Working Group Updates

International Society for the Systems Sciences on the 22-27 of July 2018. The theme is "Innovation and Optimization in Nature and Design." Current INCOSE President Garry Roedler will be giving a keynote. INCOSE members are invited to attend the conference in July. More information is at http://isss.org/world/ISSS2018_Corvallis.

Technical Operations Training Working Group

John Clark, clarkjo713@gmail.com

The INCOSE Technical Operations Training Working Group is conducting a survey to determine the training needs of our members and what members can provide that training (i.e., members training members). Please complete the survey at https://www.surveymonkey.com/r/CDMQ223 by June 30th, 2018.

EWLSE Update

Alice Squires, ewlse@incose.org

Empowering Women as Leaders in Systems Engineering

INCOSE IS 2018 Empowering Women Events Feature a Saturday Leadership Forum on Embracing Systems Engineering Leadership Diversity

NCOSE EWLSE and the Systems Engineering Research Center (SERC) would like to invite all to attend the "Empower Women Leadership Forum: Embracing Systems Engineering Leadership Diversity" on Saturday July 7th from 8 am – 4:45 pm, followed by a reception from 5 – 6 pm, to hear from leaders in the systems engineering field.

The morning includes keynotes from Kristen Baldwin and Victoria Cox. David Long, and Bill Parkins will join them after the morning networking break for the "Leadership Journey" panel. Panelists will provide personal experience on leadership styles, what works for them, what has been challenging, and will include anecdotal examples that have been turning points in their leadership journey, and more.

After lunch, the forum will pick back up with a professionally led hands-on interactive workshop, includes an afternoon networking break, and ends about 4:45pm to allow time for the 5:00 – 6:00pm Empowering Women Reception setup.

Forum attendees are invited to the Reception and can expect attendance from many INCOSE leaders at this informal networking reception. Please send an email to ewlse@incose.org to let us know you will be attending the Leadership Forum and / or the Reception, "last minute" attendees are also welcome. We hope to see you there!

Ms. Kristen J. Baldwin was appointed the Acting Deputy Assistant Secretary of Defense for Systems Engineering (DASD(SE)) in January 2016 while continuing as Principal Deputy, SE. She is the principal systems engineering advisor to the Secretary of Defense and is responsible for establishing and executing engineering policy and oversight across the Department. Her oversight includes concept engineering and analysis, design, development and manufacturing, and independent program review and assessment of the Department's major acquisition programs. She leads more than 50,000 Defense acquisition professionals in the DoD Engineering (ENG) and Production, Quality, and Manufacturing (PQM) workforce. She also serves as the acting Defense Standardization Executive. She oversees the DoD strategy for Trusted Systems Design and related Program Protection Planning activities.

A member of the Senior Executive Service since 2007, Ms. Baldwin leads digital engineering, system security engineering, mission engineering, and system-of-systems engineering initiatives. She oversees the DoD Systems Engineering Research Center, a University-Affiliated Research Center; and the MITRE National Security Engineering Center, a DoD Federally Funded Research and Development Center.

Before her current position, Ms. Baldwin served as Deputy Director, Software Engineering and System Assurance. Before joining the Office of the Secretary of Defense, Ms. Baldwin served as a science and technology advisor in the Army's Office of the Deputy Chief of Staff for Operations and Plans. She began her career at the U.S. Army's Armament Research, Development, and Engineering Center, Picatinny Arsenal.

Ms. Baldwin is a recipient of the Meritorious Presidential Rank award in recognition of exemplary service, and the National Defense Industrial Association Lt Gen Thomas R. Ferguson, Jr., Systems Engineering Excellence Award.

