. The Jet Propulsion Laboratory, founded by Caltech in the 1930s and managed for NASA since 1958, extends Caltech's reach to Mars and beyond with 19 spacecraft and eight instruments employed in active missions. Recently launched missions include the Mars Science Laboratory, Juno, Aquarius, and NuSTAR. The study of earthquakes is another domain in which Caltech is a leader, being internationally recognized for excellence in geophysical research with research centers for seismic studies, high-performance computing, and mineral physics.

The Raytheon Corporation is one of the earliest

technology start-ups. Raytheon was established in Cambridge, Massachusetts, as the American Appliance Company. Raytheon quickly moved to the forefront of innovation in the electronics industry, contributing significantly to the World War II effort. After the war Raytheon began offering civilian products, the microwave being among the most famous. In the decades that followed, Raytheon employees would build on the company's reputation for technology and innovation leadership. Today it stands as a global technology leader specializing in defense, homeland security and other government markets. Raytheon today is a unique technology company and a world leader in defense electronics, with a broad range of products, service and capabilities. The proud legacies of Raytheon, E-Systems, Texas Instruments Defense, Hughes Aircraft and others have come together to form one company with one vision: One global team creating trusted, innovative solutions to make the world a safer place.

Project Performance International (PPI, see the advertisement on page 8) has earned a worldwide reputation for providing training of the highest quality, in the major disciplines necessary to achieve successful project outcomes, in all sectors. Included in catalog of courses is a wide selection of courses for the systems engineering professional:

Systems Engineering

Requirements Analysis and Specification Writing

Engineering Management

Requirements, OCD & CONOPS in Military Capability Development

Human Systems Integration

Design

and much more.

The **Vitech Corporation**, founded in 1992 by INCOSE Past-president David Long, is dedicated to the development and application of innovative engineering and business process systems approaches to solve the challenges of designing integrated systems. Vitech developed and commercialized CORE™, – an integrated, model-based system engineering software tool which incorporates the key components of building a system: people, processes, data, and documentation.

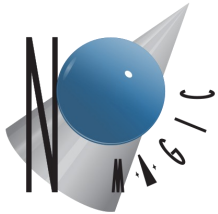
Vitech's main office is located in Blacksburg, Virginia, with satellite offices across the United States. Global business partners are located in Europe, Australia, Israel, Korea, and South Africa. Vitech provides a wide range of solutions, including requirements management software, test and evaluation, enterprise architecture software, modeling and simulation and SysML modeling, while providing a wide range of services, training, and resources.

Jama



The winner of the early registration drawing was Ms Linda Roberts of Littlerock, California. Congratulations, Linda!





Not a member? Join INCOSE!

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

INCOSE-LA Chapter NEWSLETTER

Vol. 14: Issue 3, June – July 2016

INCOSE-LA Needs You!

By Lin Yi, Communications Director

The Communications committee is looking for volunteers in both short-term projects and long-term positions:

- Website team member (1)
- Social media evaluation team member (2)
- *Newsletter* production team member (1)

Please contact communications@incose-la.org.

Authorised Charge for Portage 3 Anna

PER HEAD LOAD UP TO ONE MAUND PER TRIP

Please do not pay more than the authorised charge even if demanded by the licensed porters.

Please do not deal with porters without buckles or badges.

Western Railway of India Time Table July 1956

Help us help you — update your INCOSE profile Log into the INCOSE home page and click on “profile home” to update or correct your information



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Return Address:

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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 details on Chapter-sponsored events and registration, go to incose.org/los-angeles

CSER Kick-off Meeting

Date: June 10, 2016 - 4:00 p.m. - 7:00 p.m.

Location: Crowne Plaza Redondo Beach and Marina

Registration: <http://events.constantcontact.com/register/event?llr=14ihvgeab&oeidk=a07ecoj2zzo7b2cc134>

INCOSE-LA Speaker Meeting

NETWORKING:

A Strategy for Every Stage of Career Development

Date: June 14, 2016 - 5:30 p.m. - 8:00 p.m.

Look for a Reflector Notice in your email, and check the Chapter website for more details: incose-la.org

INCOSE International Symposium 2016

Date: July 18, 2016 - July 21, 2016

Location: The Exchange - Edinburgh, Scotland

Venue: Edinburgh International Convention Centre

Details are available on the INCOSE website:
<http://www.incose.org/symp2016/home>

Fifth Annual Mars (& Juno!) Update & LA/OC Society Expo

Date: September 10, 2016 - 1:00 pm - 5:00 pm PT

Location: Redondo Beach, CA, USA

Venue: S-Café at Northrop-Grumman

Cost: FREE

Look for a Reflector Notice in your email, and check the Chapter website for more details: incose-la.org

Future INCOSE Networking Events Tentative Dates, and Locations:

July 20, 2016 – West LA/South Bay

September 21, 2016 – Orange County

November 16, 2016 – Ventura County

December 10, 2016 – INCOSE Holiday Party

Conference on Systems Engineering Research (CSER)

March 23 — 25, 2017