MEMBERS NEWSLETTER

March 2017 - Q1

INCOSE®

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President's Corner

Alan D. Harding, alan.harding@incose.org

Welcome to the Q1 2017 newsletter, the beginning of my second year of leading INCOSE. It seems a lifetime ago since I took over from David Long, but equally the date when I pass on the baton of the presidency (well, gavel in this case) to Garry Roedler feels ever-closer. I suppose this highlights the transient nature of our volunteer leadership roles, and how each of us is a part of a continuum.

I looked back at my election statement from all those years ago (Autumn 2013) and was reassured to see that my focus was on a more global INCOSE, and on our continued progression to be increasingly businesslike. These two thrusts remain key for us:

- Development of new chapters and growth in our chapters globally continues, while we also welcome "buddying" support between chapters and the role of our sectors in encouraging and guiding chapters in their development. Recognising how INCOSE continues to evolve, this year we are finalising some vital work on chapter governance and financial models. We are also looking at our chapter circle awards to ensure that they are still the best method of understanding and encouraging the health of our chapters.
- On the business side we have plenty going on. We have appointed a new Director for Strategic Integration to ensure that we pursue our strategic objectives in a joined up way, and as a focus for our growth objective. Also, I have appointed two Associate Directors to lead Professional Development and Publications as we develop these key areas for INCOSE to provide greater value to our members and to deliver even greater impact as we develop systems engineering. We also continue with IT improvements, and as announced at IW 2017 our INCOSE online store is soon to be enhanced so that it is easier to use and can offer a greater range of products. Finally, we have asked the INCOSE secretary to lead on individual membership aspects going forwards, including recruitment and retention, so that we can ensue we offer the best possible value proposition to our members.

We also continue with IT improvements, and as announced at IW 2017 our INCOSE online store is soon to be enhanced so that it is easier to use and can offer a greater range of products.

The other thing I wanted to mention is this year's International Symposium, which will be held in Adelaide, Australia, 15-20 July. The theme is "Unlocking Innovation through Systems Engineering." This event, which is also our Asia-Oceania regional conference and the Australian SESA annual conference, will I'm sure, prove to be a fantastic event. The website is open, so I recommend you visit, make plans, and join us.

Notes from the Board

Rachel LeBlanc, marcom@incose.org

The International Workshop (IW) was a great success! Over 530 attendees led to packed Working Group (WG) rooms, plenaries, social events, and Board of Directors' (Board) meetings. The Board was very busy in meetings with other attendees, INCOSE partners, and WGs. This included a productive strategy session on Friday where INCOSE leaders focused on Impactful Events, Chapter Collaboration, Modeling INCOSE, and the Professional Development Initiative.

Over 530 attendees led to packed WG rooms, plenaries, social events, and Board of Directors' meetings.

Each year, the IW provides the Board with an opportunity to welcome new board members. This year, Tina Srivastava, Secretary, Jean-Claude Roussel, EMEA Sector Director, and Andy Pickard, Chief of Staff, renewed their positions on the Board. We welcomed two new members, Ariela Sofer as Academic Director and David Endler as Deputy Technical Director. Our first order of business was to approve the budget followed by several standard policy updates.

There were several appointments made during the Board meetings:

- Art Pyster - Director of Strategic Integration
- Ken Zemrowski – Associate Director for Publications
- Bob Kenley – Associate Director for Professional Development
- Jason Sohlke – Chair of Ways and Means

The remainder of the board meetings focused on planning for the International Symposium 2017 in Adelaide, Australia, progressing the strategic integration of our 5-year objectives, developing a membership recruitment and retention strategy, and receiving updates such as the news of record-breaking IW attendance and growth in the certification program to 23% of INCOSE membership.

IT Update

Bill Chown, billchown@gmail.com

As you all are aware, the INCOSE IT continues to evolve, and over the next few months we are planning several exciting and productive improvements across the whole system.

Some users have experienced slow access and difficulty posting or viewing large files, and other performance problems. Next month we will commission a completely new server platform, which will enable us to provide a more productive and efficient service.

We are also planning to redesign the INCOSE web site to provide better organization, fewer steps to find useful and relevant information, and a more attractive look overall. Look out for details, as we get closer to that goal.

Finally, we are in the final steps of putting in place our new INCOSE Store, where all INCOSE products will be available, both to members and (for the appropriate prices) to anyone interested in Systems Engineering and INCOSE. Look for this online in April.

IW 2017

The INCOSE International Workshop 2017 Newcomer-Veteran Attendee Session

Lisa Hoverman, newsletter@incose.org

Rachel LeBlanc, marcom@incose.org

Every January, members of INCOSE have an opportunity to come together at the INCOSE International Workshop (IW) to further the vision and application of systems engineering, by working together in working groups (WG) on challenges in specific industry domains, advancing the practice or applying systems engineering to challenging societal subjects. The work the IW participants do and hear about is advancing the state of the art, often results in papers, presentations, books, and more that transform the practice. This year the IW was in Torrance, CA and had over 530 attendees, record attendance for the IW.

> "Talking about Model-Based Systems Engineering with other professionals was a great way to start my first International Workshop."

New this year at the IW was a session directly following the opening plenary where over 120 first-time attendees were able to meet with veteran attendees to orient them to the IW, how to get started, how to plan their time, and how to engage with a WG. Feedback from both newcomers and veterans was positive. We include a few anecdotes below.

'It was great to be introduced to someone that was familiar with INCOSE and the IW. They were able to help me get started."

"I have been attending the IW for years. I enjoyed meeting new attendees and I was surprised how much I learned!"

"Talking about Model-Based Systems Engineering with other professionals was a great way to start my first International Workshop."

The IW is a perfect place to engage with WGs, learn about the many ways in which the practice of systems engineering is evolving and transforming nearly all industries, and potentially, to find one or more WGs in which to contribute. Most of the WGs have open working or outreach sessions, so that attendees can visit, learn, and become involved. If you have never attended the IW,

and have a passion for applying systems engineering/ approaches to many societal challenges, and learning about the vast applications of systems engineering, then we encourage you to join this exciting event. As a note, did you know we have an Anti-terrorism international WG?! Mark your calendars for January 20-23, 2018; the IW 2018

is in Jacksonville, Florida in the US, so start planning.

If you cannot wait until the next IW to join a WG, that is not a problem! You can do so today. As a member of INCOSE, simply log in to Connect (connect.incose.org). Once logged in, click on 'Working Groups.' Read the list of currently* 48. Add those that interest you to your Committees/Working Groups. (*subject to change)

We appreciate and welcome your involvement in an INCOSE WG and hope you will attend an IW soon!

Working Group (WG) News

A New WG for Configuration Management: WG CM NextGen

Dick Terleth, dick.terleth@adse.eu

Are you interested in expanding the scope of configuration management (CM) as part of systems engineering? Are you interested in creating a knowledge pool within INCOSE about CM to define the next generation of configuration management?

Some INCOSE members took the initiative to organize a meeting during the International Workshop in 2017 in Torrance, US-CA to discuss the start of a working group (WG) on CM. About 12 people were present and some people joined the meeting by telephone. They discussed a first draft for a charter for this WG. The Vice Chairman of the SAE G-33 committee for the development of SAE/EIA-649 standard for CM gave an impromptu off-line presentation.

The goal of the WG CM NextGen will be to grow and fully integrate the CM discipline within Systems Engineering (including modeling and simulation based approaches).

Meetings of this WG will be planned during the 2017 International Symposium (IS) in July in Adelaide, Australia) and the 2017 EMEA Workshop (September 2017 in Mannheim, Germany).

Do you want to know more about this new WG or are interested in joining? You may contact one of the provisionally assigned co-chairs:

- Dick Terleth, ADSE, dick.terleth@adse.eu
- Dale Brown, Parsons Brinckerhoff, brownd1@pbworld.com.

The Healthcare WG

Cary Bryczek, cbryczek@jamasoftware.com

The Healthcare Working Group, with support from the Chicagoland chapter is holding its third annual Agile Methods for the Development of Healthcare Systems conference, May 16-18, 2017 in Chicago, IL.

This year's keynote is given by Mr. John F. Murray, Software Compliance Expert, US Food and Drug Administration.

Agile Software Development has been delivering value to software development teams for many years, but Agile is not just for software development - Agile Product Development principles apply to the creation of any system. This conference focuses on the application of Agile principles in practices in the development of medical systems - systems built by large teams and/or systems that include more than software.

The audience for this conference is Systems Engineers, Software/Mechanical/Electrical Developers and Testers, Program Managers, Architects, Certifiers, and leaders of organizations developing complex healthcare products, from large Healthcare IT systems to medical devices that include software and hardware components. Attendees from other domains with agile systems experiences are welcome as well. A couple of slots for presentations or workshops are still available!

Visit the website for more information and updated iinformation.

INCOSE
Healthcare Working Group

Agile Methods for the Development of Healthcare Systems 2017 Conference

27th annual INCOSE international symposium

Adelaide, Australia

July 15 - 20, 2017

Unlocking Innovation Through Systems Engineering

Engage with Colleagues from around the World!

Learn about state-of-the art methods and skills.

Find out how people are making a difference with Systems Engineering.

Keynote speakers

Plan to be stimulated and challenged by the experts!

AVM Mel Hupfeld
Head Force Design, Australian Departement of Defence

Paul Nielsen
Director and CEO, Software Engineering Institute, Carnegie Mellon University

Bill Murtagh
National Oceanic and Atmospheric Administration (NOAA)

Program Highlights

101 papers, **28** poster/short presentation papers, **12** panels, **8** tutorials

Topics

Acquisition & Supply - Agile SE - Architecture - Automotive - Biomedical & Health - Complexity Science - Digitalization - Energy - Government, Defense & Security - Human Factors - Leadership - MBSE - Modeling & Simulation - Process - Project Planning - Requirements - Resilience - Risk & Opportunity Management - Small Systems - System Dynamics - System Integration - System Safety - Systems Science - Systems of Systems - Systems Thinking - Teaching & Training - Transportation - Verification & Validation

Workshops and more

MBSE – Professional Development & Education – Systems Summit on Critical Problem Definitions
Practitioner Challenge, SE101, Mentor Challenge

Mark your calendar now!
July 15 - 20, 2017

With the support of

For more information visit **www.incose.org/symp2017** or contact us **symposium@incose.org**

Working Group News

Lean Systems Engineering

J. Robert Wirthlin, robert.wirthlin@gm.com

The INCOSE Lean Systems Engineering working group (LSE WG) has had highly successful award-winning activity on lean systems engineering that led to two Shingo Awards, books, and many publications. This initiative grew out of the efforts of many organizations, such as MIT's lean aerospace engineering initiative, individual researchers, and many practitioners. As the body of knowledge has grown, the material has become more industry-neutral. Due to changes of membership and working group leadership responsibilities, leadership of this WG is now shifting to other interested INCOSE members. To make this initiative continue its record of successes, we need your involvement.

Deb Secor, one of the current co-chairs, has kindly agreed to continue serving as a transition co-chair of the LSE WG, to assure continuity of the WG, to explain our products, applications, modalities, mailing list, and the webpage organization to the new leadership. Deb's email is dasecor@hotmail.com. Deb has served as co-chair from the beginning of the WG and has total knowledge of the domain and the WG activities and membership.

