What is INCOSE's definition of a SYSTEM?

A system is a construct or collection of different elements that together produce results not obtainable by the elements alone.
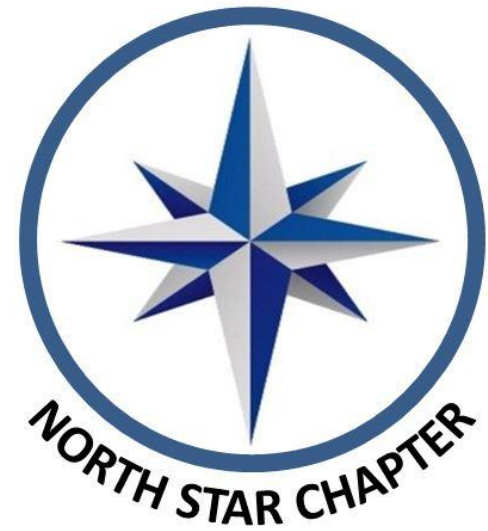
How can INCOSE Help You in Your Career?

INCOSE members have access to Job Board for up to date job listings and information.

The INCOSE Systems Engineering Professional Certification adds an important credential to your resume. Networking is one of the best ways to break into and advance your career.

There are multitudes of opportunities with INCOSE Chapters and Working Groups.

What Helps Shape a Systems Engineer?
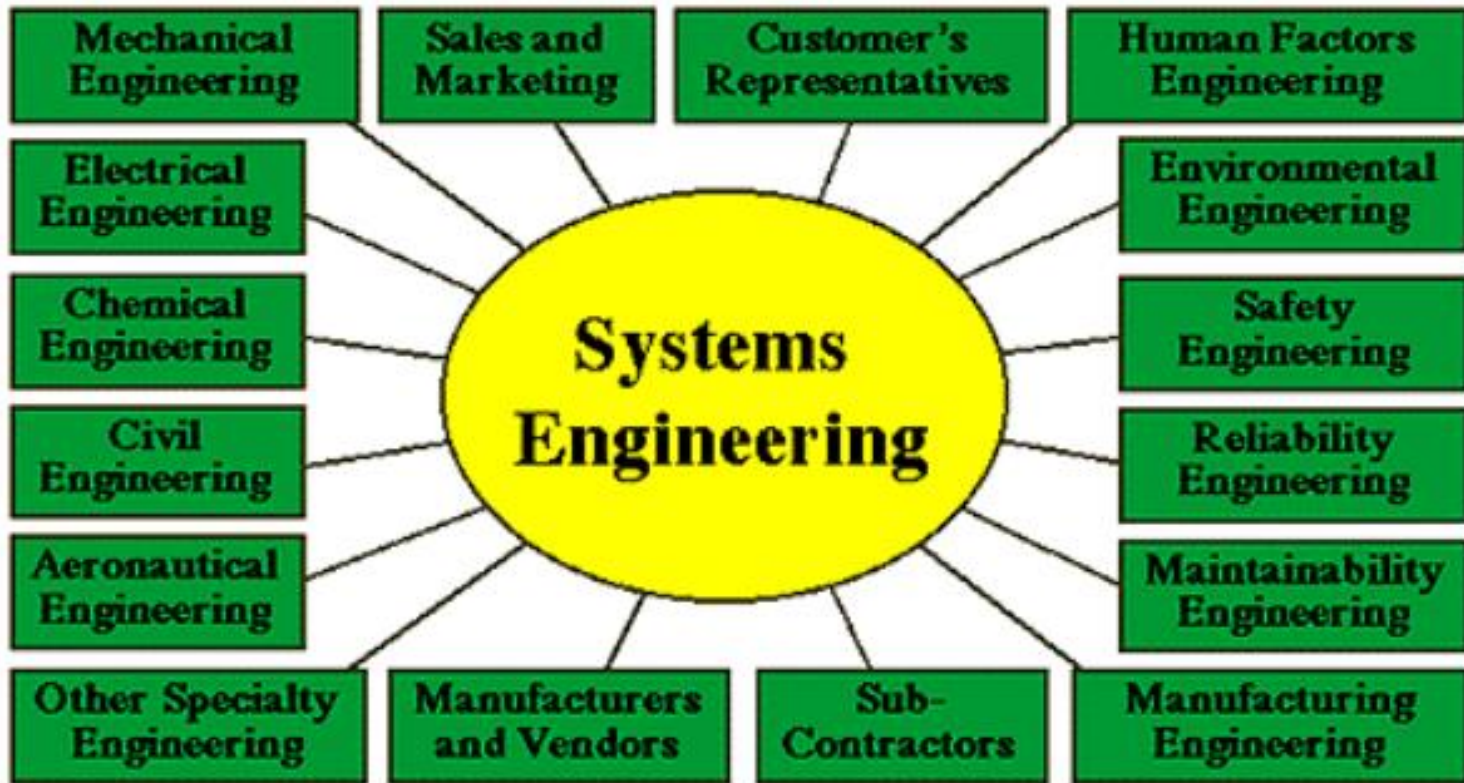
Systems engineering is concerned with the overall process of defining, developing, operating, maintaining, and ultimately replacing quality systems.

