MEMBERS NEWSLETTER

June 2019 - Q2

INCOSE

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President's Corner

Garry Roedler, garry.j.roedler@lmco.com

In the first newsletter of 2018, I highlighted several things that we need to address to take INCOSE and our Systems Engineering discipline into the future. One of these is "Systems Engineering Professional Development".

Systems Engineering Professional Development – We will be developing a comprehensive Professional Development capability. This will pull together the applicable assets and services across INCOSE, as well as integrate elements from other providers. We plan to build a platform- based ecosystem to support a highly-interactive community.

As we continue to influence the future of systems engineering to address the increasing levels of complexity, dynamics, and nondeterministic attributes of our systems, will those performing systems engineering be ready to keep pace with those changes? INCOSE has been active trying to address the professional development (PD) needs of future systems engineers and other performing systems engineering activities. This includes the following key highlights:

- An INCOSE Associate Director (AscD) role for Professional Development was created. Marilyn Pineda (marilyn.pineda@lmco.com) was appointed to this role by the INCOSE Board of Directors (BoD). A special thank you to Marilyn for providing input for this article.

- The BoD included PD as the focus of one of the three new strategic objectives. "Premier - INCOSE is and will continue to be the premier choice of professionals everywhere for Systems Engineering professional development needs." The champion of this strategic objective is the AscD for PD.

- Leveraging INCOSE's rich set of Systems Engineering content for training purposes is perennially one of our highest priorities. To serve our existing members and drive new interest among other professionals who need to develop systems engineering skills, we are in the process of setting up a Professional Development Portal. This is intended to be a community platform to connect those seeking systems engineering professional development or training with the resources available from various sources.

The Vision

In line with the strategic objective above, INCOSE has been recognized as the world's leader for aiding engineering professionals to grow their competency in systems engineering. Over nearly the past three decades we've developed a rich and varied set of content, ranging from the fundamentals (Competency Framework) to new cutting-edge topics (Complex Systems Primer).

We will continue to extend and evolve the areas of systems engineering focus for practicing engineers. However, we recognize the systems environment is not only changing, but change is coming at us with increasing speed. Practitioners of systems engineering will need to gain new skills in technologies not even envisioned just a few years ago. Similarly, the world is faced with increasing complex socio-technical problems. This requires the systems engineering professional to become more adept in non-technical skills and including requiring subject matter experts in these areas as part of a transdisciplinary team. At the same time, other professionals will find themselves in need of many systems engineering skills without necessarily changing their career focus. Our vision also includes extending our community to other professionals who need to understand systems engineering activities and collaborate with systems engineers.
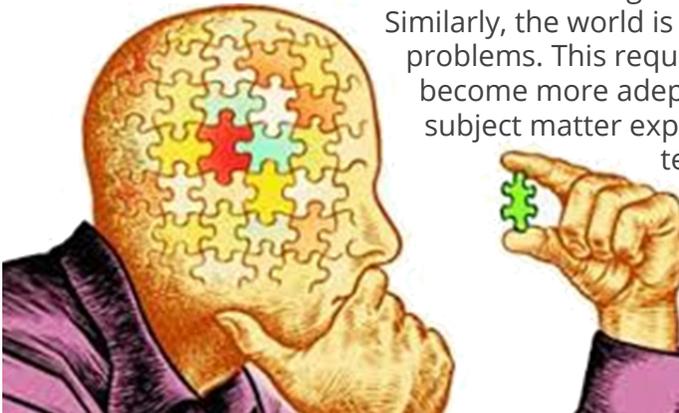
The Plan

The PD Portal will be a comprehensive solution for career development for both systems engineers and other engineering professionals who need to perform systems engineering activities. So the portal will include end-to-end professional develop capabilities, as well as easy shortcuts for those who are entering with a more focused need. The comprehensive solution includes:

- A Competency Framework with a self-assessment capability for users to obtain a sense of their proficiencies and potential areas of development.

- A targeted search for content by topic (using competency framework capabilities as the initial basis for search).

- Reference to certification, events, products, working group activities, mentoring, Technical Leadership Institute, and other INCOSE offerings.

- Training and education provided by INCOSE, as well as other providers.

- Support for users to provide feedback regarding the professional development assets and services.

For INCOSE members, targeted information pages will be available, such as:

- Professional Development Dashboard collecting all the professional development work the user has done with INCOSE and enabling an easy print-out for CSEP renewals. The intent is to eventually support user entered additions to capture a complete record of Professional Development Units (PDUs).

- Corporate Advisory Board (CAB) organization dashboard enabling CAB representatives to have collective insight into the usage of INCOSE professional development assets and services by the employees or students from their organizations.

What Can You Expect to See? (And when can you expect to see it?)

At the International Symposium in July 2019, we will unveil the "minimum viable product" which includes:

- Targeted search for content by topic with a new search algorithm behind the scenes.

- Access to a competency assessment

- Access to a selected set of training and content focused on topics with the highest demand.

- Early look at dashboards and other member-specific features.

In the following few months, additional features, along with training via partnerships will be rolled out. The plan is to continue developing features toward the comprehensive solution, while collecting user feedback to identify where other needs emerge. Below is a preview of the PD Portal.
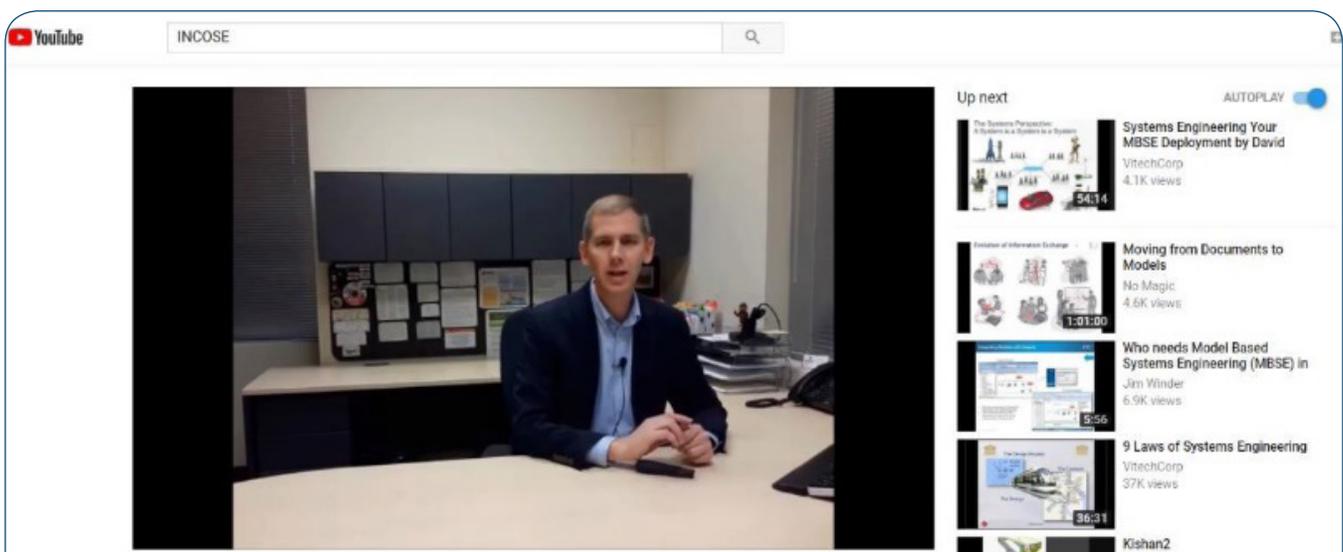
Looking towards the INCOSE International Symposium 2019

Coming Soon! Just as in 2018, we ensured a technical program for the upcoming International Symposium (IS2019) that has a strong look to the future of systems engineering, addressing the necessary and inevitable changes. These include:

- Keynotes that include a focus on innovation

- President's Invited Panels

  – The Future of Systems Engineering (FuSE), Transformation, and Digital Engineering

  – Artificial Intelligence in Systems Engineering

  – Embarking on a Grand Challenge – Applying Systems Engineering as an Enabler for Addressing Grand Challenges

  – Professional Development for Systems Engineers; Evolving Today's Engineers to Meet Society's Changing Needs

  – New Definitions for Systems and Systems Engineering

- One additional session per day reserved by the INCOSE Technical Operations leadership for Advanced Topics—presentations on new technology or state-of-the-art systems applications, such as artificial intelligence, autonomy, augmented reality, internet of things, and more.

- Sponsor tracks that focus on advanced technology, digital engineering and MBSE

IS2019 promises to be another great event.

Join me in my home town - Orlando, FL, USA during 22-25 July. The Orlando area has so many things to offer you and those traveling with you—it has much more than just the great theme parks within a short drive of the Hyatt Regency Grand Cypress, the location of IS2019. This includes the Kennedy Space Center, wildlife preserves, and beautiful beaches.

In addition to the content discussed above, IS2019 will include a very exciting set of keynote speakers, a diverse and high-quality set of paper presentations and panels, and a set of informative presentation-only sessions, which were very popular in their IS2018 debut. Join us at the symposium to engage in a breadth of INCOSE activities, listen to thought-provoking presentations about the state-of-the-practice and the state-of-the-art of SE, network with others, visit the exhibition hall, and get involved in the technical program.

