

# 2022 MID-YEAR IMPACT STATEMENT

*A Better World Through a Systems Approach*



**CONNECT**



**LEARN**



**LEAD**



**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.*



**20,600**

**Members and  
CAB Associates**



**126**

**Corporate  
Members**



**52**

**Working  
Groups**



**65**

**Chapters  
Worldwide**



**75**

**Countries with  
Active Members**

*The International Council on Systems Engineering*

[www.incose.org](http://www.incose.org)

# PREMIER CHOICE OF SYSTEMS ENGINEERS FOR PROFESSIONAL DEVELOPMENT

## Institute for Technical Leadership (TLI)

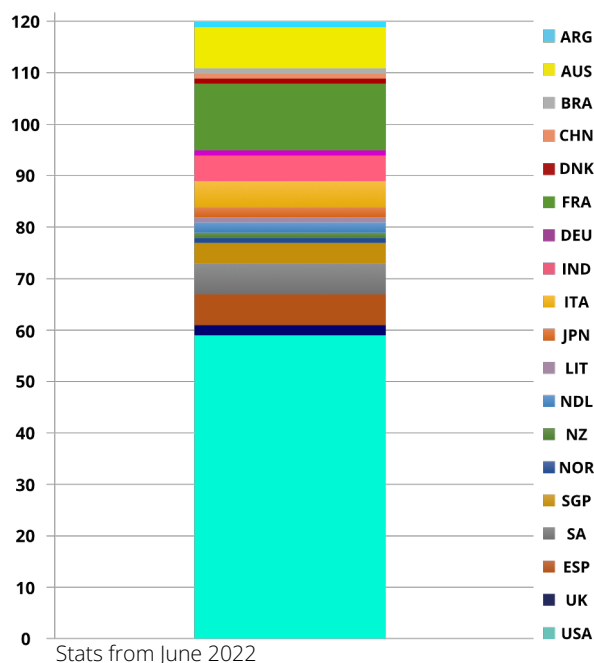


The Institute for Technical Leadership (TLI) is a global network of INCOSE members committed to improving technical leadership skills to better address the complex sociotechnical challenges of the twenty-first century. The Technical Leadership Institute members come from a wide range of countries. The first 5 cohorts inducted 63 members:

- Cohort 6 inducted 14 members at IS2021.
- Cohort 7 inducted 19 members at IS2022.
- Cohort 8 has accepted 24 new candidates to be inducted in June 2023.

120 candidates have been accepted overall in all 8 Cohorts:

### Cohort Breakdown by Country:



## Professional Development Portal (PDP)



INCOSE's Professional Development Portal (PDP) is a comprehensive solution for Systems Engineers and other professionals who want to enhance their systems engineering

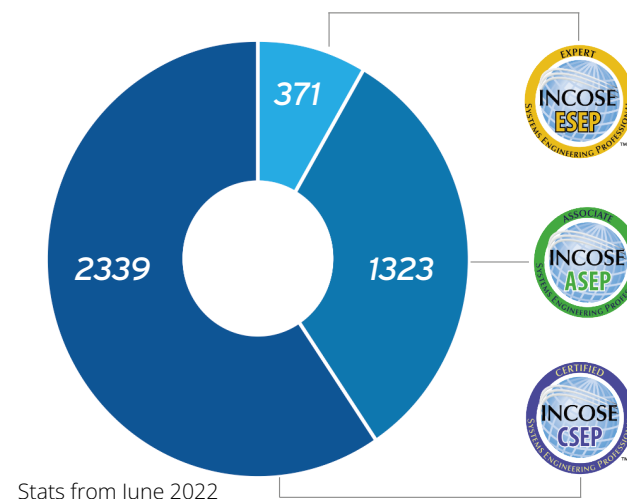
knowledge and skills. The PDP has launched with a minimum viable service at IS2022; the main initial PDP capabilities available at the launch are the ability to:

- 1 Conduct a competency self-assessment based on INCOSE's System Engineering Competency Framework (SECF) to help determine what learning resources to browse and search for.
- 2 Browse and search the PDP Catalog to find needed learning resources. Each learning result returned from browsing and searching will have the title, publication date, the type of media available, a brief description, which competency(ies) it was classified, and the ability to learn more. When learn more is clicked, the abstract, links to the learning resource, and the ability to add notes are available.
- 3 Save browse/search results on their "bookshelf." Each user will have the opportunity to save the learning resource results from the browse / save to their own "bookshelf" to review later.
- 4 Provide feedback on broken links, "bugs" on the site, identify learning resources that are classified incorrectly, recommend additional learning resources to be included in the PDP Catalog, and provide general comments.

