



# NEWSLETTER



2002, 2004-13



2003



2008, 2012  
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for Most  
Outstanding Chapter



**This edition of the Newsletter features four reports from the recent 2014 International Symposium**

## A Presidential Perspective on IS14

*By Michael Wallace, President, INCOSE-LA*

The twenty-fourth annual INCOSE International Symposium (IS), held in Henderson Nevada, welcomed system engineering scholars and practitioners from across the globe. Contrary to the norm, IS 2014 did not headline a conference theme — an effort to reflect on the versatility and the extensibility of the system engineering discipline. The conference also focused on the vision for INCOSE through 2025.

The papers and presentations were diverse in nature and allowed participants to engage in pedagogical discussions that focused on the importance of the academics of systems engineering and its applicability in today's challenging environment. INCOSE IS 2014 lived up to INCOSE's mission statement and delivered a conference that shared, disseminated, promoted and inspired to advance the best of system engineering from across the globe.

There was a host of speakers and presenters that addressed and expressed the need for systems engineering. Each morning session started off with a plenary keynote speaker, followed by breakout sessions that contained five tracks.

Grant A. Begley, President and owner of Concepts to Capabilities Consulting, was the first keynote speaker. He spoke on the growth and complexity of unmanned systems and on the relevancy and importance of systems engineering to support the growth of this technological advancement.

*(See "Presidential Perspective" on page 2)*

## A Vice-presidential Perspective on IS14

*By Stephen Guine, Vice-president, INCOSE-LA*

I attended IS 2014 wearing multiple hats: Vice-president of INCOSE LA, a systems engineering functional manager, a Certified Systems Engineering Professional-Acquisition looking for paper topics for IS 2015 and for the INCOSE-LA 2015 Mini-Conference, and as a member of several working groups.

My first day was spent primarily on strategic planning. The first half of the day was a general session comprised of work group and board leaders plus various chapter leaders who were present. The focus was on two key topics:

1. The release of the Systems Engineering Vision 2025; and
2. The new five-year goals.

The Systems Engineering Vision 2025 (web link: [http://www.incose.org/newsevents/announcements/docs/SystemsEngineeringVision\\_2025\\_June2014.pdf](http://www.incose.org/newsevents/announcements/docs/SystemsEngineeringVision_2025_June2014.pdf)) does an excellent job of describing the foundational value of systems engineering in the current environment as well as the future. I strongly recommend that all systems engineers read this document (link included above).

There was considerable discussion on the Five Year Strategic Objectives and what they mean for systems engineering as a discipline and for INCOSE as an organization.

I also participated in a the Corporate Advisory Board sessions and the Industry Outreach Board.

*(See "V-P Perspective" on page 2)*

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*(Presidential Perspective, continued from page 1)*

Grant stated, “unmanned systems will be ubiquitous to our everyday lives. Systems engineers should provide ethical, economical, and technical growth for unmanned systems.” The rapid expansion and utility of unmanned systems have bridged out across ground, maritime, airborne, and space systems.

The second keynote speaker, Scott McArthur, Director – Sculpture Consulting, dazzled the audience with his presentation on “Dogs, Bears and Magic Numbers.” Scott is a motivational speaker and specializes in organization psychology, change management, learning, development and business management.

Scott mentioned that our minds are trained to look for what we are told and to not focus on the information at hand. The objective of his presentation was to help systems engineers see the forest beyond the trees. Scott said that we need to, “un-focus on the details and yet focus on the big picture. We need to seek out the unusual participants.” Basically, we need to always look at things from a different perspective. As systems become more complex in nature, systems engineers need to expand their thought processes beyond the box. Systems engineers should not let their thinking process be trapped in the box like the proverbial Jack, and they should transform their way of thinking to adapt to the technological changes.

Chuck Severance was the third keynote speaker. Chuck is a Clinical Associate Professor at the University of Michigan. His briefing was on expanded means and ways to educate people using Massively Open Online Courses (MOOC’s). As previously noted, complex systems will require expanded learning techniques. MOOC’s can serve as a means to support adaptive learning. Systems engineers need to learn that, “in theory, theory and practice are the same; in practice, they are not (Richard Beasley)”. Bridging the gap between academia and industry on systems engineering is vital to support the INCOSE 2025 vision. Education is the foundation that knowledge is based on, but experience serves as the building blocks for innovation.

There was a wealth of other insightful discussions that transpired at IS 2014, of which, I’m sure, all of the participants benefited. One of the many things that inspired and energized me in contributing to the advancement of systems engineering was the closing panel discussion with Dr. Judith Dahmann, Kuldeep Gharatya, Jon Wade, and Dave Sharratt on the six systems engineering imperatives:

1. Expanding the application of systems engineering across industry domains,
2. Embracing and learning from the diversity of systems engineering approaches,
3. Applying systems engineering to help social and natural systems,
4. Expanding the theoretical foundation for systems engineering,
5. Advancing the tools and methods to address complexity and
6. Enhancing education and training to grow a systems engineering workforce that meets the increasing demands.