It is proposed Bob Bordley become the immediate acting chair, with Deb Secor holding the position of transition co-chair to assure smooth transition, and then the team can vote for the formal chair(s). Please let us know of your interest by contacting either Bob at rbordley@umich.edu or Deb at dasecor@hotmail.com. Editor's Note: This also appears in the Sector News Section as this WG is led by the US-MI chapter.

Model Based Conceptual Design

Michael, Vinarcik, vinarcik_michael@bah.com

The Model Based Conceptual Design (MBCD) working group met at the 2017 International Workshop (IW). The current co-chair, Michael Vinarcik, is working to engage more US individuals in the effort. There are plans to develop case studies and to collaboratively model an example system to serve as a test bed for model-based acquisition best practices.

If you are interested in engaging with this effort, please e-mail michael.vinarcik@incose.org.

Advancing Systems Engineering in the Oil and Gas industry

Cindy Chen, C.Chen@shell.com

The International Council on Systems Engineering (INCOSE) Oil and Gas Working Group (O&G WG) aims to provide the necessary tools to meet the world's oil and gas needs through safer, more reliable and cost effective solutions. The group will co-create strategies to advance systems engineering within the oil and gas industry and develop work processes, tools, and competencies to mature the systems engineering thinking and ways of working.

The INCOSE O&G WG, which is co-chaired by Shell and General Electric (GE), held their first working session at the 2017 INCOSE Annual International Workshop in Torrance, California (January 28-31) to work out a roadmap for 2017 and beyond. The group also used the IW event as an opportunity to gather learnings from systems engineering practitioners in other industries and build relationships with other working groups. Maintaining a strong external perspective on how systems engineering is applied in other industries and understanding the challenges that have been overcome and how, are considered necessary if systems engineering is to be effectively embedded in the oil and gas industry.

"The aerospace industry employs systems engineering to deliver complex systems to extremely remote environments with a tremendous success rate of reliable operations," noted Brad Tomer, Chief Engineer of GE Oil and Gas. "The oil and gas industry faces many of the same challenges and the complexity of our equipment is on the rise with the integration of software in the digital age. Systems engineering delivers complex projects within budget and on schedule, with minimized risk and improved quality. The oil and gas industry will see the maximum benefit of systems engineering if we apply the principles from reservoir to the refinery which is why we established this INCOSE working group."

"The goal of INCOSE's O&G WG is to sustain and strengthen the industry by applying systems engineering methods to drive safety performance and productivity, to deliver safe, competitive and operable outcomes," said Mia Zager, General Manager Systems Engineering at Shell. "It is vital that oil and gas companies adopt this new way of working, as the industry faces ever more diverse and dynamic environments, requiring rapid adaptation."

In addition to Shell and GE oil and gas, other WG participants include Technip FMC, Barrios Technology, Fluor, TransOcean, BP, Statoil, and IBM.

Four sub-groups have been created under the banner of the O&G WG which will focus on the following activities in 2017:

- Sub Group 1: Value of Systems Engineering – Build and share tangible case studies in oil and gas demonstrating the value of applying systems engineering
- Sub Group 2: Requirements Development and Management (RDM) – Establish a baseline benchmark for use of Requirements Development and Management for the oil and gas industry. Develop best practices and guidelines that would support effective value capture of using RDM
- Sub Group 3: Standards – Pilot project with a standards development organization to demonstrate benefits of developing and maintaining industry standards in requirements format using a database
- Sub Group 4: Competencies – Define a common set of Systems Engineering competencies for the oil and gas industry

Responses to the formation of this WG received from across the supply chain are encouraging and indicate that the whole industry is conscious of the rapidly changing environment in which we now live and sees a strong case for change.

More information is on the O&G Working Group's website: http://www.incose.org/ChaptersGroups/WorkingGroups/Application/oil-and-gas.

Please contact co-chairs Mia Zager (Mia.Zager@shell.com) or Brad Tomer (Brad.Tomer@ge.com) if you are interested in getting involved.

Transportation IW 2017 Review and Report

Transportation & Infrastructure WGs
Collaborative Sessions

Dale Brown, brownd1@pbworld.com

Transportation working group (TWG) members attended sessions of the Critical Infrastructure WG and Infrastructure WG on multiple topics related to critical infrastructure protection and other common issues related to infrastructure and transportation projects. The sessions identified some collaborative efforts for 2017, including possibly writing joint papers, sharing webinars and other general knowledge sharing opportunities. Of particular note was the advent of several discussions (over the course of the IW) related to the possible merging of these working groups. This concept explored potential efficiencies that could be achieved because of the significant overlap between these related working groups. There are scarce volunteer resources and a comment mentioned by attendees for the past several workshops has been that "there are too many working groups and too few volunteers." Stay tuned for further discussions and developments on this concept.

"Filling the Systems Engineering Talent Pipeline" Cross-Cutting INCOSE Workshop Event

The intent of this workshop was to find ways of Improving interest in systems engineering for young professionals. This session was facilitated by the TWG and was held as an open brainstorming session to address this serious issue for all INCOSE WGs and IW attendees.

A survey was created and issued before the IW and was held open for all of the IW in an effort to collect some data for evaluation by attendees.

An important initial conclusion from the survey was: "this is an actual problem that needs to be addressed" and is likely related (in the US) to a national drop-off of engineering students interested in infrastructure and transportation as was cited at the NASEM/TRB annual meeting in January (National Academies of Science, Engineering and Medicine – Transportation Research Board). In addition to the survey results, analysis of the session attendees brainstorm inputs from the brainstorming event will be issued to all TWG members and IW session contributing attendees in a report prior to the 2017 International Symposium (IS). It is expected that a panel session will continue this work at the INCOSE IS 2017.

TWG Working Session

TWG held a working session at the IW to discuss progress in 2016, and review and agree on 2017 Annual Plan.

INCOSE
Healthcare Working Group

Agile Methods for the Development of Healthcare Systems 2017 Conference

Extended Call for Presentations

Conference Title

Agile Methods for the Development of Healthcare Systems

Contact us hwgagile@gmail.com

May 16-18, 2017

Conference Theme / Description

Agile Software Development has been delivering value to software development teams for many years, but Agile is not just for software development - Agile Product Development principles apply to the creation of any system. This conference focuses on the application of Agile principles in practices in the development of medical systems – systems built by large teams and/or systems that include more than software.

Audience

The audience for this conference is Systems Engineers, Software/Mechanical/Electrical Developers and Testers, Program Managers, Architects, Certifiers, and leaders of organizations developing complex healthcare products, from large Healthcare IT systems to medical devices that include software and hardware components. Attendees from other domains with Agile Systems experiences are welcome as well.

Call for Presentations, Panels, and Workshops

To form the program for this conference, we are looking for ideas to share, a story to tell, a workshop to build skills, or questions to pose to an inquisitive audience. This is an interactive conference, so we want sessions that are a mixture of presentation and discussion. We are looking for topics in the following categories:

- Aligning Agile concepts and practices with System Engineering principles, such as those described by ISO/IEC/IEEE 15288:2015
- Agile team structures and Agile transformation models – how the architecture of the system affects the architecture of the development system that creates it
- Experiences with applying Agile practices to the development of hardware and systems
- Application of Agile Scaling models such as SAFe, Scrum Nexus, Scrum-Of-Scrums, etc.
- Cultural barriers to Agile adoption, and ways to overcome them
- Sharing Agile Systems experiences from other domains

We are looking for either 45-minute or 90-minute presentations for the main conference 17-18 May 2017, or half-day or full-day tutorials for 16 May 2017. Do you have a presentation in mind? Do you have a question you want to explore in a workshop?

Speakers get a discounted registration fee!

Deadline for Abstracts February 28th
Acceptance Notification Final Notification March 3rd
Deadline for Final Presentations April 12th

Submit Abstracts Here:
https://easychair.org/conferences/?conf=incoseahcsyscon2017

INCOSE Foundation News

Lisa Hoverman, newsletter@incose.org

Jessica Knizhnik, jessica.knizhnik@gmail.com

Holly Witte, holly@univmgmt.com

Johns Hopkins University Applied Physics Laboratory Alexander Kossiakoff Scholarship Winner

Every year, the INCOSE Foundation, in collaboration with the Johns Hopkins University Applied Physics Laboratory (JHUAPL) recognizes and encourages promising applied systems engineering research by students in a Masters or Doctoral program through the Alexander Kossiakoff Scholarship. The award carries a USD 5,000 grant to the student along with an optional paid internship at JHUAPL working on relevant systems engineering problems. The student receives a plaque and recognition at the Annual International Workshop.

The criteria for determining the award include, but are not limited to:

- Rigor and creativity of proposed applied research
- Potential application to Applied Physics Laboratory systems engineering interests
- Strength of resume and bio sketch
- Strength of academic recommendations
- Additional attributes noted in the applicant's materials that go beyond the application requirements.

2016 INCOSE Foundation JHU APL Kossiakoff Scholarship Winner - Jessica Knizhnik

Ms. Jessica Knizhnik is pursuing her Masters degree in Systems Engineering at the University of Maryland, in the A. James Clark School of Engineering, Institute for Systems Research. She shares a brief description of her winning research.

Government agencies and commercial entities throughout the world spend billions of dollars to send satellites to space each year. Though many of these satellites represent new science, human exploration, and technology developments, many of them are simply replacements for satellites that have reached the end of their lifespan. Frequently, much of their hardware is still operational, but these satellites reach the end of their lifespan due to a lack of fuel for orbital maneuvering or worn mechanisms. Rather than utilize an abundance of resources to replace a satellite entirely, it is now evident that a more cost effective solution is to simply send one additional satellite into space to robotically service a number of older, but mostly functional satellites. Because servicing time, servicer satellite mass, and servicer satellite power available are finite resources, servicer satellites must fly the minimum number of tools needed to meet all of their client satellites' servicing requirements. Jessica Knizhnik's research introduces a down selection methodology for refining a set of generic tools with a variety of specifications (descriptions of capability) in order to perform a subset of tasks needed to service a satellite with the goal of significantly reducing the number of available tool combinations that engineers need to choose from.

Ms. Knizhnik's work builds upon previous University of Maryland Space Systems Laboratory research on the Hubble Space Telescope (HST). HST is a well-known satellite with an abundance of easily accessible data on satellite servicing. It also underwent five astronaut servicing missions during its operational life time. Pilotte (2004) utilized HST astronaut Servicing Mission 3B as a basis for determining methods for robotically servicing satellites. In addition, researchers (Nassar and Austin, 2013) within the Institute for Systems Research at the University of Maryland have designed computational procedures for the systematic transformation of user requirements, high-level models of system architecture, and libraries of components into collections of viable design alternatives supported by trade-spaces for design consideration. These procedures fall into a general class of problems called the component down selection problems.

HST robotic servicing utilizing Pilotte's 2004 work acts as a baseline data set for Ms. Knizhnik's study of component down selection methods on a larger scale. By manually implementing component down selection, her study reduced the 19^4=130321 potential tool combinations for performing four different tasks identified in the Pilotte (2004) study down to a set of seven best design solutions. This systematic trade space down selection method shows promise for quickly reducing an even larger, more intractable problem to one that is easily solvable. The down selection method presented in Ms. Knizhnik's study has tremendous potential for efficiently and manageably identifying a best design solution from a large option set. The method also has the potential to showcase system properties to engineers that they may not have been deduced without performing a trade study. Future work will automate the down selection method so that it can run through orders of magnitude more design options for the satellite servicing scenario.

