INCOSE

MEMBERS NEWSLETTER

A Better World Through a Systems Approach

The Future is Here. See the Vision.

In this issue...

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- **Working Group Updates**
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The Premier International Systems Engineering Conference Accelerating through Adversity

6 Days, 5 Tracks, 4 Keynotes, 79+ Presentations, Panels, Tutorials and More!

79 + Papers, Presentations on Systems Engineering
Monday - Thursday

4 Inspiring Keynote Speakers

25 Countries Represented
United States, United Kingdom, Norway, Sweden, Australia, France, China, Germany, Japan, Austria, South Africa, Spain, India, Lithuania, Canada, Lebanon, Denmark, Switzerland, Netherlands, Israel, Italy, Finland, Hungary, Brazil, Singapore, Thailand

24 Application Domains
Top Domains
Aerospace, Enterprise SE, Defense, Academia, Social/Sociotechnical and Economic Systems, Industry 4.0 & Society 5.0, Infrastructure, Automotive, Artificial Intelligence, Machine Learning, Emergency Management Systems, Autonomous Systems, Sustainment, Automation, Information Technology/Telecommunication, Environmental Systems & Sustainability, Rail, Urban Transportation Systems, Biomed/Healthcare/Social Services, City Planning, Oil and Gas, Energy, Service Systems, Maritime, Very Small Enterprises

37 Topics Represented
Top Topics
MBSE,System architecture/design definition, Systems Thinking, Modeling/Simulation/Analysis, Complexity, Needs and Requirements Definition, Processes, Teaching and Training, Business or Mission Analysis, Verification/Validation, Systems of Systems, System Integration, Project Planning, Project Assessment, and/or Project Control, Decision Analysis and/or Decision Management, Human-Systems Integration

7 Panels
Social/Sociotechnical and Economic Systems, Enterprise SE, Emergency Management Systems, Industry 4.0 & Society 5.0, Environmental Systems & Sustainability, @Information Technology/Telecommunication, Academia, Sustainment

12 Tutorials
Needs and Requirements Definition, System Architecture/Design Definition, Resilience, System Security

HOTEL RESERVATION IS NOW OPEN, BOOK NOW !

HYBRID EVENT

A hybrid event combines in-person and virtual elements in a way that unlocks a live dialogue between and among presenters and attendees—whether they join in person or online.

In person participation
In-person experience at the Huntington place, Detroit

Remote participation
Online experience hosted on our virtual event platform

Huntington place
1 Washington Blvd.
Detroit, MI 48226, USA

Contact us symposium@incose.net
More information on www.incose.org/symp2022

Editor's Letter

Honor Lind, Director for Marketing and Communications, honor.lind@incose.net

Welcome to the first edition of 2022 of the Members Newsletter.

I am Honor Lind, the new INCOSE Director for Marketing and Communications. The Marketing and Communication team is dedicated to ensuring the Members Newsletter connects members to relevant topics and information for systems engineering professionals. The Members Newsletter informs members of the many value streams INCOSE offers, including educational information, networking platforms, and career-advancement opportunities. Together, we are a professional society and global community of systems engineers bringing systems approaches to problems and sharing information and resources to make a better world.

We invite you to share in the INCOSE journey as we bring our vision and mission to the global community of systems engineers.

Those of you who were able to attend IW either in person or via zoom will be aware of Systems Engineering Vision 2035; one of our key aims is to spread the word and we are doing that via press releases, social media, 'share and releases,' technical journals, and this newsletter.

'The future is here' with the release of the Systems Engineering Vision 2035 and we are bringing you a series of articles highlighting the future of systems engineering in the world where we all live. The first articles in this series highlight the origins of the Systems Engineering Vision 2035 and presents features on some team members—features on other team members are coming in future newsletters.

The marketing and communications team is here to help and support the marketing of all INCOSE products, services, and events. Within this issue you will read about our new and existing chapters, new products from working groups, and articles of interest that spotlight our leaders, members, affiliates, partners, and contractors who are making significant change in the world. We welcome your input and suggestions to develop our digital publications. Share the accomplishments and news from your chapter, working groups, and INCOSE teams. Email us at newsletter@incose.net.

A special thank you to the hundreds of hardworking volunteers that keep this organization running behind the scenes and to our marketing team that includes service providers UMS, KMD, Dot-The-Eye, and JonesHaus. We will be spotlighting these great firms in upcoming issues and recognizing their years of work and dedication.

I hope you enjoy reading this issue of the Members Newsletter.

Sincerely,

Honor A. Lind
Director for Marketing and Communications

Marilee Wheaton, INCOSE President

Photo Courtesy of The Aerospace Corporation

We would like to introduce you to the new INCOSE President, Marilee Wheaton. Marilee was inducted as the INCOSE President during the International Workshop 2022.

Marilee is a Systems Engineering Fellow in Aerospace's Engineering and Technology Group, working across the company to advance capabilities in digital engineering, system architecting, enterprise systems engineering, and model-based systems engineering.

A member of INCOSE since 2002, she was selected as an INCOSE Fellow in 2009 for her contributions as a practitioner and to engineering education and received one of the INCOSE Outstanding Service Awards in 2018. Marilee also received the INCOSE Foundation Kossiakoff Award for best systems engineering research in 2018. She is one of the leaders in the Empowering Women Leaders in Systems Engineering (EWLSE) working group. Marilee has been a member of the INCOSE Corporate Advisory Board representing Aerospace from 2006 – 2009 and from 2015 - 2020. She has held leadership roles for the 2014, 2017 and 2020 Conference on Systems Engineering Research (CSER) to include the Technical Program Committee and Conference Management.

SIEMENS
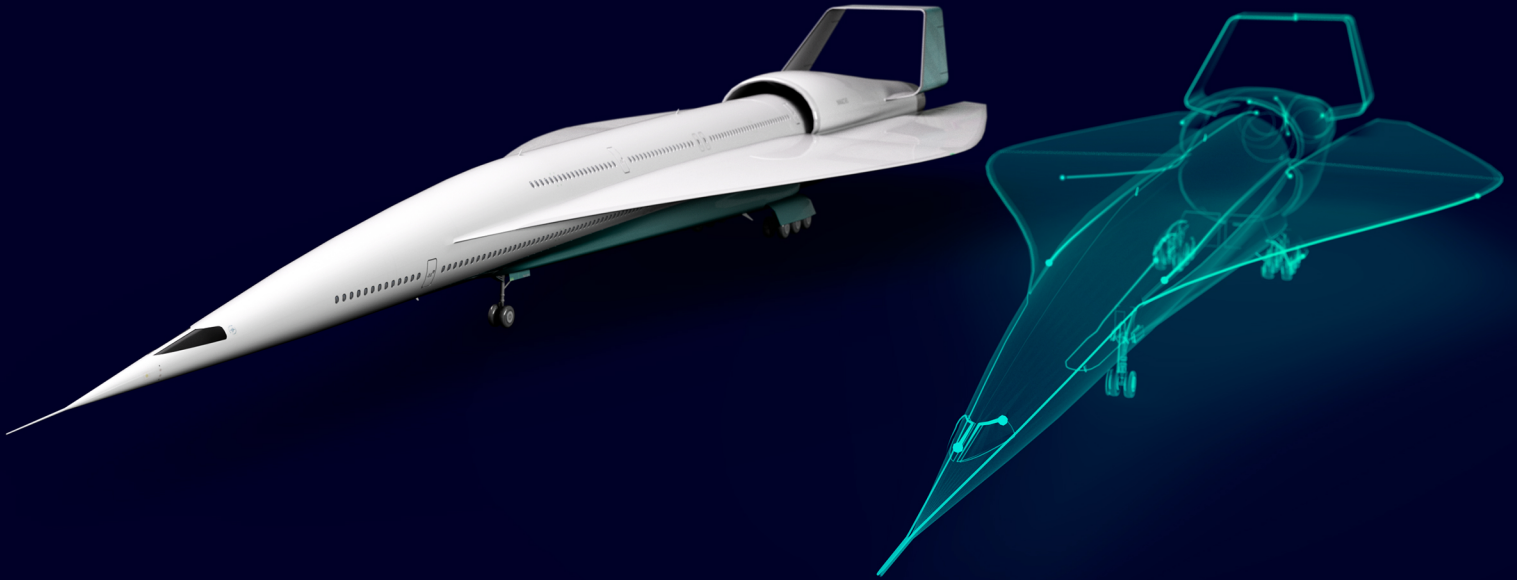
SIEMENS DIGITAL INDUSTRIES SOFTWARE

The MBSE process helps companies leverage their complexity to become more effective and competitive
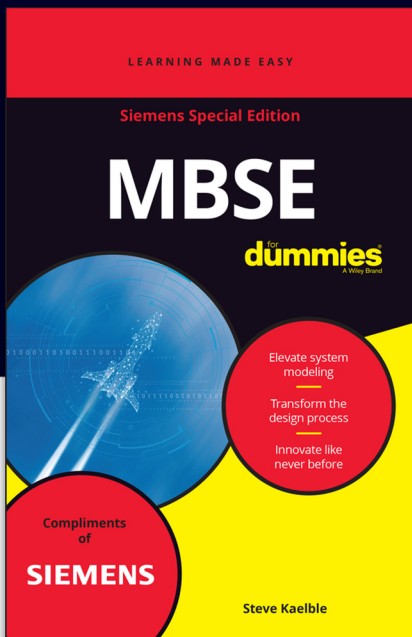
Download the free ebook, to get your copy of **MBSE For Dummies Siemens Special Edition**, and learn more today.
siemens.com/mbse-for-dummies

siemens.com/aerospace-defense

Successful Launch of the New Member Welcome Center Cafe

Dr. Shakila Khan, Associate Director for Membership Engagement, shakila.khan@incose.net

Community. Teamwork. Value. These are not just words to Membership Engagement but rather goals that we strive for in service to INCOSE members.

Teamwork Makes the Dream Work

With gratitude and appreciation to the INCOSE New Member Engagement Team (NMET), the New Member Welcome Center Café (NM WCC) is continuing to fulfill a need to improve connection and engagement across INCOSE.
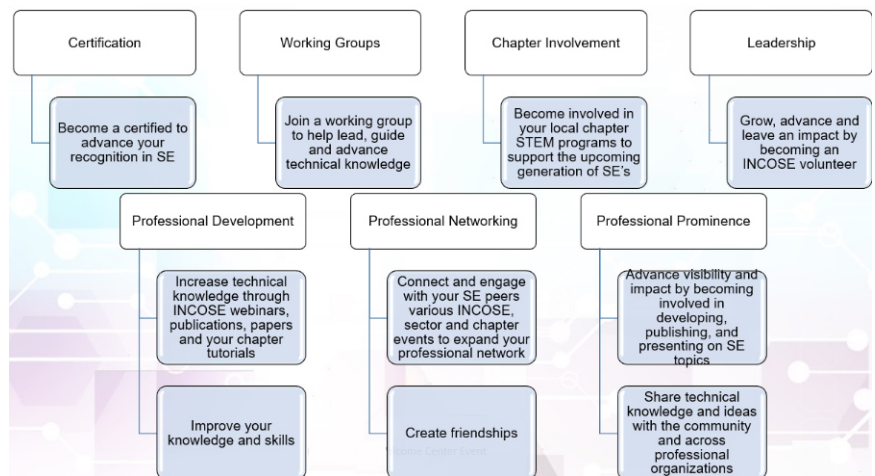
Since the launch in Quarter 4 of 2020, the NM WCC offerings continue to be exciting, appreciated, and well attended. Feedback received from participants has been overwhelmingly positive. Membership Engagement anticipates expanding to our existing members, students, and other major membership groups.

A Community of Belongings and Shared Experience

The NM WCC is an opportunity to connect and engage with INCOSE Leaders, New Member Guides (experienced INCOSE members), and other New Members across the globe. This engagement cultivates a sense of belonging and community early in a member's INCOSE journey.

Discovering the Value of INCOSE

Each monthly NM WCC provides an opportunity for New Members to gain more insight into INCOSE offerings, engage with INCOSE leaders and connect with other INCOSE members. Upcoming café topics include: Advancing Your Career, the Future of SE and Overview of the International Symposium.

Get involved, participate in the NM WCC events, and gain the benefits of membership!

There is so much value to be provided as illustrated below.

Previous WCC recordings and presentations can be found on the new member page at www.incose.org/newmember

Become a New Member Guide!

Supporting the NM WCC are the New Member Guides who, as experienced INCOSE member volunteers, help shepherd new members by addressing inquiries, providing anecdotal experience and direction to informational sources.