29th Annual INCOSE International Symposium
Orlando, FL, USA
July 20 - 25, 2019

KEYNOTE SPEAKERS

MONDAY
Dr Wanda Austin
President, University of Southern California
Keynote Title:
Interdisciplinary Systems Engineering inspired by da Vinci

WEDNESDAY
Capt. Winston Scott
Director, Environmental, Tectonics Corporation
Topic:
Astronaut

TUESDAY
Prashant Dhawan
Co-Founder, Biomimicry India
Keynote Title:
Biomimicry - A Bioinspired approach to Systems Thinking

THURSDAY
Grant Begley
CEO, Rocket Crafters
Keynote Title:
The Underway Global Unmanned Systems and Robotics Revolution

President-Elect's Letter

Kerry Lunney, kjlunney@tpg.com.au

The Magic of Systems
Pay It Forward

I often wonder what the "magic" is in systems that I find enticing. Is it because I like puzzles? Is it because I like challenges? Is it because I like variety? Perhaps it is all of these and more. I was recently asked how do I keep going at what some may consider a fast pace - don't I get tired? This made me pause to think is this unusual? Am I very different from anyone else? I really can't answer that question but I don't believe this trait is a rarity. Energy blended with a bit of personal "quirkiness" is strong in many of us. Capitalising on this perhaps makes the difference.

The world of systems can be alluring to some. It can provide the stimulus through the combination of science, engineering, and art. As an engineering discipline it can be exact and vague, complete and incomplete, abstract and detailed, methodical and creative – all dependent on the system and the phase of the system life cycle. In retrospect I can now see what I found in the "magic of systems". At the time though, it was not always evident.

First, the scope and variety in projects I have had the opportunity to be involved in has been excellent. I worked on many systems in multiple industries in various locations around the world. Not often do you get such opportunities. The experience gained is invaluable. Additional benefits are the exposure to different cultures, different executions of similar business models and the establishment of a strong and diverse network of colleagues, peers, and friends. Couple this with some extraordinary experiences such as supporting humanitarian efforts and being the focus of countrywide protests (the work, that is, *not me personally!*) to name a few. I have often been asked by friends to write my memoirs "travelling the world through systems." I will have to sleep on that one!

Another alluring factor for me was the exposure to many different disciplines engaged to deliver a quality solution. The ability to work in a trans-disciplinary environment is something I took for granted, assuming this was the norm. Until much later I had not realised this was not the case but it proved to an important learning moment for me in my career.

I must say at times you get "bragging rights." I have been fortunate to work on systems that for the majority are very visible, whether commercial or defence-related. The pride and passion that is evoked when you see the system you have worked operating in service is terrific. This is further enhanced when your family and friends see and if possible, experience the outcome. All of a sudden you become an "overnight success and expert" on all things related to the system, whether this is true or not. This is of course not unique to systems engineering, but it sure does feel good.

Adding to this sense of magic and allurement is my growing contribution to the future from three aspects – the systems engineering discipline, the opportunity to be part of the

Socorro Systems Summit VLA Tour, New Mexico

Huston Chapter Meeting—NASA, Texas

greater sustainability of our planet, and influencing the up and coming generations of technical and engineering minds. The first two are primarily through the strength and activities of INCOSE and my employer Thales. The third however has the added element of my own desire to "leave a legacy." I find it rewarding and enchanting to speak with future engineers, hopefully convincing a few to become the systems engineers of tomorrow. To receive compliments from individuals after a training session or a meeting provides me with great inspiration.

This leads to my final point and that is—pay it forward—the benefits and learning you have gained can be foundational for others. And one way of doing this is volunteering for INCOSE. By volunteering you provide the means to assist in the growth and advancement of your discipline, and in your own personal growth – technically and otherwise. That is the "magic" and your legacy.

You may ask why I picked such a topic as "the magic of systems" for this newsletter. It is because I recently had a number of experiences that were truly extraordinary, none that I had planned if you had asked me 4 months ago. I have presented at conferences, talked to students, conducted induction and training sessions, attended meetings at some amazing locations and interacted with a diverse set of people. This collage of photos shows only a portion of this journey and adds to my storytelling if ever I get to write my memoirs. My means of "pay it forward" is personally rewarding and magical, generating the energy and passion I need and enjoy.

I hope you find yours.

Cheers, Kerry

Notes from the Board

Lisa Hoverman, marcom@incose.org

President-Elect Garry Roedler opened the Q2 meetings held in Indianapolis, US-IN by welcoming two new members to the INCOSE Board of Directors (BoD or the Board):

- Mitchell Kerman: Director for Outreach (Idaho National Laboratories)
- Juan Amenabar: AscD, VALUE, Strategic Objectives champion

The Board worked in Q2 on meeting the INCOSE Strategic Objectives by looking at how to improve our value streams. We examined how to improve IT offerings, how to better coordinate our portfolio of services under a Services Director (requires a by-laws change, so we need your vote!), and how to serve

membership better across our value streams through Events, CAB Needs, Chapter Offerings, Products, Training, Volunteer at the BoD level, and Standards.

A new budget structure was introduced, and both MarCom and Outreach shared updates and upcoming plans to continue to support our Strategic Objectives and underlying Value Streams.

While doing a lot of work, some of the Board gathered the day before meetings to enjoy a tour of the Indianapolis Racing Hall of Fame (see cover!), enjoyed a dinner at our Chief of Staff, Andy and Anne Pickard's lovely home, and a social with the Crossroads of America chapter, a very high contributing chapter, showed us great hospitality!

Update from INCOSE IT

Bill Chown, cio@incose.org

Amongst the many forms of spam messages going around, you may have received email offering you lists of attendees at various events. Recently such offers have included reference to INCOSE events for which the attendee information is not public.

Sponsors and exhibitors at INCOSE major events do receive attendee information to permit them one attempt to contact those

attending, but INCOSE never provides lists of members, participants, or anyone corresponding with INCOSE for these third-party re-distributors of lists.

We are taking all necessary steps to ensure that such information is not being made accessible through any channel and are committed to protecting personal information, in accordance with our published privacy statement online.
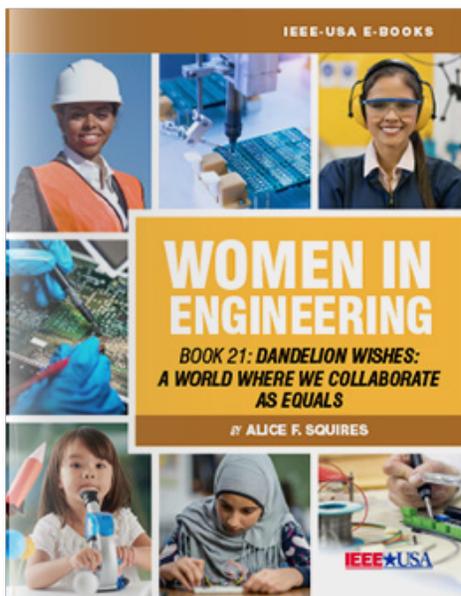
Women in Engineering—Book 21 Dandelion Wishes

In IEEE-USA's latest Women in Engineering e-book, INCOSE Leader and EWLSE founder, Alice F. Squires, shares her vision: "To be successful working together as a team of equals."

Author Alice F. Squires believes the desire to make a difference in the world follows us wherever we are. Her vision: "***To be successful working together as a team of equals***." We are collaboratively working on products that will have an impact on the world, and will improve the lives of others. From working engineer–to educating the next generation of engineers in the classroom–she strives to inspire engineers, managers, technical leaders and others to work together to make the world a better place.

https://ieeeusa.org/shop/careers/wie-book-21/

INCOSE, Los Angeles

Sharifi Nazanin,
Nazanin.Sharifi@ngc.com

On June 11, Dr. Mark L. McKelvin, Jr. spoke on Systems Architecting for an INCOSE, LA event at the Aerospace Corporation.

Dr. Mark L. McKelvin, Jr. is the INCOSE-LA Chapter President and a Senior Engineering Specialist in the Applied Software Technologies Department in the Information Systems and Cyber Division of the Aerospace Corporation, where he specializes in systems and software engineering and the application of model-based engineering techniques to develop solutions for cyber-physical, embedded, and software-intensive systems.

He is also a Lecturer in the System Architecting and Engineering graduate program at the University of Southern California, Viterbi School of Engineering where he teaches courses in Model-Based Systems Engineering and Systems Engineering Theory and Practice.

Dr. McKelvin spoke on system architecture as the conceptual model that defines the structure, behavior, and views of a system-of-interest. System architecting addresses the role of systems architecture in systems engineering, as well as the process and activities for developing a solution that meets stakeholder needs. The presentation provided a brief overview of system architecture and identified key aspects of the system architecting process. An approach to system architecting was presented along with an example to illustrate application of the approach in space system development.

Prior to joining the Aerospace Corporation, Dr. McKelvin worked at NASA/JPL as a software systems engineer, electrical systems engineer, and a lead fault protection engineer on major flight systems. His interests are in the application of modeling, analysis, and design of engineered systems. He holds a Ph.D. in Electrical Engineering and Computer Sciences from the University of California, Berkeley within the Design, Modeling, and Analysis research area (formerly Electronic Design Automation group) and a Bachelor of Science in Engineering from Clark Atlanta University in Atlanta, Georgia.