Kuldeep Gharatya, one of the final plenary panel member stated that “the future systems engineer will innovate, not just integrate.” They will need to be equipped with the knowledge to deal with collaborative engineering, complex systems of systems, advanced modeling and system architecting, composable designs, design for security, and a good sense of decision analysis skills. As Barkly Brown quoted the words of Booker T. Washington, “excellence is to do a common thing in an uncommon way.” The systems engineer of the future needs to collaborate and integrate across various domains so as to be innovative and to achieve excellence.

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*(V-P Perspective continued from page 1)*

Most important in my eyes was the focus on making Model Based Systems Engineering (MBSE) a core skill of the discipline; not only from a tool’s standpoint but from a value-added standpoint. Considerable discussion also centered on collaboration with existing industry groups, including non-traditional systems engineering type organizations such as the Association for the Advancement of Medical Instrumentation.

From an education standpoint, there is a strategic focus on getting the Graduate Reference Curriculum for Systems Engineering adapted within the academic realm, primarily for Master of Systems Engineering programs. Additionally, from an educational standpoint, INCOSE is focusing on developing a web-based matching tool that links graduate students with corporate sponsors so as to link the student’s research or to propose research activities for students with companies that might be interested in such activity.

For the remainder of the day, I participated in the strategy sub-work group focusing on the development of impactful products. The focus there was on how we might leverage the existing library of various products and processes in terms of the ones that are the most impactful. The key metric is that from a user standpoint, the products have a real, immediate value on product delivery as opposed to core education artifacts. One example given were the “zGuides” (since these are from INCOSE United Kingdom, the proper pronunciation is “Zed Guides”). These were designed to leverage core system engineering knowledge for the non-systems engineering practitioner (e.g. the new entrant to the discipline or for a relevant executive-level-value recipient).

We discussed products focused on MBSE but did not come to any finalized decisions in that it is difficult to determine what products would be most valuable. However, by the end of the strategy session, we had identified some processes for combing through INCOSE content, chapter content, and related technical society’s content. I proposed that via the proper data tagging we could create sub-products very similar to the way the *Harvard Business Review* creates books or packages focused around a specific topic, are composed of four or five previously published items, and packaged in a way that is unique to the sub-topic.

*(See “V-P Perspective” continued on page 8)*

## Excerpts from the 2014 International Symposium

By Padman Nagenthiram, Member, INCOSE Board of Directors

Even though it was very hot outside, with temperatures reaching 112°F, delegates to the 2014 International Symposium were entertained with a full array of events including keynote speeches, paper and panel sessions, and poster papers. In addition, there were sessions focused on systems engineering in automotive, biomedical, energy, infrastructure and ground transportation, plus an academic program, tutorials, workshops, an exhibition by industrial organizations and academia, and a tool vendor challenge. INCOSE hosted a luncheon for new members, and a certification reception, award presentations, social events and a banquet. One new feature in this year's symposium was the decision to minimize the INCOSE business meetings and by holding most of them before the symposium itself began. Even though this made for a longer length of stay for those attending these meetings, it allowed the attendees to enjoy more of the symposium. Following are excerpts from the symposium and business meetings that were of particular interest.

### Five Year Objectives:

In the Joint Leadership Meeting, which was open to everyone, INCOSE President David Long unveiled seven top-level INCOSE objectives for the next five years. These are:

1. Growth: INCOSE doubles its membership and embraces the healthcare, mobility, and energy business sectors
2. Alliances: INCOSE amplifies its ability to achieve its mission through diverse alliances
3. Education: INCOSE curricular recommendations are widely adopted around the world, raising the quality of engineering education
4. Products: INCOSE produces and brokers the most impactful systems engineering information in the world
5. Forums: INCOSE produces and supports the most impactful systems engineering forums in the world
6. Competency: INCOSE teams with industry to raise systems engineering competency across their supply chains
7. Transformation: INCOSE accelerates the transformation of systems engineering to a model-based discipline

These objectives will be supported by sub-objectives, initiatives and metrics. Also, the objectives are expected to change and evolve with time. It should be noted that it is not INCOSE's intention to restrict activities only to those that support these objectives as evidenced by the myriad of sessions at the Symposium. While I believe that the objectives are succinct and capture most of INCOSE's mission, there are two shortcomings which I would like to highlight.

First of these is not mentioning support for systems engineering research. I believe this is a serious omission. It does not reflect one of INCOSE's main goals "encourage support for governmental and industrial research..." stated on its public website.