As the Federal Aviation Administration's Assistant Administrator for NextGen, Victoria Cox led the transformation of the national airspace system with responsibility for the multi-billion-dollar NextGen portfolio. Cox is currently employed as Senior Technical Advisor for Veracity Engineering and serves on the Systems Engineering Research Center (SERC) Advisory Board, the Oklahoma University Remote Sensing & Radar Advisory Team, and the Virginia Aviation Board.
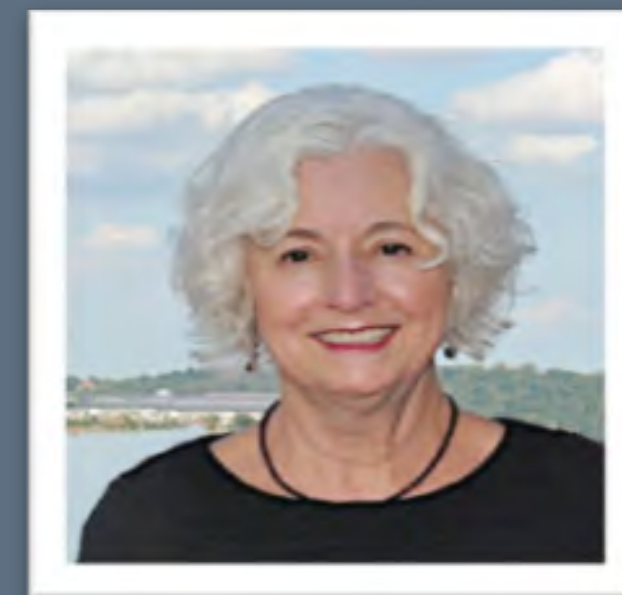
Previously, Cox was Director of International Technology Programs in the Office of the Director of Defense Research and Engineering. She supported the Deputy Undersecretary of Defense for Science and Technology as the DOD Laboratory Liaison and served as Chief of Physics and Scientific Director of the European Office of Aerospace Research and Development in London. She has served as a Commissioner on the Unmanned Systems Commission of the Commonwealth of Virginia. She is a graduate of Converse College and received a master's degree from East Carolina University. Cox has a certificate in U.S. National Security Policy from Georgetown University. She is an Associate Fellow of the American Institute of Aeronautics and Astronautics (AIAA) and holds a private pilot license.

For over 25 years, David Long has focused on helping organizations increase their systems engineering proficiency while simultaneously working to advance the state of the art across the community. David is the founder and president of Vitech, where he developed CORE™, a leading systems engineering software environment. He co-authored A Primer for Model-Based Systems Engineering and is a frequent presenter at industry events around the world. A committed member of the systems community and Expert Systems Engineering Professional (ESEP), David was the 2014/2015 president of the INCOSE.

Bill Parkins is currently transitioning out of the role of Principal Engineering Manager and Chief Engineer at Rockwell Collins Australia. This transition will complete on 30 June 2018, when Bill will retire from full time employment and engage in occasional contract assignments.

Bill had a 25 year career in the Royal Australian Navy progressing from a Naval Artificer Apprentice to the role of Assistant Director, Naval Communications Design with the rank of Commander. A second career in industry began in 1988 built on the foundations systems engineering and management background from the Navy. Bill worked in several companies in Systems Engineering, Technical or Project management roles. Companies included Andrew Australia, Telstra Applied Technologies, Rockwell (later Boeing) and back to Rockwell Collins.

Bill is a foundation member of SESA and is currently the President-Elect, assuming the role of President 1 July 2018. He has been an INCOSE member since 1993 and is certified as an Expert Systems Engineering Professional (ESEP).

Bill has been engaged in several leadership panels, at IS 2017 and at the Australian Systems Engineering, Test & Evaluation (SETE) Conference earlier this month in Sydney. In both panels there has been diversity in gender and background resulting in an interesting range of views on factors which influence careers in leadership. Continuing research in this field should provide guidance for INCOSE leaders into the future.

EWLSE Update

EWLSE-Themed Paper Presentations at the INCOSE IS 2018

Two EWLSE themed papers will be presented at INCOSE IS 2018 on Monday in the Systems Engineering Education track, please plan to attend Session 1.5.3 from 11:30-12:10, to hear Heidi Ann Hahn discuss What Can You Learn About Systems Engineering by Building a Lego™ Car? and Session 2.5.2 from 14:15-14:55 to hear about Professional Development of Student Engineers using Design Thinking with authors Heidi Ann Hahn, Valerie J. Lawdensky, Lia C. Meirose, Hannah D. Mohr, Haley B. Turman, and Sandra J. Zimmerman.