INCOSE, Colorado

Valkand Jhaveri, valkandj@gmail.com

Aerospace Day—March 11th 2019. Colorado State holds an Aerospace Day every year, on the 2nd Monday of March. This event is held at the Colorado State Capitol in Denver, CO. All local and surrounding area Aerospace Companies are represented. There are tables/booths at this event for many organizations. Tables include: Local Military – Air Force, Navy, Army, National Guard, and Space Command; Local Universities and schools; Local manufacturing industries; and Local elected representatives and their support staff. The INCOSE Colorado Front Range Chapter had a table (for the 2nd year attended by Valkand Jhaveri (VJ. The Event is attended by Industry employees, various university and high school (STEM students and other engineering professionals. It is one day event, free to the public.

As a member of Colorado Front Range Chapter, I set up and manned the INCOSE table at this event to advertise INCOSE to the attending public. It was a successful event. I also displayed the INCOSE flyer and Western States Regional Conference (WSRC information. I provided material fliers for INCOSE and other INCOSE materials. INCOSE was well received. University and STEM school students also inquired about INCOSE. Aerospace industries and local politicians and staff had good discussions on INCOSE. Our State Governor (Jared Polis and Lt. Governor (Dianne Primavera visited our table.

INCOSE Hampton Roads

John Clark, john.clark@incose.org

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

The Systems Engineering Handbook, V4.0 weekly series began on Thursday, 8 October 2015 and ended on 21 April 2016. All sessions were recorded for later download. To access the materials, do one of the following:

- 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.

- 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), Leadership Skills (Tutorial ID: 01 thru 04), and Systems Engineering Technical Processes (Tutorial Session: 01–04).

The Systems Engineering Handbook, V4.0 tutorial also provides tips and personal help in systems engineering. The chapter 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. We strongly recommend that you read the applicable sections of the INCOSE Systems Engineering Handbook, V4.0 before each session. 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.

We will be providing an eight-hour abbreviated highlighted version of the tutorial at International Symposium (IS 2019) in Orlando, US-FL this July.

Questions? Contact gabriela.coe@incose.org or john.clark@incose.org.

Western States Regional Conference

Jorg Largent, largent_atpmd@msn.com

The Western States Regional Conference team is hard at work pulling together this second annual event. This year's conference theme is "*Systems Engineering Relevance: Time for a Sea Change*."

The conference will be held 13-15 September 2019 in Los Angeles, US-CA.

The conference is an opportunity for systems engineers in the western United States to improve their skill set and to expand their network without the need to travel to other parts of the country or internationally. The conference will feature prominent keynote speakers from within the profession, plus panels, presentations, and tutorials covering a wide range of systems engineering issues and applications. There will also be time set aside for networking and information sharing at social events and meals, plus time for optional tours. We expect between 100 and 200 professionals to attend. In addition, sponsors and exhibitors are signing up to support the conference.

2020 SYSTEMS SECURITY symposium

Marriott Crystal Gateway
Crystal City, Virginia, USA
Washington DC area

IEEE SYSTEMS COUNCIL

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CALL FOR PAPERS

IMPORTANT DATES

July 31, 2019
Special Sessions & Tutorial Proposals

August 30, 2019
Initial Papers and Extended Abstracts Deadline

October 31, 2019
Acceptance Notification

CONFERENCE DATES

April 6-9, 2020
Symposium
Marriott Crystal Gateway
Crystal City, Virginia, USA

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The IEEE-INCOSE-NDIA Systems Security Symposium seeks research papers and application studies that focus on the development of secure, safe, and resilient systems. This symposium attempts to address the convergence of cybersecurity, safety, and engineering with interest in the effective application of security principles, methods, and tools to complex systems such as cyber-physical systems, autonomous systems, transportation vehicles, medical devices, large IoT systems, and other systems of interest. Preference will be given to papers and case studies that bridge theory to practice.

SUBMISSION DETAILS

Theory & Methods
Papers or Extended Abstracts addressing novel ideas, theoretical issues, technology, methodology, or detailed studies. These academic-oriented papers will be peer reviewed and prioritized according to their contribution.

Cases & Practical Experiences
Papers presenting practical ideas, lessons learned, and real-world achievements. Papers are reviewed for relevance but not necessarily academic contribution.

Papers and extended abstracts of both categories will be peer reviewed. Papers will be published in the proceedings with an 8-page maximum. Extended abstracts (typically 3-5 pages) will not be published, but will be available to the conference attendees. Student papers are encouraged in both categories.

All submission details are available on the IEEE-INCOSE-NDIA SSS 2020 Submission Portal at
https://2020.ieeesystemssecuritysymposium.org

Tutorials (1/2 day) are encouraged; please add TUTORIAL to your paper title.

Best Paper monetary awards will be recognized for professional and student papers.

Table top exhibits are available on a first come, first serve basis. See website for details.

AREAS OF INTEREST

» Systems Security Work Focused on Advancements in Theory, Practice, & Education

» Engineering of Safe, Secure, & Resilient Systems

» Examples of Mission/Systems Assurance & Assurance Cases

» Model Based Engineering Focused on Security, Safety, Trust, Resiliency

» Affordable & Scalable Approaches to Hardware, Software, Firmware Assurance

» Novel Architecture Design & Analysis Examples or Trade-Space Studies

» Trust of Complex Systems with Emphasis on Cyber-Physical Systems

» Security Considerations for Machine Learning / Artificial Intelligence

» Large-Scale DevSecOps & Agile Approaches for System Development

» Verification, Validation, & Evidences for Secure System Development

» System Security Design Considerations for Cloud Environments

» Extensions of Formal Methods to System-Level Evaluation

» Cybersecurity in Manufacturing & Supply Chains

» Case Studies to Include Automotive, Transportation, Space, & Others

» Cyber-Physical System Event Detection, Investigation, Forensics, & Malware Analysis

» Tailored Risk Management Approaches for Large Complex Systems

» Attack/Defense Modeling, Simulation, & Characterization

» Techniques for Cyber Risk Buy Down in Legacy Systems, Infrastructure, & Enterprises

» Policy, Ethical, Legal, Privacy, Economic, & Social Issues

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INCOSE

SYSTEMS ENGINEERING RESEARCH CENTER

NDIN100

UNIVERSITY of VIRGINIA

Additional preparations are progressing as the technical review board is working through over 40 submittals and building the technical program.

Location. The venue for the conference is Loyola Marymount University. This well-appointed and accommodating facility has hosted systems engineering conferences in the past. The beautiful campus is conveniently located a few miles north of the Los Angeles Airport, on a bluff near the Pacific Ocean.

Lodging. The Renaissance Los Angeles Airport Hotel will be available for accommodations, and convenient shuttle service between the

hotel and the airport, and between the hotel and the Loyola Marymount campus will also be available.

The team preparing this conference includes members from the following six chapters: Colorado Front Range, Los Angeles, San Diego, San Francisco Bay Area, Seattle Metropolitan, and Wasatch. Please come join us for this premier event in the finest INCOSE tradition. For more information as it becomes available, go to the conference website at https://www.incose.org/wsrc2019.

Australia Chapter

Bill Parkins, wparkins@sesa.org.au

Systems Engineering Society of Australia (SESA) Report

Hello again from Australia!

The first quarter of 2019 has been a gradual build up from the Christmas/New Year holiday period until the annual SETE Conference at the end of April/beginning of May which also included our annual General Meeting.

The first item of 2019 business was to finalise and approve the SESA budget. There are new initiatives that are now in place to:

- fund local activities in state and territory branches
- reduce committee workload through outsourcing and automation of manual transactions
- lower conference and membership fees to drive growth in membership

Fortunately, SESA is currently in a strong financial position thanks to the efforts over the preceding years by dedicated committee members so we can actively pursue worthy projects. We are also focussing on articulating the value of the SESA operating program and communicating it to our members and their employers.

SESA has started an external engagement initiative to seek feedback from stakeholders in local organisations employing systems engineers about the performance of SESA in meeting their expectations. We held a breakfast meeting with stakeholders during the Systems Engineering Test & Evluation (SETE) Conference on 1 May where we briefed the external engagement objectives and Ray Hentzschel (SESA immediate past president) gave a briefing on certification, chartering, and the Certified Australian Systems Engineer Program (CASE). This program provides pathways for achieving the INCOSE Certified Systems Engineering Professional (CSEP) and the Engineers Australia Chartered Professional Engineer (CPEng) from different start points, but aims at cost and time efficiencies for the candidates. The response from the breakfast attendees was positive and has given David Orr, the leader of this initiative, clear guidelines for further engagement in conjunction with future events.

This midyear will see a turnover of over half of the SESA Management Committee. The process which included a call for nominations for seven positions has recently concluded, and the selection process is nearing completion. The new committee appointments will be effective from 1 July and details will then be available on the SESA website (sesa.org.au). Many thanks go out to the outgoing committee members for their contributions over their terms.

Systems Engineering Test & Evaluation Conference 2019, Canberra 29 April-1 May.

We recently held another successful SETE Conference in Canberra. After a slow buildup and extensive social media and email registration drive at the end, we achieved our attendance target, and the initial feedback was very positive. Analysis of feedback

Major Joel Tarleton (conference chair) presenting the award for the best presentation at conference "Plying the Art of the Possible–Soldier Combat System MBSE Case Study" (Brad Spencer, Nova Systems)

Opening Plenary included a Systems Engineering Professional pantomime with the cast in the front row. Charles Homes, front left, arranged this quiet illustration of the process to achieving the CSEP.