(See "Padman," on page 8)

## August Speaker Meeting Featuring a speaker from Disney

The August Speaker Meeting will feature Kazuo "Kaz" Takeda, Manager of Industrial Engineering at Disneyland® Resort. Kaz will present an, "Overview of Industrial and Systems Engineering (IE) applications for the Walt Disney Parks and Resort."

### Abstract:

Industrial and Systems Engineering skills are utilized to improve the guest experience at the Walt Disney Parks and Resorts. Kazuo's team of industrial engineers supports various sustainability efforts for the Disneyland Resort theme parks, three hotels and the downtown Disney complex. His overview will provide the INCOSE members with an insight into the IE department mission and structure, along with a discussion related to how IE team integrates itself horizontally with various lines of business to enhance the guest experience.

### Speaker Biography:



Kazuo "Kaz" Takeda is the Manager of Industrial Engineering for the Disneyland Resort. Since 1998, Kaz has been responsible for both strategic and tactical operational functions focused on creating and maintaining a world-class theme park operation. In his role, he is accountable for planning and improving the sustainment operations for two theme parks, three hotels, and multiple retail and dining locations. His experience ranges from working with maintenance, security, textiles and horticulture, to serving on various support units that orchestrate media events and drive theme park performance.

Kaz began his career as a quality control engineer within the home satellite television industry. He then joined Telescreen LTD as the U.S. logistics manager for their international animation studio production group. In 1988, Kaz joined United Parcel Service in their industrial engineer division, supporting multiple initiatives from the creation of Quality Incentive Bonus system to the opening of new buildings and air gateways.

Since joining the Disneyland Resort, his work has continued on all aspects of Resort business and operations from being a core member of the Disney California Adventure grand opening press event team to implementation of process standards and creation of an Electrician and Machinist Union craft apprenticeship/trainee program within the Resort's maintenance division.

(See "August Speaker Meeting Particulars" on page 10)

# International Symposium Observations

By Bob Noel, INCOSE-LA Director of Communications

The speaker for the opening plenary was Grant Begley, who addressed robotics and unmanned systems as the future of engineering. The advances in technology have enabled many new systems that were not possible a few years ago. One statistic brought up by the speaker was that China has now created a processor that can perform 33 quadrillion calculations per second. The “bottom line” was that systems engineers should be a major part of the process to ensure the best capabilities but also these systems are used ethically.

The first presentation I went to was about the impending release of the new Systems Engineering Handbook (version 4.0) presented by several authors and editors of the handbook. The new release includes ensuring correlation with the Institute of Electrical and Electronics Engineers (IEEE) standard ISO/IEC 15288. I noted that the way the IEEE divided the systems engineering processes agreed with the way INCOSE divides the processes in the new end-to-end systems engineering training. The new handbook should be out and available by the end of the year (or early 2015), superseding the current version 3.2.2 and will include new sections on systems engineering leadership and agile systems engineering.

Michael Ryan of Australia made the next presentation and discussed the role of stakeholders in requirements elicitation. Michael defined a stakeholder as “someone who has the right to influence the outcome” and talked about different types of stakeholders and what they should influence, using the example of a home renovation. Though we commonly would consider a child or the local city building inspectors to be stakeholders, Michael pointed out that they really can only partially influence the requirements for a project like that. Instead, the city inspector would be more of a “compliance figure” – i.e. if the design complied with the requirement in the building code, then that person could not influence the requirements (and thus outcome) further. Although it was a good point that some stakeholders have less influence than others, my take was that they are all still stakeholders with varying roles.

Following Ryan’s presentation, the next one in that track was about quality management of requirements. The topic sounded promising and, having an author from a Spanish university, it sounded like it might be full of new perspectives. However, it focused more on an index developed by the authors. One important point was that they considered correctness, completeness, and consistency to be the primary attributes for good requirements. They didn’t expand this view to sets of requirements as we have done but at least it was validating our thoughts on the topic. They also suggested adding stability and understandability as attributes but these could easily be part of the three items already mentioned or part of a requirements management process.

In the afternoon, I went to a talk by James Armstrong about systems integration. He added a lot of humor in the presentation amid talking about key considerations for integration.

James stressed that integration must be considered on the left side of the V as early action can serve to mitigate risk. He also made the point that communication can be killed off by organizational weakness, so you should integrate the organization first. There also needs to be requirements in product specifications that ensure the ability to perform integration such as data taps, etc. He used the example of the Comanche helicopter to talk about the success of modeling up front for good integration.