## Certification

The Certification Program offers an internationally recognized systems engineering qualification at three levels; confirming an individual's competency through demonstrated knowledge, education and experience.

### 4,033 Current Active Certifications



### Individual Certification

The most popular new path to certification is credit through schoolwork, called "Academic Equivalency" which:

- Recognizes that universities assess similar topics as the INCOSE knowledge exam.
- Allows assessment through a variety of methods.
- Allows assessment in languages other than English.
- Encourages university coursework in systems engineering.



# VALUE TO OUR MEMBERSHIP AND THE SYSTEMS ENGINEERING COMMUNITY

## Products



The Systems Engineering Tool Database (SETDB) helps users to find appropriate software tools and cloud services that support your engineering activities.

 [www.systemsengineeringtools.com](http://www.systemsengineeringtools.com)



The Systems Engineering Body of Knowledge (SEBoK) provides a guide to the key knowledge sources and references of systems engineering organized and explained to assist a wide variety of individuals.

 [www.sebokwiki.org](http://www.sebokwiki.org)



The INCOSE Career Center is a platform to assist job seekers with finding opportunities provided by over 1,200 employers.

 [www.incose.careerwebsite.com](http://www.incose.careerwebsite.com)



The Papers & Presentations Library is a search engine for presentations from INCOSE conferences. This includes our annual symposia since 2010.

 [www.incose.org/products-and-publications/papers-presentations-library](http://www.incose.org/products-and-publications/papers-presentations-library)

## Publications

### Regular Publications

- INSIGHT
- Members Newsletter
- Systems Engineering Journal
- eNote

### Coming Soon:

- 'Model Portfolio Management Guide (MPMG)' by the Tools Integration and Model Lifecycle Management Working Group
- 'Letters to My Younger Self: How Systems Engineering Changed My Life' and 'Emerging Trends in Systems Engineering Leadership: Practical Research from Women Leaders' by Empowering Women Leaders in Systems Engineering
- Systems Engineering Principles by the SE Principles Working Group
- Systems Engineering Handbook Fifth Edition




Visit the INCOSE Store for up to date information on all new publications.


 [www.connect.incose.org/store](http://www.connect.incose.org/store)


## Virtual Community

### Systems Exchange Cafés

The Exchange Cafés are regular monthly events which allow systems engineers from the global community to connect and have informal discussions about topics of their choice. There are 3 different cafes which are aimed at the different sectors:


 **Maple Cafe** - 11am US Eastern, aimed at the Americas

 **Fir Cafe** - 9am Japan time, aimed at Asia & Oceania

 **Oak Cafe** - 8am London time, aimed at EMEA

 [www.incose.org/virtual-cafe](http://www.incose.org/virtual-cafe)

### Yammer

 After a successful launch, Yammer has become a community hub for INCOSE. There are now **over 50 Communities** covering different chapters, interest and working groups. Join Yammer today to connect with the INCOSE community!

 [www.yammer.com](http://www.yammer.com)

### INCOSE Webinars

The INCOSE webinars are presented by experts in the field who discuss the "State of the Art" in systems engineering.

The webinars occur live and are recorded. INCOSE members can access these recordings from the Member's Only pages of INCOSE Connect.

 [www.incose.org/webinars](http://www.incose.org/webinars)

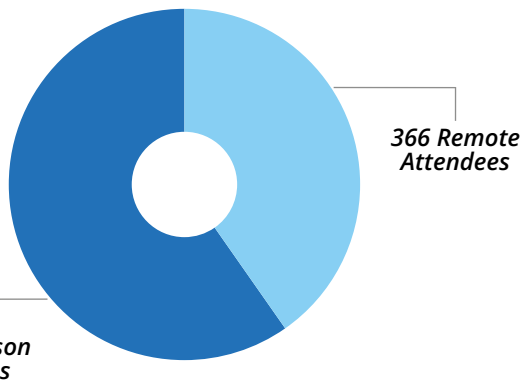
# 32<sup>ND</sup> ANNUAL INCOSE INTERNATIONAL SYMPOSIUM 2022