Where Do Systems Engineers Come From?

The systems engineer is the primary interface between management, customers, suppliers, and specialty engineers in the systems development process. While most have a background in other engineering disciplines, the career descriptor also has a lot to do with the ability and interest to think with a systems perspective. This may come from the specific and recognizable engineering fields but also from a science/math, human systems, business or any field that develops critical and logical thinking.

History of SE
When did the discipline start?

The term systems engineering dates back to Bell Telephone Laboratories in the early 1940s. Fagen [1978] traces the concepts of systems engineering within Bell Labs back to early 1900s and describes major applications of systems engineering during World War II.

Hall [1962] asserts that the first attempt to teach systems engineering as we know it today came in 1950 at MIT by Mr. Gilman, Director of Systems Engineering at Bell.
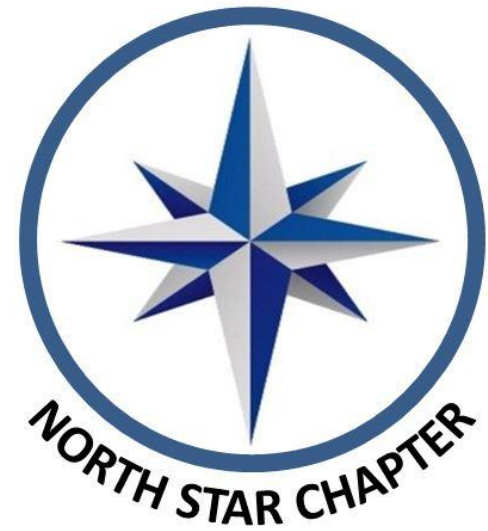
What is Systems Engineering Vision 2025?

Vision 2025 is a publication produced by a team of leaders from industry, academia and government with the intent that it will be used by people working in many domains – healthcare, utilities, transportation, defense, finance – who will add their unique perspectives to the role systems engineering plays in our serving our world's many complicated demands.

1 The Global Context for Systems Engineering

The vision for systems engineering in 2025 is shaped by the global environment, human and societal needs, policy and business challenges, as well as the technologies that underly systems. The evolving work environment, following global trends, both constrains and enables the manner in which systems engineering is practiced. In this section, we highlight the nature of evolving systems and the global context that systems engineering must respond to.

What are the Principles of INCOSE?

INCOSE Principles

Our values represent **who** we are. Our mission and vision represent **what** we are trying to achieve. Our principles represent **how** we pursue our mission / vision within the bounds of our values.

Impact

INCOSE assesses its impact based on the delivery of value to members and other stakeholders.

Partnership

INCOSE builds and disseminates products and services jointly with others to maximize our impact.

Holism

INCOSE emphasizes the whole over the individual parts in our creation of an integrated global technical network.

Differentiation

INCOSE recognizes the unique value of those who choose to affiliate with us, prioritizing direct affiliation and active participation over indirect or passive connection.

Volunteers

INCOSE is led by volunteers who set our fundamental direction.

What are INCOSE's Values?

INCOSE Values

Systems Thinking

Thinking and acting to apply systems approaches to address complex challenges and thus to realize successful sustainable solutions. **Pioneering and Innovation**

Taking opportunities ourselves or with partners to evolve systems approaches to meet future challenges.

Learning and Development

Life-long learning with a changing world through education and continuing professional development, covering both technical and leadership competencies.

Respect, Diversity, Collaboration

Building and maintaining respectful relationships internally and externally in order to enable effective collaboration across the diverse community.