On Tuesday, the opening plenary was delivered by a Scottish gentleman named Scott McArthur. His topic was organizational and individual psychology and how that influences systems engineering and leadership. He quoted that 27% of large projects simply fail while more than 1 in 6 have at least a doubling of original estimated cost. He went through an example where the pilot and copilot of a flight focused on solving a maintenance problem on board instead of noticing system alerts that the plane was in trouble and 288 people were killed. The point here was that, as engineers, we need to anticipate human nature to some degree – such as louder alerts, etc. For systems engineers, that would indicate looking at requirements and architectural choices to ensure they add this sort of thing.

I went to the morning session on “Perspectives on SE” next. The first of these talks was about motivating people to do proper systems engineering. I thought that was a particularly important area. The presenter (Oliver Hoehne) started with a case study from Siemens in Germany. He mentioned that Siemens had a requirement to specify braking performance of a transportation system but the requirement didn’t clearly give the time duration for braking. The system stopped in 1.6 seconds instead of the needed 1.0 seconds and a crash occurred. Another case of a bad requirement proving disastrous! The presenter went on to talk generally about things like political pressures forcing lower development costs but also higher operating costs. At the end, he said to ensure that leadership knows how they will personally benefit from the use of good systems engineering.

The next paper discussed how different personality types are suited for systems engineering careers. The presenter’s (Jennifer Russell) research showed that people with different Myers-Briggs personality types enjoy different parts of the systems engineering processes. For example, those that are “Perceiving” are likely to enjoy requirements analysis and development of alternate architectures. Those who are “Judging” will probably enjoy flowing down established requirements and functionality and later performing verification. Since matching people to work they enjoy doing is likely to improve productivity, this is perhaps an important message to those leading systems engineering efforts.

The final morning paper was a humorous one linking the game of golf to application of systems engineering. It was presented by David Walden and actually tied together some very interesting points. Walden presented famous quotes from golfers and then explained how they actually apply to systems engineering.

*(See “IS Observations” on page 11)*

## Creativita Institute: An Opportunity for Systems Engineers to Reaching Out

There is a new opportunity for community outreach by members of INCOSE-LA. This opportunity is courtesy the Creativita Institute. Based in Orange, California, the Creativita Institute is a non-profit, 501(c)3 organization dedicated to providing an environment and scholarships to inspire young people's interest and participation in science, engineering, and technology, while developing knowledge, skills, and entrepreneurship in the related domains.

The Creativita Institute is organizing the "Orange Open" competition in science and technology. The Orange Open emphasizes the importance of systems engineering and entrepreneurship through the use of fun and engaging hands-on system developments. Their pilot competition encourages high-school students in the Orange County area to participate this whole new event.

Planned for later this year and culminating in 2015, the theme for the inaugural event is robotics, and therein lies the opportunity for INCOSE-LA members to contribute by volunteering.

If you have passion for being a mentor or judge of an engineering competition, then you do not want miss this upcoming new event. Being a mentor to these competing teams, the high school students and their advisor teachers will look up to your system engineering expertise and experiences to guide them through tailored INCOSE workshops, robot design and development, and event competition. The judging criteria will be based upon INCOSE guidance. With this new systems engineering incubation framework, you will be able to inspire many aspiring engineers (our future technology leaders); so don't miss it!!

The event is taking place in several phases. Details of these phases, expected to begin in October, and how to become a judge or mentor are available at (<http://orangeopen.org/>).

In addition to this event being an opportunity to help the budding systems engineers of tomorrow, the INCOSE-LA Board of Directors approved a \$1,000.00 charitable contribution to sponsor this event. Reflector notices and articles in future editions of the *Newsletter* will provide additional details.

## MINI-CONFERENCE

The INCOSE-LA Mini-Conference team is working to pull together another conference with the same quality and enthusiasm as in the past. The team leaders have pulled together the many inputs and considerations, and have established the theme for the conference:

### One Discipline/Global Value: Fundamentals, Applications, and Innovation

To elaborate on the theme:

- "One Discipline: Global Value" captures that Systems Engineering connects all disciplines to the global problems/global engineering.
- "Fundamentals" captures the exploration of how to use these fundamentals and principals of Systems Engineering in new industries.
- "Applications" would be examples of how Systems Engineering has been used around us (non-traditional industry such as medical, high speed rail, various sciences).
- "Innovation" is intended to explore how new and old concepts of SE can be applied in a more global way.

Those writing papers will have the opportunity to mix and match from the above four items.

Technical Director Helayna Roberts next steps will be to start assembling a committee to begin outreach for potential panelists. Please send me an email if you would like to participate in the technical committee. This would include helping request and review papers as well as selecting panelists and guest speakers.