Embracing Diversity in the Design and Deployment of Autonomous and Cyber-Physical Systems – an EWLSE Panel at CSER

Empowering Women as Leaders in Systems Engineering (EWLSE) sponsored a two-session panel at the Conference on Systems Engineering Research (CSER) in Charlottesville, Virginia on May 8th. CSER 2018 included many opportunities to hear about autonomous and cyber-physical systems prior to the start of the panel on Tuesday afternoon. The conference opening keynote speaker announced that the human-machine interface for autonomous systems was ranked in the top ten skill gaps. Sessions on smart cities and smart transportation also laid groundwork for the panel, citing systems that are frequently used in unanticipated contexts.

The broad topic of the panel covered "Embracing Diversity in the Design and Deployment of Autonomous and Cyber-Physical Systems." The panel (Rusty Eckman, Cecilia Haskins, Alice Squires, Lory Wingate,) was tasked to provide varying perspectives and propose methods for incorporating the diverse needs of users and stakeholders affected by deployed autonomous and cyber physical systems of the future, and the audience (including Tom McDermott and Larry Strawser) was tasked to share their perspective on approaches, best practices, and related research.

The early dialogue on autonomy attempted to distinguish between programmed behavior, such as elevators or airport monorails, and systems that learn – for example, between automated, and autonomous. Jean Charles Domercant (audience member) suggested that the systems map onto a matrix that consider an individual's personal past experiences, perception of risk, and the complexity of the system. There were differing opinions about whether these systems should be introduced gradually or big-bang; or whether these futuristic systems were being deployed 'overnight' or going through a transition period. The group acknowledged the very human challenge of the transition period – even in cases where the switch to autonomously-run systems has already been made, there is a push for the "human" to remain in the loop; and in cases where autonomy is clarified, this can create a non-acceptance of using the autonomous system. This was accompanied by concern that keeping a human in a system as a "just in case" mitigation was not only monotonous for the person, but also potentially ineffective if the person is not alert at the moment their intervention is needed. One challenge during the transition period is the mix of human-driven and autonomously-driven system interacting in close proximity, increasing the overall level of uncertainty. Tom McDermott spoke of the importance

of establishing a "Human-machine conversation" as one way to address the uncertainty. The social context of these systems requires trust and scalability to help cope with unanticipated consequences. Larry Strawser discussed how the INCOSE Academic Council-sponsored project on "The Future Directions of Systems Engineering Research" has found that the topic of this EWLSE panel is related to a major "gap" in Systems Engineering capability. That is, there is a need for research that explores how the social, political, and economic aspects of systems challenges can be incorporated into the "usual" systems engineering approach.

Between the two sessions for this panel, nineteen audience members and four panelists attended the panel, both experts and novices contributed to the positive and learning-rich atmosphere in the room and generated a lively and relevant dialogue shared by all.

As a side note, Alice Squires also supported a second two session panel at the CSER 2018 conference on systems engineering Careers on May 9th and had the pleasure of speaking to a fair-sized audience, along with four other gentlemen on the panel of various backgrounds and experience levels, about our career paths and the future of systems engineering-related careers. The only thing missing were female engineers in the audience, hence the need to raise awareness of the importance of proactively making an effort to be inclusive with opportunities involving career related opportunities, even something as simple as a supportive and empowering conversation.

Success Factors for Technical Leadership – an EWLSE Panel at SETE 2018

Bill Parkins,
bill.parkins@rockwellcollins.com

Building on the successful experience from the INCOSE International Symposium in 2017 in Adelaide, AU we decided to include

panel sessions in the Systems Engineering Test and Evaluation (SETE) 2018 program.

One panel, which I was a moderator for, was: Success Factors for Technical Leadership.

The panelists were

- Helen Williams, Director Rail Systems Development, Transport for NSW,

- David Long, President Vitech Corp, INCOSE Past President,

- Shannon Standing, Senior Eng. Dir. Rockwell Collins Simulation and Training Systems and,

- Kerry Lunney, Country Engineering Director & Chief Engineer Thales Australia, and INCOSE President-Elect

Helen is a chartered engineer with qualifications in Aeronautical Engineering and Railway Signalling Engineering. She spent her early career in the UK Royal Air Force. She specialised in system safety for complex and critical systems, working for several years in the Defence Evaluation and Research Agency, testing and evaluating jet aircraft.