Jawahar Bhalla (JB), the SESA technical director, had a pivotal contribution in SETE 2019 success, supported by his predecessor Charles Homes. JB also presented the best paper award to Paul Nation of Defence Joint Logistics Command for his paper "Modelling Uncertainty in Reliability Growth Planning for Continuous-Use Systems."

Upper right: Dinner fun–conference chair turned extravert and gave an entertaining send up of the older members of SESA (also known as the dinosaurs, although, Kerry Lunney, in her absence may object!)

comments on tutorials, keynote speakers, conference papers, panels, and presentations is currently in progress and we expect several recommendations for improving future conferences.

Congratulations and thanks to the Organising Committee (Joel Tarleton, Jo Dawson, Bill Bunton, Don Lowe, Jawahar Bhalla, Charles Homes, Mahmoud Efatmaneshnik and to the ***Engineers Australia Events Managers*** (Alice Wearne, Tarryn Silver, and people from other support functions in Engineers Australia).

Looking towards the future SESA events:

- National Speaker Program, 28 May–Robert Halligan will present on the topic "A Framework of Knowledge, Skills, and Attitude Conducive to High-Performance Engineering."

- Australia Systems Engineering Workshop (ASEW), Melbourne, AU, 28-29 October

- World Engineering Convention, Melbourne, AU, 20-22 November

- SETE 2020 Brisbane, 11-13 May 2020

- 2020 will be SESA's 25th Anniversary and we are currently hatching celebratory activities.

INCOSE Western States Regional Conference

Systems Engineering Relevance:
Time for a Sea Change!

13-15 September 2019
Loyola Marymount University, Los Angeles, California

International Flavor ● Prominent Speakers ● Panels, Presentations, Tutorials

Systems Engineering Topics

- Model-Based Systems Engineering (MBSE)
- Agile
- Attracting and Developing Tomorrow's Workforce
- Natural and Social Systems
- Transportation Systems
- Large Observatories
- Resilient and Sustainable Systems
- Systems Research and Analysis
- Application to Healthcare and Medical Devices

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For the latest information, including price and speakers, see
https://www.incose.org/wsrc2019
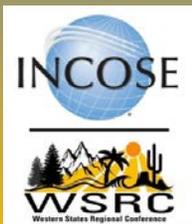
Hosted by the INCOSE Los Angeles Chapter
in collaboration with the
Colorado Front Range, San Diego, San Francisco Bay Area,
Seattle Metropolitan, and Wasatch Chapters.

India Chapter

Swarupanand Sewalkar,
sewalkarswarupanand@johndeere.com

All Members Meet. The INCOSE India Chapter conducted a virtual meeting, "All Members Meet," on the 16th of April. At this meeting, the chapter updated members about activities including the launch of quiz for certification preparation, a summary of the annual member survey, chapter goals, and local and global leadership opportunities to engage with INCOSE. This year, the chapter also sent out live polls through GlobalMeet to make the session interactive. Around 40 percent of those who attended were attending the meeting for the first time, and some were looking for mentoring for certification.

India Chapter President Stueti Gupta's Lightening Talk—SWE Conference. In April 2019, the Society of Women Engineers held their fourth conference in Bengaluru, IN. The theme of the conference was "Meet Locally. Learn Socially." INCOSE selected India Chapter's President, Stueti Gupta's submission for a lightening talk. Stueti's topic was on "Systems Thinking and Its Importance for Technical Leadership." The session was very well attended and welcomed lots of dialogue on the topic. Stueti was also a mentor for the speed mentoring session during the conference.

INCOSE India MBSE Local Working Group Kickoff. Through discussions at recent chapter events, it was evident that there is significant interest among members to drive adoption and exploration of model-based systems engineering (MBSE). To channel this interest, the chapter hosted a meeting on 3 May 2019 and kicked off a Local Working Group (LWG) focused on MBSE. The participants represented various industries, such as aerospace systems, embedded electronics, and automotive and off-highway vehicles to name a few.

During the meeting, the participants expressed interest in building training modules, domain specific examples, as well as contribution to standards and guidelines in specific domains. They also reviewed ongoing INCOSE initiatives, such as the systems engineering transformation initiative and the work done by various challenge/activity teams through the OMG-INCOSE MBSE efforts. The group decided that the members will meet in subsequent months to develop a common understanding of the ongoing efforts and the state of the art.

India Chapter's President, Stueti Gupta presented a lightening talk—Systems Thinking and Its Importance for Technical Leadership.

The Chapter hosted a kickoff meeting for a Local Working Group focused on model-based systems engineering.

Thereafter, the LWG will choose a couple of challenges to work on and collaborate with existing teams at INCOSE to deliver technical products, such as domain-specific guidelines or examples.

To know more or participate in the India Chapter MBSE Local Working Group, please write to Nikhil Joshi, najoshi@gmail.com.

Korea Chapter
Joongyoon Lee, jlee2012@postech.ac.kr

The Korean chapter is planning to conduct a conference on the topic "Systems Engineering for a New Framework of Future Strategy" on 30-31 May 2019. We will hold the conference in the Graduate School of Engineering Practice at the Seoul National University, Seoul, KR. We expect around 150 delegates to attend the conference. The conference program includes:

- Panel discussion
    - o Moderator: Prof. Joongyoon Lee (Pohang University of Science and Technology)
    - o Presentors: Dr. Jaewook Lee (KIDA), Dr. Byongjin Park (ADD), Dr. Changbum Ahn (chair of KOSSE)
    - o Panel members: Gen. Kyongseo Kim (Air Force), Gen. Youngsam Kim (Army), Director Jeongin Seo (KDIA), Dr. Minyong Lee (ADD)
- Paper presentations: 45 papers (4 sessions, 3 tracks) with posters
- Six tutorials
    - o Introduction to Joint Capabilities Integration and Development System
    - o Right OCD
    - o Systems Engineering-Based Concept Design of a Ship
    - o Applying Modeling and Simulation for Supporting Systems Engineering of Weapon Systems
    - o Applying Lean Systems Engineering and Project Management
    - o Risk Management Using Active Risk Manager

Sector Updates—EMEA

INCOSE UK

Richard Tingley,
publications@incoseonline.org.uk

We are pleased to announce that we have confirmed the keynote speakers for ASEC 2019. Speaking on day one, as part of the M'Pherson Lecture, are Garry Roedler, the current INCOSE President, Kerry Lunney, the INCOSE President-elect, and Alan Harding, the INCOSE Immediate Past President.

Speaking on day two, Professor Emma Sparks, named one of 2018's Top Fifty Women in Engineering, will be giving the Arnold Lecture. Emma has consulted with the Defence Science and Technology Laboratory in Adelaide, AU where she has worked extensively over the last seven years helping them to progress L125, the Australian Modernisation Programme. She is currently at Cranfield University at Shrivenham, GB, is a member of INCOSE and the Institution of Engineering and Technology (IET), and is a senior fellow of the Higher Education Academy.

You can find more information on ASEC 2019 on the conference website, asec2019.org.uk.

Planned Events. As usual, the INCOSE UK groups are active with regular meetings and events across the UK, with a few events highlighted below.

22 May 2019–Agile Systems Engineering– Problem Structuring Workshop. Following a first meeting of the reconstituted INCOSE Agile Systems Engineering Working Group, one of the priorities identified was ensuring that agile systems practioners are competent. To that end, the Agile Systems Engineering Working Group is holding a problem structuring workshop, facilitated by Duncan Kemp of Defense Euipments & Support (DE&S), to better understand the situation. They are expecting a broad cross section of participants from industry, academia, and different domains so they can capture different perspectives for further investigation and development.

10 July 2019–MBSE Interest Group–July Meeting. The MBSE Interest Group will hold their July meeting at the ZF Technical Centre in Shirley, Birmingham, GB. TeamStorming is a unique brainstorming and team-building technique that has no need for complex notations or tools but which is built on the rigour of systems thinking. Many organisations have the strong need to reap the benefits of systems thinking to produce ideas that form a structured and rigorous output, yet do not have the time or resources to train staff in traditional system engineering techniques. The TeamStorming methodology enables the benefits of system thinking and systems engineering through several well-proven brainstorming exercises that allow a group of people to work together in order to answer specific questions related to their business, all underpinned by a systems model that enables the teams to produce an output that they can use as a formal input to systems engineering activities.

Interested members can purchase TeamStorming from the INCOSE UK Online store.

INCOSE, France

Jean-Claude Roussel, jc.roussel6231@gmail.com

Workshop of the Oil & Gas Working Group in Paris, FR.
On 2-3 April, major European stakeholders of the oil and gas (O&G) value chain met to define their vision for collaboration in the O&G industry on digital requirements management to improve efficiency and quality. The INCOSE EMEA Sector O&G Workgroup organized this event which TechnipFMC hosted in Rueil-Malmaison, a city close to Paris, FR. Jean-Luc Garnier, technical direct or of AFIS facilitated.

Participants included operators: TOTAL, Shell, BP, Equinor, and ENI; engineering, procurement, and construction (EPC) contractors: TechnipFMC, KBR, Wood, Aker Solutions, and Aibel; equipment manufacturers: Baker Hughes, ABB, and Siemens; and standards and norms editors such as the British Standards Institution (BSI), Standard Norge, DNV GL, the Netherlands Standardization Institute (NEN), and ASTM International.