Key to our success, of course, will be our volunteers. Want to help? Can you help with requirements decomposition? Our top-level requirement: a great conference. How does that decompose? A venue. Food service. Registration. Financial management. Should the conference be just the presentation of papers, or should we include a panel discussion, perhaps an systems engineering assessment of the California High Speed Rail. Logistics. Call for papers. Coordinate with sponsors other participating organizations such as IEEE, the San Diego Chapter, or a working group. These are all areas in which we could use help. Please contact Karen Miller at [karmill888@aol.com](mailto:karmill888@aol.com) and we will a place for you.

## LONG BEACH—ORANGE COUNTY AREA NETWORKING EVENT

INCOSE-LA is hosting another Bi-monthly Professional Networking Event. This one will be held in Westminster – a location selected because it would be more convenient for our members in the Long Beach and Orange County area.

**WHEN:** Wednesday, August 27th, 5:30 p.m. to 8:00 p.m.  
5:30 - 6:30pm Registration, welcoming  
6:30 - 7:00pm Discussion of upcoming events  
7:00 - 8:00pm Networking

### WHERE:

Michael's Sports Pub and Grill, 15192 Goldenwest Street, Westminster, California 92683, (<http://www.michaelsportspubandgrill.com>),

**COST:** No-host bar, Chapter will host light appetizers.

**RSVP:** Please register on line by August 18, 2014 RSVP online at <http://events.constantcontact.com/register/event?llr=14ihvgeab&oeidk=a07e9k729urec79ba17> or [scottbirtalan@gmail.com](mailto:scottbirtalan@gmail.com)

(See "How to get There" on page 10)

# Systems Engineering

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## Upcoming 5-Day Courses

### Systems Engineering

December 8 - 12, 2014	Las Vegas, NV
February 9 - 13, 2015	Las Vegas, NV
June 1 - 5, 2015	Las Vegas, NV
September 14 - 18, 2015	Las Vegas, NV

### Requirements Analysis & Specification Writing

January 26 - 30, 2015	Las Vegas, NV
April 13 - 17, 2015	Las Vegas, NV
August 24 - 28, 2015	Las Vegas, NV

### Systems Engineering Management

November 3 - 7, 2014	Las Vegas, NV
March 30 - April 3, 2015	Las Vegas, NV
August 24 - 28, 2015	Washington, DC

### Software Engineering

September 22 - 26, 2014	Las Vegas, NV
September 29 - October 3, 2014	Washington, DC

### Human Systems Integration: The Cognitive Element

March 2 - 6, 2015	Los Angeles, CA
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September 29 - October 2, 2014	Detroit, MI
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February 9 - 12, 2015	San Diego
February 23 - 26, 2015	Las Vegas, NV

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*("V-P Perspective" continued from page 2)*

On my second day I participated in the model-based systems engineering workshop, which was focused on application and practice. My overall impression of this workshop is that it was probably one of the best MBSE workshops I have attended, specifically because it was not overly focused on tools or SysML (systems modeling language). The focus was on the "why's" from a value standpoint and from a knowledge generation standpoint, more than the technical implementation and the "down in the weeds" aspect. Additional focus was on the thought processes because most organizations do not execute the thought process well.

One of the key concepts put forward early in the class was that you cannot "draw" your way to systems engineering. You can "draw" your way to some understanding, but those drawings in and of themselves are not a model (a point which was reiterated during the course). Drawings are outputs and visualizations of the model — a known point worthy of repeating.

There was also a great point brought up that the value of systems engineering in general and MBSE specifically, is not driven by "specialization" but by "specialized knowledge", with the salient point being that the value of a systems engineer is to have knowledge of the system as a whole and then leverage those with specialized knowledge within key domains of the system, whereas an engineer with highly specialized knowledge of just one domain will yield a suboptimal system.

A point was made that all systems are developed from models, regardless of whether or not we wish to acknowledge those models. One of the in-class activities was for everyone to draw a horse and then the instructor asked the class "when you looked in your "mind's eye" to draw that horse, what color was the horse?" Some people said brown, some people said black, some people said spotted. The point was that you couldn't draw the horse unless you already had a "model" of the horse in mind, and because of this, when collaborating we need to ensure that everyone has the same concept of what color the horse is, before we start building our models.

One of the discussions was of the difference between "top down" versus "middle out" methodologies, where the "top down" approach assumes a "greenfield" where you can begin your modeling from a clean sheet of paper. "Middle out" assumes that you actually have a system fielded which will require some form of understanding before determining what additional capabilities should be modeled.

This approach is much more relevant in today's world in that we are leveraging on existing tools and technologies in order to deploy new systems. The example given was that of Gutenberg and the press. We notice that Gutenberg's father was a metallurgist, which is where Gutenberg came up with the idea of having the moveable type be made of a metal that was strong enough to be reused for numerous presses but could still be melted down to cast new letters. Also, he grew up in an agricultural region which is where saw the idea of using the screw press for the pages which was very similar to the presses that was being used for grapes.