References:

Nassar, N. and M. Austin, 2013, 'Model-Based Systems Engineering Design and Trade-Off Analysis with RDF Graphs,' Conference on Systems Engineering Research, Atlanta, US-GA.

Pilotte, K. J., 2004. 'Analysis of Grasp Requirements for Telerobotic Satellite Servicing,' Master of Science Thesis, University of Maryland, College Park, US-MD.

INCOSE Foundation News

Interested in applying for the Kossiakoff Scholarship?

To be eligible, each applicant must submit an application package to include a complete resume/vitae, a brief bio-sketch, description of the study/research areas of interest (at least 3-4 pages), and a discussion of the contribution and expected outcomes that will benefit applications of interest to the JHU APL. Applicants must have two faculty references submit recommendation letters on their behalf. Completed applications and faculty references can be submitted beginning 1 May and must be received by 30 November of each year. The award will be made at the annual INCOSE International Workshop.

Applicants must be U.S. citizens and an admitted student in a Masters or Doctoral Program in Systems Engineering at an accredited university. An applicant seeking the award must submit an application. Applicants may not receive more than one award.

About Alexander Kassiakoff

Dr. Alexander Kossiakoff was an INCOSE Fellow and until his death at age 91, he was Chief Scientist of The Johns Hopkins University Applied Physics Laboratory (APL), and chaired their Management and Systems Engineering Program. He completed his book entitled "Systems Engineering Principles and Practice" at age 90. He was Director of APL for many years, a pioneer in solid propellant rocket technology, and a leader in the development of the US Navy's first guided missile systems.

The INCOSE Foundation Announces New Round of Grants for Chapters and Working Groups

Following the success of our initial grants made to recognize INCOSE on its 25th Anniversary, we decided the success of this program warrants a permanent place in our portfolio. Chapter Leaders, Working Group (WG) Leaders, and Sector Directors have already received information and submission forms for proposals for work by INCOSE Chapters and WGs. Proposals are due on March 31, 2017. If you would like a submission form, please write to holly@univmgmt.com or call 1-800-366-1164. These grants will have awards from 1,000 – 5,000 and are open to any Chapter or WG in the INCOSE global network.

As a member, you have also just received a letter describing the new direction for The INCOSE Foundation along with an opportunity to make a gift. The INCOSE Foundation took the time to review its structure and focus in 2016 and made some important commitments including: an expansion of the board to include more INCOSE members around the globe and, a commitment to support your work.

As we enter 2017, we ask you to support the work of your colleagues globally with a contribution to the INCOSE Foundation. Please give as generously as you can. Your gift will help us support the work of the future. Together, we support the mission "to address complex societal and technical challenges by enabling, promoting, and advancing systems engineering and systems approaches."

Following the success of our initial grants made [to chapters] to recognize INCOSE on its 25th Anniversary, we decided the success of this program warrants a permanent place in our portfolio.

The INCOSE Foundation agrees that this will lead to a better world. Many of you made donations through the Wine Soiree at the International Workshop, raising well over 7,000 and we thank you! Let us continue the momentum. Please make a gift and join us in meeting the future with the best we have to offer.

Americas Sector Updates

Steven Dam, steven.dam@specinnovations.com

Hampton Roads Area Chapter

John Clark, john.clark@incose.org

INCOSE Hampton Roads Area Chapter offers Free SE Handbook V4.0 Training

The INCOSE Hampton Roads Area Chapter and the INCOSE Training Working Group are providing free INCOSE SE Handbook V4.0 training and other free systems engineering (SE) training for all INCOSE members, employees of INCOSE Corporate Advisory Board (CAB) organizations, employees, and students of INCOSE Academic Council organizations, and INCOSE student members.

The SE Handbook V4.0 weekly series began on Thursday October 8, 2015 and completed on April 21, 2016. All sessions are available for download. To access the materials, do one of the following:

1. Log into Connect then click on Library, Tutorials, and Training WG Tutorials. Scroll down to SE Handbook V4.0 Tutorial, click on Tutorial ID: 01_October 2015, click on the Tutorial Session you want, right click on the file you want, click on Save target as, and save the file on your drive.

2. Click on https://connect.incose.org/Library/Tutorials/training/SitePages/Home.aspx, log-in to Connect, scroll down to SE Handbook V4.0 Tutorial, and follow the above.

Tutorial Session: 00_Shared Documents contains the schedule and reference documents. Other past recorded tutorial sessions include: SE Fundamentals (Tutorial ID: 02_October 2014), SE Handbook V3.2.2 (Tutorial ID: 02_ October 2014), and Leadership Skills (Tutorial ID: 01 thru 04).

The SE Handbook V4.0 tutorial also provides tips and personal help in systems engineering. We will provide a certificate of completion on request. The tutorial consists of weekly 60-minute sessions. There is no need to register, just join in. Reading of the applicable sections of the INCOSE SE Handbook V4.0 before each session is strongly recommended. Course materials include the shared documents, tutorial slides, questions, and audio and video recordings for download and use at your convenience. Most slides contain speaker notes in the PowerPoint Notes View.

Questions? Contact john.clark@incose.org.

California - Los Angeles (LA) Chapter

INCOSE-LA ended 2016 with their annual Holiday Party at the Del Rey Yacht Club in December where over 30 members enjoyed a buffet dinner, socialized, and exchanged gifts. Thanks go to Bo Oppenheim, club member and INCOSE Fellow, who welcomed us to the club for the third year.

The LA chapter inducted the new board at our Town Hall, held at the Westin LAX Daily Grill January 10, 2017. The chapter recognized volunteers at the event, presented awards and voted on strategic objectives for 2017 during the social event. The chapter is grateful to Dassault Systems for generously co-hosting the event.

During the INCOSE International Workshop (IW), January 27-31, 2017, INCOSE President, Alan Harding, and most members of the INCOSE board met with our chapter board and members during a social event held Tuesday evening, Jan 31, at the Torrance Marriott. We discussed goals and objectives of INCOSE and INCOSE LA during the event, enjoyed appetizers, and socialized.

During both the Town Hall and the IW social event, members voted for a vision statement to help define a strategy for the chapter. The resulting vision statement for INCOSE-LA 2017 is "Encourage systems thinking for wider community problems." The Strategic Planning Meeting (SPM) on February 18, 2017 will discuss how we go about encouraging systems thinking and what wider community problems we will target first. On February 25, 2017, INCOSE-LA members will attend the GameSIG Workshop held at Santa Ana College to mentor and coach teams about how to engineer video games using systems engineering best practices. The chapter will present a best-engineered game award on June 10, 2017.

The chapter is supporting Pi Day at California State University Northridge (CSUN) on March 14, 2017 where we will meet high school and college students, plan Pi games,

The resulting vision statement for INCOSE-LA 2017 is "Encourage systems thinking for wider community problems."

and eat pie.

On March 15, 2017, speakers Bruce Arnheim and Julie White will address "The Interplay Between Test and Training for System Readiness" at a dinner event co-hosted with the Software Process Improvement Network (SPIN) in association with the Ground Satellite Architecture Systems (GSAW) at the Renaissance LAX Hotel. GSAW is from March 13-16, 2017 at The Aerospace Corporation.

INCOSE-LA is a co-sponsor of the Conference on Systems Engineering Research (CSER) 2017 along with the University of Southern California Viterbi School of Engineering, Systems Architecting and Engineering, and the Stevens Institute of Technology. Papers received follow the theme "Disciplinary Convergence: Implications for Systems Engineering Research" and promise another stellar line-up of tracks. To register: www.cser2017.com. The Wednesday immediately prior to CSER, March 22, 2017, Dr. Steven Dam, Director for the Americas Sector, will present an overview of the Sector and its plans for 2017.

See www.incose.org/los-angeles for more information about upcoming events for the LA Chapter. The INCOSE-LA Chapter Newsletters link at the bottom of their home page has more information.

Americas Sector Updates

California – San Diego Chapter

Greg Bulla, gbulla@yahoo.com

INCOSE San Diego STEM Awards

The San Diego chapter awarded over $12,000 of STEM funding to 13 schools in San Diego County in 2016. These funds were primarily used to purchase various science kits to assist in the teaching of physics, engineering, hazardous material science, robots, software coding, 3-D printing, medical science, and other STEM topics. Several other schools will be standing up STEM labs, providing young students the opportunity to learn by experimentation. One school – North Terrace Community School in Oceanside – will even be teaching a novel subject concerning the relationship between art, math and science.

Please let us again thank our sponsors and members for their generous donations, which made these awards possible! Year after year, people and organizations continue to come forward.

- Cubic Corporation
- SAIC
- ViaSat
- International Test and Evaluation Association, and
- Individual INCOSE San Diego members

Michigan Chapter

J. Robert Wirthlin, robert.wirthlin@gm.com

The INCOSE Lean Systems Engineering working group (LSE WG) has had highly successful award-winning activity on lean systems engineering that led to two Shingo Awards, books, and many publications. This initiative grew out of the efforts of many organizations, such as MIT's lean aerospace engineering initiative, individual researchers, and many practitioners. As the body of knowledge has grown, the material has become more industry-neutral. Due to changes of membership and working group leadership responsibilities, leadership of this WG is now shifting to other interested INCOSE members. Many of these members have roots in the Michigan chapter of INCOSE and the University of Michigan, the home of lean thinking. To make this initiative continue its record of successes, we need your involvement.

Deb Secor, one of the current co-chairs, has kindly agreed to continue serving as a transition co-chair of the LSE WG, to assure continuity of the WG, to explain our products, applications, modalities, mailing list, and the webpage organization to the new leadership. Deb's email is dasecor@hotmail.com. Deb has served as co-chair from the beginning of the WG and has total knowledge of the domain and the WG activities and membership.

It is proposed Bob Bordley become the immediate acting chair, with Deb Secor holding the position of transition co-chair to assure smooth transition, and then the team can vote for the formal chair(s). Please let us know of your interest by contacting either Bob at rbordley@umich.edu or Deb at dasecor@hotmail.com.

North Star Chapter of Minnesota

Kendra Kreutz, kendrakreutz@gmail.com

Announcing the 11th Annual INCOSE Great Lakes Regional Conference (GLRC11)

Save the Date Oct 11-14, 2017

The participating chapters of the INCOSE Great Lakes Region invite you to join them for their annual conference hosted by the North Star Chapter of Minnesota, October 11-14, 2017 in Minneapolis, MN.

The planning committee is working on:

- Keynote speakers
- Technical presentations
- Welcome reception on Wednesday evening
- Celebration banquet on Thursday
- Tutorials and workshops on Saturday
- Opportunity to take the INCOSE certification exam

Watch for our call for proposals and other conference information on the GLRC11 website: www.incosegreatlakes.org.