NMET seeks additional volunteers to serve as New Member Guides. Guides will host breakout sessions at each NM WCC, interact with new members, answer questions, and help new members find ways of engaging with INCOSE based on their interests.

To volunteer for New Member Engagement, contact nme@incose.net

Outgoing and Incoming Board Members

During IW2022 we showed our appreciation to all of the outgoing INCOSE Leaders and Board Members and welcomed the new INCOSE Leaders. Once again, we would like to give thanks to all of the leaders listed below for their dedication and commitment to INCOSE and the systems engineering practice; we wish you continued success in your careers.

Outgoing Leaders

Kerry Lunney
President, 2020-2021

Don Gelosh
Services Director, 2019-2021

Don York
Corporate Advisory Board Chair, 2020-2021

Lisa Hoverman
Marketing and Communications Director, 2019-2021

Antony Williams
Director, Americas Sector, 2017-2021

Marilyn Pineda
Associate Director, Education and Training, 2018-2021

Troy Peterson
Associate Director, Future Strategic Objective, 2019-2021

Garry Roedler
Nominations and Elections Chair, 2021

John Snoderly
Grievance Committee Chair, 2015-2021

Masood Ahmed
Assistant Director, Technical Information, 2019-2021

Incoming Leaders

Marilee Wheaton
President

Ralf Hartmann
President-Elect

Mike Vinarcik
Treasurer (2nd term)

Richard Beasley
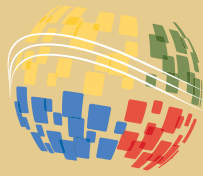Services Director

Ron Giachetti
CAB Chair

Honor Lind
Marketing & Communication Director

Renee Steinwand
Director, Americas Sector

Heidi Davidz
Deputy Services Director

Mike Dahlberg
CAB Co-Chair

SPONSORSHIP OPPORTUNITIES

Be part of the 32nd Annual INCOSE Internationnal Symposium and the 1st Hybrid Edition

1 VISIBILITY
Unique brand of recognition and visibility for your organization

2 PRACTICE
Access to the latest thinking relevant to the practice of Systems Engineering

3 SPOTLIGHT
Put a spotlight on your organization's competency in Systems Engineering

4 ASSOCIATION
Be associated with the highest culture of professionalism and innovation

5 SUPPORT
Demonstrate organizational support to INCOSE's mission

6 CONNECTIONS
Develop sustainable business connections

Key event Figures

Average of 900 participants

78% Americas
13% EMEA
9% AsiaOceania
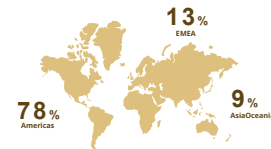
Lots of possibilities to interact with systems engineering communities

Connection with participants

The International symposium offers a lot of opportunities for sponsors to interact with participants:

Coffee breaks: all coffee breaks are organized on the exhibit hall

Sponsor track: sign up for a 30 minutes time slot in our Sponsors Track and take advantage of this unique opportunity to deliver a non-refereed presentation to symposium attendees. The presentations have to be delivered in person and will be broadcasted on the platform for the benefit of remote participants. It will be advertised in the symposium program, on the event web site and in the IS2022 APP.

Receptions: two reception will be held on the exhibit hall:
- Monday Ice Breaker Reception
- Tuesday Exhibitor's Hour

Chat: connect to all participants through a private chat available on the IS2022 APP and the dedicated virtual platform

Our promotion supports

• Newsletter (quarter) =   **over 12,000 recipients**
• E-Note (mailing monthly) = **over 13,000 recipients**

Social media :
1900 members
3450 members
350 members
16 500 members
2 720 members

Thanks to our sponsors

Caltech   SYSTEMS ENGINEERING RESEARCH CENTER   United Technologies Corporation Institute for Advanced Systems Engineering UNIVERSITY OF CONNECTICUT   WPI

Introducing Your 2022 Leadership Team

INCOSE is managed by a Board of Directors in accordance with its bylaws. The Board of Directors sets strategy and policies that serve the stakeholders – members and practitioners of systems engineering. Board members are both elected and appointed.

Board of Directors

Marilee Wheaton, INCOSE Fellow
President

Ralf Hartmann
President-Elect

Kyle Lewis
Secretary

Michael Vinarcik, ESEP
Treasurer

Christopher Hoffman, CSEP
Technical Director

Julia Taylor
Director for Outreach

Bob Swarz
Director for Academic Matters

Barclay Brown, ESEP
Chief Information Officer

Honor Lind
Director for Marketing and Communications

Richard Beasley, ESEP
Services Director

Tom McDermott
Director for Strategic Integration

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Director, Americas Sector

Sven-Olaf Schulze, CSEP
Director, EMEA Sector

Serge Landry, ESEP
Director, Asia-Oceania Sector

Olivier Dessoude
Deputy Technical Director

Mike Dahlberg
Corporate Advisory Board Co-Chair

Heidi Davidz
Deputy Services Director

Andrew Pickard
Chief of Staff

Committee Chairs
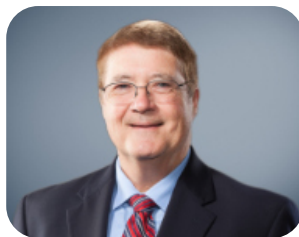
Greg Parnell
Fellows Committee
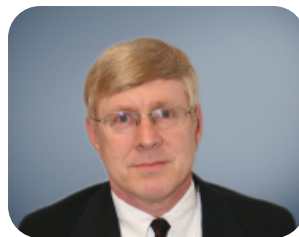
Kirk Michealson
Policy Management Committee

Clifford Whitcomb
Editor, Systems Engineering

Bill Miller
Editor, INSIGHT

Michale Vinarcik
Budget & Planning

Paul Schreinemakers, ESEP
Nominations & Elections

Donna Long
Associate Director, Events

Maria Romero
Associate Director, Diversity, Equity & Inclusion

Introducing the INCOSE President-Elect, Ralf Hartmann

Interviewed by Beth Concepción

INCOSE president-elect outlines his strategic vision

Ralf Hartmann is starting his tenure as INCOSE president-elect with a leg up on past presidents-elect: the launch of Systems Engineering Visio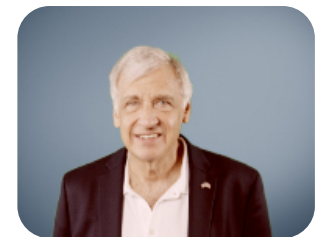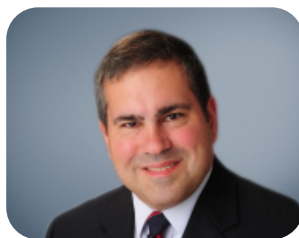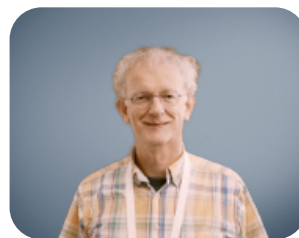n 2035. "There couldn't be anything better that happened to me that to start my time as President-elect and then President than to have this document in hand," he said. "This is what the organization is all about."

The organization stands at more than 19,000 members in 75 different countries. Ralf said he wants to encourage more international discussion and collaboration among the members. And to do that, he has found the bright side to the pandemic. "What I really believe is that the last two years of the pandemic has provided a super opportunity for us," Ralf said. "That means now everybody in the world is very much used to collaborating through Zoom and similar technologies sitting in their home and participating in meetings. This was a crash course around the globe for international collaboration that we wouldn't have anticipated."

Ralf said he would like to see future conferences feature 500 people on site and more than 5,000 online – benefitting from increased international collaboration.

It's that international collaboration that is key to helping disseminate Systems Engineering Vision 2035 to solve real-world challenges.
"There are so many socio-economic problems on the planet," he said. "What we call Systems Engineering provides the methodologies, the approaches, the type of systems thinking that is really necessary to have any chance to master the challenges we are having."

But he also said that Systems Engineering Vision 2035 needs to be distilled into a brochure or something that even laypeople can understand.

"This kind of document or synthesis is an entry point to those new domains," he said.

He also said he sees this synthesis going hand in hand with a codification of theories and best practices. "We need to make a big effort now in ensuring that the discipline is elaborated in a way that is like any other scientific discipline – fully recognized," Ralf said. "It is based on standards -- a body of knowledge, which is in a book, which can be learned across the globe and it is everywhere the same."

Ralf said he recognizes the strength of INCOSE, and also opportunities for development. "We are a very different animal in terms of professional organizations," he said. "INCOSE is 90 percent a volunteer organization."

Ralf wants to add more professional staff to support the organization in certain areas, as well as "influence by conviction" volunteer members to take on new and expanded roles.

Ralf himself has had many roles in INCOSE since joining in 1996. Ralf, the former head of Airbus Group Systems Engineering Governance and VP Technical Advisor for Digital Design, Manufacturing and Service within the Digital Transformation Office at Airbus Defense & Space, is a founding member of GfSE, the German Chapter of INCOSE. He was president of that chapter in 2000 and chair of the second European Systems Engineering Conference that same year. He was co-chair of the Standards Technical Committee 1998-2000 and co-chair of the Modeling and Tools Technical Committee 2000-05. Ralf also was the INCOSE Director for Strategy 2008-14, during which time he helped sponsor Systems Engineering Vision 2025.

Ralf is betting that there are more members like him who have a passion for the organization. "It was in the mid 1990s where I discovered INCOSE, and I felt immediately attracted by it and I never left it again," he said. It's a good thing too: There are big goals to fulfill.

INCOSE Strategy Sessions

Strategy Sessions

Tom McDermott, INCOSE Director of Strategic Integration, tom.mcdermott@incose.net

On Friday, 28 January 2022 we held our first ever hybrid INCOSE Strategy Sessions. Strategy sessions are held twice a year;, the first in a hybrid format the Friday before the International Workshop and the second in a fully virtual format two weeks after the International Symposium. At these sessions, INCOSE leaders and invited guests contribute their ideas to INCOSE around topics of interest to INCOSE technical and service related strategies. Once again, we had great support from INCOSE leaders and members. Thank you to all of the participants for donating your valuable time.

The goal with these strategy sessions is to make sure member ideas and needs are captured into a strategic framework and are used to drive real change in an open and transparent fashion. Each session produces a set of data and recommendations that are then presented to the Board of Directors for approval to proceed, priority setting, resourcing, impacts to other areas, etc. Recommendations that generate Board actions are tracked via quarterly Board meetings. The Director for Strategic Integration maintains a list of Strategy Session recommendations and dispositions that continue to be reviewed at Board meetings until they have all been worked or otherwise closed. In this way the event lives on and your inputs are considered in ways that drive real improvements to our member value. See the article on our SySTEM initiative, which began as a strategy session at IW2021, separately in this issue.

The hybrid IW2022 Strategy Sessions considered four topics as summarized below. Thank you to all who participated in the sessions, facilitated a session, and flawlessly maintained our virtual connectivity. The following summarizes the sessions:

Session 1: Organize Outreach to New Domains. This session followed on from an IS2021 session that focused on expanding INCOSE presence in the southern continents and focused on means to further expand our geographical influence. In addition, the session identified needs and opportunities to improve our outreach to influential institutions across the world.

Session 2: Ethics as a Quality Attribute. This session identified the need to address ethics in two systems: the systems we are creating and the human-based ones we use to create the system. INCOSE has a systems engineering code of ethics but we would like to see a stronger framework for addressing ethics in system design across multi-person teams. Look for additional outputs in this area.

Session 3: Systems Engineering Modernization. As the digital transformation of systems engineering evolves, it is likely to also change the ways we practice systems engineering. Over 70 people came together in this session to discuss weaknesses in SE practice today and their vision for a modernized practice.

Session 4: Best Practices in Model Verification and Validation. This session focused on ways INCOSE can provide guidance on verification and validation of systems engineering models (SEMs), particularly evaluation of SEMs for large and complex systems using large and complex models.

If you are interested in further details on any of these areas, please contact tom.mcdermott@incose.net

Empowering Women Leaders (EWLSE) Update

Alice Squires, EWLSE Founder, alice.squires@incose.net

With a new year comes new beginnings. We have successfully navigated many changes in the last two years and this year was the first year we experienced a hybrid form of the International Workshop (IW) with some members meeting in person after a long break, and others meeting remotely through the conference platform system; some from nearby and others from afar.