## Event Summary

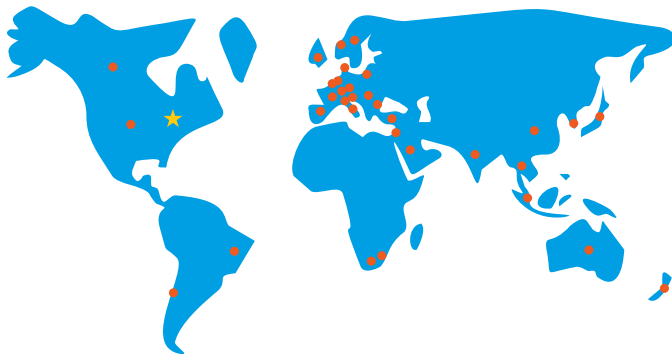


The 32<sup>nd</sup> Annual INCOSE International Symposium (IS) took place from June 25<sup>th</sup> to

June 30<sup>th</sup> as a hybrid event, with the physical event taking place in Detroit. IS is the largest worldwide annual gathering of people who do systems engineering for four days of presentations, case studies, workshops, tutorials and panel discussions. The program attracts an international mix of professionals at all levels, and includes practitioners in government and industry, as well as educators and researchers.



The event was attended by individuals from 63 Chapters across 34 different nations.



## President's Invited Content

### Presentations

- Brian Collins (UCL): Safer Complex Systems - How to Move from State of the Practice to State of the Art, SAFELY!!
- Dr. Jon Wade (University of California): Engineering the Value Chain System
- Courtney Wright (V1 Decisions): Look in All the Corners: Gathering, Tracking, and Verifying Requirements
- Tom Strandberg (Syntell): Systems Architecting - A Recipe for Success
- Jon Holt (Scarecrow Consultants) MBSE – The Natural Evolution of Systems Engineering
- Duncan Kemp (UK Ministry of Defence): If you thought Systems Engineering was fun, wait until you try System of Systems Engineering
- Dr. Nicole Hutchinson (Stevens Institute of Technology): You're a Systems Engineer: Own It!
- Randall Iliff (PPI): What Force is More Powerful Than Profit? – An Exploration of Why Leaders Still Fail to Recognize the Value of SE

### Panels

- Realizing the Systems Engineering Vision 2035
- Transforming Mobility: Automotive Executive Roundtable
- Transdisciplinary Perspectives on Systems Engineering in and for Contested Cyber Environments
- MBSE Lightning Round: MBSE Implementation Progress Reports From the Field
- How to be an Effective DEI Ally and Advocate
- Research Enabling the Discipline of System Engineering

## Keynote Speakers



Dr. Christopher J. Scolese (Director, NRO)  
*Architecting the Future: The Role of SE and DE at the NRO*



Carla Bailo (Center for Automotive Research)  
*Mobility and System Engineering Integration*



Laura Doughty (Director, Peakfield Consultancy Ltd)  
*The Power of Connection: The Power of Influencing and How to do it*



Christopher Davey (Ford Motor Company)  
*Ford's Connected-Agile, Model Based Systems Engineering and Simulation Journey... So Far.*

## International Symposium 2023

The 33<sup>rd</sup> Annual INCOSE International Symposium will be taking place July 15 to 20, 2023 as a hybrid event with the physical event taking place in **Honolulu, Hawaii, USA.**



July 15 to 20  
2023



Hybrid Event  
Honolulu, HI,  
USA



[www.incose.org/symp2023](http://www.incose.org/symp2023)



# VALUE TO OUR MEMBERSHIP AND THE SYSTEMS ENGINEERING COMMUNITY

## Volunteerism

Successful organizations such as ours owe their success to the involvement of volunteers who take time away from their daily engagements and contribute to INCOSE.

There are a range of volunteer opportunities currently available:

- Deputy Assistant Director, Technical Events
- Deputy Technical Director
- Assistant Director for Industry and Domain Outreach – Rest of the World
- Assistant Director for Industry and Domain Outreach – Rest of the World
- Diversity, Equity, and Inclusion Advisory Committee Member

To apply for an opportunity visit [www.incose.org/volunteer](http://www.incose.org/volunteer). If you have any questions or need more information, please contact the Volunteer Opportunities Administrator at [voadmin@incose.net](mailto:voadmin@incose.net).

