

EXTERNAL EVENTS

Event Ambassador Read Ahead – INCOSE Overview

INCOSE Event Ambassadors are the people that “man” the INCOSE exhibit / booth at an external event or conference. Where do these Event Ambassadors come from? They could be from Outreach, working groups / initiatives in Technical Operations, Chapters, MARCOM, INCOSE Operations (UMS), etc., i.e., from anywhere across INCOSE. These individuals never know what the discussions will be at the exhibit / booth ahead of time and may not know everything about what INCOSE is doing currently, therefore we must provide them with a brief overview of selected INCOSE areas to study before the event (and can refer to it during the event) so everyone is “singing from the same sheet of music.”

SOURCES:

- MARCOM “Why INCOSE? FuSE & INCOSE Overview” brief, 5 April 2023.
- SE Vision 2035 Input from the lead, Sandy Friedenthal.
- Additional membership input from Don York, Secretary.
- Certification input from Courtney Wright, Certification PM.
- Professional Development Portal (PDP) input from Don Gelosh, AscD Education & Training, and Kirk Michealson, PDP PM.
- Services Team input from Richard Beasley, Services Director, and Heidi Davidz, Services Deputy Director.

1. What is INCOSE?

INCOSE is the International Council on Systems Engineering, a professional society for Systems Engineering. *A better world through a systems approach* to connect, learn, lead, and prosper.

INCOSE is the premier choice of systems engineers for professional development. With over 30 years of experience, we are shaping the future of systems engineering. We interact with systems engineers across the globe on a daily basis to set standards.

There are over 21,000 members and CAB Associates with over 120 corporate members, with over 50 working groups, over 60 chapters worldwide, and 75 countries with active members.

2. What is the Mission and Vision for INCOSE?

VISION: A better world through a systems approach.

MISSION: To address complex societal and technical challenges by enabling, promoting, and advancing Systems Engineering and systems approaches.

OBJECTIVE: Global leader for systems engineering professionals for career development.

FUTURE: Lead the future of systems engineering, academically, in emerging domains, and in practice.

3. Why Join INCOSE?

- INCOSE is the global Systems Engineering professional society – providing the opportunity for life-long learning in systems approaches.
- A community of peers, resources for your career, and a place to be a leader.
- INCOSE members stand out and are often sought after as experts. INCOSE members share practices and learn from each other.
- INCOSE members create products, produce events, and represent the organization in international forums.
- INCOSE members increase the body of knowledge and advance the practice of systems engineering.
- Network with over 21,000 members in 75 countries.
- Increase your professional stature with the INCOSE Systems Engineering Professional Certification.

4. What are the INCOSE membership benefits? (Secretary / Membership or MARCOM)

- A global network of colleagues who understand systems engineering.
- Certification opportunities.
- Access to quarterly e-Publications, INSIGHT and Journal of Systems Engineering.
- Electronic version of the Systems Engineering Handbook.
- Collaborate with experts and practitioners **worldwide**.
- Exclusive access to INCOSE iNet, the collaborative space for INCOSE Members Only.
- Member discounted registration to the International Workshop and International Symposium, and discounts to Wiley products.

Join INCOSE by going to <https://www.incose.org/incose-member-resources/join-incose>. Types of membership, membership prices and how to join from other countries are all specified here.

5. What is the INCOSE SE Handbook?

The INCOSE Systems Engineering Handbook describes the state-of-the-good-practice of SE for the global systems community. The result is a comprehensive guide to SE activities across any number of possible systems, projects, and domains. The handbook is led by an international editorial team and supported by over 100 subject matter expert authors. The handbook is published by Wiley and is available in hardcopy, PDF, and eBook formats.

The Fourth Edition was released in 2015. The latest Fifth Edition of the handbook will be released in mid-2023. The main updates to the Fifth Edition include:

- Alignment with the latest version of ISO/IEC/IEEE 15288:2023.
- The addition of several new topics based on inputs from the SE community. Some of the new topics include: foundational topics such as SE principles, SE heuristics, uncertainty, and cognitive bias; additional life cycle methods and approaches such as loss-driven SE, patterns, design thinking, and biomimicry; additional tailoring considerations based on the methodology/approach, systems type, and domain; and SE in practice topics such as professional competencies and soft skills, diversity equity, and inclusion, and SE in relationship to other disciplines.