The workshop kicked off with two inspiring case studies on digital requirement management. Airbus shared their experiences on the impressive A350 project and Wood Nuclear provided insights from the ITER mega-project. Participants then shared their views on the current situation and their vision of the ideal (future) situation with respect to digital requirements management through a value chain. Within the present different stakeholders, each had an opportunity to share expectations with regards to other parties in the value chain when it comes to digital requirements management.

The outcomes of the workshop define specific collaboration on requirement writing guidelines, a shared vision on the need for a common exchange protocol for requirements, and the need to identify collaborative pilot projects. This workshop is a first of a kind for the O&G industry and is paving the way for future developments in the O&G sector based on strong and common system engineering practices.

INCOSE, Netherlands

Berber de Vogt-Lefde, berber.de.liefde@rws.nl

EMEA Workshop.
Every two years, INCOSE EMEA organizes a two-day workshop. Previously, these events took place in France and Germany. This year INCOSE-Netherlands (NL) is in the lead to put this event on the map. Already, a team has been working hard for several months behind the scenes to put everything in place.

During the INCOSE IW (International Workshop in Torrance, US-CA) last January, we already contacted several people as session leads for about 15-20 half-day (and sometimes even full-day) workshop sessions. Now we believe that we can put this together into a sound program. We will plan the workshop sessions in five parallel tracks–five sessions every morning and five sessions every afternoon, spread over two days. We expect each session to last about two and a half hours.

We are currently working on pricing for participation so that it will cover the costs but not hinder participation. However, there will be a substantial discount for INCOSE members.

Speakers.
We aim for some plenary keynotes from the board, both from the International as well as the EMEA level.

The two-day workshop will not just be passive listening sessions; we will set up work forms in which everyone can contribute actively. Active methods maximize results (what you read you will forget; what you hear you will understand; what you do you will remember)!

Program.
In terms of session topics, you could think of typical systems engineering-related issues such as configuration management (CM), documenting on A3, product line engineering (PLE), model-based systems engineering (MBSE), system architecture, human system integration (HSI), systems of systems (SoS), system thinking (ST), reliability engineering (RE), systems engineering for small and medium enterprises (SME), safety, simulation, to name a few. Domain-related workshops such as systems engineering for automotive, oil and gas, transportation and rail, or road and tunnel could also be areas of interest for sessions.

In addition, we would also explore things like future of systems engineering (FuSE), knowledge-based engineering, competency, project management and systems engineering integration, the possibility for a certification test exam, and our Dutch Jong INCOSE with an interactive session.

Location. The Future Experience Center (LEF) is supporting this two-day event which will take place at RWS in Utrecht, NL. We will have discount options available for overnight stay plus breakfast at Van Der Valk, which is an excellent hotel very close to RWS. Professional session facilitators from LEF will offer explicit support stimulating creativity and maximizing concrete results. In addition, we are looking into opportunities for creating visualizations of the session outcomes because we can utilize our brain much better when we remember visualized information! We are planning to set up a market place at the end of the second day where we can exhibit these visualizations as a nice representation of all creative activities.

Sign Up. We expect the registration procedure to be operational in June. It is advisable to already block at least 10 and 11 October in your agenda! Please mark your calenders!

Preliminary
Technical Program

29th Annual **INCOSE**
international symposium
Orlando, FL, USA
July 20 - 25, 2019

The Premier International Systems Engineering Conference

6 Days, 6 Tracks, 4 Keynotes, 100's of Presentations, Exhibitions, Tutorials, Panels, and More!

over 130	Papers, Presentations & Posters on Systems Engineering — Monday - Thursday	
4	Inspiring Keynote Speakers	Dr Wanda Austin - President, University of Southern California. Prashant Dhawan - Co-Founder, Biomimicry India. Capt. Winston Scott - Director, Environmental, Tectonics Corporation. Grant Begley - CEO, Rocket Crafters
17	Countries Represented in Papers	Australia - Canada - China - France - Germany - India - Indonesia - Japan - Lithuania - Netherlands - Norway - Spain - Sweden - Thailand - Turkey - United Kingdom - United States
over 19	Application Domains	Top Domains: Aerospace - Defense - Enterprise Systems Engineering - Academia - Autonomous Systems - IT/Telecom - Service System - Automotive - "Other"
over 36	Topics Represented	Top Topics: System Arch/Design Definition - Model Based Systems Engineering - Processes - Modeling/Simulation/Analysis - Needs and Req Definition - Systems Thinking - Agile Systems Engineering - Complexity - "Other"
over 15	Tutorials — Saturday and Sunday	Including Topics Like These From Many Experienced Systems Engineering Trainers: Decision Analysis - Academia - Automotive - Processes - IT/Telecom - Modeling/Simulation - Systems Science - Teaching and Training - Infrastructure/Rail - Measurement and Metrics
over 8	Panels — Monday - Thursday	Including Topics Like These Discussed With Global Leaders in Systems Engineering: Aerospace - Systems Thinking - Defense - Model Based Systems Engineering - Academia - Decision Analysis - Processes - Complexity

more information at www.incose.org/symp2019

Preliminary
Technical Program

INCOSE

HSI2019
Human Systems Integration
Conference
Biarritz, France
September 11 - 13, 2019

A scientific and industrial event

3 Days, 3 Tracks, 4 Keynotes, 40's of Presentations, Panels, and More!

over 40	Plenary address, Papers & Posters on Human Systems Integration — Wednesday - Friday	
4	Inspiring Keynote Speakers	Guy André Boy CentraleSupélec and ESTIA Institute of Technology, Chair of INCOSE HSI WG. Mica Endsley Former US Air Force Chief Scientist, President of SA Technologies. General Frédéric Parisot French Air Force State Staff. David Sirkin Stanford University
14	Countries Represented in Papers	Australia - Austria - Belgium - Canada - France - Germany - Hong Kong - India - Israel - Norway - Romania - Slovenia - United Kingdom - United States
18	Application Domains	Top Domains: Adaptive Systems, Aeronautics, Automotive, Air Traffic Management, C2, Defense, Healthcare, Manufacturing, Maritime, Medicine, Nuclear, Oil & Gas, Public safety & security, Social Media, Space, Tangibility, Training, UAV
19	Topics Represented	Top Topics: Agile Development, Artificial Intelligence, Certification, Cognitive Engineering, Complexity Analysis, Decision Making, Design Thinking, Digital Human Modeling, Human Centered Design, HCI, Human Factors & Ergonomics, Human Machine Teaming, Machine Learning, MBSE, Modeling & Simulation, Organization Design & Management, Performance Monitoring, Situation Awareness, Systems of Systems
3	Panels	With Global Leaders in Human Systems Integration: - Technological and organizational situation awareness for public security/safety - Do We Need to Develop a New Discipline of Human Systems Integration? - HSI Implications of Adaptive Human-Machine Teaming

more information at www.incose.org/hsi2019

EWLSE Updates

Alice Squires, ewlse@incose.org

The Empowering Women as Leaders in Systems Engineering (EWLSE) group is presenting a panel at the INCOSE International Symposium (IS 2019 on "How Essential are Cognitive Flexibility and Cognitive Diversity to Developing Effective World-Wide Sustainable System Solutions?" on Tuesday, 23 July from 10:00 a.m. to 12:10 p.m. We hope to see you there! We will have a lively discussion on how individual cognitive flexibility (one of the top 10 skills employers desire most by 2020 per the World Economic Forum and the cognitive diversity inherent in a team impact the team's ability to develop effective sustainable system solutions to complex global problems. Moderated by Rusty Eckman, the panel will feature various perspectives on the role of cognitive flexibility and diversity from panelists Lisa Hoverman, Eric Specking, Hazel Woodcock, Bill Parkins, and Alice Squires. After a short presentation from the panelists, there will be plenty of time for an interactive discussion with the audience.

EWLSE is also planning an on-site social networking gathering at the INCOSE IS 2019 for both EWLSE members and anyone interested in finding out more about women in systems engineering leadership on Wednesday, 24 July after the end of the day's technical sessions. We are still determining the exact gathering place on-site and attendees can also bring one guest in support of our vision of a world where men and women are equally represented as leaders in systems engineering.

In the fall, EWLSE will be hosting an INCOSE EWLSE booth at the Society of Women Engineers (SWE conference in Anaheim, US-CA on 7-9 November at WE19. If you are attending WE19, please let us know so we can get together. Also, please consider stopping by our booth and supporting INCOSE and EWLSE in our efforts to communicate the many benefits of a career in systems engineering and support women in their engineering career. We also have four exhibitor passes for a small fee for those who are in the area or willing to travel to Anaheim. Please email ewlse@incose.org if you are interested.

Men and women are invited and encouraged to join EWLSE and support women in engineering by adding "Empowering Women" to your committee/working groups under your INCOSE profile (click on your name after you log into INCOSE, select Profile, and proceed from there).

Empowered Women: Call for "Systems Engineering Leadership" Intent to Submit a Chapter Submissions

Alice Squires, ewlse@incose.org; Marilee Wheaton, marilee.j.wheaton@aero.org

EWLSE is sponsoring a book focused on topics in support of systems engineering leadership as part of the Springer Women in Engineering and Science series. This series highlights women's research and achievements in key, targeted areas of contemporary engineering and science and raises awareness of the pivotal work women are undertaking. The purpose of these biographies is to motivate and inspire those entering the field. The series has several requirements: editors must be IEEE members, and authors of chapters must be women; however, we are asking for all members of the community to consider participating. Men and women can serve as reviewers, and we will acknowledge all contributions.

