All of these ideas align well with planned academic forum activities for next year.

3. Long term success

The group looking at this topic suggested that we should treat engineering education as a system:

- Understand the complexity of the education context (Stakeholders, competencies, industrial need, skills gaps, and more)
- Use this to create an engineering education architecture, showing how a mixture of domain skills, SE-KSA, and cross disciplinary work will best prepare future engineers for practice
- Deliver new education artefacts, which practitioners and professors can integrate, test, and support within the curricula

If we developed this 'system,' we could look for ways to allow students to choose from curriculum artefacts and then grade students on how they do things as well as the results they get. This would require methods to identify objective, evidence based outcomes and benefits to the community. It also requires a change in the way we view engineering education and curriculum accreditation in society.

Conclusion

Overall, the forum was very successful in achieving its aims and including members of the Asia-Oceania community into the academic forum. Many thanks to all members of the Indian chapter of INCOSE and the APCOSEC team for their support, in particular Ramesh Kumar Ramakrishnan, Ramakrishnan Raman, and Udit Kumar Sahoo. Special thanks to Professor Mahendra Nayak, Dr. Venkatarangan M.J. and faculty and student support from PES University. We look forward to future academic forum events in the Asia-Oceania region.

EWLSE Update

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Alice Squires, alice.squires@wsu.edu

The Empowering Women as Leaders in Systems Engineering (EWLSE) mission to develop engaging content and delivery approaches for promoting successful strategies for developing women leaders in systems engineering across cultures, locations, and domains is being realized through discussions and continued presentations at local and regional events. Tracks at both international (International Workshop 2016 and International Symposium 2016) and regional events, such as the INCOSE Regional Mini-Conference 2016 conference held in Los Angeles, CA April 9-10, 2016,

inspired awareness in individuals and chapters and continued to snowball more events to be held. We detail three such successive events below

EWLSE Dinner at the Socorro Systems Summit

Regina M. Griego, griegor@sandia.gov

The inaugural Socorro Systems Summit sponsored by the INCOSE Enchantment Chapter (New Mexico) occurred on 28th-29th October 2016 in Socorro, NM. As part of the summit, Empowering Women as Leaders in Systems Engineering (EWLSE) held a dinner gathering on Friday evening at the Socorro Springs Brewery. The invitation went to over 40 participants and 24 men and women attended the dinner, including six students from the INCOSE Student Chapter at UTEP (University of Texas at El Paso). The intent was to share a dialogue in which participants shared their leadership stories, exchanging tips and insights about navigating the systems engineering leadership journey, with particular emphasis on the women systems engineers' brand of leadership. After everyone enjoyed a beverage and a helping from the pizza, pasta, and salad buffet, Regina Griego, Principal Systems Engineer at Sandia National Laboratories, started the conversation by sharing her story of leadership. Each participant shared their journey and gave testimony to the many women leaders in their lives. Some provided information on efforts that they were involved in to increase participation of women as leaders in systems engineering. The gathering also provided attendees with the opportunity to share information and ideas about, and to possibly collaborate on, activities that encourage young women to pursue careers in science. INCOSE leaders like Kevin Forsburg and Jack Ring provided sage advice. Everyone felt that the collective testimonies and camaraderie were very meaningful and the students were particularly inspiring as our future.

EWLSE Panel at the 2016 San Diego Chapter Mini-conference

Stephanie Chiesi, schiesi@gmail.com

Another example of requests for EWLSE inclusion in INCOSE events includes planners for an annual mini-conference held by the San Diego chapter that attended the RMC 2016 EWLSE track. Through discussions with the mini-conference organizers, the planners included an EWLSE plenary session at the San Diego mini-conference on 5th November 2016.

Unlike the RMC 2016 track, at the San Diego mini-conference the EWLSE presentation was one of the plenary sessions. With a commensurate number of participants to previous events, the session once again started with all attendees asked to introduce themselves by name and to share what empowers them. This exercise was one of the first things experienced by the facilitator at the first EWLSE meeting attended at the 2015 International Symposium (IS), and it was a great kickoff to the program as it gave the entire audience a

chance to learn a little about each other, to reflect on what empowerment may be, and also provided smiles and laughs to start the program. As this session was shorter than the previous track experience, this also helped the audience get very comfortable with the environment for discussion and the panel session.