- Refreshed inputs from the INCOSE Working Groups reflecting their latest principles and practices.
- Single column layout to make the book more accessible.

6. **What is the SE Vision 2035?**

The Systems Engineering Vision 2035 is intended to inspire and guide the strategic direction of systems engineering for the global systems community. This community includes leaders of organizations, practitioners, students, and others serving this community that includes educators, researchers, professional organizations, standards bodies, and tool vendors. This vision can be used to develop strategies to evolve the systems engineering capability of an enterprise or project. This, in turn, will help deal with the continuously changing environment, be more responsive to stakeholders, and become more competitive. The vision can also be used to help direct investments and support collaborative efforts to advance the discipline and grow the skill base to meet current and future challenges. Finally, the reader will gain insights on trends that impact enterprise competitiveness and how systems engineering will respond to these trends, which include the digital transformation, sustainability, smart systems and complexity growth, and advancements in modeling, simulation, and visualization.

The Vision is organized into the following Chapters:

- 1) Global Context for Systems Engineering. Provides the global context for systems engineering. It summarizes some of the key trends and influencing factors that are expected to drive changes in the practice of systems engineering. These factors include: the societal and environmental condition, technology, the nature of systems, stakeholder expectations, and enterprises and the workforce.
- 2) Current State of Systems Engineering. Highlights the current state of systems engineering including systems engineering competencies, practices, foundations, and current challenges. It points to the fact that basic elements of systems engineering apply to all kinds of systems, small and large, but that there is significant variation in maturity across industries and organizations.
- 3) Future State of Systems Engineering. Describes the future state of systems engineering needed to address the changing global context and the current challenges. It addresses the digital transformation and the direction towards a fully model-based systems engineering environment. It touches upon theoretical foundations, and the education and training needed to develop the competent systems engineering work force of the future. It also provides an example of how the daily life of a systems engineer could look in 2035.
- 4) Realizing the Vision. Describes what is needed to realize the vision. It identifies a set of systems engineering challenges, and the high-level roadmaps needed to transition systems engineering from the current state to the future state. It also highlights the need for collaboration among the global systems community to evolve and implement the roadmaps.

7. **What is the Future of Systems Engineering, FuSE?**

The FuSe Mission Statement is:

- FuSE refines and evolves the SE Vision 2035 across competencies, research, tools & environment, practices, and applications.

- FuSE identifies critical gaps towards the vision realization and initiates & supports relevant actions
- FuSE fosters involvement and collaboration within and outside of INCOSE.
- FuSE educates, shares success, and expands.

The FuSE Streams are:

- 1) Vision & Roadmaps – The Systems Engineering Vision and Roadmaps stream continuously refines, evolves, and complements the SE Vision 2035. Furthermore, we create an integrated set of roadmaps.
- 2) Foundation – The SE Foundations stream has its basis in both theory and industrial practice. First goal is to assess the adequacy of the foundations and identify gaps to determine future directions.
- 3) Methodology – The SE Methodology stream guides the advancement of practices, methods, and tools for engineering systems to be fit for purpose.
- 4) Application Extensions – The SE Application Extensions stream integrates social sciences and soft systems into systems engineering practice to address grand challenges.

Learn more at incose.org/about-systems-engineering/fuse.

8. **What do working groups / initiatives do?**

INCOSE has over 50 active Working Groups.

- Working groups are the resource practitioners need.
- Discuss, collaborate, share in person, and online with a wide diversity of interests.
- Create products to advance the state, art and practice of systems engineering.
- Help develop and review international standards.
- Bring value to other INCOSE stakeholders in your interest area.
- WGs run events, workshops, panels and much more.
- Learn more at incose.org/workinggroups.

Some of the working groups are:

- Artificial Intelligence Systems
- Automotive
- Competency
- Human Systems Integration
- Knowledge Management
- MBSE Initiative
- Natural Systems
- PM-SE Integration
- Requirements
- Smart Cities
- Social Systems

9. **What do chapters do?**

Chapters play an essential role in the achievement of INCOSE’s goals and objectives:

- Organizing a multitude of professional and social programs.
- Attracting new members from industry, government and academia.
- Supporting technical activities striving to advance the state and art of systems engineering.
- Showcasing INCOSE as the international authoritative body on systems engineering that it is.
- Learn more at incose.org/chapters.