Individuals

The importance of people, their intellect and influencing skill, to support complex decisions and to deliver enduring change. **Volunteerism**

Volunteers and staff working together to achieve our objectives and to deliver benefit to our members, individuals and society.

Why Get an INCOSE Certification?

Certification Value to You as a Systems Engineer

- Formally recognizes your Systems Engineering capabilities
- It is a discriminator that can aid in obtaining your next job
- Can provide a competitive advantage in your career
- Provides a portable Systems Engineering designation that is recognized across industry
- Furthers your professional development as a systems engineer
- Demonstrates your commitment to continuing professional development. Participation in continuing education indicates your commitment to personal development

Certification Value to Your Organization

- Formally recognizes the Systems Engineering capabilities of your people
- Certified systems engineers can be a selling point and a discriminator for your proposals
- Can be used as part of the hiring and promotion process
- It encourages employee participation in continuing education
- Provides an independent internal and external assessment
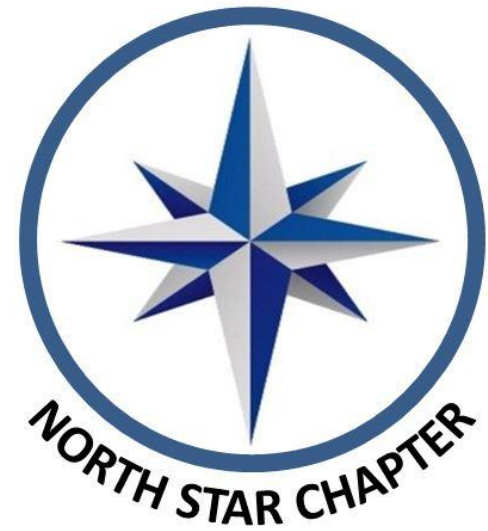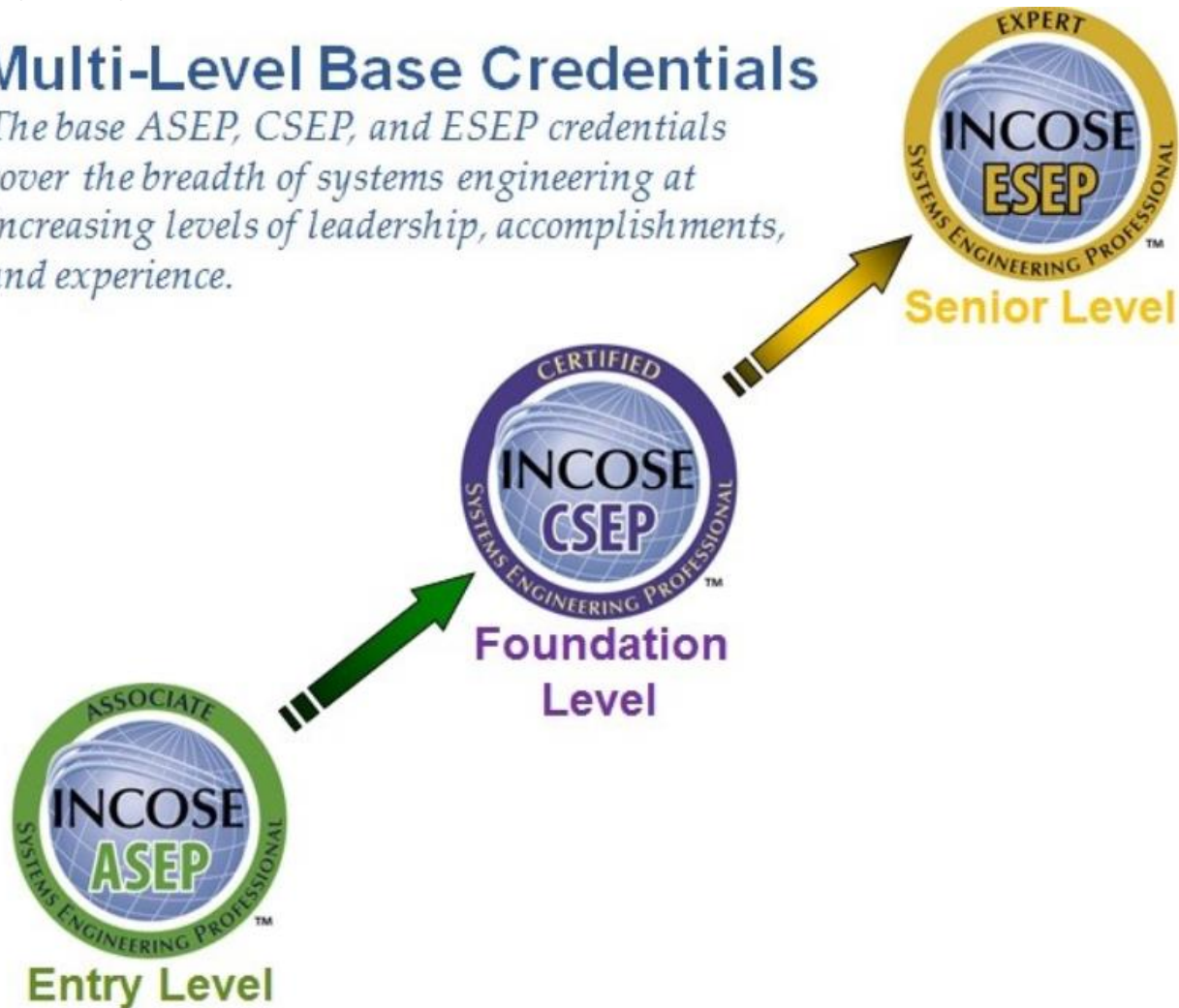- It is a tool for promoting professional competence