EWLSE was busy, mostly behind the scenes, at the IW. We added two new resources to the EWLSE resources page found here: https://www.incose.org/incose-member-resources/ewlse/resources. Please find:

1. The four volumes of the "Rising to the Top" series featuring global women engineering leaders (https://www.gedcouncil.org/rising-to-the-top/).
2. The complete compilation of 24 IEEE-USA books (free to IEEE members) written by successful women engineers and technologists (https://ieeeusa.org/product/women-in-engineering-complete-collection-books-1-24/).

The EWLSE Pubs team (Alice Squires, Lisa Hoverman, and David Long) met – with Lisa and David in California, and Alice remotely – to discuss the final plans for releasing the "*Letters to My Younger Self: How Systems Engineering Changed My Life*" ebook (Volume I). This publication will feature 25 letters from INCOSE members around the world, from ten different countries, to their younger self – with insights into the exciting world of systems engineering for future systems engineers. And for the "*Emerging Trends in Systems Engineering Leadership: Practical Research from*

Women Leaders" book, while there is still work to do with the publisher (Springer), we can provide a sneak preview on the final composition of the book. Twenty-six female authors of twelve chapters apply practical experience, related research, and applicable case studies to explore emerging trends in systems engineering leadership. The chapters are grouped into four areas of emerging trends in systems engineering leadership:

1. The growing demand for certain essential skills (historically called soft skills).
2. The increased recognition of an integral need for diversity, equity, and inclusion.
3. The broadening of considerations for systems thinking, ethics, and utilitarianism.
4. The rate of technological change and its impacts with relation to systems resilience and the digital transformation. One overall theme of the book is a call to action for a systems approach to global leadership in concert with the Systems Engineering Vision 2035.

At the IW, the INCOSE Social Systems Working Group and the Empowering Women Leaders in Systems Engineering (EWLSE) hosted an Artificial Intelligence (AI) and Ethics workshop at the International Workshop on January 31st, 2022. The workshop was facilitated by Erika Palmer (Sintef) and Sierra Hicks (Penn State). The workshop facilitators gave a brief overview of what many perceived as a useful lens for ethical AI and then opened up for teams to explore ethics throughout the life-cycle of a specific AI product. Diversity and how this affects AI products was a theme in all of the breakout teams. To culminate the event, teams presented their very insightful findings based on the breakout room discussions. Participants, and even those who stopped by to discuss AI and ethics further, were convinced that examining AI products through an ethical lens is a

very productive way to move forward. Erika and Sierra received requests for future events that take on AI & Ethics in this fashion; many were both relieved and inspired to use this approach. The workshop was a successful hybrid event that has since received lasting appreciation. If you are interested in such a workshop please follow up with Erika Palmer (erika.palmer@gmail.com).
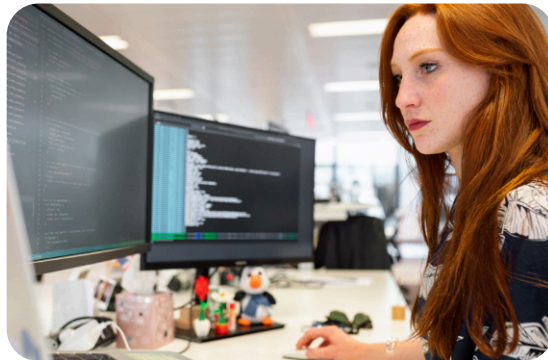
Another task completed during the IW was EWLSE was establishing a Yammer Community. This community allows anyone who is a member of INCOSE to join the discussion. The tool allows postings similar to how one might post on LinkedIn or even Facebook, but only INCOSE members can see and respond to the discussions. This is a great way to start a conversation on a topic that you have wanted to share with the EWLSE community whether it be an interesting article, a book, any other type of resource, or perhaps even a news article related to EWLSE topics. You can also let others know about surveys, events, and other initiatives of interest to the community. Let's start using Yammer to communicate more on what is happening in our lives and our community. We are especially excited to hear your positive news and examples of empowered women leaders in systems engineering! Yammer can be accessed here: https://web.yammer.com/

Please feel free also to follow up privately with greetings, queries, comments or stories to ewlse@incose.org.

Neurodiversity Can Make the Workplace Stronger

Emma Jane Taylor, Dot-The-Eye & Maria Romero, Associate Director Diversity, Equity & Inclusion, maria.romero@incose.net

INCOSE has been at the forefront when it comes to Diversity, Equity, and Inclusion (DEI) and as an organization we continue expand our knowledge in this area and help develop forums for discussion around the topic of DEI in Engineering. We are developing guides to support our members and are looking to build DEI elements into Systems Engineering competencies.

Maria Romero, Associate Director of Diversity, Equity and Inclusion will be focusing on implementing resiliency of diversity and equity (DE) into the workplace, and neurodiversity.

Implementing Resiliency of Diversity and Equity (DE) into the Workplace

There is a growing body of evidence that shows when DEI is actively implemented in the workplace (going beyond just writing words in a policy), it results in more committed employees and a better working environment, enabling organizations to outpace their competitors.

Neurodiversity

Neurodiversity is an approach to education and ability that supports the fact that various neurological conditions are the effect of normal changes and variations in the human genome. Conditions such as ADHD, Autism, Dyspraxia, and Dyslexia all fall within the spectrum of "Neurodiversity".
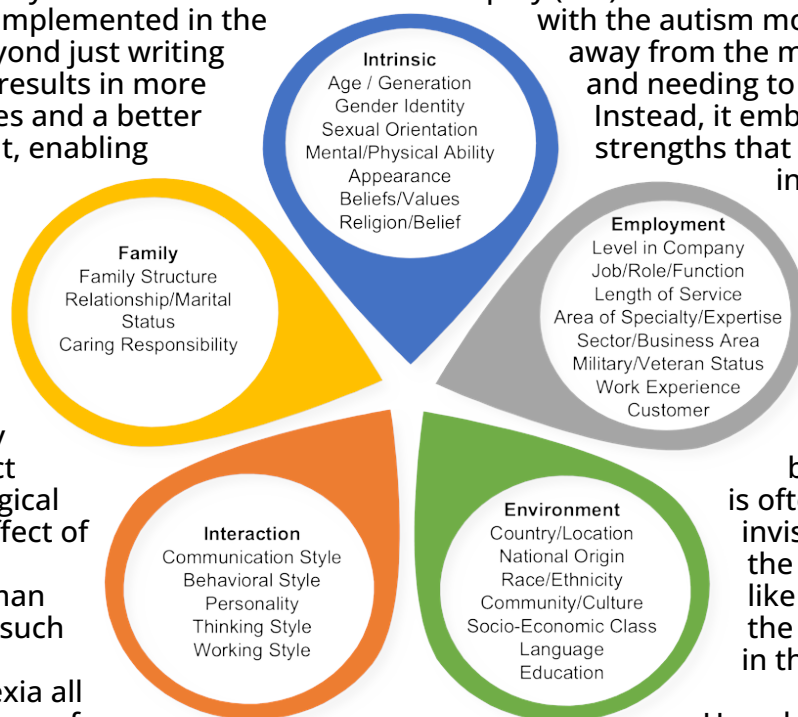
People who fall into this spectrum offer organizations the opportunity to a have a more rounded view of complex problems, because they approach these problems in a different way. A growing number of organizations have started to recognise the benefits of having a diverse workplace.

A good example of this is GCHQ, the United Kingdom's intelligence, security and cyber agency, who actively recruit individuals who are dyslexic because they believe that dyslexic thinking skills are mission-critical for protecting the country (more at https://www.gchq.gov.uk/news/dyslexic-thinking-skills).

People of all neurological processing types should be included and accepted in the workplace culture in order to achieve more diversity, inclusion, and equity (DEI). The idea of neurodiversity started with the autism movement, which moved away from the medical model of broken and needing to be fixed or medicated. Instead, it embraced the differences and strengths that these neurodivergent individuals (ND) have from their neurotypical (NT) counterparts. This concept has broadened to include attention deficit hyperactivity disorder (ADHD), learning processing disorders, bipolar, and Tourette's. It is often thought of as the invisible disability because to the average person, NDs look like everyone else. However, the world looks very different in the eyes of an ND.

How does neurodiversity affect workplace diversity if you cannot

Intrinsic
Age / Generation
Gender Identity
Sexual Orientation
Mental/Physical Ability
Appearance
Beliefs/Values
Religion/Belief

Family
Family Structure
Relationship/Marital Status
Caring Responsibility

Employment
Level in Company
Job/Role/Function
Length of Service
Area of Specialty/Expertise
Sector/Business Area
Military/Veteran Status
Work Experience
Customer

Interaction
Communication Style
Behavioral Style
Personality
Thinking Style
Working Style

Environment
Country/Location
National Origin
Race/Ethnicity
Community/Culture
Socio-Economic Class
Language
Education

see the differences? NDs make up approximately 10 percent of the population. As of February 2020, the U.S. labor force was 164.6 million, which means approximately 16.5 million individuals are ND. Many of these have higher-than-average skills and abilities, such as pattern recognition, memory, or advanced math skills. Unfortunately, many do not fit prospective job applicant profiles. They may struggle with interviewing or maintaining eye contact, have erratic work histories, or have difficulty filling out job applications. If they are hired, they are more likely to be underemployed and working well below their education or abilities.

Companies that specifically seek out ND applicants, such as SAP, Hewlett Packard Enterprise, Microsoft, Dell, Deloitte, and Google, have established special programs to help support them to improve their success as employees. ND employees often need accommodations such as support services (buddy programs), physical environment changes (quiet rooms), flexible working arrangements (evening shifts or working from home), and technology. So, with these types of support needs, why would a company seek out NDs knowing they will come with "baggage"?

The benefits of hiring and working with ND employees far outweighs the cost and effort. For example, those on the autism spectrum often excel at pattern recognition and memory retention. They can become fantastic developers and programmers, which is why SAP, HPE, Microsoft, Dell, and Google have sought them out. Their natural skills also enable them to tolerate the monotonous tasks, such as those found in accounting and auditing. These fledgling programs have primarily focused on Autism spectrum individuals, but these programs can be expanded to include all types of neurodiverse individuals.

Those with ADHD can be incredibly imaginative, can see the "big picture," are high energy, enjoy change and chaos, and are risk-takers. These natural tendencies make for successful entrepreneurs, inventors, and CEOs, such as Bill Gates, Sir Richard Branson, David Neeleman, Paul Orfalea, Alan Meckler, and James Carville. Employees who have learning processing disorders (LPDs), such as dyslexia and dyscalculia, had to work hard in school because their brains are wired differently from NTs. In fact, they typically develop unique ways of acquiring knowledge and solving problems. Many may not have been successful in college, but that did not stop them from being successful in business. Such NDs include Steve Jobs, Charles Schwab, Bill Hewlett, Jacques Dubochet (Nobel physicist), and Carol Greider (Nobel molecular biologist).

So, the next time you are preparing for a recruitment, focus on the knowledge, skills, and abilities (KSAs) that you need and not the package they come in. Go out of your way to look for someone who does not fit the mold and may have acquired those KSAs in an unusual or circuitous path. You just might be surprised at how looking for a square peg to fit the round hole might solve more than just your vacant position. Neurodiversity can be one more tool to achieving a truly inclusive, diverse, equitable, and accepting workplace.

Volunteering Opportunities

Volunteer Opportunities Administrator, voadmin@incose.net

You can develop Professionally and support INCOSE by joining the INCOSE Team.

INCOSE is a volunteer lead organization which continues to grow, and we need your help to meet our goals and objectives. In addition to helping spread our message of "A better world through a systems approach'", you can develop your leadership and technical skills.

Below are some of the roles that are currently available. For more information about each of these roles or to see future openings, please visit the volunteer page of the website: www.incose.org/volunteer.

If you have any questions or need more information, please contact the Volunteer Opportunities Administrator at voadmin@incose.net

Apply Today!

Diversity, Equity, and Inclusion (DEI) Committee Member

Deadline: March 31, 2022

Certification Advisory Group Member

Deadline: April 2, 2022

INCOSE Certification Intern (Paid Role)

Deadline: April 5, 2022

Certification Blog Interviewee

Deadline: July 1, 2022

Click here for more information and application details

What do the volunteers think?

"You learn so much about yourself and get back value in the form of personal/ professional networks, awareness of the impact and applications of systems engineering across the world." - Shakila Khan, Systems Engineer at MITRE

SySTEM

SySTEM is always actively seeking new participants: regardless of your professional background, location, or level of commitment, there's likely something you can contribute to SySTEM. If you would like to join SySTEM, or are interested in learning more about the initiative, please contact the SySTEM initiative lead and Program Director, Caitlyn Singam, at caitlyn.singam@incose.net or visit incose.org/systeam.