10. **What are the Services available to INCOSE Members?**

In the INCOSE organization, Technical Operations leads development of technical products and content, and Services Operations leads the delivery of this content to members. The primary objective of Services Operations is to “provide value through impactful services.” This organization is responsible for delivery of the following services.

- **Events** – International conferences such as the International Symposium and the International Workshop provide a venue for the systems engineering community to present research findings, share practices, market services and tools, build a professional network, and further the systems engineering discipline.
- **Certification** – See paragraph 11 below.
- **Professional Development Portal (PDP)** – See paragraph 12 below.
- **Technical Leadership Institute (TLI)** – TLI is a global learning network of INCOSE members committed to improving technical leadership skills to better address today's product, enterprise, and societal complexity. Following nomination by an INCOSE leader, participants embark on an initial two-year experience designed to increase their self-awareness, improve their understanding of complexity, and provide experience in leading through influence in the presence of ambiguity and uncertainty.
- **Community Offerings** – INCOSE offers a range of virtual ways to review and highlight technical content. Webinars share focused technical content. Virtual Systems Exchange Café meetings enable members to discuss, review, reread selected SE articles, books, topics.
- **Mentoring** (in development) - A pilot mentoring program is underway to enable personal development and growth. Mentors help mentees understand and apply systems engineering principles and concepts.
- **Systems Engineering Laboratory** (in development) – The “SE Lab” is a set of vendor-provided computing environments where INCOSE members can use real, full versions of systems engineering tools for non-commercial INCOSE purposes at no cost to the member or to INCOSE. Tool providers participate to gain exposure for their products, and for modest promotional consideration and acknowledgement for their contribution of product availability.

11. **What is Certification, what is needed to achieve, number of years)?**

Certification is assessment and recognition of an individual’s capabilities within the field of systems engineering. INCOSE is the credentialing body for the ASEP, CSEP, and ESEP certifications. All certified individuals are INCOSE members.

The Associate Systems Engineering Professional (ASEP) is knowledgeable about the terminology and processes in the INCOSE SE Handbook. There is no experience requirement.

The Certified Systems Engineering Professional (CSEP) is knowledgeable and also has verified experience of at least five years of SE work.

The Expert Systems Engineering Professional (ESEP) has at least twenty years of SE experience and has demonstrated their commitment to professional development and technical leadership. They have made an impact and are recognized in their community as someone who can solve challenging problems using the tools of systems engineering.

12. **What is the Professional Development Portal, PDP?**

The Professional Development Portal (PDP) is a comprehensive solution for Systems Engineers and other professionals who want to enhance their systems engineering knowledge and skills. The main initial PDP capabilities available at the launch are the ability to:

- Conduct a competency self-assessment based on INCOSE's System Engineering Competency Framework (ISECF).
- Browse and search the PDP Catalog to find needed learning resources.
- Save browse/search results on their "bookshelf." Each user will have the opportunity to save to their own "bookshelf" to review later.
- Provide feedback.

The PDP Minimum Viable Service (MVS) was complete on 27 July 2022. The Initial Operational Capability (IOC) – with the above capabilities – launched on 3 October 2022. The Full Operational Capability (FOC) V1.0 with additional capabilities is planned for IS 23 in July 2023..

13. **What is the Corporate Advisory Board / Academic Council?**

Corporate Advisory Board membership allows organizations to guide the direction of the discipline.

- Employees can gain access to the state-of-the-art products.
- Align with peers and fellow industry leaders, grow your global footprint, and learn about how other industry leaders are applying systems engineering to solve business problems.
- Gain better access to talent – find and hire competent, certified Systems Engineers through your INCOSE connection.

The INCOSE Corporate Advisory Board (CAB) is the Voice of the Customer to the INCOSE leadership. The CAB provides strategic guidance to technical leadership, leading to the development of systems engineering products and input to standards to meet their needs.

The Academic Council is a branch of the Corporate Advisory Board facilitating discussion and exploration of issues relevant to academia and strategic collaborations within INCOSE. A well-educated workforce is key to Global Prosperity. Council member organizations offer bachelors, masters, and doctorate degrees in systems engineering and related programs. Active in advancing the state-of-the-art of systems engineering through academic programs. Learn more at incose.org/cab.