The goal of the book that EWLSE is proposing will be to present new and emerging topics supporting systems engineering leadership using unique, creative, and innovative approaches. This will be a one-of-a-kind book rather than a repeat of previously published systems engineering textbooks. Marilee Wheaton, Aerospace Corporation, and Dr. Alice Squires, Washington State University, are the book editors. At this stage, we are seeking ideas on potential chapters for the book through "intent to submit a chapter" submissions in the form of a chapter description up to 500 words, to be sent to both editors (ewlse@incose.org, marilee.j.wheaton@aero.org) by 1 October 2019. The chapter submissions will support the final organization of the book chapters and a formal call for chapters in the fall. Initial ideas for chapter topics in the context of systems engineering leadership include persistence in leadership, impact of workforce culture, role of technical satisfaction, soft skill advantage, systems engineers as superheroes, and other fun, emerging, and energizing topics.

To Those Seeking Systems Engineering Mentors and Mentees

Lauren Stolzar, lstolzar@gmail.com
Stephanie Chiesi, schiesi@gmail.com

The newly created mentor/mentee program, available to all INCOSE members (see Figure 1) has kicked off and we have successfully matched over half a dozen mentors and mentees since the INCOSE IW 2019, with a few additional matches in the works. We currently have several experienced systems engineers who are ready to support those seeking mentors. If you are seeking a mentor, or willing to be a mentor, please hold your smartphone up to the QR code in Figure 1 to gain access to the sign-up survey, or go directly to the url: https://bit.ly/2G6TJPL.

For additional information, please email i ncose-mentor@incose.org.

Figure 1. INCOSE needs you! For mentors and mentees: https://bit.ly/2G6TJPL

Certification Updates

The Path from DAU Certification to INCOSE Certification

Courtney Wright, certification@incose.org

INCOSE is excited to announce that individuals who have earned Defense Acquisition University (DAU) engineering certifications (previously called systems, planning, research, and development (SPRDE) levels II and III have a streamlined path to INCOSE systems engineering certification at the Associate Systems Engineering Professional (ASEP) and Certified Systems Engineering Professional (CSEP) levels. Those with level II or level III DAU engineering certification may bypass the INCOSE knowledge exam with proof of their certification. Since the knowledge exam is the only technical requirement for ASEP, qualifying individuals will only have to become INCOSE individual members and complete the ASEP application (including application fee) to become ASEPs. They may also apply those knowledge exam results toward earning their CSEP.

Those with level III DAU engineering certification get a streamlined path to CSEP. As stated above, they do not have to take the knowledge exam. They also do not need to document their qualifying degree, as DAU has already confirmed that. They can fulfill the remaining technical requirements (experience documentation and references) in a form. They only need to write a single narrative description of their work experience and get that signed by their current supervisor, with no additional references required. They will need to submit this application, proof of DAU certification, and the CSEP application fee, and have a current INCOSE individual membership, to become CSEPs.

INCOSE Academic Equivalency Awarded for University of Detroit Mercy

Courtney Wright, certification@incose.org

INCOSE is pleased to announce that we have awarded the University of Detroit Mercy with an academic equivalency award. INCOSE first awarded this academic equivalency in January 2019. Now that this equivalency is in place, students who demonstrate the knowledge of systems engineering through coursework will not have to take the INCOSE knowledge exam. Knowledge demonstration is a mandatory part of the path to Associate Systems Engineering Professionals (ASEP) and Certified Systems Engineering Professional (CSEP).

In response to the University of Detroit Mercy receiving this award, the President of INCOSE, Garry J Roedler states, "At INCOSE, we are pleased to have the systems engineering certification academic equivalency in place with the University of Detroit Mercy. Academic equivalency demonstrates the strength of specific university systems engineering programs in meeting the knowledge requirements for systems engineering certification. It also shows the strength of universities working closely with INCOSE to embrace and evolve the requirements in their systems engineering programs towards meeting the accepted competencies for systems engineering. With the relationship that the University of Detroit Mercy has with the automotive industry, this should help us strengthen the application of systems engineering to the automotive domain."

DAU Engineering Certifications Holders' INCOSE Certification Path

- Join INCOSE
- Choose Certification Level
- Complete Short Form, Provide, and Pay Fee
- Complete Forms, Provide Supporting Documentation and Pay Fee
- INCOSE Verifies Documentation
- Take and Pass Exam

INCOSE ASEP — Knowledgeable individuals with 0–5 years of systems engineering experience

INCOSE CSEP — Practicing systems engineers with demonstrated expertise and 5+ years of experience

INCOSE ESEP — Chief systems engineers with demonstrated technical expertise (verified by oral review) and leadership with 20+ years of experience

13th Annual INCOSE Great Lakes Regional Conference (GLRC)

22-25 Oct 2019 – Cleveland, Ohio, USA

"Giant Leaps With Systems Engineering"

Call for Submissions

ABOUT INCOSE GLRC

The INCOSE Great Lakes Regional Conference (GLRC) is a medium-sized annual INCOSE systems engineering (SE) event organized by the INCOSE Chapters of the INCOSE Americas Sector North (Great Lakes) Region.

The GLRC was established in 2007 to provide a forum for supporting and promoting INCOSE and SE at the local Chapter and Regional levels.

The GLRC is strategically positioned "in-between" INCOSE's smaller-sized chapter-level events and INCOSE's two large-sized international events – the Annual INCOSE International Symposium (IS), held in July, and the INCOSE Annual International Workshop (IW), held in January.

The GLRC strives to deliver an exceptional high-value conference experience to attendees and presenters alike. Our approach is to provide an outstanding peer-reviewed program at a remarkably affordable price, with significantly less time commitment and travel expense than the INCOSE IS and IW events.

Website www.incose.org/GLRC13

v2 – 5/29/2019

TOPICS / SUBMISSION TYPES

Abstract submissions of the four types listed below are being sought. The topic scope includes **all SE-related topics,** from **all sectors** of industry, education and government:

(1) *Presentations and Panel Sessions* (24-30 sought) for the 2-day, 3-track "core" GLRC program; Wed/Thur. Oct. 23-24.

(2) *Presentations and Lectures* (6-8 sought) supporting the INCOSE Systems Engineering Professional Development Day (SE-PDD) program on Thur. Oct. 24, which will be live-streamed to locations "on-demand."

(3) *Feature Presentations* (3-5 sought) supporting the GLRC keynote and technical talk line-up Tues. Oct 22 thru Fri. Oct. 25.

(4) *Tutorials and Workshops* (6-10 sought) to be provided on Tues. Oct. 22 and/or Fri. Oct. 25.

Key Dates

Deadline for Submissions *	June 23, 2019
Notification of Acceptance	Aug. 5, 2019
Draft Presentation Due	Aug. 31, 2019
Final Presentation Due	Sept. 29, 2019
Conference Dates	Oct. 22-25, 2019

Contact INCOSE GLRC Program Chair:
Dennis.W.Rohn@NASA.gov

PRESENTER BENEFITS

The GLRC appreciates that it is the presenters, panelists, and instructors who make the GLRC (and the advancement of INCOSE and SE!) possible. Please consider the benefits that the 13th Annual INCOSE GLRC is able to provide:

(1) *Discount admission* (est. 20-40%) to the GLRC and its activities. *Free* admission may apply in certain cases.

(2) *Copyright ownership* – GLRC uses INCOSE's standard IP contract. Unlike many other conferences, you retain ownership of your work.

(3) *Broadened exposure* due to GLRC co-location with the EnergyTech and Informational Security Summit (ISS) events, and SE-PDD live-streaming.

(4) *Five minutes or less* to initiate your submission on-line using EasyChair. *

INITIATE ABSTRACT SUBMISSION

** Please **INITIATE** and secure your submission ASAP and **PRIOR TO** the June 23 deadline. EasyChair Premium Service allows you to log back in **AT YOUR CONVENIENCE** to update, edit, and complete your final submission.*

www.easychair.org/conferences/?conf=glrc13et2019

2019 EnergyTech Conference & Expo

21-25 Oct 2019 – Cleveland, Ohio, USA

"Lighting the Way to a Brighter Future"

Call for Submissions

ABOUT EnergyTech

The EnergyTech Conference and Expo is an annual Cleveland-based event that explores the intersection of

(1) Power & Energy Systems with emphasis on smart- and micro-grid technologies

(2) Critical Infrastructure and Megaprojects as Complex Systems, utilizing a PM-SE Integration approach, and

(3) Vehicle Electrification and Autonomous Control – *for Land, Sea, Air, and Space.*

Since its founding in 2009, EnergyTech has enjoyed a continual partnership with both INCOSE and NASA. Additional partners over the past decade include IEEE, AIAA, InfraGard, the ISS, and others. In 2019, EnergyTech welcomes SAE!

EnergyTech provides a forum for government-industry-education collaboration, technology transfer, and accelerated learning. In 2018 EnergyTech held the 1st Annual "Spirit of Innovation" Exposition and K-12 STEM/STEAM Education Program, which hosted over 600 middle and high school students.

Website www.EnergyTech.org

v2 – 5/29/2019

TOPICS / SUBMISSION TYPES

Abstract submissions of the four types listed below are being sought. The topic scope is that of the conference (see "About EnergyTech" at left):

(1) *Presentations and Panel Sessions* (30-40 sought) for the 2-day, 3-track "core" EnergyTech program; Tues/Wed. Oct. 22-23.