You are also cordially invited to join the SySTEM Discord server, the aforementioned community hub for anyone interested in SySTEM and its activities. Joining the community hub grants access to the latest SySTEM announcements, discussions, and event information. You can join by following these steps:

1. Enter the invite link into your web browser: **https://bit.ly/3oy1GmF** or scan the QR code.
2. Sign in with an existing Discord account or register a new account. You may be asked to verify your email address.
3. Follow the prompts to join the SySTEM server.

Once you complete the sign-up process, you'll be greeted with a welcome message and immediately receive full access to the entire SySTEM communications hub. Afterwards, you can access the server at any time directly through your account (via discord.com or the Discord app) without having to use the invite link again.

We hope to see you join us online, and for you to become part of a vibrant global community seeking to improve education for all!

Improving STEAM Education for All Students: Introducing the SySTE(A)M Initiative

Caitlyn A. K. Singam, SySTEM Program Director, caitlyn.singam@incose.net

We are proud to announce the launch of the INCOSE SySTEM Initiative (also known as the SySTEAM Initiative), a group dedicated to the goal of fostering the integration of systems competencies into science, technology, engineering, arts, and mathematics (STEAM) education.

Why tackle education?

 Education is arguably the most universal, and yet the most unique, part of any STEAM professional's journey, simultaneously managing to be both synergizing and schismatic. While all STEAM professionals have to go through some sort of education – whether it is formal classroom education, experiential training, or a combination of both – the quality and characteristics of education, as experienced by the students receiving it, can vary greatly across disciplines, geographic regions, and even from student to student. Systems thinking and systems engineering (ST/SE) competencies in particular are a major part of that variability: despite being recognized as having nearly universal relevance in both technical and non-technical contexts, they are woefully under-recognized outside of the systems engineering community and are frequently not introduced to students until collegiate or graduate-level education, if at all. Many students therefore miss out on the chance to explore a potential interest in SE until after they have already specialized, and often never get to see those skills applied outside of an engineering context. The SE community, meanwhile, loses out on a whole host of potential talent – future ST/SE leaders, practitioners, and researchers – and is faced with a smaller, less diverse community as a result.

Enter the SySTEM Initiative

Here at INCOSE SySTEM, we believe that we can do better by both students and professionals alike. SySTEM was founded on the belief that ST and SE skills should be part of every student's foundation, so that all students, no matter where in the world they live, whether they choose to be artists, engineers, or something else entirely, will have the interdisciplinary skills they need to succeed in their chosen endeavors and as global citizens. Every student deserves the right and opportunity to a quality education, and to that end SySTEM wants to help promote a more just, equitable, and transparent approach to education in general, and to ST/SE competencies in particular, in a way that helps reduce disparities in educational quality, access, and competency attainment. More broadly speaking, SySTEM's vision is for a world where all students are able to get a quality STEAM education; our mission is to help make that happen by promoting ST/SE integration into and across the entire STEAM educational pathway – from primary school to post-graduate – in classrooms across the globe.

In order to support that expansive mission and vision, SySTEM has identified four key, achievable goals that will guide strategy going forward:

(1) development of a framework for ST/SE integration into STEAM, inclusive of recommendations for including ST/SE skills in both science and humanities classrooms alike;

(2) establishment of a committee that will advocate for adoption of the framework across the globe;

(3) generation of general guidance for companies and members of industry to engage in STEAM and support the SySTEM vision; and

(4) a large, interdisciplinary community of collaborators, advocates, and experts whose input, suggestions, and participation will help shape SySTEM's product development efforts and drive the initiative forward.
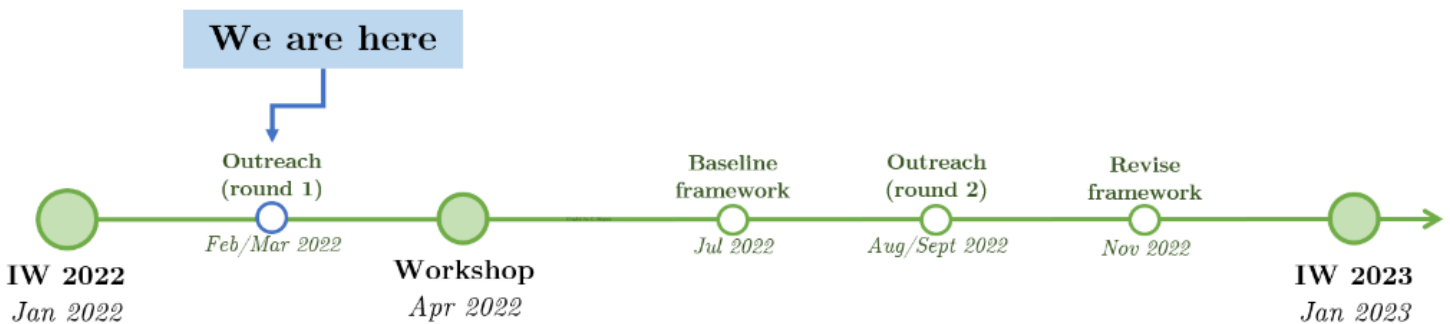
INCOSE SySTEM has begun taking steps towards these goals. We were delighted to participate in the INCOSE 2022 International Workshop (IW) this past January, which marked SySTEM's IW debut and the initiative's second-ever workshop, and were able to start laying the foundation for our framework development efforts. With participants from three different continents and several different stakeholder groups (including students, educators, researchers, and industry professionals) in attendance, we held a series of discussions tackling a number of strategically valuable topics: identifying stakeholder needs, selecting priority targets for improvement within the educational pathway, and brainstorming potential approaches to curriculum standardization. Going forward, the Initiative is seeking to leverage the momentum from the 2022 IW to propel development of the ST/SE integration framework, with the aim being to have a draft version to present at the 2023 IW.

A community effort

None of these efforts, of course, would be possible without SySTEM's community. Our efforts rely on SySTEM being a large and diverse community of participants with varied perspectives, inclusive of both INCOSE members and non-members whose collective efforts help with everything from performing outreach to developing framework recommendations to reviewing documentation.

In November 2021, SySTEM launched an online community hub using the Discord communication platform, which has since been established as a one-stop portal for event announcements, discussion, and document sharing, as well as a place where both INCOSE members and their external colleagues can gather in support of a common goal.

SySTEM: roadmap to IW2023

We are here

| IW 2022 Jan 2022 | Outreach (round 1) Feb/Mar 2022 | Workshop Apr 2022 | Baseline framework Jul 2022 | Outreach (round 2) Aug/Sept 2022 | Revise framework Nov 2022 | IW 2023 Jan 2023 |

tracecloud

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We speak the language of Systems Engineering. If you are an INCOSE member you will find a close fit between Tracecloud features and INCOSE best practices

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Provide Structure

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Change Control

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Systems Engineering Vision 2035 in Conversation With Sandford Friedenthal, Lead Author

Interviewed by Beth Concepción

Sandford Friedenthal, Lead Author of Systems Engineering Vision 2035, identifies the key takeaways from producing the publication.

It's fair to say Sanford "Sandy" Friedenthal is an expert on the state of systems engineering. He quite literally wrote the book on it, along with a team of leaders from industry, academia and government. Sandy was the lead on Systems Engineering Vision 2035, recently released in January 2022.

The team started work on the document in January 2020 in person. Then the pandemic interrupted plans. "It was a bit of a hassle," Sandy said drily. "We missed the face to face, clearly."

Still, the team persevered and ended up with a more robust document than Systems Engineering Vision 2025, on which Sandy also served as the lead.

"Our projection in terms of systems engineering changed from 2025 to 2035, and there were changes to the document itself," he said. "The 2035 document is more in depth than the 2025 document. It's more detailed, and we spent some time trying to improve a bit the methodology for how we make that projection and the logic behind it."

Systems Engineering Vision 2035 addresses new topics as well.

"We saw new trends," he said. "For example, two pop up right away. One is the digital transformation.

That's just having such a big impact where systems engineering is going," he said. "It applies to every organization and everything we do. The other trend was toward sustainability."

Another important topic in Systems Engineering Vision 2035 is the role of Artificial Intelligence (AI).

Sandy explained: "AI got a lot more emphasis in terms of their impact on the systems -- autonomous vehicles, for example -- but also the use of AI in systems engineering and taking advantage of artificial intelligence as a way to help us automate a lot of the more mundane tasks and free the systems engineer up to do creative tasks, if you will."

Another area of emphasis is data science. "Data science techniques were sort of a new practice [when we were writing] 2025," he said.

Sandy said there are two important takeaways from Systems Engineering Vision 2035 for systems engineers: "Agility is becoming more and more critical. A model-based approach to systems engineering is critical. We have to become more agile. We have to do a better job of managing complexity with all these factors. We have to adopt a model-based approach in order to help us achieve that."

Sandy is an industry leader in model-based systems engineering. He helped Lockheed Martin, among others, to enable model-based systems development and other advanced practices.

Systems Engineering Vision 2035 isn't just for systems engineers, though. It's a projection that includes and impacts other stakeholders including
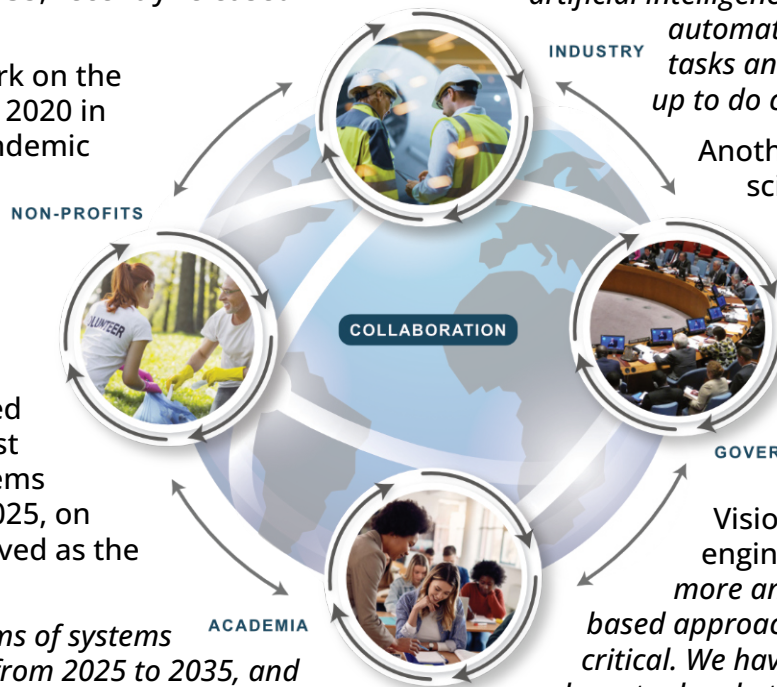
higher education. Systems Engineering Vision 2035 spells out the need for interdisciplinary and technical competencies as well as *"soft and durable"* personal and professional skills to enable students to adapt to new demands.

There's also a fundamental need for a partnership with universities.

"One of the things we put in the vision was to establish an agreed-upon set of theoretical foundations," Sandy said. *"It's not that they don't exist. They exist, but there's not per se an agreed-upon set that get taught, particularly at the graduate level. Universities should help us to establish those foundations and get them agreed upon and then teach them consistently. A mature discipline demands that."*

Higher education institutions aren't the only partnership targets. Systems Engineering Vision 2035 encourages conversation among stakeholders in the broader global systems community – a community that includes government and policy makers, industry and corporations.

"Systems engineering is a critically important discipline and what we are trying to do with the vision is to inspire and guide that strategic direction of systems engineering," he said. *"We rely on collaboration across this broad community."*

Sandy concluded, *"Our goal is to reach out to a much broader community to help us collectively improve this discipline so that we can in fact create better systems that provide value ultimately to all aspects of society."*

Former INCOSE President, Garry Roedler Reflects on the Importance of Systems Engineering Vision 2035

Interviewed by Beth Concepcion

When discussing Systems Engineering Vision 2035, Garry Roedler, president of INCOSE 2018-19, references a 1948 quote from Albert Einstein.

"Our situation is not comparable to anything in the past. It is impossible, therefore, to apply methods and measures which at an earlier age might have been sufficient. We must revolutionize our thinking, revolutionize our actions."