What type of Certifications are available through INCOSE?

The International Council on Systems Engineering has established a multi-level Professional SEP Certification Program to provide a formal method for recognizing the knowledge and experience of systems engineers, regardless of where they may be in their career.

Multi-Level Base Credentials

The base ASEP, CSEP, and ESEP credentials cover the breadth of systems engineering at increasing levels of leadership, accomplishments, and experience.

EXPERT
INCOSE ESEP
SYSTEMS ENGINEERING PROFESSIONAL TM
Senior Level

CERTIFIED
INCOSE CSEP
SYSTEMS ENGINEERING PROFESSIONAL TM
Foundation Level

ASSOCIATE
INCOSE ASEP
SYSTEMS ENGINEERING PROFESSIONAL TM
Entry Level

What is INCOSE's
Systems Engineering Handbook?

SE Handbook V4

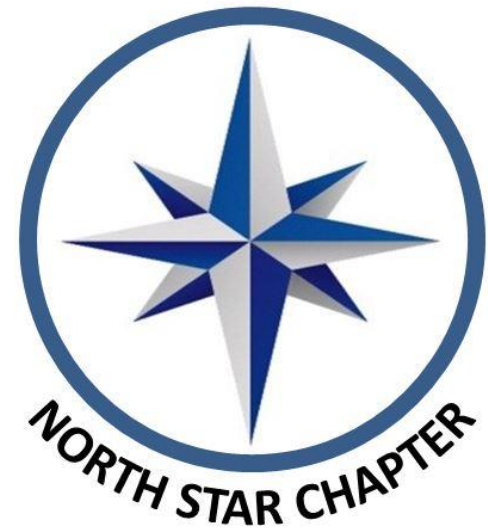*A Guide for System Life Cycle Processes and Activities*

- For the new systems engineer
- For the engineer in another discipline who needs to perform systems engineering
- For the experienced systems engineer who needs a convenient reference

What is INCOSE's definition of a SYSTEM?

Hall [1962] defined systems engineering as a function with five phases:

(1) system studies or program planning;
(2) exploratory planning, which includes problem definition, selecting objectives, systems synthesis, systems analysis, selecting the best system, and communicating the results;
(3) development planning, which repeats phase 2 in more detail;
(4) studies during development, which includes the development of parts of the system and the integration and testing of these parts;
(5) current engineering, which is what takes place while the system is operational and being refined.

What is a Working Group?