Southern Maryland (SoMD) Chapter

Karl Geist, kgeist@md.metrocast.net

INCOSE SoMD Chapter 2017 St. Mary's County Science and Engineering Fair

On Saturday 21 January 2017, INCOSE SoMD Chapter participated in the organization and judging for the thirteenth consecutive year of the St. Mary's County Science and Engineering Fair.

In addition to planning and sponsoring the Fair, John Walker, SoMD Chapter Director, and Karl Geist, Chapter Treasurer led a three-person team by reviewing the 129 projects, selecting 6 winners, and presenting the INCOSE Chapter's Systems Engineering cash awards. All projects from the 21 different categories in the Fair were reviewed and considered for the awards.

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The categories included Animal Sciences, Behavioral and Social Sciences, Biochemistry, Biomedical and Health Sciences, Biomedical Engineering, Chemistry, Computational Biology and Bioinformatics, Earth and Environmental Sciences, Embedded Systems, Energy: Chemical, Energy: Physical, Engineering Mechanics, Environmental Engineering, Material Science, Mathematics, Microbiology, Physics and Astronomy, Plant Sciences, Robotics and Intelligent Machines, Systems Software, and Translation Medical Sciences.

This year five Junior Projects were selected for interviews by Karl Geist and Greg Olson, and seven Senior Projects were selected for interviews by Karl Geist, Greg Olson, and Jim Wetzel to determine the overall six INCOSE winners. At the Awards Ceremony, Karl Geist presented the awards to the Senior High Division winning students: Braedon Myers' First Place Project "UFR (Unmanned First Responder)," Natalie Wolfe's Second Place Project "Strike Sensing System," and Kathryn McCurdy's Honorable Mention Project "Automatic Window Washer." The Junior High Division winning students were Ryan Williams' First Place Project "Remotely Op. Planetary Exploration Rover," Tom Wilson's Second Place Project "Something Here is Fishy," and Ria Sharma's Honorable Mention Project "Solar Powered Water Desalination."

These six INCOSE winners along with four additional winners selected by The Patuxent Partnership (TPP) for a total of 10 students won a total of 41 awards (18 Senior and 23 Junior), recognized at an Award Reception Sponsored by The Patuxent Partnership and INCOSE SoMD Chapter on the 21 February 2017 at the Great Mills High School.

INCOSE SoMD and the Association for Unmanned Aerial Systems International (AUVSI) – Seafarer Chapter

Student Unmanned Aerial Systems (SUAS) Competition

The INCOSE SoMD Chapter has a long proud history of providing support and sponsorship to the AUVSI Student Unmanned Aerial Systems (SUAS) Competition. Since its inception 14 years ago as part of our sponsorship, the SoMD Chapter hosts registration and stages a reception dinner for the participants, their friends, and competition volunteers. This year 59 colleges and high schools will travel to SoMD from around the world. We estimate the reception will include as many as 500 people, so the Chapter will require additional man power to support registration and the reception. In past years, INCOSE members have assisted in many capacities and this year we reach to our members as well as members from sister INCOSE Chapters. We would love assistance from interested members in any of three areas:

Wednesday Competition Registration, 14 June

Registering and badging participants: This task entails validating the identification of each Team, their participating members, their clearances, and providing them their badges and appropriate Competition paperwork. We would like to have ~ 10 or so volunteers to help with registration – starting ~1530 (3:30 pm) to 2000 (8:00 pm).

Wednesday Reception, 14 June

Food Services: This task entails providing the welcome buffet style meal for each Team and their participating members at the Bay District VFD's (Station 3), 46900 S. Shangri La Drive, Lexington Park, MD. This year we anticipate serving 500+ people in a four hour period starting ~16:00 (4:00 pm), so we need 8 or so volunteers. The more hands the merrier!

Thursday – Saturday Event Staffing, 15 – 18 June

Competition Staffing: This task entails helping escort participants to/from the competition site, (Webster Field, St. Inigoes, MD), and providing assistance in the overall event logistics. This is a great way to meet talented minds in academia getting ready to enter the workforce. You will get a chance to review team designs and meet the students as you assist with the logistical functions of the event.

In the past, the SoMD Chapter specifically helped with the competition planning, team registration, security requirements, and competition staffing through its duration. Additionally for those having the time and the interest, the INCOSE SoMD Chapter helps judge the technical papers presented by the student teams, and the "on field" flight competition. Generally, several members attend the final day Awards Banquet for additional student interaction. This competition involvement normally exceeds 250 hours of support.

To volunteer for judging, registration, food services or staffing, or for more information, please contact Karl Geist at kgeist@md.metrocast.net or 301-475-5646. Further information on the event is below.

The AUVSI SUAS Competition fosters interest in Unmanned Aerial Systems (UAS), stimulates interest in UAS technologies and careers, and engages students in a challenging UAS missions. The competition requires students to design, integrate, report, and demonstrate a

Americas Sector Updates

UAS capable of autonomous flight and navigation, remote sensing via onboard payload sensors, and execution of a specific set of tasks. The competition, started in 2002, occurs annually.

The 2017 SUAS Competition will be June 14th to 17th, 2017. The AUVSI Seafarer Chapter released the rules for 2017, and 59 teams including 31 USA Universities, 25 International Teams, and 3 High Schools have been accepted. You can see the current list of the teams below.

Competition Judge Responsibilities
May 2017 – June 2017 (2 months), Webster Field, MD

- Judging of Technical Journal Papers (describes the team's systems engineering approach, the UAS design, and the testing conducted).
- Judging of Flight Readiness Reviews (FRR), with emphasis on following good systems engineering practices, test & evaluation, stress testing, proof of flight & hours, training, safety, risks & mitigations, and launch platforms.
- Judging of interoperability with ground stations, (sensor and communication of position, display time and obstacles), waypoint mission planning (navigation), imagery analysis (imagery verification by team on shape, color, size and decryption of secret message), actionable intelligence (tasking, off axis tasking, emergent target (human) tasking, airdrop tasking (water bottle)).
- Judging of autonomous flight (takeoff, navigation, landing, search detect and avoid (SDA), and cyber safe capabilities (secured network of aircraft and ground station, encrypted data link, GPS spoofing, authentication).

View experiences of past competitions at https://www.youtube.com/watch?v=4lnvLL2YMyk

Teams

1. ABES Engineering College
2. Anadolu University
3. Birla Institute of Technology & Science, Pilani
4. Brigham Young University
5. Cal Poly Pomona
6. California State University, Fullerton
7. Calvert Hall College High School
8. Christopher Newport University
9. Clark College
10. Concordia University
11. Cornell University
12. Delhi Technological University
13. Dr. J. J. Magdum College of Engineering, Jaysingpur
14. Ecole de Technologie Superieure (ETS)
15. Embry-Riddle Aeronautical University
16. Flint Hill School
17. Harvard University
18. Illinois Institute of Technology
19. Indian Institute of Technology,Bombay
20. Indraprastha Institute Of Information Technology
21. Istanbul Technical University
22. Kansas State University
23. M.S. Ramaiah Institute of Technology
24. McGill University
25. Michigan State University
26. Mississippi State University
27. Monroe Community College
28. Mukesh Patel School of TM&E, NMIMS University
29. Munich University of Applied Sciences
30. Norfolk State University
31. North Carolina State University
32. Palos Verdes High School
33. Pennsylvania State University
34. Polish Air Force Academy
35. Poznan University of Technology
36. Purdue University
37. RV College of Engineering
38. Rutgers University
39. SRM University
40. Saint Louis University
41. Simon Fraser University
42. Technion Israel Institute of Technology
43. The University of Texas at Austin
44. U.S. Naval Academy
45. Universite de Sherbrooke
46. University Politehnica of Bucharest
47. University of Alberta
48. University of Arizona
49. University of California, Los Angeles

50. University of California, Riverside
51. University of California, San Diego
52. University of Cincinnati
53. University of Hawaii
54. University of Maryland College Park
55. University of Missouri, Columbia
56. University of Pennsylvania
57. University of Toronto
58. Virginia Commonwealth University
59. Yildiz Technical University

Texas - Gulf Coast Chapter

Antony G. Williams, antony.g.williams@nasa.gov

The Texas Gulf Coast Chapter (TGCC) of INCOSE is hosting a one day conference on May 5, 2017 titled: Systems Engineering in Aerospace and Oil & Gas – Opportunities for Collaboration.

The conference provides a collaboration and communication opportunity for systems engineering practitioners in the aerospace (Aero) and oil and gas (O&G) communities. The conference location is the Transocean Facility in Greenway Plaza (4 Greenway Plz, Houston, TX 77046).

The conference theme is "The business case for Systems Engineering: Complex systems in Aero and Oil and Gas - Compliance/Cost Savings/Reliability/Safety."

We are seeking presentations related to this theme from both the Aero and O&G communities, specifically in the following areas: success stories in systems engineering, requirements development and management, system architecting, test and verification, and system integrity.

For more information, see the TGCC SE Conference home page, or email Tony Williams at antony.g.williams@nasa.gov.

North Texas Chapter

Long Dong, ldong426@gmail.com

The North Texas Chapter sponsored Future City at the Patron-Level Sponsor, which underwrites a special award to include a team plaque, gift certificates, and a check to a school. Future City is a project-based educational program for sixth through eighth grade students that engages and challenges them to develop their vision of a livable city of the future using a hands-on, inquiry-based strategy. This program gives middle school students a fun way to tackle real-world problems while building their STEM skills. Students work as a team with an educator and engineer-mentor to plan/simulate cities using SimCityTM software; research and write solutions to an engineering problem; build tabletop scale models with recycled materials; and present their ideas before judges at the Regional Competition in January. www.dfwfuturecity.org.

The chapter will be hosting Rick Dove at our next chapter meeting on March 14, 2017. Rick Dove chairs the INCOSE working groups for Agile Systems and Systems Engineering, and for Systems Security Engineering, and is the leader of the current INCOSE Agile Systems Engineering Life Cycle Model Discovery Project. He is an INCOSE Fellow, and the author of Response Ability, the Language, Structure, and Culture of the Agile Enterprise. His presentation will be on Enabling and Facilitating Agility in Systems Engineering and Hardware Development. All are welcome to attend. Visit our site for the call in information: http://www.incose.org/ChaptersGroups/Chapters/ChapterSites/north-texas/chapter-events.