What that means is this: "Tomorrow is not going to be just like today," Roedler said. "The pace of change is like nothing I've ever seen."

It is important then that Systems Engineering Vision 2035, on which Roedler worked with a team of about a dozen leaders from industry, academia

and government, looks at not only where Systems Engineering is headed, but also global trends.

One of those trends is Artificial Intelligence.

"We created a working group in INCOSE that is focused on it – applications in the systems we develop and AI as applied to the environments we use for Systems Engineering."

It's one of the things on which the team could agree.

"I always find that the hardest part of any project is bringing people together and establishing consensus," Roedler said. "But we had a really superb team – a diverse set of experts."

Systems Engineering Vision 2035 is an important road map to the future of Systems Engineering.

SYSTEMS ENGINEERING VISION 2035

"We need to move the needle on systems engineering to prepare ourselves to make change in a relatively quick and efficient manner," he said. "We need to engineer systems that not only meet the user's needs but can evolve as the user's needs change."

Roedler stressed that this vision should not be limited to INCOSE. The document should be part of bigger conversations.

"INCOSE is a facilitator, but not necessarily leading every piece of it," he said. "We want to work with others."

Roedler is adept at working with others. He was a Senior Fellow and the Engineering Outreach Program Manager for Lockheed Martin. He also held key leadership roles in several industry associations and standards development organizations, including chair of the IEEE Joint Working Group for DoD SE Standardization; editor

of ISO/IEC/IEEE 15288, Systems Life Cycle Processes and several other standards; and key editor roles for the Systems Engineering Body of Knowledge and the INCOSE Systems Engineering Handbook.

The publication of Systems Engineering Vision 2035 can bring together many players to make progress on a broad effort to work on global challenges.

"Through INCOSE and our collaborations, we can set a research agenda that aligns well with the Systems Engineering Vision 2035," he said.

These are the first articles that form part of a series highlighting the origins of the Systems Engineering Vision 2035 and its team leaders.

Access the Systems Engineering Vision 2035 website on www.incose.org/sevision

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Marilee Wheaton, INCOSE President, holding her copy of Systems Engineering Vision 2035 at IW2022

About the Interviewer

Beth E. Concepción works for Missouri University of Science and Technology and also is a journalist with more than 30 years of experience in print and broadcast media.

Her day job involves creating corporate and professional educational opportunities at an engineering-focused public university, and she has more than 20 years of experience in senior positions in higher education administration. Concepción earned a B.A. from Oglethorpe University, a B.S. from Mississippi State University, an M.A. and M.F.A. from SCAD, and a Ph.D. from the University of South Carolina.

SYSTEMS ENGINEERING

VISION 2035

ENGINEERING SOLUTIONS FOR A BETTER WORLD

Free online at <u>incose.org/sevision</u>

India Chapter

Kalpesh Sawant, **INCOSE India,** sawantkalpeshk@gmail.com

Various activities have been taking place at the India Chapter; such as the webinar series, a joint summit on MBSE & a joint summit on AI. These have helped to advance the mission of the India chapter to become the epicenter of systems engineering activities in India, and promote INCOSE in India.

The INCOSE India Chapter is determined to increase its presence in the Indian Academia & Professional sectors for the year of 2022 and with this vision, the India chapter has started the activities mentioned below:

Manipal MIT

The India Chapter has worked extensively with faculty members at MIT Manipal and is jointly collaborating towards their minor program in systems engineering. The university, under MAHE, has introduced the minor program in systems engineering from the year 2022. This is a one-year program consisting of four subjects covering systems engineering & MBSE. Students have already enrolled for this course. Dr.Yogananda Jeppu & Dr Ramakrishnan Raman are adjunct faculty in the institute, and have started conducting classes. These classes are also attended by faculty members who will teach the courses from next year onwards.

State of SE Survey

The India chapter has initiated a survey jointly organized with BLUEKEI solutions in January 2022.

The outcome of the survey will help in understanding the current state of systems engineering in India. The survey result will be used as a baseline for annual surveys, which can be carried over to gather information about systems engineering trends, expectations, challenges & best practices in India.

This would be also helpful in finding systems engineering opportunities for growth of disciplines in India; which can be used by the global systems engineering community.

Membership updates

The India chapter has observed a 20.1% increase in membership from the year 2021. 28 new members have joined the chapter and membership count increased from 169 to 203!

INCOSE INDIA LinkedIn Group

INCOSE INDIA Website

New Zealand Chapter

Christian "PJ" Parra-John, **INCOSE NZ,** christian.parra-john@shoalgroup.com

INCOSE (NZ) resolves to form an Incorporated Society and apply formally to become a Charted Chapter of INCOSE

Kia ora tātou! The systems engineering community in Aotearoa (New Zealand) has taken a major step forward early in 2022. We are very pleased to announce that 20 of the 33 current members of New Zealand's "Emerging" INCOSE chapter have together agreed to proceed with chapter formation! INCOSE (NZ) held a General Meeting on 1 February 2022 to vote on 3 things:

Should INCOSE(NZ) resolve to become an Incorporated Society under New Zealand law?

Do we agree with the Constitution as drafted and required to become an Incorporated Society?

Do we agree with the Chapter Bylaws as drafted and required to become a Chartered Chapter of INCOSE?

Jess Tucker led the meeting and provided background information for each question put to the membership. All 20 members present voted unanimously in agreement!

An Interim Leadership Committee was proposed with no objections made by those present. The appointed interim officers are:

- **President**, Christian Parra-John (Shoal Group)
- **Vice-President,** Jess Tucker (Beca Applied Technologies)
- **Secretary**, Steve Wallace (L3Harris)
- **Treasurer**, Thomas McKay (Beca Applied Technologies)
- **Additional Member**, John Welford (WSP)

We are extremely happy that after over 3 years of promoting INCOSE, recruiting members through community engagement, and raising the profile of systems engineering here in New Zealand, we are finally able to take our place on the international stage as a community represented within and supported by INCOSE. New Zealand's systems engineering community may be small, but it represents multiple domains (defence, aerospace, aviation, energy, transport, rail, and more), representing over a dozen organisations and institutions. INCOSE (NZ) will continue to foster connections between members, to support the adoption of systems engineering practices in new areas, and to help New Zealand achieve better holistic outcomes through systems thinking.

Next steps are to make the formal applications for both Incorporated Society and Chartered Chapter. Our monthly "INCOSE (NZ) Meet-Ups" will resume in March 2022 and will feature speakers and presenters from across New Zealand and Oceania.

To find out more about INCOSE (NZ) events or to connect with our community of practitioners, join us on our slack channel: Slack | general | INCOSE New Zealand

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Congratulations!

The INCOSE Board of Directors has voted to charter the INCOSE New Zealand Chapter! Great job to the New Zealand team, you organized and achieved the chartering requirements very quickly and with great energy and style!

Tony Williams, ESEP
INCOSE New Chapter Coordinator

Korea Chapter

Joong-yoon Lee, **KOSSE,** leejy@ajou.ac.kr

The 2021 Fall Conference to commemorate the 10th anniversary of the Korean Society for Systems Engineering was organized on 3-4 December 2021. The theme of the event was "Application of Systems Engineering on ESG (Environment, Society and Government)". The event was organized at Seoul National University B/D 38 and Virtually via (Zoom). The event featured two keynote Lectures on ESG and three Special Lectures on Digital Technology Application. Over 31 Papers were presented, and 43 teams participated in the System Innovation Invention Contest.

Prof. JooYeoun Lee has been elected as the new President of the Korean Society for Systems Engineering (KOSSE) for a two-year term.

BOD of KOSSE

Plenary Session

New President's Inaugural Address

BOD Dinner

Latin America Chapter

Jaime Robles Pardo, INCOSE LATAM (América Latina), jaime.roblespardo@incose.net

INCOSE LATAM, the newest chapter of INCOSE, are happy to unveil their new logo. After a vote the following logo was chosen as the new logo of the Latin American chapter:

INCOSE LATAM has now held two informational meetings. The first one in mid-December 2021 and the second one in mid-February 2022, both with approximately 30 participants. Here are the recordings of them in our new Youtube Channel: https://www.youtube.com/channel/UCQMD0bhMttHeO2w0IGjnIww

So far, we have people participating from seven Spanish-speaking countries and a wide array of sectors including aerospace, defense, academia, astronomy, automotive, etc. Also, our friends from INCOSE Brasil have been actively supporting our effort.

We are adopting Spanish as our official language (as much as we can) to overcome the English language barrier that sometimes prevents people from the region in becoming more involved in the Systems Engineering community.

Additional milestones besides the logo include the creation of an Advisory Committee and a Core Team (6 members from Argentina, Chile, Colombia and Mexico).

At the moment, we have a directory with 45+

people. As you can imagine, only a fraction of them are INCOSE members, so our next meetings will focus on demonstrating the value that INCOSE provide to its members.

INCOSE LATAM's current core team is:

Adrián Unger, Argentina

Jaime Robles, Chile

Nelson Ruiz, Colombia

Diego Bernal, Colombia

Gengis Toledo, Mexico

Alder Pérez, Mexico

INCOSE LATAM LinkedIn Group

INCOSE LATAM Youtube Channel

Videos in Spanish: translation available using YouTube closed caption translation

UK Chapter

INCOSE UK, publications@incoseuk.org

Annual Systems Engineering Conference (ASEC) 2022

We are proud to announce that ASEC 2022 will be taking place at the Crown Plaza, Newcastle, UK on 22nd and 23rd November 2022.

Newcastle is an outstanding location for this year's ASEC. As well as being a vibrant and thriving city with excellent air and rail links, it is a good location for the Northeast and Scottish groups and there is an engineering faculty at Newcastle University.

The NewcastleGateshead Convention Bureau have been very welcoming and are keen to host our event. So, we look forward to seeing you in Newcastle for ASEC 2022.

The event website is now live:
www.asec2022.org.uk

Theme

The theme for ASEC 2022 is "**Building toward a brighter Future**" and within this we will be exploring the following topics.
• Exploiting Change and Transformation
• Moving the Systems Engineering Profession forward
• Developing Professionals for the future
• Embedding a Systems Approach in the UK

Call for Content

The ASEC call for content guide is now available on the ASEC 2022 website.
The guide covers the ASEC 2022 structure as well as the call for Papers and Tutorials. It also discusses the submission review process, the anatomy of how to write a good paper, deadlines

and other information.

You can access the guide here.

Endorsed Training Provider Virtual Event

A virtual training event will take place on the 12th April 2022. Scarecrow Consultants will be running their "A Model-Based Approach to Systems Engineering" course via Zoom.

This introductory module establishes the need for MBSE, introduces the MBSE Mantra of People, Process & Tools, gives an overview of MBSE in One Slide and discusses the evolution of MBSE in your organisation. This event, open to members and non-members, and will be run by Scarecrow Consultants Ltd. More details on the course can be found here.

The course will run for 3 days and the cost of the course, for each delegate is £960 + VAT for members and £1,200 + VAT for non-members. If you are interested in attending, please email events@incoseuk.org.

Endorsed Training Provider Live Event

We are pleased to announce that the first INCOSE UK Endorsed Training Provider event will take place between 5th – 7th April 2022 at Marsh Farm Hotel, Royal Wootton Bassett, Swindon, UK.

This event will be run by two of our registered Endorsed Training Providers – Burge Hughes Walsh Ltd and Scarecrow Consultants Ltd.

Burge Hughes Walsh will be running a course entitled "Systems Engineering Fundamentals Course" which focuses on the concepts, principles

and practices of Systems Engineering to give attendees both an understanding and specific knowledge to apply Systems Engineering to the design of complex systems.

Scarecrow Consultants course, "A Model-Based Approach to Systems Engineering" aims to improve Systems Engineering though the use of MBSE, achieve improved communication, enhanced understanding and how to minimize complexity through use of modelling, how to implement MBSE into a business and above all improve confidence for the delegates, their teams, business and clients.

Each course will run for 3 days with 8 - 15 delegates. The cost of the course, for each delegate, is £1,200 + VAT for non-members and £960 + VAT for members. The booking system with full course details is now open.
Book your place here.

Professional Development Online Sessions

In order to provide information and guidance, we have set up a series of interactive Professional Development Zoom sessions. These sessions are open to all and there is no requirement to be a member in order to attend. The following sessions are available to book by emailing profdev@incoseuk.org.