As the session keynote speaker, in addition to panel facilitator, Stephanie Chiesi from Raytheon Missile Systems discussed what it meant to be an empowered technical leader and what the challenges are that women face, not just at a senior level for leadership, but in reaching that level. Her discussion and examples were not just on the current workplace, but also on day-to-day interactions in growing up and the role that unconscious bias played in that environment with the role models encountered such as teachers, other adults, and activity leaders. Following the keynote talk was a panel for questions and discussion that included: Claudia Rose of BBII enterprises and past San Diego chapter president, Candace Conwell of SPAWAR, Kathy Houshmand of the US Navy Research Laboratory, and Randy Woolley.

The discussion by the panelists, questions, and interaction from attendees proved engaging and insightful about where we can make the most impact in continuing to encourage and empower women as leaders in systems engineering. The discussion ranged from how can industry, academia, and government employers help retain technical women, to, what are the barriers seen at the college level and younger, to how can the title of the group also better involve men and the pursuit of equality amongst the genders as leaders? As multiple participants commented later in the day, it was an engaging session and the group discussion could have continued.

EWLSE at APCOSEC 2016

Geetika Purohit, PurohitGeetika@JohnDeere.com

EWLSE and the INCOSE India chapter also organized an EWLSE panel discussion at the 10th Asia Pacific Council on Systems Engineering Conference (APCOSEC) in Bangalore, India on 9-10th of November 2016 and an after conference leadership workshop on 11th November. This was the first engagement of EWLSE in India. The panelists Vipin Balan (General Electric, India), Dr. T. V. Gopal (Anna University, India) and T. K. Anuradha (Indian Space Research Organization, India) expressed their experiences with "21st Century Leaders, Tackling Unconscious Bias" moderated by Dr. Shamsnaz Virani (Worcester Polytechnic Institute, USA). The panelists represented the diversity of systems engineering population and expressed perspectives from industry, academia, and government agencies. The audience enjoyed the session – evidenced by the excellent question and answer session. It generated increased interest in future EWLSE events and memberships.

Stueti Gupta (Executive Committee Member, INCOSE India Chapter) started the leadership workshop with a welcome note for all the attendees, followed by introduction to INCOSE and EWLSE by Shamsnaz Virani. Alan Harding, INCOSE President, also addressed the audience and set the context for the workshop. He was followed by Dr. T. V. Gopal (Anna University, India), who shared his thoughts on the topic "Is it on target for women? Or are women on target?" Thereafter, Seema Raghunath (Leadership Coach, Director - The Corporate Chamber), led an interactive session for the participants covering topics such as, "Leadership Presence / Overcoming Fear" and "Leadership Development / Power & Influence." The event was highly engaging, triggering further discussions and insights. Seema also shared her views on the topic of work-life balance on requests from the participants. The EWLSE APOSEC event was very successful with participation from over 40 members both men and women from various organizations including the Indian Space Research Organization, John Deere, Aeronautical Development Agency, Honeywell, Indian Institute of Science, Vemana Institute of Technology, DSATM and Hindustan Aeronautics Limited. Alan Harding commended Ramakrishnan Raman (Assistant Sector Director - INCOSE Asia Oceania) and Stueti Gupta for organizing this event.