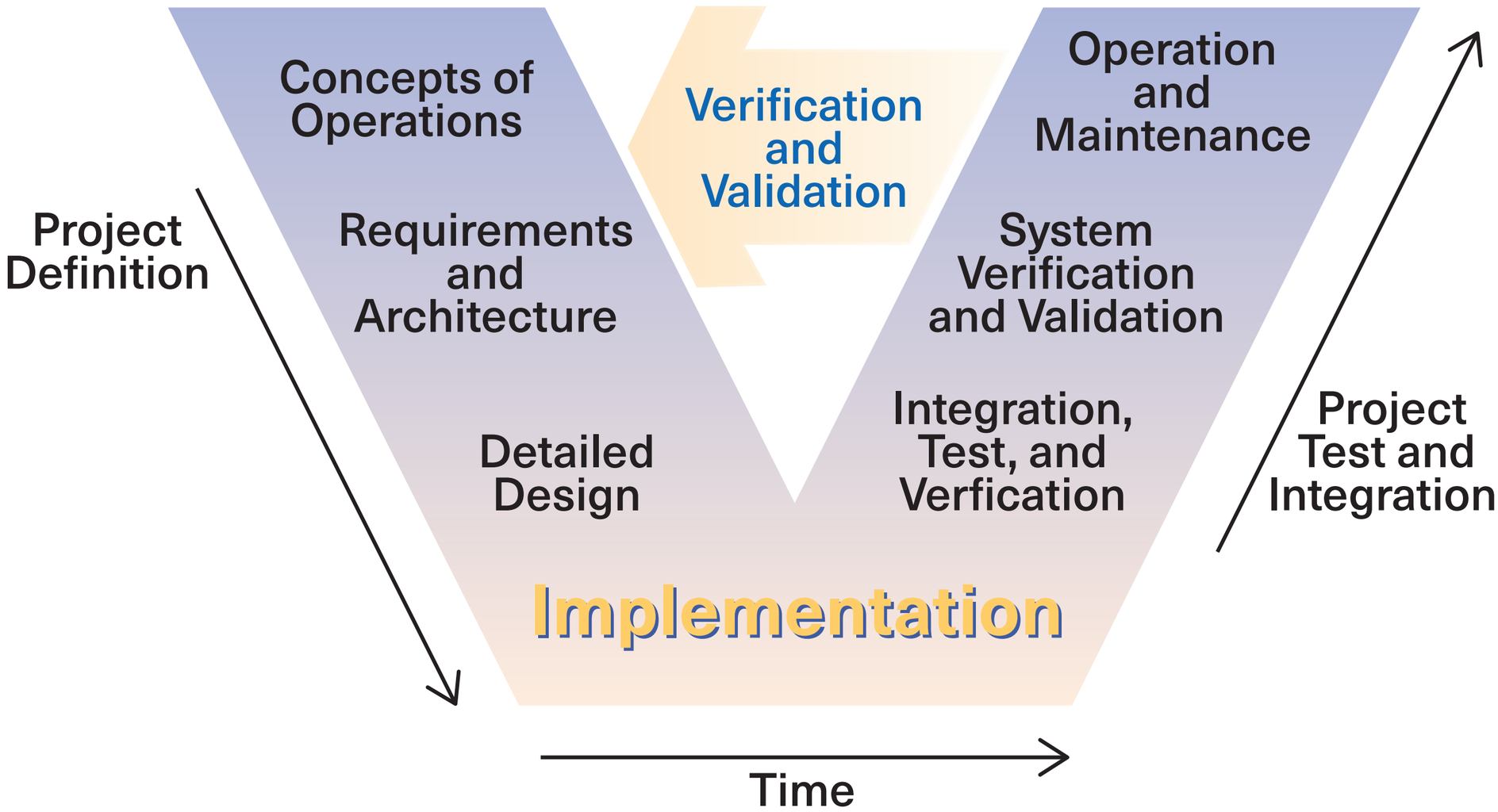
The chapter is sponsoring the No Magic World Symposium on May 21-24, 2017 in Allen, TX. Visit the website, https://nmws2017.com, for more information and to register. This symposium provides opportunities to network and interact with experts in aerospace, automotive, manufacturing, healthcare, financial services, and other industries. Participants will get the latest advances in Model-Based Systems Engineering (MBSE), SysML, PLM, PLE, Enterprise Architecture/UAF, Conceptual Modeling and Ontology. Featured speakers include:

- Richard Mark Soley, PhD - Chairman & CEO, Object Management Group, responsible for the vision and direction of the world's largest consortium of its type,
- John A. Zachman - CEO, Zachman International, the originator of the "Framework for Enterprise Architecture,"
- Sanford Friedenthal - MBSE Consultant, an industry leader in model-based systems engineering (MBSE),
- Michael Vinarcik - Senior Lead Systems Engineer, Booz Allen Hamilton, Fellow of the Engineering Society of Detroit and co-lead of INCOSE's Model Based Conceptual Design Working Group,
- Martin Eigner, PhD - Professor, University of Kaiserslautern, an expert for Product Lifecycle Management, Model Based System Engineering (MBSE) and Industrial Internet and chair of Virtual Product Engineering at the University of Kaiserslautern, and
- Gary Duncanson - President and Chief Executive Officer, No Magic, Inc., a renowned thought leader in the software industry pushing for Standards Compliant software solution and interoperability and is on the Board of Directors of the Object Management Group (OMG).

INSIGHT

This Issue's Feature:

Verification & Validation



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EMEA Sector Updates

South Africa Chapter

René Oosthuizen, monze@mweb.co.za

South Africa at IW2017

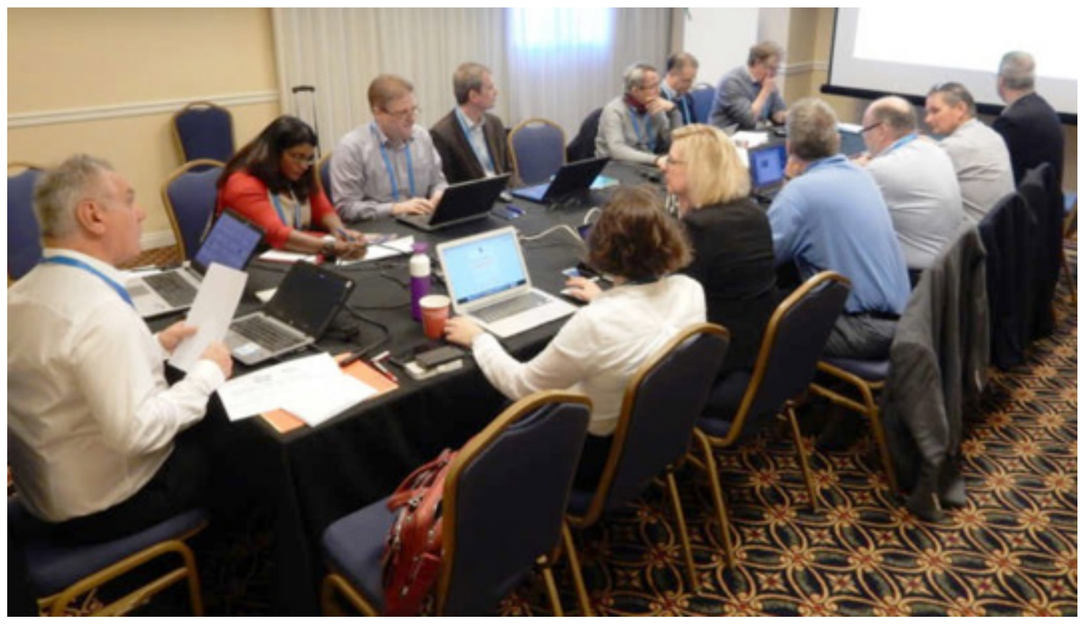
The 2017 INCOSE International Workshop (IW) held in Los Angeles from January 28-31, 2017 was attended by a record number of over 530 delegates. As usual, the event was preceded by an INCOSE strategy session, which took place on Friday, January 27, 2017.

Not to be left behind, the South Africa (SA) Chapter also set an all-time IW participation record with five members, namely Suja Joseph-Malherbe (President), Andrew Wheeler (President-Elect), Jörg Lalk (INCOSE Associate Director: Technical Review), Rudolph Oosthuizen (Member, first-time attendee) and René Oosthuizen (Assistant Director: EMEA Sector) attending.

As usual, the IW was a beehive of activity, which kicked off with INCOSE SA participation in the strategy session. Suja, Andrew, Jörg and René participated in the strategy session which covered four topics for discussion: "Future Events - towards more and more impactful forums," "Good Neighbour! - Chapter Collaboration," "Professional Development Initiative," and "Modelling INCOSE."

René was a co-facilitator in the Good Neighbour break-out session on account of his involvement on the INCOSE Chapter Governance and Financial Model Task Team activity, whence this topic originated.

The IW had a full program of working group (WG) sessions and business meetings as may be gleaned from the program here. Jörg was of course mostly involved in the huge job of finalising the technical program for the International Symposium 2017 (IS) in Adelaide, South Australia during the period July 15-20, 2017. Rudolph Oosthuizen has taken keen interest in MBSE and hence the MBSE WG at IW2017 was his target. I hear rumblings that he is keen to get a local MBSE WG started up, so please feel free to contact him if you are interested. Suja and Andrew's main mission was to represent the South Africa Chapter at IW2017, interacting with INCOSE management at various forums and keeping abreast of developments impacting business back home. Suja also handed over the



Chair of the Ways & Means Committee, a position she filled during the past two year, to her successor. Suja, Andrew, and René attended the Europe Middle East & Africa (EMEA) Chapter Leader meetings held on Saturday and Tuesday. Three important agenda items featured at the meetings. One was the 2nd EMEA Workshop from September 19-21, 2017 in Mannheim, DE. This is a Sector equivalent of INCOSE IWs and INCOSE SA members are encouraged to participate; more will be shared about this soon and should you be interested in attending, please contact me in the meanwhile.

Predictably, the South Africa Chapter featured prominently at the Foundation soirée where different styles of Pinotage wines (red, rosé, white) were presented for tasting.

The next important point for discussion was an invitation to Chapters to propose venues for the IW in 2019 in the southern part of Europe – if this initiative is successful, the INCOSE IW in 2019 will mark the first IW to be held outside the US, testimony to INCOSE's globalisation drive. Finally, the topic of the IS in 2020 was up for discussion. René repeated the "Expression of Interest to host the IS in 2020" presentation made to the INCOSE Events Committee at the EMEA Chapter Leader meeting, at which France and Sweden also announced their interest to host IS2020. Of significance is that EMEA is the Sector of choice to host the IS in 2020, hence the race is on for the bidding EMEA Chapters!

Predictably, the South Africa Chapter featured prominently at the INCOSE Foundation Soirée where different styles of Pinotage wines (red, rosé, white) were presented for tasting. All participating countries are invited to contribute wines toward the Saturday evening social event, the proceeds of which accrue to the INCOSE Foundation. INCOSE SA had a dedicated table for tasting,

with promotion videos of Cape Town and the Western Cape looping on a screen in the background as subtle reminder of the origin of the good mooti and the possible location of the IS in 2020.

In addition to the wine tasting, the South Africa Chapter sponsored a bottle of port wine for a raffle, which fetched USD 750 for the Foundation coffers. Delight beams from the winner, Doreen Anderson, as she receives the coveted prize from Dr John Snoderly, chairperson of the INCOSE

Foundation.

The 4-day workshop, a whirlwind of activity, was over far too soon, leaving many to ponder over unfulfilled actions and surfing the internet for insight into Einstein's general theory of relativity and consolation in time dilation.

Having been hosted in Los Angeles for four consecutive years, the IW in 2018 will take place in Jacksonville, Florida during the period January 20-23 , 2018.

From the UK Chapter - INCOSE UK ASEC 2016

Ian Gibson, Ian.Gibson@Jacobs.com

Building on Success

"Madness". "Far too risky". "You'll burn yourselves out." Just three of the views put forward by international INCOSE colleagues when I (Ian Gibson, INCOSE UK Events Director) told them that we were committing to hold our INCOSE UK Annual Systems Engineering Conference (ASEC) in the same year as hosting the International Symposium! Well, being made of much sterner stuff, we came to the conclusion that both events served different purposes, and that whilst there would be a natural inclination for some UK-based members to prioritise getting a ticket to Edinburgh, there would be just as many who value the unique UK perspective that they find at ASEC. So, with this in mind we returned to one of our favourite venues, the Scarman Centre at Warwick University, which we have outgrown based upon recent conference attendance figures but which we expected to suit our needs admirably on this occasion.