 [www.incose.org/volunteer](http://www.incose.org/volunteer)

## INCOSE Joint Leadership Meeting



Joint Leadership Meeting

The annual INCOSE Joint Leadership Meeting was held online on May 18. Twenty INCOSE leaders summarized the priorities for the coming year and beyond. Generally speaking, the focus areas fall in five value streams: events, education and training, products, certification and membership.

The recording of the meeting and the presentation slides are available on the members only INCOSE Intranet.

 [www.incose.org/inet](http://www.incose.org/inet)

## New Membership Engagement (NMET)



The New Membership Engagement Team (NMET) was created in 2021 to develop programs and pathways to introduce new members to the value of their INCOSE membership.

NMET created and launched the new member Welcome Center Café (WCC) events to help new members across all INCOSE sectors actively engage and receive maximum value from INCOSE resources and opportunities.



The WCC are online interactive events that include featured guest such as experienced INCOSE members who present on their professional and personal benefits resulting from involvement with INCOSE. Additionally, conversation is held with new members on their specific areas of interest.

New members are added to the INCOSE Yammer community for continued engagement via the virtual platform.

Previous WCC recordings and presentations can be found on the new member page at: [www.incose.org/newmembers](http://www.incose.org/newmembers).

For new member questions and inquiries, contact the New Membership Engagement Team at [nme@incose.net](mailto:nme@incose.net).

 [www.incose.org/newmembers](http://www.incose.org/newmembers)

## Diversity Equity & Inclusion (DEI)



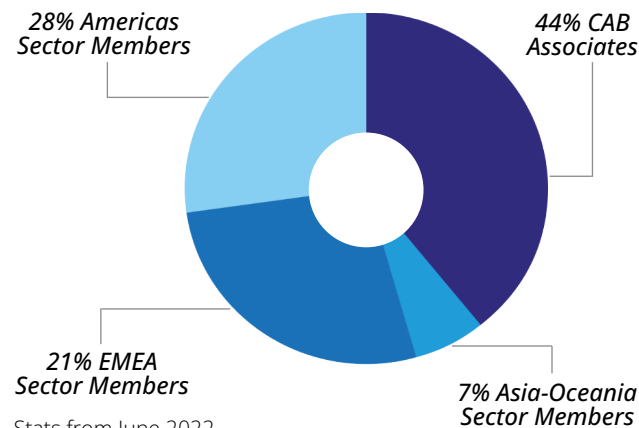
Policy DEI-100 was established for the Diversity, Equity and Inclusion (DE&I) initiative as an imperative effort within INCOSE to ensure that structures and mechanisms are in place to make INCOSE an organization where everyone can comfortably be their authentic self, recognize themselves in other members, and have an equal voice and opportunity in their interactions within the organization.

### Strategic Goals of DEI

- Goal #1: Affirming greater inclusion and diversity within INCOSE membership.
- Goal #2: Recruitment of more members from diverse backgrounds. Work is already underway to achieve Goal #2.

 [www.incose.org/dei](http://www.incose.org/dei)

## INCOSE Member Breakdown



 [www.incose.org/join](http://www.incose.org/join)

# INCOSE GLOBAL OUTREACH

## Chapter Updates

- The New Zealand Chapter became a chartered chapter of INCOSE.
- INCOSE LATAM (Latin America) became the latest emerging chapter. It includes Spanish speaking countries in Central and South America.
- INCOSE Brazil celebrated it's 10<sup>th</sup> Anniversary in March 2022.
- INCOSE INDIA hosted the MBSE Summit 2022 in May, in collaboration with Aeronautical Society of India and IEEE Systems Council.
- The Southern European Systems Engineering Tour 2022, organized by 5 European Chapters (Belgium, France, Italy, Spain and Switzerland) took place in May.
- The INCOSE WMA student division at Virginia Tech was nominated for two Student Organization Leadership Awards.
- This year the INCOSE Germany Chapter, GfSE, celebrates its 25<sup>th</sup> Anniversary.
- INCOSE Spain, AEIS, celebrated it's 10<sup>th</sup> Anniversary in June 2022.