Technical Operations Working Groups create the resource practitioners need. Discuss, collaborate, share in person and online across more than 40 Working Groups with a wide diversity of interests. INCOSE Working Groups create products, present panels, develop and review standards.
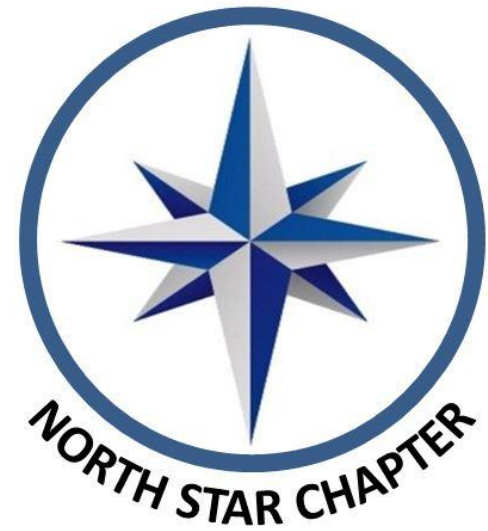You will:
- Bring value to other INCOSE stakeholders in your interest area
- Build expertise and contacts
- Help develop and review international standards
- Share information across Working Groups
- Create products to advance the state, art and practice of systems engineering.
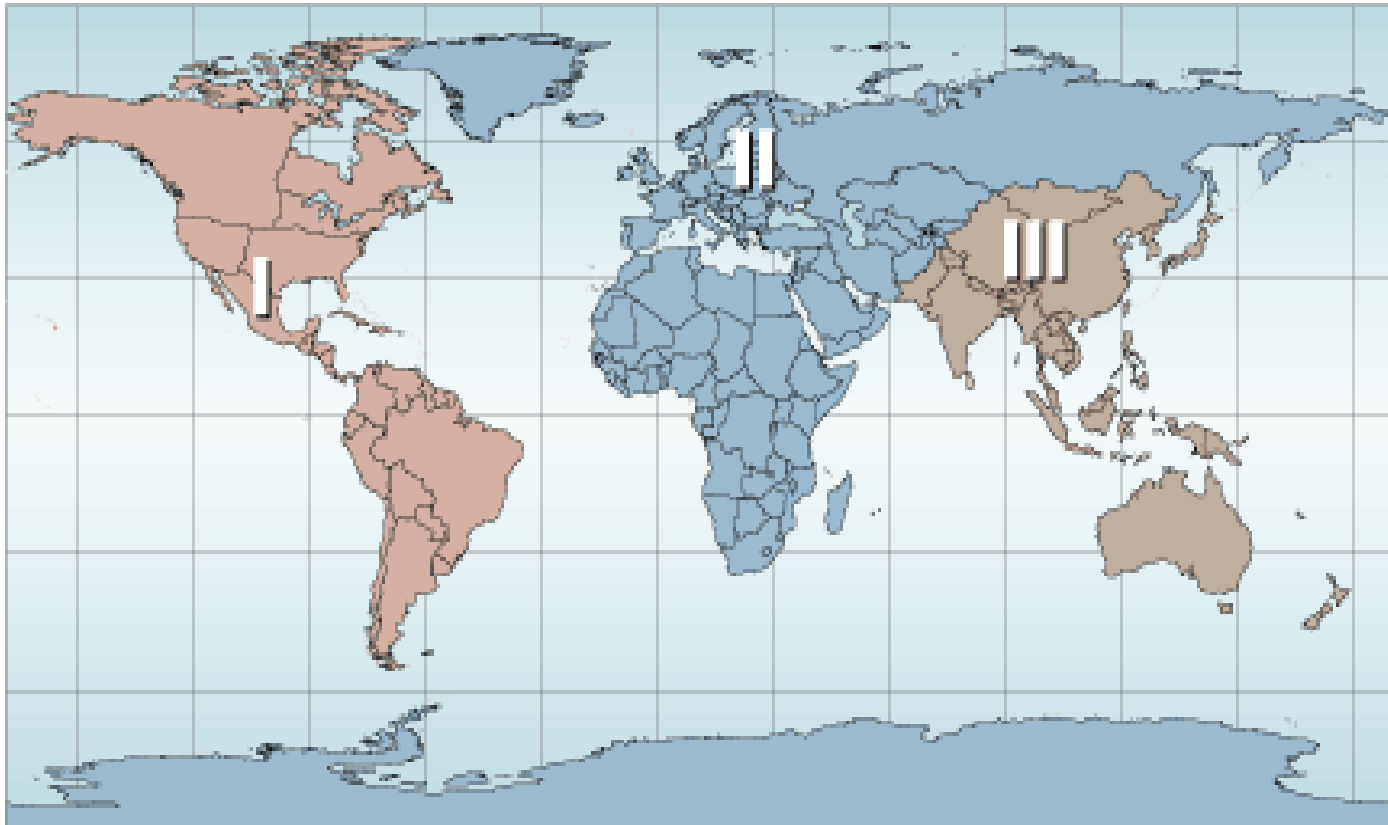
What Countries are represented in the Americas Sectors?