- 13 April 2022 - Professional Registration Transfers, Additional Membership and Dual Registration Clinic
- Professional Registration Webinar (UK Spec v4)
- 18 May 2022, 15 Jun 2022, 13 July 2022, 16 November 2022
- 17 August 2022 – Interview Preparation Clinic
- 14 September 2022 – SEP Certification Clinic
- 12 August 2022 – C/D/E Competences Clinic

ECF Handbook Series

The Early Careers Forum have put together a series of sessions taking a look at the INCOSE Handbook. The second session will be taking a

look at the concepts presented in Chapter 3, Generic Lifecycles. Topics that may be covered in this session include:
- Characteristics of lifecycles
- Stages of a lifecycle (concept through to retirement)
- Lifecycle approaches (iterative, sequential)
- What is best for your organisation/team/project?

There will also be an expert panel on hand to bring these topics to life. To book, navigate to the event in the INCOSE UK event calendar.

ePreview: INCOSE UK Newsletter

The latest issue of ePreview has just been released and contains more information about ASEC 2022 and reveals the INCOSE UK 2021 Membership Survey results.

There are also more details about the Endorsed Training Provider Events, and we take a look at Certification and Registration with INCOSE UK.

The newsletter is available on the INCOSE UK website.

Requirements Working Group (RWG)

Tami Katz, Requirements Working Group Chair, tami.katz@incose.net

It has been a busy time for us in the RWG. The first of our new publications is now available in the INCOSE Store, please download a copy of the Needs, Requirements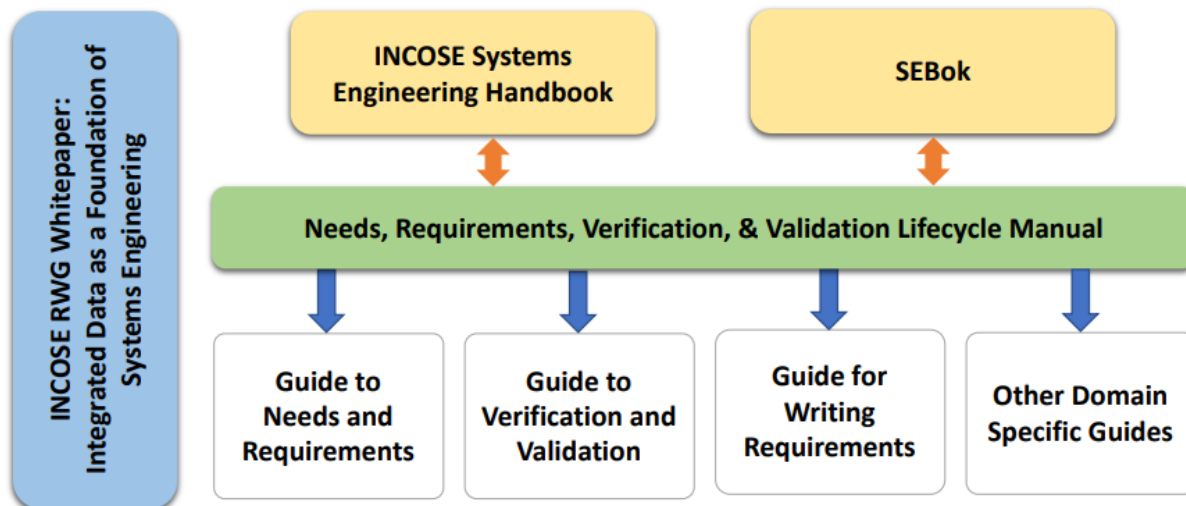, Verification and Validation Lifecycle Manual (NRVVLM) and put it to use. We appreciate any INCOSE member feedback so that we can continue to improve it with future updates.

Our other new products, the *Guide to Needs and Requirements* and the *Guide to Verification and Validation*, are in final review; we expect them to be published in the INCOSE store by April 2022. These Guides will help the user with application of the NRVVLM, giving guidance on practical application, examples, and checklists. This fits into our larger portfolio of working group products, which provide a rich body of knowledge for all things Needs and Requirements! The entire product structure shown below, including how the manual and guides, align with the INCOSE Systems Engineering Handbook and SEBoK. We are pleased that these new products are also able to support the CAB needs as we aim to provide value to the industry and academic community.

We also held virtual sessions prior to IW2022 which were supported by some amazing speakers! The set of topics are highlighted below, and you are welcome to check out the recordings at our INCOSE RWG YouTube Channel "RWG IW2022 Sessions". Please subscribe to get notifications of new material:

- "Ontologies as a Cornerstone to Merge Knowledge from Models and Documents" by Ilyes Yousfi (ReUse Company)
- "Introduction to EARS (Easy Approach to Requirements Syntax)" by Alistair "Mav" Mavin
- "The Digital Thread - Enabler of Automated Requirement Quality Assessment" by Henrik Mattfolk
- "Requirements and Verification Management Using SharePoint Tools" by Tony Williams

INCOSE RWG Whitepaper: Integrated Data as a Foundation of Systems Engineering

INCOSE Systems Engineering Handbook

SEBok

Needs, Requirements, Verification, & Validation Lifecycle Manual

Guide to Needs and Requirements

Guide to Verification and Validation

Guide for Writing Requirements

Other Domain Specific Guides

- Panel discussion on "Today's tools gaps, upcoming tools gaps, and new capabilities that vendors should be paying attention to? (discussion)" by speakers from Jama Software, Zuken and Vitech
- "How to Be Successful in the Absence of Requirements" by Ron Carson
- "Needs, Requirements, Verification and Validation Lifecycle Manual Overview" by Lou Wheatcraft

RWG Chair Tami Katz and Co-Chair Lou Wheatcraft hosted a discussion at the Hybrid IW2022 to provide highlights of our busy 2021 and focus for 2022.We appreciated the support of those that were able to attend (a highlight below shows Tami in the room with participants, both in person and the Zoom monitor of the virtual attendees).

Coming up in 2022, the RWG is planning regular Working Group Exchange Cafes and guest speakers. Thank you to all the great input from our RWG community, and we look forward to continuing our dialog on Needs and Requirements!

Needs, Requirements, Verification, Validation Lifecycle Manual

January 2022

Download here

Call to Action - Share and Release

The Marketing and Communications Team is asking for the support of members, to help us spread INCOSE's message of *'A better world through a systems approach'* – to help you do this, we will be introducing a new form of communications to members, called *'Share and Release'.*

A Share and Release is like a Press Release but is tailored for members to use. The aim of the document is to give you information on a particular topic along with quotes from the relevant board members, leader and experts, which you can then share with others. They will include images and suggested Social Media posts.

All of us have our own networks which will include engineers who have not engaged with INCOSE, and we believe people engage more with a message that comes directly from a colleague, leader or expert from within their organization or networking group.

The first Share and Release is about *SYSTEMS ENGINEERING VISION 2035*, one of INCOSE's key initiatives, please help us spread the word to help create *'ENGINEERING SOLUTIONS FOR A BETTER WORLD'.*

Lastly if you have any media contacts, we would be grateful if you shared their details with us, so we can continue to grow our media contacts database by email to marcom@incose.net

INCOSE Awards

Awards presented at the International Workshop 2022 (IW2022)

Program Management Systems Engineering (PM-SE) Integration Working Group

Co-Chairs: John Lomax, Jean-Claude Roussel, Tina Srivastava

"The PM-SE Integration Working Group was formed in 2016. In these past 5 years, the WG has developed into a strong and influential group with key strategic collaborations within and outside INCOSE. Over this past year, the WG co-chairs worked closely with SE Handbook and working group leaders coordinating over a dozen expert WG members that contributed to multiple sections of the SE Handbook.

Presentations have also been made to multiple chapters around the world where they solicited new members, compared the SEH and PMBoK, and promoted the importance of Product Breakdown Structures. Outside of INCOSE, the PM-SE WG continues to work in close collaboration with PMI in the continuity of the PMI-INCOSE Alliance to establish strong foundations for integrating PM and SE disciplines."

Systems and Software Interfaces Working Group

Chairs: Jeannine Siviy, Nickolas Guertin, Sarah Sheard (founding chair)

"Vision 2025 calls for a systems engineering future that is broad in its reach: any system may benefit from sophisticated model-based understanding and decision-making, from inception to retirement. Realities of software and data are threaded throughout the Vision. Sarah Sheard founded the SaSIWG to ensure that we interface well with software, in all relevant dimensions, as it is critical to our future success. Over the past 16 months this group has led active monthly discussions, created an internal awareness video about the WG, hosted two book clubs, received a Best Paper Award, and published a special themed issue of Insight, reflecting foundational work and perspectives on business, organizational, process, and technical dimensions of systems and software interfaces. The Systems and Software Interfaces Working Group has significantly contributed to achieving the Systems Engineering Vision and continues to do so in their planned goals for the coming year."

Systems Engineering Tools Database Working Group

Co-Chairs: John Nallon, Stephane LaCrampe, Rene King, Robert Halligan

"The INCOSE SETDB Working Group, in partnership with Project Performance International (PPI) under a Memorandum of Understanding, developed and published the "INCOSE/PPI Systems Engineering Tools Database (SETDB)" to provide our stakeholders with current information regarding systems engineering software tools and cloud services. The SETDB provides the systems engineering community a reliable source of information about software tools they are using or wish to use while executing their business processes throughout a product lifecycle. The SETDB working group applied systems engineering and good project management to great effect, and subsequently delivered a product and service of high quality and high value to INCOSE's stakeholders."

Infrastructure Working Group

Chairs: Alain Kouassi, Marcel van de Ven, Laura Uden

"The Infrastructure Working Group (IWG) was formed in 2005 and has regularly established and met goals for collaboration and product development. All these efforts have involved multiple Infrastructure members collaborating on the development and review of guides, handbooks, leaflets, presentations, and models spanning more than a decade of delivered value. The Guide for the Application of Systems Engineering in Large Infrastructure Projects (Version 1, June 2012) was well received with an updated version to be completed in 2022 as an Appendix to the Systems Engineering Handbook, Version 5. In addition to INCOSE products, collaboration and outreach efforts have been sustained through external organizations such as NETLIPSE* and internal working groups (Smart Cities, Architecture, Transportation, Telecom, and Critical Infrastructure)."

Human Systems Integration Working Group

Co-Chairs: Guy-André Boy, Grace Kennedy

**"*The HSI working group has shown an increase of membership and activities across various INCOSE events (IW, IS, EMEA) and in the recurrent HSI conference series organized with other parties such as ACM, IEA, and AAE*. WG Chair Guy-Andre Boy additionally serves as the Outreach Ambassador for the EMEA sector and the INCOSE Outreach Relationship Manager for the International Ergonomics Association. Through these alliances, conferences, workshops, webinars, and keynotes, more than 3500 professionals from over 24 countries were involved through the HSI WG this past year, expanding the global reach and further development of INCOSE expertise and influence."*

MBSE Propeller Hat Award

Presented to Phil Zimmerman

"Ms. Philomena (Phil) Zimmerman for motivating change to bring MBSE out of the basement. As the Director for Engineering Tools and Environments within the Department of Defense Office of the Deputy Director for Engineering. Her portfolio includes Digital Engineering, Engineering Infrastructure, Chief Information Officer collaboration, and model and simulation technical leadership. She supports elements of the Office of the Under Secretary of Defense for Research and Engineering (OUSD (R&E)) related to policy, practice, and workforce development, as well as the R&E use of digital methods

All change from one state to another requires interaction and energy. When you think of Digital Engineering, the first name and voice that comes to mind is Phil Zimmerman. She has been a catalyst for change – an evangelist, change agent, conductor, motivator, and connector of many. She has helped spin up several INCOSE activities and motivated and connected many to advance Systems Engineering and Digital Engineering."

MBSE Propeller Hat Award

Presented to Dr. Dov Dori

"For developing the Object Process Methodology (OPM), for which he received the Technion Klein Research Award and the Hershel Rich Innovation Award. He is IEEE Fellow, International Association for Pattern Recognition (IAPR) Fellow, and INCOSE Fellow. He is known in INCOSE for numerous presentations, papers, and books published in the fields of conceptual modeling of complex systems, systems architecture, and design.