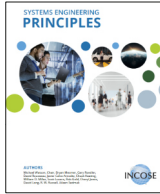


## Upcoming Chapter Conferences

- (Japan) INCOSE Japan Symposium 2022, September 6 2022, Virtual.
- (Europe) 11<sup>th</sup> Nordic Systems Engineering Tour, 7 - 9 September 2022, Linköping, Copenhagen, Hamburg.
- (Switzerland) SWISSED22, September 12 2022, Zurich.
- (Australia) SESA Systems Engineering Test and Evaluation (SETE) Conference 2022, September 12 - 14 2022, Canberra.
- (USA) Western States Regional Conference (WSRC), September 30 - October 2 2022, Golden, Colorado.
- (USA) Great Lakes National Conference (GLNC), Fall 2022
- (Sweden) INCOSE Sweden Annual Seminar, November 2022 10, location TBC.
- (South Africa) INCOSE South Africa 16<sup>th</sup> Annual Conference, November 14 - 16 2022, Virtual.
- (Germany) TdSE - Tag Des Systems Engineering, November 16 - 18 2022, Paderborn, Nordrhein-Westfalen
- (UK) INCOSE UK Annual Systems Engineering Conference (ASEC) 2022, November 22 to 23, Newcastle-upon-Tyne.

## Working Groups

- The SE Principles Working Group has launched a new publication '*Systems Engineering Principles*'.
- A new working group has been created: Systems Engineering and Lawmaking (SELAW) Working Group will explore the application of systems engineering to the design and validation of laws.
- The INCOSE AI Working Group kicked-off on May the Fourth, its AI Explore Series. These Series aim to be short, bi-monthly interactive talks to explore & educate in key issues regarding Artificial Intelligence (AI).
- The Configuration Working Group has written an article with the working title '*Providing Truth, Trust, and Traceability to Modeling*'.
- The Requirements Working Group has released a series of new publications and updates on existing publications:
  - Guide to Verification and Validation*
  - Guide to Needs and Requirements*
  - Guide to Writing Requirements Summary Sheet v3.1*
  - Guide to Writing Requirements v3.1*
  - Needs and Requirements Manual v1.1*



The publications listed above are available to download in [INCOSE Store](#).



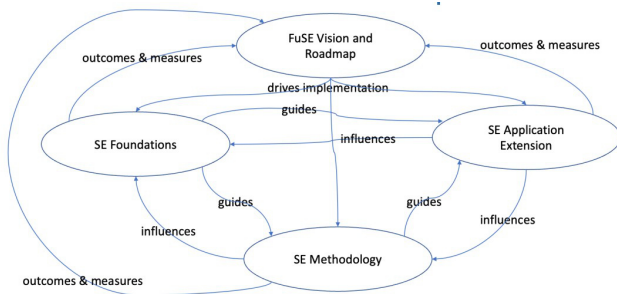
# GUIDING THE FUTURE OF SYSTEMS ENGINEERING

## Future of Systems Engineering (FuSE)



FuSE is the systems community collaboration of professional societies, academia, government organizations, and non-government organizations, to realize the Systems Engineering Vision 2035.

FuSE is facilitated and enabled by INCOSE engagement of its leadership, working groups, initiatives, and periodicals. FuSE is guided by the goals in the Systems Engineering Vision roadmap out to 2035, holistically spanning and integrating the transformation of interrelated competencies, research, tools and environment, practices, and applications.



The objective is systems engineering that is and remains fit for purpose in the 21<sup>st</sup> Century ecosystem of exponentially increasing technology innovations, scale, interconnectedness, complexity, and non-determinism. 21<sup>st</sup> Century systems engineering must account for the diversity of cultural, political, economic, sociological, technological, environmental, legal, ethical, and diversity factors in addressing the grand challenges we face to assure sustainability of a better world through a systems approach.

## Systems Engineering Vision 2035



*This Vision is intended to inspire and guide the strategic direction of systems engineering across diverse stakeholder communities.*

The Systems Engineering Vision 2035 launched at the International Workshop 2022. It has been well received by members and industry alike. The SE Vision 2035 is being utilized and referenced in different organisations in support of various topics in discussion.

Kerry Lunney, INCOSE Past President, will be delivering talks and workshops at the Systems Engineering Test and Evaluation (SETE) Conference in Australia:

- Talk: "Excelling Through Evolutions and Disruptions, Tomorrow's Vision for SE"
- Workshop: "Preparing Engineers to Tackle Increasing Complexity and Disruptions in our Future"

Here is how the Systems Engineering Vision 2035 has performed since launch in January 2022:



13,000+  
Web page Views



8,000+  
Users



## INCOSE Foundation



Okezue Bell, first winner of the Bill Ewald Award

The INCOSE Foundation, chaired by John Snoderly, is dedicated to making a difference in people's lives by **advancing the development of systems thinking and systems engineering practices throughout the world.** In this, it is closely aligned with the values and goals of INCOSE, the organization.