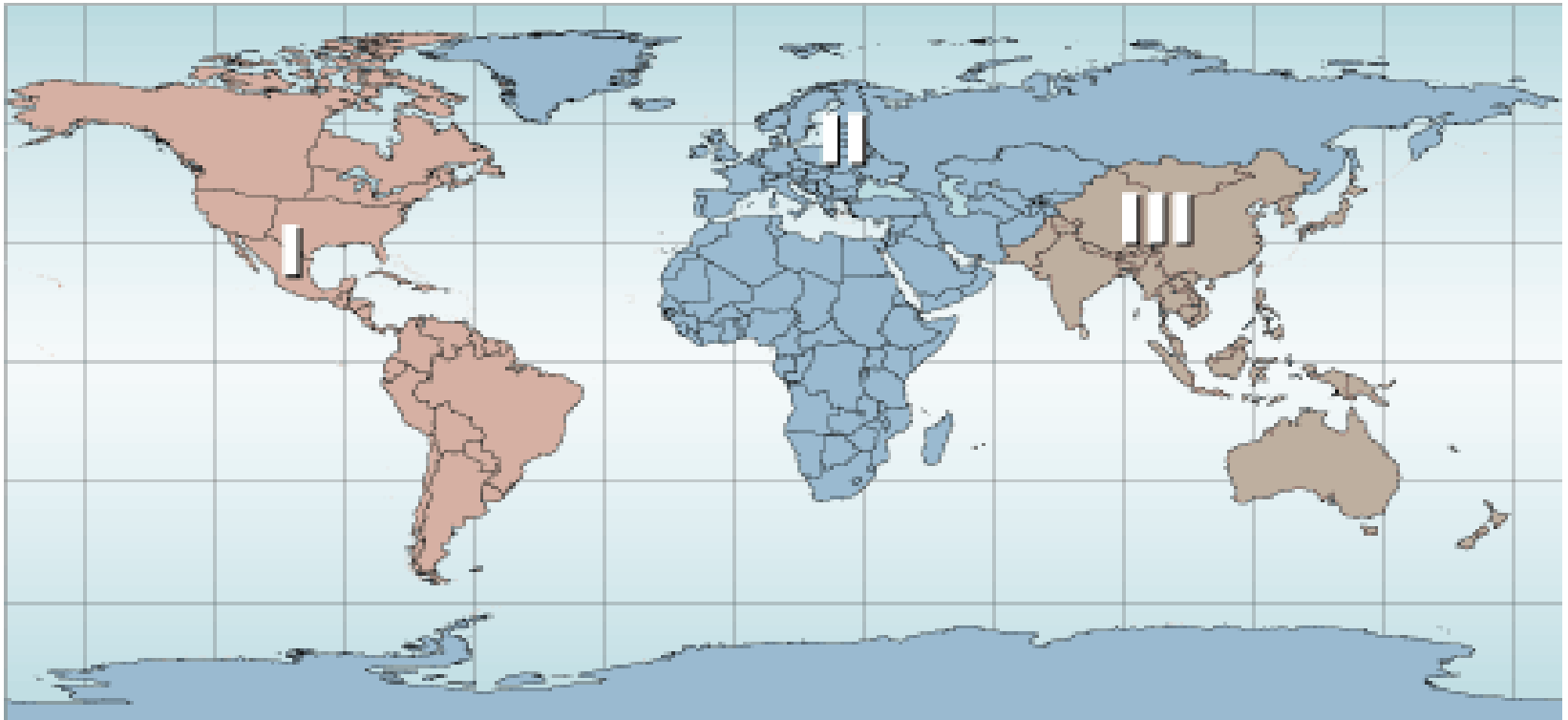
I. Americas Sector / Steve Dam, Director

How many Sectors does INCOSE have?

I. AMERICAS SECTOR / Steve Dam, Director
II. EMEA SECTOR / Jean-Claude Roussel, Director
III. ASIA-OCEANIA SECTOR / Kerry Lunney, Director

When was INCOSE founded?

INCOSE was formed in 1990 with a membership that represents a broad spectrum – from student to senior practitioner, from technical engineer to program and corporate management, from science and engineering to business development. Members work together to advance their technical knowledge, exchange ideas with colleagues, and collaborate to advance systems engineering.
[64 members in 1990; 11,134 members in 2015]