Clearly this was even more of a team effort than usual, as I started 2016 taking on not only the project lead role for the 2016 International Symposium (IS), but also stepping into the international Outreach Director role after it was vacated by Paul Davies (presumably in an attempt to actually retire). Without the steadfast support of various UK and international colleagues, I doubt whether this would have been quite so easy to pull off. My sincere thanks to everyone who played their parts in making both events so successful.

So, winding back to the start of 2016, things got off to a promising start when we were able to track down suitable candidates for our targeted topics – Rhys Davies talking about Asset Management, and Andy Stanford-Clark talking about the Internet of Things. Both of these topics are going to feature more and more around the edges of Systems Engineering, and indeed with each other, in the years to come. This situation improved still further when a colleague mentioned that she knew someone who was a keen amateur rocket maker and did a lot of STEM activity. Once we had made contact and the conversation moved onto whether he should bring the big rocket or the medium-sized one, I knew that we were on to a good thing, but even then could not have foreseen just how good Dr "Rocket" Russ Strand's after-dinner presentation was going to be.

Of course, a technical conference stands and falls on the quality of its papers, and with the new double-blind review process bedding in nicely under Jon Holt's direction, we

EMEA Sector Updates

found ourselves in the unusual, but welcome, position of having to turn down papers that would have easily made it into the conference in previous years. If anyone reading this article just missed out in 2016, it would be well worth considering submitting a revised version for 2017. Unlike some other conferences, we do not declare the best paper in advance based upon the paper review, but make the award based upon feedback from delegates on the delivered presentations. This year, it has been nice to see both new and familiar names in the top three:

1. "Data visualisation for systems engineers" - John Welford,
2. "The Evolution of a Systems Engineer" - Paul Davies,
3. "Scenario Selection Method for System Scenario Analysis" - Tim Ferris, Rick Adcock, Stephen Barker.

All of the authors received a prize, although this year they may have been looking somewhat enviously at the winners of the best poster prize, as these were kindly provided by Dyson and taken home by the lucky winners at the conference dinner. Over recent years, it has been pleasing to see the poster competition really take hold, becoming an important part of the conference in its own right. We have plans for 2017 to create a space for short presentations from the poster authors as part of the main programme, which should spark increased interest in the posters themselves during the breaks.

This year we had two prizes for the Academic Research Showcase Competition:

- 1st Prize - Mohammad Faheem Mirza – "Applying Systems Methodologies for Community / Social Development;"
- 2nd Prize - Guy Schmidt – "DIM: CLOUD Decision Influence Model: Cultural Limitations On User Decisions."

Finally, the programme also included an "Ask the Experts" panel, four well-received tutorials, a session on the INCOSE UK Certification process, and a set of meeting slots for working groups, not forgetting the INCOSE UK Annual General Meeting – an opportunity to find out about how INCOSE UK is managed and who fulfills each role.

It is fair to say that Russ Strand's after-dinner talk was the highlight of the event for many. He is going to be a hard act to follow. As usual, attendees greatly enjoyed the networking opportunities, friendly atmosphere and the good mix of interesting content. As an organiser, it was heartening to see so many new faces, many of whom felt quite at home joining in during the Q&A, or in the bar afterwards.

Many of you commented favourably on the quality of the technical papers, and that seems to have been reflected in the best paper marks, which show a significant improvement on previous years in terms of the overall shape and consistency.

Whenever a venue changes the names of all of the rooms just after you have gone to print on the event handbook you know there is going to be trouble! This caused as much confusion as could be expected, and whilst most delegates coped with the challenge, several felt the need to draw our attention to it in the event feedback forms. More amusingly, someone complained that the bar was open too late – I am pretty certain that it wasn't stated as being compulsory.

We would like to thank Dot-The-Eye for coordinating the event; the keynotes and after dinner speaker; the paper review panellists for supporting the improved peer-reviewed judging process; the paper authors (both successful and unsuccessful), without whom there would be no technical programme; the poster teams; the tutorial presenters; the working groups; the fringe participants; everyone who covered the event on Twitter (with a special mention for Alex Toth, @aditot, again this year); and of course, the delegates – without whom there would be no event.

EMEA Sector Updates

United Kingdom (UK) Chapter

Ivan Mactaggart, president@incoseonline.org.uk

UK Chapter Election of Officers

At our Annual Systems Engineering Conference (ASEC) 2016, INCOSE UK held its Annual General Meeting (AGM). There were a number of positions up for re-election on the UK Council and we are pleased to announce the following appointments:

- Ivan Mactaggart to the position of President,
- Kirsty Ackroyd-Wallis to the position of President-Elect,
- Phil Savvides to the position of Finance Director,
- Jon Holt re-elected in the position of Technical Director.

Therefore, the current full UK Council is made up as follows:

- President – Ivan Mactaggart
- Immediate Past President – Richard Beasley
- President-Elect – Kirsty Akroyd-Wallis
- Finance Director – Phil Savvides
- Academic Director – Duncan Kemp
- Technical Director – Jon Holt
- Communications Director – Hazel Woodcock
- Events Director – Ian Gibson
- Professional Development Director – Ian Presland
- UKAB Chair – David Venn
- Company Secretary – Emma Jane Taylor.

At this point I feel it is appropriate to offer a special mention to our outgoing Finance Director, Peter Lister. Pete has been a very active member in the UK Chapter for over 20 years and was present at our inaugural meeting in Shrivenham in 1994. Since then he has held a number of senior positions on the UK Council, the most recent of these was an extended stint as our Finance Director, during which time his tireless endeavours have contributed hugely towards the financial stability of the Chapter and allowed us to continue to expand the scope of our outreach.

Pete is currently in the process of handing over the Finance Director responsibilities to his successor and I would like to take this opportunity to wish him the very best in his – well deserved (!) retirement.

INCOSE UK Early Careers Workshop

Looking forward to 2017, the UK Chapter has a number of events on the horizon. On April 5th, there will be a joint meeting between the Council and the UKAB, at which we are running our inaugural Early Careers Workshop. The aim of this is ensure that we are meeting the needs of our future systems engineering experts and leaders and to assist with this, members of both the Council and UKAB will be inviting members who are in the early stages of their careers.

The event will be split into separate sessions, with the first focussing on what INCOSE UK can offer in order to assist with career development. The second will centre around our 2025 Vision, with the aim of leading a discussion on what our Early Careers members would do in order to meet this. Whilst there will be subject matter and support from the Council on offer, this will not be imposed and the sessions will be self-organised by the attendees.

At the end of the event, the outcome should be a set of formal recommendations to UK Council for their consideration and response. We are excited about the potential presented by this event and are hopeful that it will lead our drive to boost engagement with our younger members.

INCOSE UK Chapter Training Day

Following this, we are pleased to be re-running our annual Training Day at Engineers' House in Bristol. This will offer a full day's training in six different subject areas, with courses including; 'Product and System Test and Evaluation Essentials (PASTEE) for Systems Engineers,' 'A Systems Approach to Requirements,' 'Understanding and applying NAF (NATO Architecture Framework) version 4.0,' 'ISO 16355 - Redefining QFD To Transform High-Value Systems Engineering,' 'Don't Panic! The Absolute Beginner's Introduction to Model-based Systems Engineering (MBSE),' and 'The System Engineering of Interfaces.'

In addition to the training, we will also be running an on-site SEP examination, which will be a fantastic opportunity for our members who have been studying towards this to move forward with their certification. The bookings system will be online in the next few weeks – keep an eye out to read further details about everything on offer.

Finally, our regular ASEC will be returning at the end of the year. With contract negotiations in the final stages, we are looking forward to being able to release full details imminently.

Further details on all of the above will be available in our Preview magazine as the year progresses. You can access our latest 'transportation' themed issue via the Chapter website here, and our April '17 issue will include an Internet of Things (IoT) special feature.

Academic News

The following reports were primarily collected and submitted by Thomas Gannon, the Assistant Director for Academic Communications for the Academic Council of INCOSE.

Tom Gannon, tgannon@wpi.edu

Omega Alpha: Academic Recognition through a Systems Engineering Dissertation Showcase

Wolt Fabrycky, Omega Alpha Chairman 2006-16

During its tenth anniversary meeting in 2016 in Edinburgh, the Omega Alpha Association Board of Directors authorized establishment of an Exemplary Systems Engineering Doctoral Dissertation Showcase (ESEDDS). Its legacy was a charter cohort formed from five exemplary doctoral programs identified in 2011. Three dissertations received the Exemplary designation, and these are showcased under Exemplary Systems Engineering Doctoral Dissertations on www.omegalpha.org.

Steady-state continuation of the Systems Engineering Dissertation Showcase began in 2017 with two exemplary Systems Engineering dissertations per year selected. They come from 2 countries. The OAA Board has authorized a $5,000 cash award for each exemplary dissertation, together with a Certificate of Exemplary Recognition and an Omega Alpha Medallion.

Upon recommendation of an evaluation committee, and at the discretion of the Board, dissertations selected for final decision may receive Honorary Recognition. Although cash awards are not yet available for these dissertations, certificates and medallions will be. Omega Alpaha is seeking individual and corporate named awards for these dissertations.

Omega Alpha: Procedure and Deadlines for the Annual Recognition Cycle

Wolt Fabrycky, Omega Alpha Chairman 2006-16

Doctoral degree candidates: 1) Become doctoral degree recipients when their dissertations are successfully defended and; 2) May become aware of the Omega Alpha systems engineering showcase opportunity described on www.omegalpha.org and; 3) Are invited to submit their dissertation abstract along with biographical and professional information, declaring an intent to compete for showcase recognition and; 4) Declarations of intent to compete received by 07/31 will be reviewed by 09/30 and; 5) Accepted declarations will be invited to submit electronic versions of completed dissertations by 10/31 and; 6) Both the Exemplary Awards and the Honorary Recognitions will be announced at year end.

The first recognition cycle completed during calendar year 2016. These dissertations provide examples and benchmarks for dissertations submitted during and beyond 2017. Please encourage declarations of intent to participate using the application form found on www.omegalpha.org.

SEANET Doctoral Workshop at the University of Southern California - Thursday, March 23, 2017

INCOSE seeks to foster and accelerate doctoral research in the field of systems engineering by connecting student researchers through a network. The purpose of SEANET is to advance systems engineering research by providing a collegial support network, research resources, and contacts that will enable the completion of doctoral dissertations related to systems engineering. The INCOSE SEANET invites current and soon-to-be doctoral students to participate in this one-day workshop at the University of Southern California in conjunction with the CSER 2017 conference in Redondo Beach, California. Students will have the option to exhibit a research poster following the SEANET workshop.