*(See "V-P Perspective," on page 9)*

*(Padman, continued from page 3)*

Secondly, the seventh objective gives the wrong impression that all of systems engineering is expected to be transformed to a model-based discipline.

#### **SE Vision 2025:**

INCOSE unveiled its vision for systems engineering in the year 2025 at the symposium with much fanfare. It should be emphasized that this is an INCOSE Vision not for itself, but for the discipline of systems engineering. A glossy brochure describing the Vision was supplied to all attendees. A PDF version may be downloaded from the INCOSE public website. All of Thursday morning, July 3 was devoted to a panel discussion on the Vision. There was even a separate room where the artwork and the major points from the brochure were displayed for the duration of the Symposium.

The brochure is well written and is divided into three sections:

1. The Global Context for Systems Engineering
2. The Current State of Systems Engineering and
3. The Future State of Systems Engineering.

The Systems Engineering Imperatives as described in the brochure are:

- \* Expanding the APPLICATION of systems engineering across industry domains.
- \* Embracing and learning from the diversity of systems engineering APPROACHES.
- \* Applying systems engineering to help shape policy related to SOCIAL AND NATURAL SYSTEMS.
- \* Expanding the THEORETICAL foundations of systems engineering.
- \* Advancing the TOOLS and METHODS to address complexity.
- \* Enhancing EDUCATION and TRAINING to grow a SYSTEMS ENGINEERING WORKFORCE that meets the increasing demand

The theme of the 2015 INCOSE-LA Mini-Conference "One Discipline/Global Value" echoes these imperatives.

While the document captures most of the issues in the current state of systems engineering, in my opinion, it does not adequately address the cost over runs and unintended consequences that are the result of developing increasingly complex systems that have to interact with the environment. These issues are present even in Aerospace and Defense where the current practice of systems engineering is well established. Furthermore, there is a need to understand and embrace the so-called soft skills of systems engineering to resolve some of these issues. It is not enough to learn about systems thinking. It should be seamlessly integrated into the current practice of systems engineering. To do this more effectively, further research is required in new thinking, methods and tools.

*(See "Padman" on page 9)*

*(Padman, continued from page 8)*

This vision for systems engineering is not intended to simply be a prediction of the future, but is intended to inspire and guide the direction of systems engineering as it evolves to meet the needs and challenges of an ever changing global environment. It requires broad participation from the systems engineering community at large to develop and execute the path forward to realize the vision.

#### **Chapter Technical Information Coordination Initiative (CTICD):**

The Chapter Technical Information Coordination Initiative was kicked-off earlier in the year with two very successful and well attended meetings at the INCOSE International Workshop in Torrance, California. At these meetings a wealth of information was unearthed due to presentations on their work by various Chapters. As a result, there has been tremendous interest across INCOSE and even outside organizations, on learning and utilizing this information. The objective of the Initiative is to facilitate and leverage the sharing of technical knowledge between Chapters and other INCOSE entities and thereby create synergy between the various entities across INCOSE. Two further meetings were held at the symposium during which a committee was formed with representatives from the chapters across all three Sectors of INCOSE. A charter was drafted and a wiki has been set up for communication within the committee. Initial tasks have been determined and lead personnel assigned. The committee's goals include providing guidelines for chapters for sharing technical information and creating a medium to do this sharing. All meetings are open to all INCOSE members and volunteers are encouraged to contribute.

#### **Other Interesting Tidbits:**

The INCOSE membership has surpassed 10,000 members for the first time. They are spread across 62 countries and 67 chapters. Some members have no chapter affiliation. A new INCOSE LinkedIn group has been set up. The URL is: <https://www.linkedin.com/groups?home=&gid=7499834>.

INCOSE was founded almost 25 years ago in Seattle Washington by a small, but dedicated group of volunteers. The INCOSE International Symposium returns next year to INCOSE's birthplace to mark its 25th anniversary. Many special events and awards are being planned in celebration. Stay tuned for further announcements!

The next INCOSE meeting that includes all of INCOSE will be the International Workshop which is to be held in Torrance, California on January 23-28, 2015. This will be followed by the aforementioned 25th Anniversary INCOSE International Symposium in Seattle, Washington on July 10-16, 2015. The 2016 INCOSE International Workshop is also slated for Torrance, California in January 2016.

*(V-P Perspective, continued from page 8)*

Additionally, because of his agricultural background, he understood the concept of the division of labor in the actual use of his press. Previous to Gutenberg, the printer did everything – typeset, pressing and hanging pages dry, whereas Gutenberg divided all of these into individual processes and roles. Again, it was the leveraging of existing capabilities and processes in order to drive innovation.