In addition to contributing a language, method, and tons of research in Systems Engineering, Dr. Dori is also a passionate leader, mentor, and teacher. There is only one appropriate way to express why Dr. Dori is receiving the Propeller Hat Award – How Dr. Dori Saved The World"
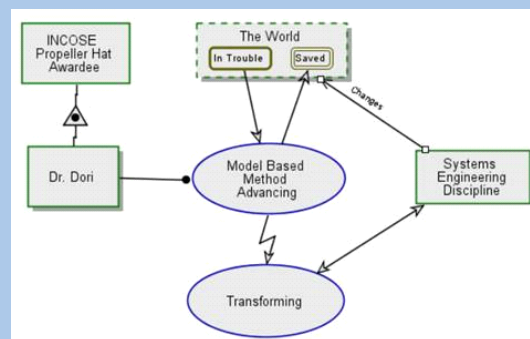
For over 20 years, INCOSE has worked alongside KMD Events to bring you a range of forward thinking and exciting events. IW2022 was no exception! We would like to thank KMD Events for working tirelessly to bring this hybrid event to life and ensuring that delegates in both Torrance and in their homes across the world were able to take part.
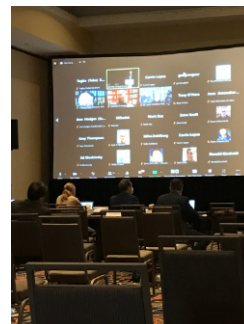
INCOSE Certification Program Update

Courtney Wright, Certification Program Manager, courtney.wright@incose.net

The Program

INCOSE's Academic Equivalency Program allows university coursework to replace the INCOSE knowledge exam. Since its start in 2018, 15 university programs have been recognized with Academic Equivalency.

Courtney Wright is a Certified Systems Engineering Professional (CSEP) and the Program Manager for INCOSE's Certification Program. To find out more about the program visit: https://www.incose.org/systems-engineering-certification/certification-agreements/equivalency-programs

Internship

Courtney works with interns who help with the delivery and development of the program. Morenikeji Araloyin has recently completed his internship with Courtney.

"Morenikeji is my fourth intern. I have one every "summer," which means two per year given the two world hemispheres. Though Morenikeji lives in the Northern Hemisphere (US), he ended up being available during the winter between getting his master's degree and starting his PhD program.

Morenikeji led a review of the Certification Program's 3-year-old Academic Equivalency program. He interviewed the university partners in this program, capturing their experiences and reporting back to them on how their outcomes compared with those of other universities. His capture of the as-is state of the Academic Equivalency program is an important contributor to the program's future growth, including process changes as well as market expansion."

When asked about his two proudest professional accomplishments Morenikeji answered:

"I am proud to have received a Systems Engineering master's degree this past Fall as a systems engineering career has always been my high professional priority. I am most proud to have gained skills to develop and manage large-scale complex systems."

INCOSE would like to thank Morenikeji for all his time and dedication and wish him continued success with all his future endeavors.

Morenikeji Araloyin, INCOSE Intern

Morenikeji Araloyin is a current PhD student in Systems Science at Binghamton University. His research interests include complex systems, cyber-physical systems, and system dynamics. He previously worked as a Quality Assurance Engineer prior to joining INCOSE in December 2021 as an intern. He has a bachelor's degree in Mechanical Engineering and a master's degree in Systems Engineering.
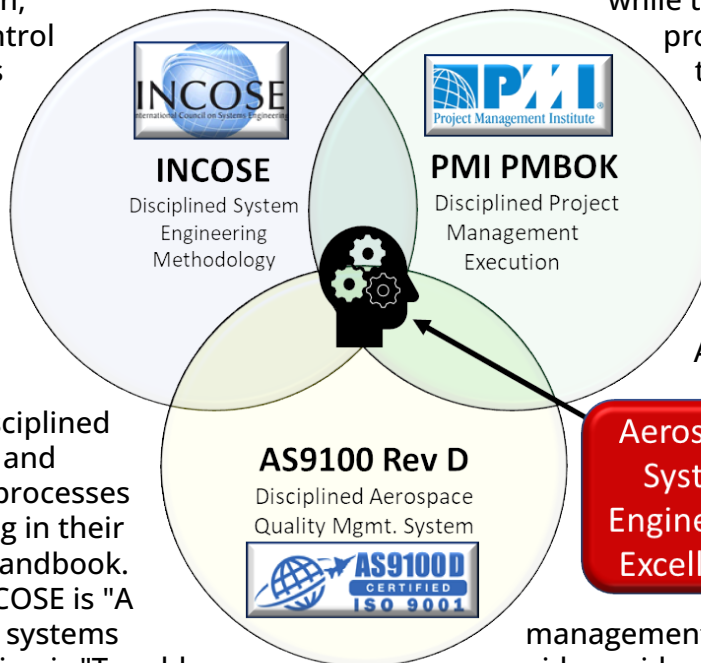
The Pinnacle of Systems Engineering Excellence in Aerospace Organizations is the Confluence of INCOSE, PMI, PMBOK, and AS9100 Rev D Disciplines, Values and Processes

William E. Fawcett PhD, PMP, ESEP - On behalf of KBR Inc.

The intersect of the International Council on Systems Engineering (INCOSE), Aerospace Standard AS9100 Rev D and the Project Management Institute (PMI) Project Management Book of Knowledge (PMBOK) disciplines, provides the "optimal sweet-spot" for Aerospace companies to command robust and controlled methods and processes in conceiving, designing, evolving, managing, controlling, and developing System Engineering Projects. Successful evaluation of Concept of Operations (CONOPS), requirements planning, Scope/Cost/Schedule control, Product development, validation, verification, quality control and compliance results in Aerospace Systems Engineering Excellence and outstanding Project Execution.

INCOSE System Engineering Handbook

INCOSE promotes a disciplined approach to managing and controlling the critical processes for Systems Engineering in their Systems Engineering Handbook. The stated vision of INCOSE is "A better world through a systems approach" and its mission is "To address complex societal and technical challenges by enabling, promoting and advancing systems engineering and systems approaches". A key goal of INCOSE is to assure the establishment of competitive, scale-able professional standards in the practice of systems engineering embracing disciplines that intersect and embrace the core elements of AS9100 Rev D and the Project Management Institution (PMI) Project Management Body of Knowledge (PMBOK) Guide.

This overview explains how the intersect of these three organizations commands a "Space" for the optimization of Aerospace Engineering Excellence (AEE). INCOSE adopts and expands upon the systems engineering processes described in ISO/IEC/IEEE 15288:2015. The processes in 15288 are divided into 4 functional categories covering Technical, Management, Agreement and Organizational project-enabling activity. The technical processes are the activities directly associated with the definition, design, development, delivery, and support of the system while the Management Agreement processes are those executed by the project team to manage the endeavor, its information, and the components that result in a new or revised system. These processes include Project Planning and Control, Risk, Configuration, Metrics and Quality Assurance. The Organizational Project Enabling Processes of 15288 address Lifecycle, Infrastructure, Portfolio, Human Resources, Quality and Knowledge management processes. INCOSE also provides guidance on Design for X and Cross-Cutting techniques embracing Modelling and Simulation, Prototyping, Interface Management, Lean, and Agile System approaches. Many of the INCOSE disciplines are promoted as core processes within the PMI PMBOK and compliance to the AS9100 Rev D standard. This overlap of disciplines provides an intersect capability for Aerospace Organizations to excel in Aerospace Systems Engineering Excellence.

AS9100 Rev D Aerospace Standard

The AS9100 Rev D standard is used by organizations that design, develop, or provide aviation, space, and defense products and services; and by organizations providing post-delivery activities, including the provision of maintenance, spare parts, or materials for their own products and services. The adoption of a Quality Management System (QMS) is a strategic decision for an organization that can help to improve its overall performance and provide a sound basis for sustainable development initiatives. The potential benefits to an organization on implementing a QMS, based on AS9100 Rev D, are the ability to consistently provide products and services that meet customer and applicable statutory and regulatory requirements, to facilitate opportunities to enhance customer satisfaction, to address risks and opportunities associated with its context and objectives and to demonstrate conformity to specified QMS requirements.

The QMS principles promoted in AS9100 Rev D cover leadership, engagement of people, a disciplined process approach, continuous improvement, risk-based thinking, evidence-based decision making and relationship management. The key to AS9100 Rev D is understanding and managing interrelated processes as a system which contributes to the organization's effectiveness and efficiency in achieving its intended results. This approach enables the organization to control the interrelationships and interdependencies among the processes of the system, so that the overall performance of the organization can be enhanced and aims at taking advantage of opportunities and preventing undesirable results. This AS9100 Rev D system approach is totally consistent with INCOSE's Vision and Mission philosophy.

Project Management Institute (PMI) and the Project Management Body of Knowledge (PMBOK)

The PMBOK is a framework of standards, conventions, processes, best practices, terminologies, and guidelines that are accepted as project management industry standards. The PMBOK refers to the five process steps of project management: initiating, planning, executing, controlling, and closing. The PMBOK promotes Knowledge Processes covering Project Integration, Scope, Schedule, Cost, Resource, Communication, Risk, Stakeholder, Procurement and Quality Management. Quality focus is based on Prevention rather than Inspection, Total Quality Management and Lean Six Sigma. Alignment to INCOSE embraces numerous tools and techniques governing the clean execution of a comprehensive and complex project such as a systems engineering project. Every aspect of the PMBOK is fully complementary and aligned with AS9100 and INCOSE disciplines.

Aerospace Organizations, operating under the governance of INCOSE, AS9100 Rev D and PMI PMBOK disciplines, will essentially have a sustained culture that assures robust quality-controlled processes, effective project management and overall systems engineering excellence. INCOSE systems engineering principles elevate efforts to ensure that product development, delivery and support are executed for optimized Life Cycle Cost and consistent Customer Satisfaction. AS9100 Rev D instills a Culture of Quality and Continuous Improvement while PMBOK guides the organization in Project Management execution controlling scope, cost, schedule, interface, and risk management. The combination of these three organizational and system orientated disciplines is a synergistic and powerful toolset for any Aerospace Organization delivering robust Systems Engineering, Quality and Project Management excellence.

Systems Engineering Handbook
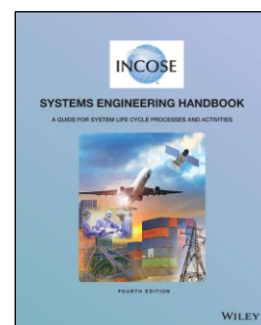
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Staying Safe in Computerland

Barclay Brown PhD, ESEP, INCOSE CIO

There are two things that break my IT heart. One is people wasting valuable time doing work on their computers that could be done so much faster and better if they knew better how to use what they have and the other, much more serious, is people getting in trouble online due to scammers and hackers. In this brief article, I want to give you my top ten rules for staying safe online, and helping your friends and family stay safe.

1. Don't reuse passwords. This one rule will protect you from serious computer harm due to the various security intrusions that you read about or are notified about in messages from the online services you use. A quick parable will illustrate. You join your local garden club, run by a nerdy fellow named Seymour who in addition to being a gardener is also an amateur programmer. He sets up a cool little web site for his members and writes all the software himself for people to set up accounts, log in, and keep records of their gardens online. Great. But Seymour isn't experienced enough to properly encrypt and store the passwords users use when they create accounts on his system. You don't know about his inadequacies, so you create an account on his system with your email address and a password—still no problem. For convenience, you, like many people, use the same password for many web sites, including your email account. A budding hacker Elliott at the local high school is trolling around for poorly secured web sites and discovers Seymour's garden club site—in fact he finds it because the principal of the high school brags about his garden and Elliott reasons this could be a way to get back at that principle for some recent, unreasonable, disciplinary actions. Elliott easily finds Seymour's password file and grabs your email and password, along with the principal's, and many others. Next, Elliott tries the same emails and passwords on other sites, like email systems, banking systems, and social media. If any of Seymour's garden club members have used the same email address and password on those sites, Seymour is in. Avoid all of this by using DIFFERENT passwords on EVERY system or web site that you use, especially your banking and email systems. This little story happens ALL the time. For a particularly gripping example, see They Told Their Therapists Everything. Hackers Leaked It All. (https://www.wired.com/story/vastaamo-psychotherapy-patients-hack-data-breach/).

2. Password vaults from prominent companies are safe and should be used. How are they safer then Seymour's garden club site? Can't hackers just hack the password vault's system? That's very unlikely—password vault companies are extremely focused on security—it's their business. They make sure your passwords are impossible to find out. See PC Magazine's recommendations for password vaults at (https://www.pcmag.com/picks/the-best-password-managers).

3. The worst password for someone to find out is not your banking password—it's your email password. With your email password, it is usually possible to reset every other password you have, including every bank password you have.

4. Use two-factor authentication on important systems, which include your email system and banking system, ideally with a convenient authenticator app (Google, Microsoft or other third party like Duo). Two-factor authentication ensures that even if someone

gets your password, they can't get into your systems. Authenticating with a text code is not bad, but authenticators are safer from hacking.