The SEANET Workshop will feature speakers, panel sessions and working sessions on the process of completing doctoral education and research. Students are encouraged to discuss their interest in participating with their academic advisor and are expected to have their own funds for travel costs. Students are not required to attend the CSER conference to participate in the SEANET Workshop. For more information visit: http://csse.usc.edu/new/events/event/seanet-2017-usc

INCOSE Now an Association Affiliate Member of the American Society of Engineering Education (ASEE)

Alice Squires, alice.squires@wsu.edu

As an important step towards integrating systems engineering education into the education of all engineers, INCOSE joined the American Society of Engineering Education (ASEE) with Alice Squires representing INCOSE on the ASEE Corporate Member Council (CMC). For 2017, Alice has been elected to and is serving on the CMC board. The board has made two recent decisions: 1) After discussing industry's position on hiring engineering technology graduates as engineers, the CMC decided on a two-pronged position statement: first, to maintain or raise the requirements (potentially requiring advanced education) for qualifying graduates as engineers and second, to focus on broadening the pipeline of candidates across the general population, leaving the current situation on hiring engineering technology graduates as is. 2) The CMC stood up a new special interest group to develop a survey to assess the level of interest across the board in higher education in the US for digital badge and certificate

programs as a key element of future workforce strategy. The CMC is currently considering initiatives related to a special interest group focused on bringing a systems perspective to all engineers to help them deal with the growing complexity of systems and foresee the far reaching consequences of design decisions in society both now and in the future. The annual ASEE conference will be in Columbus, Ohio from June 25 - 28, 2017. The ASEE CMC will be sponsoring the Industry Day at the annual ASEE conference on Tuesday, June 27th, and offers a one-day industry registration for those interested on attending only on that day of the conference.

Please send any questions or comments related to ASEE CMC activities to alice.squires@wsu.edu.

INCOSE Sponsoring Three Events at the 2017 ASEE Annual Conference & Exposition in Columbus, Ohio on June 25 – 28, 2017

In related news, the INCOSE Academic Council has three events they are sponsoring at the annual ASEE 2017 conference:

1. INCOSE CMC representative Alice Squires will be moderating a panel: "Perspectives on System Engineering's Critical Role in Transforming Engineering Education Around the Globe" with speakers INCOSE Director of Academic Affairs, Ariela Sofer; BKCASE Editor-in-Chief, Rick Adcock, INCOSE Academic Forum Research Advocate, Tom McDermott, and ASEE Systems Engineering Division board members, Radu Babiceanu and Satinderpaul Devgan. The panel will be on Monday, June 26, from 1:30 - 3:00pm.
2. INCOSE Director for Strategic Integration, Art Pyster, will be delivering a Distinguished Lecture on Wednesday, June 28th, from 9:45 to 11:15 am: "Spice Up Every Engineer's Education with A Pinch of Systems Engineering".
3. Rick Adcock will also be leading a two-part workshop on "Integrating Systems Engineering: Foundations for First Year Students and Best Practices for the Capstone Experience" on Wednesday afternoon from 1:30 to 5:30 pm.

INCOSE Marketing and Communications Director Rachel LeBlanc will be hosting an INCOSE Booth at the ASEE conference and is seeking INCOSE members attending the ASEE conference to spend time at the booth during the conference; INCOSE attendees, please send your name to marcom@incose.org.

Purdue Industrial Engineering (IE) Students Kick Off Senior Project at International Workshop

DeEtte Starr, starrd@purdue.edu, and Bob Kenley, kenley@purdue.edu

Purdue Boilermakers Eren Bozbag, Brent Malloy, Alex Perry, Josh Moore, and Ayush Jaiswal, with Hollywood sign in the background.

Associate Professor of Engineering Practice and INCOSE Fellow Bob Kenley recently took a team of five Purdue IE seniors to an international workshop in California to begin their senior project.

The team traveled to Los Angeles, US-CA January 27-31, 2017 to attend the International Council on Systems Engineering (INCOSE) conference and to start their senior project. Eren Bozbag, Ayush Jaiswal, Brent Malloy, Josh Moore, and Alexander Perry made up the team.

> "This seems to be a very exciting project for all of us and something quite different from what we are used to as students of industrial engineering,"

The students met with INCOSE leaders and key stakeholders to brainstorm for project ideas. In the end, they decided to design a holistic system for INCOSE - a platform for those who need required training and experiences in systems engineering. Moore described it as "a professional development portal for INCOSE so that users can track their progress towards achieving various competencies within systems engineering."

How will INCOSE benefit from this project? "INCOSE's vision is to establish a comprehensive systems engineering professional development capability," explained Perry. "While they have many of the necessary pieces in play, there is no integration of these systems to ensure they operate together. This problem is what our team will try to solve."

The students were grateful for the project, the professional interaction, and the trip.

"This seems to be a very exciting project for all of us and something quite different from what we are used to as students of industrial engineering," Jaiswal said. "Systems engineering seems to be coming up in a big way and through this project we hope to learn more about the different processes that go into developing a comprehensive system."

"The project is really interesting because it uses the problem-solving skills of an engineer in an entrepreneurial application by creating a business model," said Moore. "The trip was incredible and our team was so thankful for the opportunity to interact with leaders of INCOSE while enjoying the beautiful weather of Los Angeles."

In addition to nailing down a senior project idea, benefits of the trip included connecting with people and companies at the workshop, and learning from INCOSE leaders. "It was a great way to kick-start our project and a good opportunity for us to get closer as a team," concluded Bozbag.

Dr. Kenley recently was appointed as the INCOSE Associate Director for Professional Development reporting to President-Elect Garry Roedler. The idea of sponsoring a senior design project with INCOSE sprang from his participation in the Purdue Entrepreneurial Leadership Academy that equips faculty members with training in entrepreneurship and small grants from the Purdue Research Foundation to support faculty-driven entrepreneurship projects.

"When I proposed this project to President-Elect Roedler, he was very supportive, especially when we discussed the fact that the professional development capability is targeted at the demographic group that our students belong to," said Kenley. "I knew it might be a stretch for our undergraduates to take on this project, but the promise of a trip to Los Angeles in January definitely had some appeal. We are delighted with the capabilities, experience, and enthusiasm of students who came forward, and we are confident that they will help INCOSE to accelerate its efforts."

Sigma Theta Mu Charters Its First Three Chapters

Michael Vinarcik, vinarcik_michael@bah.com

Sigma Theta Mu, founded at the 25th Annual International Symposium of the International Council on Systems Engineering, was established with the support of INCOSE to mark in a fitting manner those who have conferred honor upon the university they are currently attending or their alma mater by distinguished scholarship in the study of systems or the field of systems engineering. This is an important milestone in the maturation of our field and parallels the establishment of other comparable discipline-specific honor societies.

At the 2016 International Workshop, the Founding Board (Michael J. Vinarcik, ESEP-Acq [President], Art Pyster, Ph.D. [Treasurer], and C. Robert Kenley, Ph.D., ESEP [Secretary] provisionally approved the charter requests for the first three chapters of Sigma Theta Mu:

- Michigan Alpha: University of Detroit Mercy (UDM)
- New Jersey Alpha: Stevens Institute of Technology
- Virginia Alpha: Old Dominion University

On February 11, Michael Vinarcik, President, conducted an induction ceremony for Robert Kraus, Arun Sivan, and George Papaioannou. They are graduating from the UDM MS Product Development Program (MPD) and have the distinction of being the first three student members of Sigma Theta Mu.

Universities with undergraduate and graduate programs in systems-related disciplines may petition the Board to establish a local chapter of Sigma Theta Mu. For more information, see www.sigmathetamu.org.

EWLSE at IW 2017

Alice Squires, ewlse@incose.org

Regina Griego, griegor@sandia.gov

Lisa Hoverman, newsletter@incose.org

Empowering Women as Leaders in Systems Engineering (EWLSE) again held engaging, well-attended sessions at the International Workshop (IW) on Monday afternoon, January 30, 2017. The first session, led by Alice Squires, EWLSE Founder, was an introductory session. Here, Alice presented an update on EWLSE progress with a full year of the initiative in action. She specifically noted a better online presence and a strong start on the mentoring program. Following her update, attendees shared personal background information so that others in the group understood where they were coming from, along with their Most Empowering Success from 2016 and Greatest Leadership Challenge going forward in 2017. Below we share the feedback from this session. As you read the comments, we encourage you as readers to reflect on where you have similarities and differences.

EWLSE at IW 2017

The second session was a breakout session, where attendees were broken into four teams to collaborate and determine 'Breakthrough Ideas for Gender Parity in Engineering.' Attendees commented that the session was enlightening, lively, and fun. We encourage you to join us at one of our upcoming events – a few of which are listed below!

EWLSE IW Introductory Session

Most Empowering Success from 2016

Below you will find some of the exciting things EWLSE 2017 IW attendees accomplished in 2016. What were some of your most empowering 2016 moments as an engineering professional?

- Turned a customer into a client
- Led one of the highest funded projects; project led to 4 patents
- Retired from large company culture; chose to retire
- Founded the product development excellence team
- Facilitated the integration of test, systems, hardware, and software through one large face-to-face meeting
- Initiated the practice of capability leaders presenting directly to NASA
- Switched companies
- Built acceptance of systems engineering in the institution
- Mentored a woman with great success where we both benefited from the relationship
- Participated in important research projects
- Initiated new business
- Addressed how change management impacts requirements management
- Was able to get to the INCOSE IW
- Stood up a team of 6 students to collaborate successfully virtually on the design of an aircraft
- Convinced 4 of 30 men to stand up the systems engineering process
- Part of first product release for a new company
- Helped team recognize the need for systems engineering as a discipline
- First woman in role driving the implementing of systems engineering in the company
- Awarded research grant for idea with several student teams
- Represented EWLSE at APCOSEC
- Re-elected INCOSE Secretary, thank you
- Elected INCOSE chapter president with five new officers representing diversity in race, gender, and age
- Recognized importance of emergent properties in domain that led to implementing new systems engineering focused process
- Initiated future female leaders in systems engineering program in region with 10 women in program
- Survived first year of doctorate
- Delivered two papers at INCOSE IS 2016
- Initiated the INCOSE Oil and Gas Working Group
- Role as General Manager of our global group
- Moderated INCOSE IS 2016 technical session EWLSE panel with strong attendance, raising awareness and areas of conflict in public audience

EWLSE at IW 2017

Top Leadership Challenge Moving Forward in 2017

Here we list find some of the challenges EWLSE attendees are facing. Do you experience these as an engineering professional? How would you advise navigating these? We welcome your input!