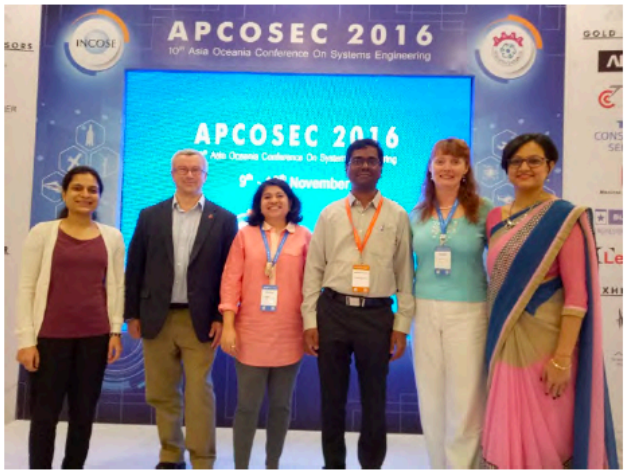


Figure 1. INCOSE team at the EWLSE workshop

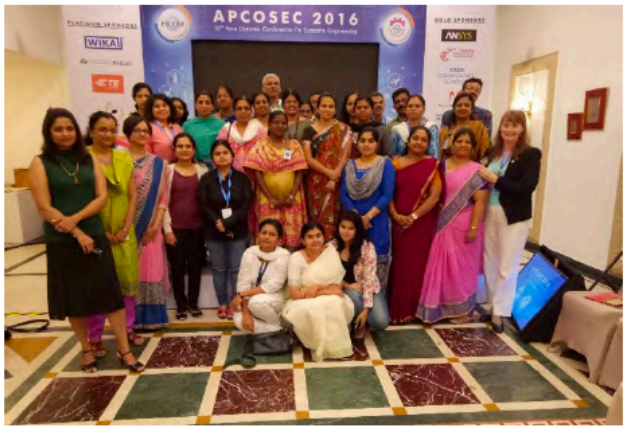


Figure 2. EWLSE workshop attendees

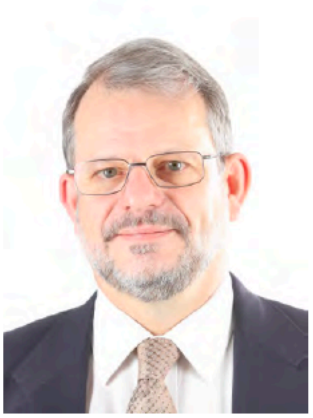
EWLSE Update

EWLSE sessions are continuing at other regional events. The leadership team continues to engage group members and to respond to requests for sessions, panels, and more. For more information, please join the group on incose.org through the following steps:

- **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 Committee Tasks**
- **Select "Join this Working Group"**

Spotlight ON!

Stephen Cook



Name: Stephen Cook

Titles/Organizations:

- Director and Principal Consultant at Creative Systems Engineering
- Professor of Defence Systems at the University of Adelaide

Place of Birth: Amersham, England, UK

Current Residence: Adelaide, Australia

Domain: Defence and Academia

Studied in college: Electronic engineering, systems engineering and computer science

Year joined INCOSE: 1998

Roles in INCOSE: INCOSE Fellow, past-president Systems Engineering Society of Australia (INCOSE chapter in Australia), and member of various working groups: Systems of Systems Engineering, Model-based Conceptual Design, Systems Science, and Complex Systems

Spotlight ON!

Years in systems engineering: 35

1. Why did you become a systems engineer?

I started my career as a design engineer working on telephony and aerospace equipment in the late 1970s. Soon I was responsible for designing systems comprising new designs and a significant amount of existing equipment. I was keen to find out the best way to go about it, and had the opportunity to do so when I became the project engineer at British Aerospace Australia for the design of the electronic subsystem of a scientific satellite.

2. What are your favorite and least favorite parts of being a systems engineer?

I enjoy being a thought-leader in the industry – whether it be as an academic and teacher, a consultant, or as a practitioner working on major projects. It is fabulous working in areas that appreciate the value of systems engineering and where it is understood and thoughtfully applied in both the acquisition and supply side.

On the other hand, it is a struggle trying to help with situations or projects that are destined for a bad outcome because their management is convinced that systems engineering is something they can do without. Fortunately, this does not happen very often.

3. What piece of advice would you give to someone considering a career as a systems engineer?

First, take an engineering degree or other degree that will give you a good grounding in mathematics and science. Then start your career in detailed design and implementation, and progress through equipment, subsystem, and overall system design. Always seek challenging work that gives you the opportunity to demonstrate high performance – the hallmark of a successful systems person.

4. You have published more than 200 articles and reports over the course of your career. Tell us briefly about one that you are most proud of and why.

I am currently finishing a report on recommendations for rolling out Systems of Systems Engineering (SoSE) within the Australian Department of Defence. This report seeks to shape SoSE practice for years to come, and I believe the recommendation will bring substantial improvements over the previous arrangements.

5. What do you like to do outside of work?

I have been a competitive in-line speed roller-skater for more than 20 years, and I am ramping up my training for the national championships next January. I'm also a competitive table tennis player and play several times a week. As I have said for 40 years, with just a bit more coaching I know I can make it to the next grade ...