(2) *Presentations and Lectures* (3-5 sought) supporting a PM-SE Integration Professional Development Seminar (PMSEI-PDS) on Thur. Oct. 24, which will be live-streamed to various INCOSE and PMI meeting sites.

(3) *Feature Presentations* (3-4 sought) supporting the keynote address line-up Tues. Oct 22 through Thurs. Oct. 24.

(4) *Tutorials, Workshops, and Workshop Sessions* (12-24 sought) delivered on Mon. Oct. 21, Thurs. Oct. 24, Fri. Oct. 25.

PRESENTER BENEFITS

EnergyTech appreciates that it is the presenters, panelists, and instructors who make EnergyTech possible. The benefits EnergyTech2019 Conference provides are:

(1) *Discount admission* (est. 20-60%) to EnergyTech and associated activities.

(2) *Copyright ownership* – EnergyTech2019 is utilizing an IP agreement arrangement with INCOSE. Unlike many other conferences, you retain ownership of your work.

(3) *Broadened exposure* due to EnergyTech co-location with the Information Security Summit (ISS) and INCOSE GLRC events, and live-streaming of the PM-SE Integration Seminar.

(4) *Five minutes or less* to initiate your submission on-line using EasyChair. *

Key Dates

Deadline for Submissions *	June 23, 2019
Notification of Acceptance	Aug. 5, 2019
Draft Presentation Due	Aug. 31, 2019
Final Presentation Due	Sept. 29, 2019
Conference Dates	Oct. 21-25, 2019

ET2019 General Program Chair: John@EnergyTech.org
NASA-SAE Program: Raymond.F.Beach@NASA.gov

INITIATE ABSTRACT SUBMISSION

** Please **INITIATE** and secure your submission ASAP and **PRIOR TO** the June 23 deadline. EasyChair Premium Service allows you to log back in **AT YOUR CONVENIENCE** to update, edit, and complete your final submission.*

www.easychair.org/conferences/?conf=glrc13et2019

Omega Alpha Association

Systems Engineering Doctoral Dissertation Showcase: SEDDS Now=10

Wolt Fabrycky, woltfab@vt.edu

During its tenth anniversary meeting in July of 2016 in Edinburgh, GB, the Omega Alpha Association Board of Directors authorized the establishment of a Systems Engineering Doctoral Dissertation Showcase (SEDDS). After three yearly cycles, the Omega Alpha Association (OAA) is very pleased with the global quality standard that the 10 showcase dissertations benchmarked.

Omega Alpha designated three dissertations for exemplary recognition in 2016, two in 2017, and two in 2018. In addition to displaying these exemplary dissertations on its website, the Omega Alpha Board authorized a USD 5,000 cash award together with an engraved exemplary recognition plaque incorporating the Omega Alpha medallion.

The Board of Directors added an honorary recognition category in 2017, designating one dissertation with that honor in that year, and two in 2018. Omegal Alpha authorized a cash award of USD 1,000 for each honorary recognition dissertation together with an engraved plaque incorporating the Omega Alpha medallion.

The international distribution of showcase dissertations is very gratifying to see with one each from Australia, France, Germany, Israel, the Netherlands, Sweden, and four from the United States. Supporting detail (abstract, impact, biographical, and contact), as well as the dissertations themselves are accessible on www.omegalpha.org as outlined below:

2016 Showcase–Exemplary Recognitions:

- **Autonomous Formation Flying in Low Earth Orbit**
  Author: Simone D'Amico
  Advised by: Eberhard Gill and Boudewijn Ambrosius
  University: Technical University of Delft

- **Heritage Technologies in Space Programs: Assessment Methodology and Statistical Analysis**
  Author: Andreas Makoto Hein
  Advised by: Ulrich Walter and Edward Crawley
  University: Technical University of Munich

- **Managing Unarticulated Value: Changeability in Multi-Attribute Tradespace Exploration**
  Author: Adam Michael Ross
  Advised by: Daniel E. Hastings
  University: Massachusetts Institute of Technology

2017 Showcase–Exemplary Recognitions:

- **Measuring and Influencing Problem Complexity and Its Impact on System Affordability During Requirements Elicitation for Complex Engineered Systems**
  Author: Alejandro Salado Diez
  Advised by: Roshanak Nilchiani
  University: Stevens Institute of Technology

- **Cyber Physical Disruption Modeling, Analysis, and Management: An Evolutionary Object Process Model-Based Robust Systems Engineering Approach**
  Author: Yaniv Mordecai
  Advised by: Dov Dori
  University: Technion–Israel Institute of Technology

Honorary Recognition:

- **Supporting Space Systems Design Via Systems Dependency Analysis Methodology**
  Author: Cesare Guariniello
  Advised by: Daniel DeLaurentis
  University: Purdue University

2018 Showcase–Exemplary Recognitions:

- **Innovate by Designing for Value–Towards a Design-to-Value Methodology in Early Design Stages**
  Author: Sonia Ben Hamida
  Advised by: Jean-Claude Bocquet and Marija Jankovic
  University: Université Paris-Saclay

INSIGHT Magazine

September 2020 Issue

Loss-Driven Systems Engineering

Call for Papers

While much of systems engineering focuses on delivery of desired capabilities, loss-driven systems engineering addresses potential losses associated with the system of interest. Loss-driven systems engineering is addressed by a number of specialty engineering areas such as safety, security, operational risk, resilience, critical infrastructure protection, recovery, and a number of ilities.

The objective of this special *INSIGHT* issue is to explore the belief that the loss-driven systems engineering specialty areas share a commonality and synergy when it comes to vocabulary, taxonomy, modeling and analysis, adversities considered, losses considered, requirements, and architectural and design techniques for achieving their objectives – and to identify means for exploiting such commonalities and synergies as part of the systems engineering process.

Example Categories of Papers Sought:

- The meaning of loss-driven systems engineering
- The effect of loss-driven systems engineering on the systems engineering life cycle
- Commonalities and synergies among loss-driven systems engineering specialty areas
- Where loss-driven specialty engineering areas should/must collaborate
- Synergies – and conflicts – among loss-driven systems engineering specialty areas
- Tools techniques and practices for achieving loss-driven systems engineering that apply to multiple practice areas
- Harmonizing the vocabularies of operational risk, resilience, safety and security
- Coordinating architecture and design decisions among loss-driven systems engineering specialty areas
- Loss-driven considerations for autonomous systems

Please submit abstracts (800 words or less) to jbrtis@mitre.org no later than August 16, 2019. Abstracts should be submitted as MS Word .doc files or plain .txt files. Use a simple file name like smith_abstract.doc. Acceptance of an abstract does not guarantee publication of an article. Final decision for publication will be made by the Editorial Board based on the final article.

Key Dates	
Abstracts:	August 16, 2019
Final Draft Paper:	December 2019
Final Papers:	March 2020
Publication Date:	September 2020

- ***Computational Models for Architecture of Autonomous Networked Systems***
  Author: Mohsen Mosleh
  Advised by: Babak Heydari
  University: Stevens Institute of Technology

Honorary Recognitions:

- ***On the Military Utility of Spectral Design in Signature Management: A Systems Approach***
  Author: Kent Andersson
  Advised by: Jouko Vankka, Gunnar Hult, Hans Liwång, and Hans Kariis
  University: National Defence University of Finland and Swedish Defence University

- ***Successful Project Portfolio Management Delivery: A Novel Strategic Portfolio Decision-Making Model***
  Author: Darius Danesh
  Advised by: Michael Ryan
  University: University of New South Wales

SEDDS Now=10 is News to Be Used

Seven exemplary and three honorary dissertations comprising more than 2500 pages, along with supporting materials, are conveniently available for examination on www.omgalpha.org. Individuals pursuing the doctoral degree in systems engineering, or individuals contemplating such a journey, can be enlightened by considering what were judged to be among the best. Benchmarking has become a promising strategy for achieving continuous improvement, and this also holds true for dissertation research. Faculty who are engaged in the development and strengthening of doctoral-level research in academic institutions worldwide may take advantage of this as well.

SEDDS Plans for 2019 and Beyond

OAA has planned the next SEDDS competition for calendar year 2020. The Omega Alpha Board decided that SEDDS needs a breather during 2019. The board is suspending the showcase competition for 2019 because the past three years have been intense and exhausting for more than a dozen dedicated evaluators. The evaluators came from three cohorts: the OAA membership, prior SEDDS awardees, and selected INCOSE Fellows. Omega Alpha applied

these individuals' work to a comprehensive worldwide solicitation process conducted in several innovative ways. Although the response has been quite good, we have some ideas to streamline and strengthen it for 2020.

SEDDS had its roots in the Systems Engineering and Architecture Doctoral Dissertation Network (SEANET), founded by OAA Board member Donna Rhodes before SEEDS. SEANET has now become the responsibility of INCOSE member Cecilla Haskins. In view of the focus on doctoral research, we are currently studying and strengthening the interface between SEDDS and SEANET. The objective is to serve those pursuing the systems engineering doctorate prior to and during their programs and to provide guidance in the dissertation phase as to what constitutes a benchmark standard based on actual examples.