- Finding resources, getting funding
- Growing systems thinking and systems engineering in company
- Applying lessons learned to next project
- Time constraints, money constraints
- Transitioning to retirement
- Impactful communication on why systems engineering is important
- 11% women submitting in ~ 400 abstracts
- Bringing women in systems engineering back into the fold
- New model for how we managed specialty areas
- Hard to get buy-in in systems engineering
- Need solutions now, time pressure
- Stove-piped interfaces
- Primary Investigator on top projects
- Bringing in STEM related careers
- Becoming part of systems engineering team
- Cultural barriers to adoption of systems engineering process
- Growing start-up
- Addressing "troublemaker" "secret society" views
- Combined vision of implementing MBSE
- Bigger scope for implementing systems engineering
- Millennial needs and aging workforce impact
- Sexual assault on campus
- Hiring cyber security – no women
- Positions coming up in INCOSE, president elect
- Shift of focus of business where women no longer in leadership
- No official systems engineering – continue the theme
- Keep going without support
- Taking forward program and changing negotiations
- Finishing doctoral while working INCOSE IS 2018
- Upper management does not communicate
- Focus on Change management

Breakthrough Ideas for Gender Parity in Engineering

At the INCOSE IW the second EWLSE session was a brainstorming session on "Breakthrough Ideas for Gender Parity in Engineering." The premise of the brainstorm is that progress has been very slow or stalling for increasing women in engineering, particularly systems engineering. The exercise was to address: What are breakthrough ideas to the goal of achieving gender parity within 20 years. A tall order, but the participants

EWLSE at IW 2017

in the EWLSE brainstorming session formed four groups of about 5-6 people in each and were provided ideas on visioning for a future of gender parity. The teams were: Team Amazing, Team Wonderful, Team Diversity, and Team Respect (all self-named). The themes that came forward included: changing culture within and outside engineering companies, creating advocacy and self-accountability throughout organizations, and impacting the future through the education system. Changing culture received the greatest dialogue by all the teams. Internal culture ideas included respect for work/life integration choices, creation of explicit local culture on teams to level the playing field, and conscious creation of opportunities for women leaders (making the promotion path explicit, not implicit to the in-crowd). External culture included changing pop-culture's portrayal of "women's work or roles" and funded research on the value of gender diversity, specifically in engineering. For the theme of creating advocacy and self accountability for gender parity, ideas were: creating explicit champions in the engineering line management for gender parity, training all managers to be advocates for diversity (in particular gender parity), providing mentoring groups and nurturing a mentoring environment, and encouraging everyone to self-monitor to make the culture gender-friendly. The last theme, was impacting the future through the education system. The ideas for this theme included creating more gender parity among faculty, pairing women students (in particular graduate students) with industry mentors, training engineering faculty on implicit bias and diversity awareness (particularly aimed at gender issues), hosting women engineers as visiting lecturers for engineering classes, and sponsoring "take a girl to work" days regularly (not just daughters).

There was lively discussion during each group's brainstorm, more people joined as the teams reported out and discussions increased in animation. We intend to further the conversation at the Conference on Systems Engineering Research (CSER) at Redondo Beach in Los Angeles with an EWLSE panel to be held 10:30-noon Saturday, March 25th, and again at the INCOSE IS 2017 with an EWLSE panel "Systems Engineering Leadership: Navigational Instruments and Guides."

Interested in joining EWLSE? We welcome you!

Join EWLSE through www.incose.org:

- Login to your member account
- Select Profile Home
- Scroll to My Committees/Working Groups
- Select Browse/Join a Working Group
- Select "Empowering Women" on the right
- Scroll down to the Committee Tasks
- Select "Join this Working Group"

Local Chapter Initiatives

Ian Gibson, Ian.Gibson@Jacobs.com

Tranche 1 Winners

We are pleased to announce funding for two proposals under Tranche 1 of the Local Chapter Outreach initiative. The Winning Chapters are GfSE and the South African Chapter.

- GfSE – to support them working on development of SysML standards into the German automotive industry with PROSTEP and the OMG.

- South African Chapter – to support them engaging with student members in other parts of Africa through existing academic links, providing a hub for future expansion.

The Local Chapter Outreach Committee is working on the exact details of both of these proposals with the respective chapters.

We look forward to receiving the next set of submissions in May.

Spotlight ON!

Interviewed by Sandy Young, info@incose.org

David Walden, ESEP

Name: David Walden, ESEP

Title: Owner and Principal Consultant

Organization: Sysnovation

Place of Birth: Minneapolis, Minnesota, USA

Current Residence: Shakopee, Minnesota (October through May) and Pentwater, Michigan (June through September), USA

Domain: Consulting and training in all domains

Studied in college:
Undergraduate: Electrical Engineering,
Graduate: Electrical Engineering, Computer Science and Management of Technology (MOT)

Year joined INCOSE: 1994

Spotlight ON!

Roles in INCOSE: Lead editor of the INCOSE Systems Engineering Handbook, liaison to ISO/IEC JTC1/SC7 Working Groups 10 and 20, former certification program manager, former chair of the Corporate Advisory Board, founding member and first president of the North Star Chapter in Minnesota

Years in systems engineering: 30-plus

1. Why did you become a systems engineer?
I started out at McDonnel Aircraft as an electrical engineer in the software department (they only hired "engineers" at the time, not computer scientists …). However, I found my passion led me to be concerned with avionics systems at a higher level, and I quickly moved into the avionics analysis department to work on fire control and data fusion algorithms. Since then, I have been fortunate to have been the lead systems engineer on numerous complicated and complex systems.

2. You have quite the engineering family. Will you please share all the engineering connections in your family? Which ones are involved with INCOSE and/or systems engineering?
I was actually the first person on my side of the family to get a college degree. However, my wife, Beth, comes from a family of mechanical engineers. She, along with her father, mother, uncle, all three of her brothers, and one nephew are all mechanical engineers from Valparaiso University. We have been blessed with three children (two girls and a boy) who are also all engineers from Valparaiso University (two mechanicals and one electrical, in case you are keeping count …).

My daughter Erika has been to a few Crossroads of America Chapter meetings in Indiana and my son Joseph has been to a few North Star Chapter meetings. Beth is involved behind the scenes at Sysnovation as the CFO and in many INCOSE-related activities, including the Great Lakes Regional Conference (GLRC). She is also part of the INCOSE spouses' group that gets to do fun stuff while most of us are in meetings at the International Symposium and the International Workshop.

3. What is the biggest challenge you face?
Keeping the Sysnovation CFO happy.

4. Why should someone consider INCOSE's Systems Engineering Professional Certification?
INCOSE's Associate Systems Engineering Professional (ASEP), Certified Systems Engineering Professional (CSEP), and Expert Systems Engineering Professional (ESEP) certifications are recognized throughout the world as the standard for systems engineering professionalism. Earning any level of SEP can help set you apart from your peers. Now go out and get certified! (Full disclosure: I was the INCOSE certification program manager from 2007-2013, and I teach a certification prep course. However, I truly believe certification is an important piece of our discipline.)

5. Anything to add?
I look forward to welcoming many of you to GLRC11 in Minnesota this October!

Integrating Program Management and Systems Engineering

Randall Iliff, randall@eintllc.com

INCOSE, MIT, and PMI formally collaborated for several years on several related strategic initiatives. One major effort has been to develop a book incorporating research that each of our organizations supported over the past three years focused on the integration of systems engineering and project/program management practices. Thanks to the generous contributions of many INCOSE members, as well as our Alliance colleagues at the Project Management Institute (PMI) and the Massachusetts Institutes of Technology (MIT), we are pleased to announce that this important new book is now available!

Integrating Program Management and Systems Engineering is a valuable resource for anyone involved in developmental effort, and particularly those of us who believe that the power of systems engineering is more often limited not by a lack of skills or tools, but instead by a lack of integration into the program management environment in which work takes place.

"A great contribution to systems engineering and project management, this book lays out the fundamental challenges of integrating these two disciplines and offers well-written practical guidance on how to address those challenges. This is the most comprehensive examination I have seen on the ties between systems engineering and program management." – Dr. Art Pyster

This book presents a framework for understanding how these elements combine to improve integration in programs. It uses case studies and acknowledged best practices to show the practical, real world application of the integrated program management-systems engineering framework. A key contribution of this book is practical guidance on tools, processes, capabilities, and structures that enable effective integration between program management and systems engineering.

The book will shortly be offered through the INCOSE Bookstore, and is already available through Wiley, Amazon, and other booksellers. Through the INCOSE Store, INCOSE members will receive a 25% discount and CAB associate members qualify for a 12.5% savings from the list price.

INCOSE, MIT, and PMI will be actively promoting this work during 2017, so expect to hear a lot more about this new resource!

Editor's Note: Maybe this is the first book you download from the new INCOSE Store next month? The cover and advertisement for this great new publication follow. Happy Reading!

Eric Rebentisch, Editor-in-Chief

Integrating Program Management and Systems Engineering

Methods, Tools, and Organizational Systems for Improving Performance

Project Management Institute

INCOSE

WILEY

Publication of the International Council on Systems Engineering

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Who are we? INCOSE is a 10,000+ member organization of systems engineers and others interested in systems engineering. Its mission is to share, promote, and advance the best of systems engineering from across the globe for the benefit of humanity and the planet. INCOSE charters chapters worldwide, includes a corporate advisory board, and is led by elected officers and directors.

2017 INCOSE Board of Directors

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Note from the Editor

Lisa Hoverman, newsletter@incose.org

Welcome to the first Newsletter of 2017! With a record-breaking/setting International Workshop just behind us, and exciting events like CSER, the 2017 INCOSE IS in Adelaide Australia, and the GLRC ahead, 2017 promises to be INCOSE's best year yet. It was great to see many of you at the IW and I look forward to seeing more of you at events throughout the year.

This Newsletter is our largest yet and has come leaps and bounds in this third year of publication with your contributions – so Thank You! Please keep sharing these with us as we continuously work to improve our communications. I hope that you see some of your suggestions and contributions in this issue. We welcome feedback and contributors!

As some exciting Marketing and Communication News: we have created an INCOSE Facebook Page! This is our outward facing page to the world of Facebook. We will still maintain a Facebook Group where people can contribute and communicate as a community (currently ~1650 members). However, we will use the Facebook page to represent our brand and represent systems engineering (as we are the global authority).

Here's the link to the page: https://www.facebook.com/INCOSE/.

We would ask for your support in promoting the page in your sectors, chapters, working groups, colleagues, etc., as appropriate. Further, we ask for your help in identifying information that we can post on the site. This information can be about INCOSE and items of interest to the systems engineering community. Please send ideas for posts to marcom@incose.org.

We will use the page to promote our events as well. Once we have a new store, we will also use it to promote our products. We are off to a good start. We reached over 7300 people in the first month, primarily with an article written by two INCOSE members (one our President!) in the Engineering News Record Viewpoint. Our page has over 140 views, 70 likes, and 700 engagements. Let's keep the momentum going!!

Finally, stay tuned for the first 2017 issue of INSIGHT (advertised earlier!). INSIGHT's mission is to provide informative articles on advancing the state of the practice of systems engineering. The focus of this issue of INSIGHT is Verification and Validation, in collaboration with the March 2017 issue of the International Test and Evaluation Association (ITEA) Journal on the common theme of the engagement of systems engineering with test and evaluation. Our intent is to encourage and stimulate our systems engineering community to focus more energy on verification and validation.

A sincere note of appreciation to all who contributed to this Newsletter and updated members on the IW, the many events, and opportunities in INCOSE and your niches of systems engineering. I look forward to your upcoming contributions (submission dates in the table below!) and articles as we continue to evolve the Newsletter. Have a terrific March!

Due Dates for Q2 2017 Newsletter:

General Content (GC): May 15, 2017
Late Breaking News (LBN): May 25, 2017 (with permission from the editor)

Due Dates for other 2017 Newsletters:

Q3 Newsletter, GC: August 15; LBN: August 25
Q4 Newsletter, GC: November 15; LBN: November 25

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