INCOSE members know the work of The Foundation through its scholarship programs. The newest of those is the Bill Ewald Award, established by Maryann Ewald to recognize Bill's outstanding achievements. The Awards are made through the ISEF program and the first one has just been awarded to Okezue Bell, who is a junior in high school, for his work with prosthetics. [Read more here.](#)

In the last two years we have conducted a thorough strategic examination of how we deploy our considerable human resources to create a global systems engineering community. With the support of INCOSE, **we are launching The Foundation Member program to engage people who want to enhance their systems knowledge but their geographic region does not support the privilege of INCOSE membership.** Phase I of our program focuses on two universities in Africa.

We believe this new initiative will help to build a global systems engineering community, providing the benefits of systems engineering to a much broader cohort. Everything we do is only made possible through the support of our donors and for that, we thank you.



# GUIDING THE FUTURE OF SYSTEMS ENGINEERING

## SySTEAM



*"Improving education for all students, everywhere"*

INCOSE SySTEM has changed its name to INCOSE SySTEAM. The new SySTEAM name, which stands for 'Systems, Science, Technology, Engineering, Arts, and Mathematics' reflects the group's dedication to including the arts and humanities, not just STEM fields, in our efforts. Here are some of the initiative's aims:

- Open-access group that welcomes any and all interested volunteers.
- Developing a framework for putting systems skills in every classroom - from primary school to postgraduate.
- Fostering face-to-face and asynchronous discussion and collaboration through regular online working sessions and an interactive Discord hub.

### Join the INCOSE SySTEAM Discord Hub

SySTEAM is on the lookout for new community members, and welcome any interested individuals to join the free Discord community hub (join link: [bit.ly/3oy1GmF](https://bit.ly/3oy1GmF)) or scan QR Code. Regardless of your professional background, location, or level of commitment, there's likely something you can contribute to SySTEAM.



SCAN ME

 [www.incose.org/system](https://www.incose.org/system)

## Women Leaders in Systems Engineering



*"Imagine a world where women and men are equally represented as leaders in systems engineering."*

EWLSE is pleased to welcome two new sector leads. As of April 2022, Erika Palmer is the EWLSE Americas Sector lead, Anabel Fraga is the EWLSE EMEA Sector lead, and Stueti Gupta continues as the EWLSE Asia Oceania Sector lead.



**Stueti Gupta**  
Asia & Oceania  
Sector Lead



**Erika Palmer**  
Americas Sector  
Lead

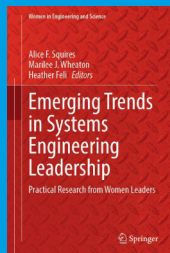


**Anabel Fraga**  
EMEA Sector  
Lead

### Upcoming publications by EWLSE



**"Letters to My Younger Self:  
How Systems Engineering  
Changed My Life"**  
(sponsored by Spec Innovations)



**"Emerging Trends in Systems  
Engineering Leadership:  
Practical Research from Women  
Leaders"**

EWLSE would like to thank Spec Innovations and Caltech for their sponsorship and support.

 [www.incose.org/ewlse](https://www.incose.org/ewlse)

## Corporate Advisory Board (CAB)

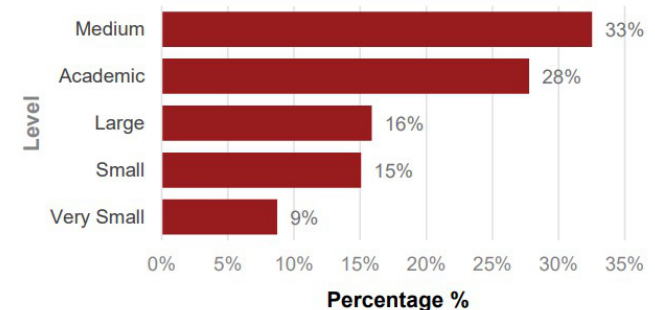


*"Voice of the Corporate  
Customer for INCOSE"*

The CAB advises INCOSE on technical challenges facing industry as well as workforce development so as to strengthen the systems engineering community. The INCOSE CAB is the voice of the customer to the INCOSE Leadership.