We are seeking external funding for SEDDS because a venture of this scope has proven to be expensive. We cannot expect the OAA Membership of just 60 to underwrite the annual stipend and administrative costs of SEDDS. If it was not for a very generous endowment, OAA would not be in existence over the past 13 years and the association could not have initiated SEDDS. Accordingly, we are considering approaching the private sector for the endowment of SEDDS recipients. This might begin at the honorary recognition level. With only two per year authorized at the exemplary level, expansion in the annual number is possible.

Omega Alpha is very pleased to be able to advance the rigor and quality of systems engineering research worldwide within academia through the Systems Engineering Doctoral Dissertation Showcase. We would appreciate any suggestions or advice on how best to achieve this.

Spotlight On

Jasmine Wang, info@incose.org

Kayla Corey

Kayla is a student at George Mason University, studying Systems Engineering with a concentration in operation research. She joined INCOSE in 2015 and is the President of the Student Chapter. Kayla was born in Portland Oregon and currently resides in Fairfax, Virginia, USA.

How would you describe yourself in three words? Hard working, open-minded, and persistent.

When did you first hear about systems engineering, and how did you become interested in studying it?
I first learned about systems engineering in an "Introduction to Engineering" course. It sparked my interest enough to take a systems engineering introduction course. Working on complex problems with no straight forward answer, plus the ability to create and improve these systems enticed me to keep learning more. I enjoyed it so much that I declared systems engineering as my major.

Who are some of your role models in engineering and/or specifically in systems engineering?
All my professors at George Mason University have become role models for me—especially Professor Kathryn Laskey. What inspires me most about Professor Laskey is her perseverance and dedication. When I started working for her as an undergraduate research assistant, I got to know her as someone who does not compromise when it comes to what she believes in. She has changed my perception of what it means to be a female in this industry; it should not be looked at as a limitation, but instead, something to be proud of and embrace.

What are some of your responsibilities as president of the GMU Student Chapter of INCOSE?
As the president of the GMU Student Chapter of INCOSE, I plan monthly meetings, where we discuss popular topics in the industry, such as how systems engineering can assist with complex problems like climate change. We also talk about how we can further promote systems engineering in the Fairfax community, which has led me to visit middle schools to introduce engineering students to systems engineering.

What are some of your career goals?
Overall, my goal is to always be working on something I'm passionate about and to never stop learning. I'm extremely excited about graduating in a month and starting the next chapter in my life. If I had one wish for the future it would be to love my job so much, I forget I'm working.

Complete the sentence: The biggest development in systems engineering in the near future will be _____ .
Related to climate change. This is a wide spread complex problem that requires a lot of analysis, development of new systems, and improvements to current systems to help prevent further climate change.

What do you like to do outside of work?
I enjoy crafting, traveling, hiking, and spending time with family.

Spotlight On

Jasmine Wang, info@incose.org

Prasanna Ramamurthy, CSEP

Prasanna is a Systems Engineering Manager for Avionics & Mission Systems Collins Aerospace. His area of expertise is aerospace and his studies include electronics, communication engineering, and avionic system engineering. Prasanna has 15 years of systems engineering experience. He joined INCOSE in 2017 serves as the India Chapter memberships officer and a member of the Bengaluru circle coordinator, Asia Oceania Systems Engineering Conference 2019 organizing committee. Prasanna was born in Namakkal, Tamilnadu, India and resides in Bengaluru, Karnataka, India.

What initially drew you to avionics?

I have been fascinated with military, aeronautics and space technologies since childhood. India's progress and significant achievements in these domains rekindled my passion and inspired me to pursue a career in aerospace, in part, to serve the country. After completing my bachelor's degree in electronics, avionics became my natural choice for a master's degree and subsequent career.

What are you working on today?

I'm primarily involved in the development of futuristic wireless communication technology for intra aircraft communication. I lead systems engineering teams working on aircraft data management, video surveillance, and fuel measurement systems.

What systems engineering topic or product would you like to be most remembered for?

I've worked as a systems engineer for several military aircraft upgrade programs of India's Defense Research and Development Organization (DRDO). I would like to be remembered for my contributions in the design, development, integration, and flight testing of military mission management system for these strategic programs.

How has INCOSE shaped your systems engineering career?

I am an INCOSE Certified Systems Engineering Professional. The INCOSE certification has given me formal systems engineering training. I'm able to apply and relate these learnings daily to solve complex problems.

As an executive committee member of the India chapter and the coordinator of Bengaluru circle, I'm given many opportunities to sharpen my leadership skills, grow my professional network and help me advance my career.

What are some of the goals for the India chapter of INCOSE?

The chapter has a number of goals, including but not limited to:

- Elevating recognition of systems engineering in the local industry and academia through multi-pronged outreach strategies;
- Promoting INCOSE certification programs and supporting engineers through mentorship programs;
- Sharing best practices in systems engineering through circle events; and
- Creating local workgroups that are aligned with global workgroups in order to better address the systems engineering problems faced by the industry.

What do you like to do outside of work?

Outside of work, I enjoy researching the relationship between ancient civilizations and classical languages through linguistics and open archeological research. I'm interested in understanding how we are related to each other as humans and how we've all evolved from common origins. Some of my research is focused on ancient civilizations such as Sumer, Egypt, and Maya.

I also enjoy volunteering for events focused on environmental protection and spending time with my wife and two sons. I participate in a number of various hobbies including swimming, reading, movies, volleyball, and travel.

Social Media Update

Alan Harding, alandharding@gmail.com

I am delighted to update everyone on how the INCOSE social media activity is growing and of our plans going forwards. We now have a social media team, and I would like to take this opportunity to welcome both Daniel and Tino to Marketing Communications (MARCOM. Here is an introduction to the team.

LinkedIn. Daniel Lee has taken on the responsibility of managing LinkedIn for us. Since discovering systems engineering over a decade ago, Daniel has pursued systems as more of a hobby than a career. He is an applications engineer with Eaton for Marina Power and Lighting Solutions, and is on the Board of Directors for the Hampton Roads Area (HRA Chapter of INCOSE. Daniel lives in Williamsburg, US-VA.

Facebook. Tino Garcia has recently become the INCOSE Facebook administrator. He is a board member of the Space Coast INCOSE Chapter (US-FL. He is a systems engineer with 15 years' experience in the US military and Department of Defense (DoD contracting. He currently develops DoD Architecture Framework (DoDAF architecture diagrams using the Unified Profile for DoDAF/MODAF standards as part of ENSCO's systems engineering architecture management team. He has been a Certified Systems Engineering Professional (CSEP for the past five and a half years.

Assistant Director Social Media and Twitter. I continue to lead INCOSE's social media activities and to look after both the general INCOSE Twitter account and the INCOSE President's Twitter feed. I have been a member of INCOSE since 2005 and serve in a variety of roles including leading INCOSE UK and most recently as INCOSE President for 2016-2017. I am the head of information systems engineering at BAE Systems Air, and I live in Shropshire, GB.

Having a team will allow us to work together, share ideas on how to use social media effectively for INCOSE, and to cover for each

Assistant Director Social Media and Twitter
Alan Harding

LinkedIn
Daniel Lee

Facebook
Tino Garcia

other when someone is unavailable or on vacation. It will also allow us to plan activities that span the social media channels—and to coordinate even better to get information out to INCOSE members and potential new members.

My vision is for a social media team that evolves to reflect our diverse membership, and so I would be delighted to hear from anyone from across INCOSE who wants to get involved with the team. Right now, I am looking for someone who can help us set up and run a new Instagram channel that we will target to people in the high school, college, and wider millennial communities. With its younger user demographic (71 percent of 18- to 29-year-olds say that they use it), we think this is a good thing to try, and I would love to launch this new channel at the International Symposium (IS) where there is a lot going on and lots of photographs available to use. If you think you might be interested in this, please contact me at alan.harding@incose.org.

Note From the Editor

Lisa Hoverman, newsletter@incose.org

Welcome to the second Newsletter of 2019! We are heading into the busy season of buzz and excitement for the International Symposium. We have some great and exciting keynotes and talks planned this year at the IS2019! I encourage you to check them out as well as our schedule, to effectively plan the your best IS ever!

Beautiful Orlando may be a distraction, but stay focused and enjoy the island vibe at our Island Night Social. Register now if you haven't, as this is new for us and promises to be a fun #incoseIS addition.

The Newsletter continues to grow and improve in content to inform our readership on all things INCOSE, both current, upcoming, and historically. There are some interesting previews on upcoming IS and other exciting later regional 2019 conferences and other initiatives of INCOSE.

Missing from our Q1 Newsletter was the INCOSE *"Spotlight."* We are happy to have that back for this Q2 Newsletter with two great Spotlights presented. The Omega Alpha Systems Engineering Doctoral Dissertation series is 13 years old this year, and has an article highlighting some of the very best that has come out of systems engineering doctoral work recently.

Please keep sharing your publications with us as we work to improve.

I hope that you see some of your suggestions and contributions in this issue. As always, we welcome feedback and contributors at newsletter@incose.org.

If you didn't notice the fun blurb on page 7, INCOSE Leader, and on of my Mentors, Dr. Squires has an awesome new book out! Worth the read!!

 We look forward to seeing you participating, networking at, and presenting at, one of the many terrific upcoming INCOSE events. I end with a sincere note of appreciation to all who contributed to this Newsletter. Have a wonderful June 2019, I hope to see you at the upcoming IS if not before!

INCOSE Member Newsletter

Who are we? INCOSE is a 15,000+ 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.

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