5. Never, and I mean never, believe anyone calling or emailing you and asking for a password: "Hi, this is Sarah from IT support; I need your login information so I can perform some routine maintenance" –you might be surprised how often this works in large company settings.

6. Never, and I still mean never, believe anyone on the phone who needs to access your computer remotely to work out a refund for you, erase a virus, or some other pretense. They have very clever ways of fooling you, or your loved ones, into believing that you suddenly owe them money, and every day they get people to send them untraceable and irreversible money through gift cards or crypto currencies. These scams target the elderly and computer-naïve, so be sure your loved ones are aware.

7. Do not write your passwords down in a nice leather-bound notebook labeled passwords (Amazon has some lovely ones for sale), and leave it on your desk. Use a password vault, or a very well-hidden hardcopy, and encrypt your password cheat sheet, if you must have one, with software or with a code you invent. For example, add a special punctuation mark or change some letters in the passwords you write down—only you know how to decode and use them.

8. Back up your data. In case of computer failure, fire, theft, or even a ransomware attack, the worst damage is to lose all your stored data. If your data is stored in cloud services like gmail, outlook.com, Facebook, SmugMug, or your bank, then no backup is needed (except if those services periodically delete data and you want to keep it permanently). But, if you keep the draft of your new book, photos of your wedding, or important business records on your computer, you must have a backup—and not just one. Follow the 3-2-1 backup strategy.

Have three copies of everything, using at least two different media types (hard drive, USB drive, online storage) and have at least one copy located off-site, away from your computer or phone. For example, every week copy your data to a portable hard drive. When you visit your mother, take her the drive and ask her to hide it for you. Then backup to a new portable drive the next week. On the next visit to Mom's, switch the drives and do your next backups on the original drive. This way, a computer failure would lose only a week's work, while a fire or theft would lose only months (you do visit your mother every few months, don't you?) Online backup to Microsoft OneDrive or Google Drive is also fine. As they say, if you have only one digital copy of something, you don't really have it.

9. Make sure important information on your phone is stored in the cloud, too. For most people, this means photos. It's common to have years of photos on your phone and unless you have backed it up, or use a cloud photo app like Google Photos, the loss of your phone through damage, theft or sudden failure (my last phone died suddenly with no warning), you could lose important memories forever. Google Photos handles it all for you, and it's still a great choice, but for alternatives, see https://www.pcmag.com/news/google-is-killing-free-unlimited-photo-storage-7-alternatives.

10. If you can, keep your data on a hard drive separate from the main drive in your computer. That way, a computer failure doesn't lock up all your data inside it. For around $20 you can get a tiny 128GB USB drive for your laptop that will store all your regularly used data. At home, $100 will get you a usb-connected one terabyte solid-state hard drive (SSD). If you keep anything sensitive on it, like perhaps an unprotected password cheat sheet, encrypt the drive with Microsoft BitLocker or the equivalent.

Stay safe (and productive) out there on the interwebs.

Dr. William Ewald Obituary

In January 26, 2020, as the world started its pandemic lockdown, INCOSE lost a quiet, kind, articulate, gregarious, and generous behind-the-scenes leader, visionary, and mentor - William (Bill) Ewald, PhD. He suffered a stroke in 2015, initially losing his ability to walk, and then essentially losing one of his greatest assets, his ability to speak and share his thoughts in that characteristically gentle voice. These physical losses never deterred him from actively continuing to support and root for INCOSE and The INCOSE Foundation as they continued to grow and thrive.

In his most recent day job as Assistant Professor at Johns Hopkins University, he guided students and companies as they moved forward in their careers and strategies. For INCOSE, he provided strategic guidance and vision first brought on board to "help", then as Director of Strategic Presence and ultimately through his leadership to the Chesapeake Chapter as its President and as founder of The INCOSE Foundation. Bill would likely have considered that as his most significant contribution. His vision and leadership led to its creation, and his role as Chief Executive Officer brought an enthusiastic and successful marketing campaign for establishing and building the Foundation corpus of funds. He served as CEO Emeritus and his name remains on the roster.

John Snoderly, an INCOSE Past President who serves as The INCOSE Foundation Chair and good friend to Bill Ewald remembers him as "a passionate supporter of The INCOSE Foundation that he created. He always had good ideas and thought out of the box. With his sense of humor combined with excellent communication skills, he was extremely skillful in his dealings with the INCOSE Board of Directors as well as the INCOSE Foundation. I admired his passion for doing the "right thing'. When I was President of INCOSE I appreciated his ideas which led to a lot of good from his work with the Foundation. His legacy will live on as long as the Foundation exists. To quote Hellen Keller "What we have once enjoyed we can never lose. All that we love becomes a part of us." will never forget him."

Indeed, that legacy lives on in Bill's many accomplishments and through his friends, family, and colleagues. He had a huge impact. Bob Kenley, former INCOSE Board member and an early Foundation board member, remembered his "generosity in sharing his personal connections and experiences with all of us for the greater good. There were many people who were not members of INCOSE who regarded Bill highly, and regarded all of us card-carrying systems engineers more highly because of Bill."

Bill took time to get to know his INCOSE colleague's families because his close associates became his close friends. Bob Kenley's wife, Barb, recalls his desire to share his wisdom on leadership with INCOSE members, which he articulated in an article in 2013 when he served as President of the Chesapeake chapter:

"A few more words about leadership. I believe that every systems engineer has the potential to be a leader no matter where they sit in an organization or how long their tenure. The ingredients for effective leadership were perhaps captured by anthropologist Angeles Arrian who studied successful leaders around the globe. There are just four tenets:

1. Show up - physically, mentally, emotionally, and spiritually.
2. Tell the truth without blame or judgment.
3. Pay attention to what has heart and meaning.
4. Be open to outcome, not attached to it.

When you think about it, not a bad leadership

prescription for systems engineers - as well as the rest of us." 1

Both Bob and Barb zeroed in on Bill's third tenet, which Bob illustrated with the story of how Bill always looked forward to an INCOSE meeting in Los Angeles so he could find time to visit his cousin Mitch Kupchak. Mitch, who played for the "Showtime" Lakers in Los Angeles from 1981 to 1986, during which period the team won three NBA championships, and later served as an executive with the Lakers from 1986 to 2017 when the Lakers won seven more championships, shared that Bill was both family and trusted friend. "I always enjoyed our time together," says Kupchak, because talking to him was so interesting and informative. I could always count on Bill if I ever needed any guidance or help. I miss him dearly."

Bill Miller noted that Bill Ewald started just as that "helper" but became so much more. "Bill was a North Star or councilor for the organization. (He also used the New Jersey term, consigliare) and served for several years as Director for Strategic Presence through to the term of Paul Robaitaille. He was also influential in the creation of the INCOSE Code of Ethics."

Bill Ewald had the ability to bring a group together and as diligently as he worked, he also played! INCOSE Meetings were often followed by an evening of friendly libation sharing in commodious hotel settings. Bill Miller, now Editor in Chief of INSIGHT, also recalled how, at IW 1997 in Las Vegas, Eric Honor brought Bill Ewald to the BOD meeting, Bill Miller's first as Secretary, in order for Ewald offer his help based on his experience with non-profit organizations. "We went to a local bar with Bill and Jaz (from Vancouver) for 'a beer' and didn't leave until well after midnight," says Miller.

At one meeting at an IW that Bill Miller wasn't able to attend, many years later, Bill Ewald and other Foundation colleagues gathered in the lovely outdoor bar at the hotel in Torrance. According to The INCOSE Foundation Managing Director, Holly Witte, Bill Ewald thought it would be a good idea to phone Bill Miller at home...at midnight in his time zone. Miller took the call in stride and many

laugh-filled minutes filled that beautiful courtyard, which turned out to be just below then INCOSE President Samantha Brown Robataille's room, a fact she brought to our attention the following morning.

"It was important for Bill to know people in different aspects of their lives," says Witte, who met Bill by phone in 2009 when she was being interviewed for her role at INCOSE as Managing Executive. "I was in the parking lot of a man who would ultimately get the job of walnut blasting the paint off of my cedar house in Oregon. Coordinating Bill's schedule made that the only logical time to meet in the interview cycle and he knew where I was. He was as interested in the choice of walnut over sand for the blasting as he was in my background, wanted to know about my home and my life in Oregon. Needless to say, I loved working with him and we became good friends."

While Bill Ewald's stroke and passing may have taken him from our presence, his passion and legacy prevail. "Each time Jim Armstrong and I visited him," says Sutton, "he asked about the state of The INCOSE Foundation, the Chesapeake Chapter, and INCOSE. He continually wanted to know the progress of the Foundation. He also began to build a corpus for a William and Maryann Ewald Program under Foundation auspices. While his life ended too quickly to be here to see that program come into being, with his wife Maryann's guidance, the Foundation will make awards to Inspire and recognize systems engineering application in non-traditional areas and the teaching of systems principles in early education environments.

We remember Bill as an affable, kind, considerate gentleman who knew and valued each of us and our profession. He had a vision for the profession and how INCOSE could contribute to its future. We hope that INCOSE and The INCOSE Foundation can fulfill that vision in his name."

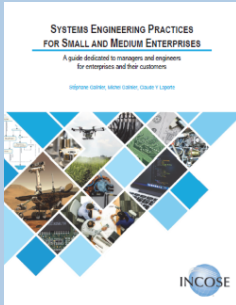**The full obituary can be found on the INCOSE website. Click here to read it.**

Latest Product Releases

The INCOSE store stocks a wide range of publications and guides. Access the INCOSE Store here.

Needs, Requirements, Verification, Validation Lifecycle Manual (NRVVLM)

Download your free copy here: https://bit.ly/3AE2s6s

Systems Engineering Practices for Small and Medium Enterprises (SE4SME)

Purchase your free copy here: https://bit.ly/3MGIMEz

INSIGHT and Systems Engineering Journal can be accessed in the Wiley store. Access the Wiley Store here.

INSIGHT - The INCOSE Magazine

Read it here: https://bit.ly/3MAbU0d

Systems Engineering Journal Volume 25, Issue 1

Read it here: https://bit.ly/3qhBzl6

WILEY

As an INCOSE Member you are entitled to 20% off hardcopy books published by John Wiley and Sons, Inc.

Use the following link incose.org/wiley to access the code at checkout on Wiley's web site in the Wiley bookstore online.

Upcoming Events

We are excited to share with you some of the upcoming INCOSE and Partner events. For more up to date information on INCOSE events visit the events website page: www.incose.org/events

March 24-26, 2022

Hosted by Norwegian University of Science and Technology

CSER 2022 to be held virtually this year

The upcoming Conference on Systems Engineering Research (CSER) will be held in a virtual format hosted by the Norwegian University of Science and Technology on 25-26th March 2022. The PhD colloquia Systems Engineering and Architecture Network (SEANET) takes place the day before on the 24th March 2022. The program and registration will be available shortly.

For more information see Home - CSER2022

March 21-24, 2022

Las Vegas Convention Center (North Hall), Las Vegas, NV

IWCE 2022: Making the Toughest Times Better

This year's comprehensive conference program will focus on industry trends, executive discussions, regulatory reviews, technical instruction, cybersecurity checks and other discussions in various formats from informal roundtables to in-depth training classes.

For more information see www.iwceexpo.com

Upcoming Events

HOTEL RESERVATION OPEN

Event venue: **Detroit Huntington Place** - 1 Washington Blvd. - Detroit, MI 48226

August 16 – 18, 2022
Suburban Collection Showplace
Novi, MI 48374

14th Annual Ground Vehicle Systems Engineering and Technology Symposium (GVSETS) & Advanced Planning Briefing for Industry (APBI)

Call for papers is now open

Submit your papers here

www.ndia-mich.org/events/gvsets

Upcoming Events

Systems Exchange Cafés

The Systems Exchange Cafés are regular monthly virtual meetings run on Zoom. They are intended to be an informal conversation, and attendees can drop in and out to discuss ideas related to systems. Open to all.

Maple Café

11 AM Eastern Time

www.incose.org/maplecafe

Fir Café

9 AM Japan Time

www.incose.org/fircafe

Oak Café

8 AM London Time

www.incose.org/oakcafe

INCOSE UK

INCOSE UK Annual Systems Engineering Conference 2022

22nd & 23rd November 2022

Newcastle upon Tyne, UK

Paper submission now open.

www.asec2022.org.uk

INCOSE Member Newsletter

Who are we? INCOSE is a 19,400 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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