There are currently 126 CAB members. New additions since January 2022 are: AVIAGE Systems (China), The REUSE Company (Spain), Toshiba Corporation (Japan), Lawrence Livermore National Laboratory (USA) and Loyola Marymount University (USA).

### CAB Distribution by Level



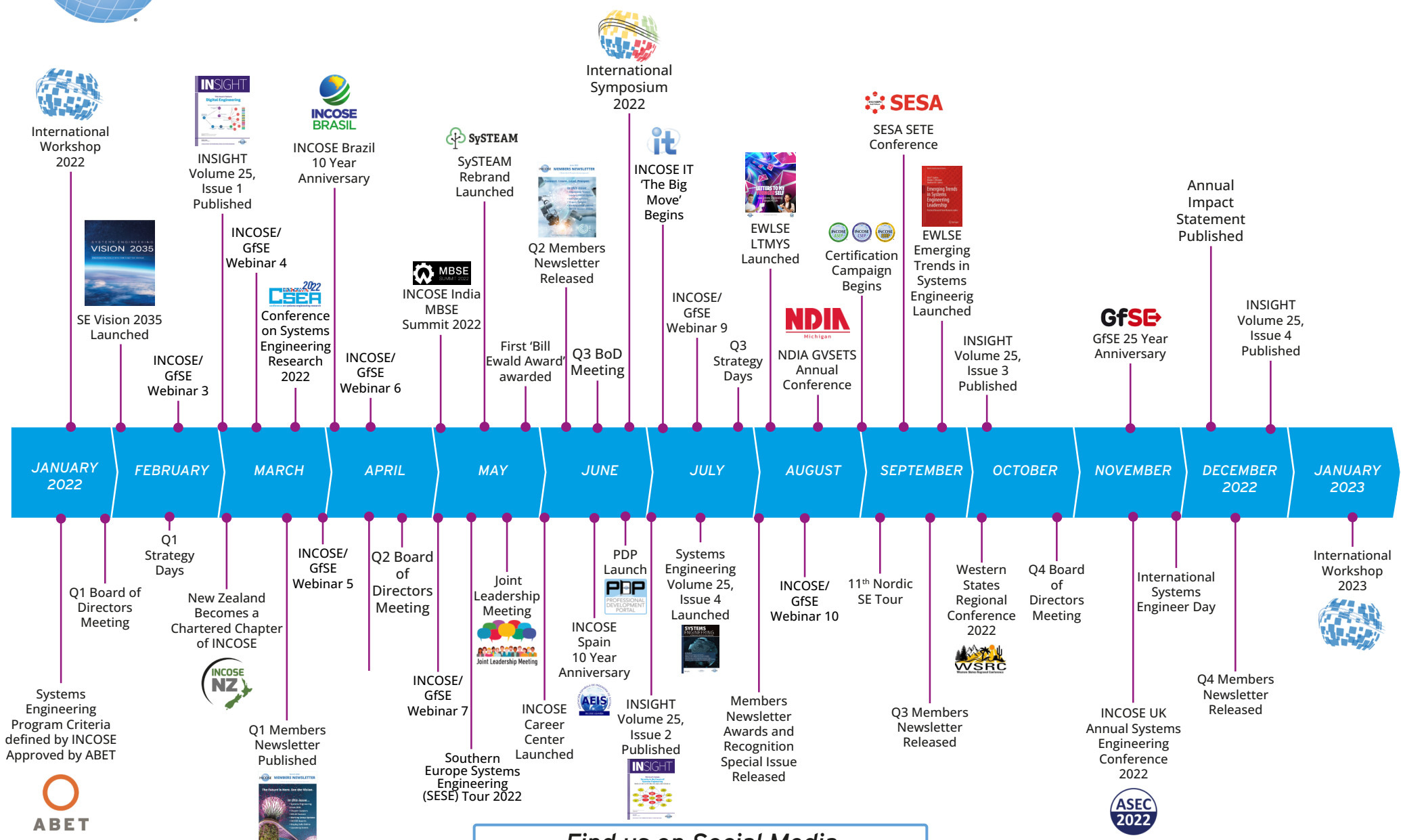
For more information on how to join the Corporate Advisory Board please contact Ron Giachetti, CAB Chair and Mike Dahlberg, CAB Co-Chair at [cab@incose.net](mailto:cab@incose.net)

 [www.incose.org/cab](https://www.incose.org/cab)





# INCOSE 2022 ACCOMPLISHMENTS AND INITIATIVES



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