In her role as Director of Rail Systems Development Helen is currently building and deploying an integrated team that offers technology strategic direction for rail systems, best practice in systems engineering, operational integration and systems assurance to programs across the Infrastructure & Services Division of Transport for New South Wales.

Helen is passionate about building an inclusive, flexible team that attracts and develops great people. This experience, passion and other life experiences, including raising a family made Helen's presentation entertaining and insightful. Helen's

EWLSE Update

message was 'Let it go!' meaning you can't do everything as a leader, you have to let some things go.

Helen has taken on a role in the SESA Management Committee and her involvement should be thoughtful and of great value.

David is well known to the INCOSE global community, both as a contributor in events all over the world and as the CEO of a successful business focused on systems engineering tools and methods. Once again David travelled to Australia to participate in SETE and contributed papers and this panel.

David recounted the great influencers on his accidental journey to leadership and clearly he is now carrying on that guidance to current and future generations of systems engineers.

Shannon Standing also travelled to SETE from the Washington area, combining some work engagements with the conference commitments. I was personally thrilled that Shannon was able to attend and contribute to the panel. Shannon has led avionics programs for nearly 20 years and has found a balance between technical skills and soft leadership skills was necessary on her journey of technical leadership. Her Art Class for Systems Engineers is a great tool for teaching teams how to communicate. Ask her!

Kerry is also well known to the INCOSE community. Kerry is a foundation member, a former President of SESA, and has contributed significantly to our conferences for over 20 years.

Kerry's presentation recounted her journey through technical leadership. There are many twists and turns in the journey but a knowledge of yourself, modelling your styles and behaviour on people who inspire you, and emulating a champion in your field are factors which and in her case have contributed to success, and can in others' lives.

The Question and Answer session lasted nearly an hour with both the panel and audience thoroughly enjoying the exchanges. Feedback was extremely positive, and the panel concept was a great success. One regret is that we didn't record the panel session as I think there are some important factors which should be added to our body of knowledge. I have tried to distil some key points and would encourage readers to reach out to the individual panellists for further discussion.

Interested in joining EWLSE? We welcome you! To become a member of EWLSE please log into your account on incose.org, go to Profile Home and add "Empowering Women" to your Committees/Working Groups. Are you interested in being matched to a systems engineering mentor who is standing by ready and waiting to be connected with you? Please start by emailing ewlse@incose.org with your interest.

Spotlight ON!

Interviewed by Sandy Young, info@incose.org

Name: Heinz Stoewer

Title/Organizations: President at Space Associates GmbH, advisor at Airbus, chair emeritus for systems engineering at Delft University of Technology and "Distinguished Visiting Scientist" NASA Jet Propulsion Laboratory

Place of Birth: Giengen, Germany

Current Residence: Munich, Germany and Kaag-Dorp, Netherlands

Domains: Aerospace

Studied in college: Technical physics, business administration/operations and systems management

Year joined INCOSE: 1996

Role(s) in INCOSE: Deputy chair tech board, fellow, president (2004-05), life member

Years in systems engineering and program management: more than 50

Author's Note: We are breaking from tradition for this Spotlight and will be featuring statements that Heinz Stoewer developed based on one question we asked him. We thought readers would find these statements interesting instead of the usual Q&A format.

Stoewer is a pioneer in aerospace systems engineering, most well-known for his work on Space Tug, Europe's first human space laboratory; Spacelab, many Earth-focused satellites; and for infusing and broadening systems engineering in Europe and beyond.

Most recently, Stoewer received the 2018 Simon Ramo Medal "for pioneering accomplishments in and technical leadership of space systems engineering, and for his profound influence on the teaching and practice of systems engineering."

The award inspired the establishment of a new annual student prize (carrying Stoewer's name) for the best master's thesis of the year by the renowned aerospace faculty of the TU Delft.

Since the start of your aerospace career to now, what are the biggest changes you have seen in the use of systems engineering?

a. From simple engineering solutions to growing and sometimes not sufficiently well understood complex systems