As part of MBSE, the instructor pointed out the value of “visual height” in terms of doing the systems analysis and being sure that you can truly see what alternatives are available to you. The analogy he used was looking at your home on the street at a very close-up view and deciding if you should make a left or right out of your driveway in order to get to a highway. As you pull back farther, you realize that depending on which way you want to head on the highway, there might be greater value to making a left or right as soon as you leave your home, and although both choices might get you to your destination, one is clearly preferred. Equating this to the decisions that are made early in the system development process means that you need to have a good Concept of Operations document or at least a solid understanding of system implementation.

The next concept presented was the three systems and four domains. We often focus on just the system under design when we're thinking about systems engineering, but we need to ensure that we fully understand the context or environment for the systems under design, and we also need to be conscious of the system or systems that are being used actually create and generate these designs.

The presentation focused on the implementation of MBSE from using a layered approach with a sub-focus on “intentionality,” meaning that we want to make sure that as we are progressing through our design, we ensure that our process don't create needless constraints. We do not want to be forced to make a decision simply because it is contingent on all previous decisions, but rather be able to make a design decision based on the robustness and validity of that option.

As we accomplish our MBSE layer-by-layer that we would be seeking to be complete in each layer before moving to the next layer. A lot of this implementation is covered in the MBSE primer which is available from the Vitech website.

*Stephen's report on MBSE training and a “fire in the kitchen” will continue in a future edition — Editor*

While what happens in Vegas stays in Vegas, the ever-popular INCOSE-LA soiree led to some inevitable “escapes” showing that there was more to the symposium than lectures and meetings.



# How to get there: August Networking Event and Speaker Meeting

*(How to get there, continued from page 5)*

## **HOW TO GET TO THE NETWORKING EVENT:**

Michael's is just south of Westminster Mall on Goldenwest Street. The closest freeway exit is on the 405, and the exit is for Bolsa Avenue and Goldenwest. Bolsa and Goldenwest intersect just south (Goldenwest) and west (Bolsa) of the freeway. Michael's is south of the intersection. Turn left at the first light on to Georgetown Avenue and then turn right into the parking lot.

So come enjoy the company of colleagues and friends. The purpose of this gathering is to welcome any new members and to provide an opportunity for Chapter members to gather and network in an informal setting. This is a great way to meet other systems engineering professionals and members of the INCOSE -LA Chapter. Hope to see you there!

## **September 10 Speaker Meeting "Bo" Oppenheim speaking on Lean Healthcare**



Bohdan "Bo" W. Oppenheim is a Professor of Systems Engineering at Loyola Marymount University in Los Angeles, and founder and co-chair of INCOSE Lean Systems Engineering Working Group. "Bo," is a world renowned authority, and his presentations are as enjoyable as the are educational and knowledgeable.

Healthcare costs in the United States have been rising faster than inflation for many years. Recently, (until Obamacare), the U.S. was spending more than 3 trillion dollars on healthcare annually, vastly more per person than other developed countries, which is clearly unsustainable. While medical research, education, knowledge and facilities in the U.S. tend to be second to none, the average healthcare delivery is poor; and global rankings place us in position 17 among 150 countries ranked. Most European countries are ranked vastly better at much lower costs.

This is the background for "Lean Healthcare," a body of knowledge about streamlining operations and promoting value while reducing waste and costs. The objective is increase healthcare quality while reducing costs, by eliminating non-value added activities. Lean frees up valuable time for medical professionals to spend more time with patients.

Please check your email for a Reflector notice or go to the INCOSE-LA website for additional details.

*(August Speaker Meeting Particulars, continued from page 3)*

Kaz is an active member of the Institute of Industrial Engineering (IIE) National Leadership Committee as Assistant Region Vice President and Chapter Development Fund Committee Chair. He also serves on the National Industry Advisory Board and has been elected into the rank of IIE Fellow.

At the university level, Kaz serves on the University of Southern California, Cal Poly Pomona, and Cal Poly San Luis Obispo Industrial Engineering Advisory Committees.

Kaz is a part-time instructor at the USC Daniel J. Epstein Department of Industrial and Systems Engineering. Kaz received his bachelor degree from California State University at Long Beach and his Master in Business Administration at the University of Redlands.

## **Particulars:**

The meeting will be on Tuesday, August 12, 2014. The host site will be at The Boeing Company facility in Huntington Beach.

The meeting will begin at 5:30 p.m. with refreshments and networking.

The speaker portion will begin at 6:30 p.m., and the meeting will conclude by 8:00 p.m.

Host site:

The Boeing Company – Huntington Beach  
Building 17, Room 109  
14900 Bolsa Chica Road  
Huntington Beach, California 92647

The host site is located approximately two miles south of the interchange between the Garden Grove Freeway, the 22, and the 405. People coming west on the 22 can take the Valley View Street exit, and turn left. Valley View becomes Bolsa Chica. People coming from the west on the 405 can use the Bolsa Chica Road exit, which is immediately after the split with the 22. The Boeing facility is on the left for those heading south on Bolsa Chica.

People coming from the south on the 405 can use the Bolsa Avenue exit, then cross under the freeway and head west to the end of Bolsa. The end of Bolsa is Bolsa Chica; turn right, and the Boeing facility will be on the right

## **REGISTRATION:**

Please go to the INCOSE-LA website to register for this event by Friday, August 8, 2014.

Please check your email for a Reflector notice or go to the INCOSE-LA website for additional details.

(IS Observations, continued from page 4)

An example was the quote that “A short putt never goes in.” Walden related that to systems engineering by making the point that, if we don’t put enough rigor into systems engineering, we will never succeed. Better to put a little more than is needed into the systems engineering effort than to come up short. Though the paper was humorous and definitely a golf primer, it also reminded attendees of some important thoughts relating to the application of the systems engineering process.

The final paper of the day was presented by Dov Dori from Massachusetts Institute of Technology and addressed modeling of system-based decision-making. As the title suggests, it was really about decisions made by machines, not that much by humans. It was interesting from the standpoint of attempting to address emergent behavior. A lot of material was quoted from different handbooks. An important point was not to make decisions too early and limit options.

The first presentation I went to on Wednesday was an examination of how to introduce systems engineering to future engineers. A panel talked through some ideas and the first speaker was Kristen Baldwin. Kristen emphasized that systems engineers can become a more obvious group by taking hold of the process of creating constraints for new product development to ensure affordability, safety and environmental concerns. She mentioned that the role of leadership has got to be to motivate and inspire while dealing with complexity (by making data-driven decisions and not shying away from decisions). She also talked about the “bathtub” where there is a gap in available engineering talent for those born around 1976. Her ideas for combating this included improving the current workforce through training, helping doctoral candidates, getting experiences to employees quickly and supporting the Science, Technology, Engineering and Mathematics programs.

I also attended the Agile Systems Engineering track. The

first was a paper on systems engineering for software intensive programs using Agile. Larri Rosser from Raytheon made the presentation. Some of the paper was an intro to Agile methods but Larri stressed that some useful systems engineering techniques, which included developing modular architectures than can more easily accept change, an incremental process and using systems engineering leadership to tie together multiple “scrum” teams to ensure the big picture is recognized. She also mentioned an acronym RACI meaning that few are Responsible or Accountable for the work, but many need to be Consulted or Informed.

In the afternoon, Rick Dove presented two papers on Agile Systems Engineering fundamentals. It was more about philosophy of the terms than much else, though he said a few times that the actual papers available from INCOSE were more complete regarding the topic. He made some interesting points such as when a system is truly agile, it has to be able to be reactive and proactive when circumstances dictate it. Much of the other material was standard Agile thinking or related to the previous papers.

**Stay Connected**

**Get the latest on INCOSE-LA happenings in the Reflector e-mails**

If you wish to be placed on our e-mail distribution, contact Susan Ruth at [susan.c.ruth@aero.org](mailto:susan.c.ruth@aero.org)

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# INCOSE-LA Chapter NEWSLETTER

Vol. 12, Issue 3: June – July 2014

Return Address:

**PO Box 10969  
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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 <http://www.incose-la.org>

### **August Speaker Meeting**

Date: Tuesday, August 12, 2014

Time: 5:30 p.m. – 9:00 p.m.

Overview of Industrial and Systems Engineering (IE) applications for the Walt Disney Parks and Resort

Place: Boeing Huntington Beach

Cost: Free for members; \$10.00 for non-members

*See article on page 3 for details*

### **OC—LB Networking Event**

Date: Wednesday, August 27, 2014

Time: 5:30 p.m. – 8:00 p.m.

Place: Michael's, near Westminster Mall

*See article on page 5 details*

### **September Speaker Meeting**

Date: **Wednesday**, September 10, 2014

Time: 5:30 p.m. – 9:00 p.m.

Lean Healthcare

Details in work — save the date

Cost: Free for members; \$10.00 for non-members

*See Reflector Notice in your email for details*

### **Mars Science Laboratory Curiosity Rover Update**

Presented by Fred Lawyer

Date: Saturday, September 27, 2014

Time: 1:00 p.m. – 6:00 p.m.

Place: Northrop Grumman S Café, Redondo Beach

*See Reflector Notice in your email for details*

### **The INCOSE-LA Mini-Conference**

Conference data: Spring, 2015

Opportunities available now

*See article on page 5 for the latest update*