

## 1 PURPOSE

The purpose of the working group is to advance and promote the application of Systems Engineering to understanding and managing the enterprise as a system.

Enterprises are highly complex systems of people and technologies that are entities in their own right, which are prone to gross structural inefficiencies and failures to the extent of causing great societal harm and economic loss. Systems engineering (SE) is an interdisciplinary methodology for understanding, designing and enabling system solutions for complex problems and, as such is uniquely suited to offer understanding and solutions in the domain of enterprises.

Enterprises depend highly on the intelligent interaction, creation, management and use of various forms of knowledge embodied in their organizational policies, processes and structures. As an understanding of the basic physical sciences provides the scientific framework within which physical systems are engineered, an understanding of the basic social sciences must provide an underpinning for the engineering of socio-technical systems such as enterprises. This understanding must include a focus on tacit and intangible aspects of organization that may be alien to many systems engineers accustomed to focusing on the tangible aspects of physical and electronic systems.

This working group (WG) seeks to apply the principles of systems engineering to develop a body of knowledge for identifying and understanding the elements, characteristics, behaviors and problems associated with viewing the enterprise as a system and the system as the enterprise, and to develop Systems Thinking, Systems Analysis and Systems Engineering responses to optimize enterprise performance. Over the longer term the WG will strive to identify an integrated Enterprise Systems Management portfolio of tools that enable systems engineers to lead in the design of more robust, efficient and safer enterprise systems for stakeholders and society in general.

## 2 GOAL

The WG will work to build a generic understanding of the elements and sub-systems and their various roles comprising enterprises, and a set of systems engineering methodologies for applying this generic understanding to analyzing specific organizations and their problems. This will involve establishing cross disciplinary teams and consultations involving systems engineers, enterprise architects, people from the life and social sciences, and practitioners in areas such as management consulting, organizational knowledge management, business process reengineering, and change management, amongst others.

Over the short term, the WG will seek to assemble existing knowledge and theories relating to the enterprise as a system for inclusion in the SEBOK that is accessible to systems engineers. Over the intermediate term, the WG will collect and assess methodologies and templates to guide systems engineering approaches for intangible and tacit aspects of the enterprise as a system.

Over the long term, the WG will compile a comprehensive Enterprise System Management addition to the INCOSE Handbook and training and certification packages for Enterprise Systems Management.

### 3 SCOPE

It is the intent of the WG to focus narrowly on the enterprise embodiment of SE and to work closely with other WGs that can and will inform this area – System Sciences WG, Complex Systems WG, System of Systems WG, Human Systems WG, Enterprise Architecture WG, and others.

The initial scope of the WG will be to survey relevant scientific foundations, to assess and prioritize concepts, and to match them with systems engineering concepts and principles for incorporation in an Enterprise Systems Management Body of Knowledge. Amongst others, the following scientific domains appear to be directly relevant.

#### **Major disciplines:**

- Business Management
- Organizational Behavior
- Psychology
- Other Social Sciences, more generally
- System Engineering

#### **Specialized fields**

- Systems Thinking and Systems Analysis
- General systems theory
- Soft Systems Methodology
- Second order cybernetics
- Social Systems Theory

This WG's scope is significant as it attempts to engage with issues from an emergent field of complex (adaptive) systems (social, technical and economic) focusing on the implementation of processes involved in this multi-disciplinary field. The skill set required is considerable due to an approach that includes social science, engineering, processes and management, practical and theoretical comprehension for an applied outcome. These are not commonly combined skills sets and no real formal training exists, yet the need for such combinations is known.

### 4 SKILLS AND EXPERTISE REQUIRED

Other than Systems Engineering, skills will be required from a variety of disciplines having some knowledge of the scientific disciplines listed above. Our existing members from within and outside of INCOSE are multidisciplinary in their own rights – having both theoretical and practical experience, and should be able to gain other knowledge as required through their wide academic

disciplinary and industry connections. Experience at the senior management, board or investment level of the enterprise is highly recommended.

### 5 MEMBERS, ROLES AND RESPONSIBILITIES

List the names of members and briefly describe their responsibilities.

- Chair: William (Willy) Donaldson (US)
  - o Responsibilities
  - o The lead shall be responsible for status reporting to the Assistant Director for Knowledge.
  - o The lead shall be responsible for establishing and managing the work of the WG
- Vice Chair: TBD (EMEA)
- Board Sponsor(s)/Champion(s): INCOSE President, Past-President and President Elect
  - o Responsibilities
  - o The Board sponsor shall be responsible for resource advocacy and status reporting to the INCOSE BOD and external stakeholders.
- Members - The WG is open to all INCOSE Members

### 6 OUTCOMES (PRODUCTS/SERVICES)

To produce a comprehensive addition to the INCOSE Handbook specifically targeted at the enterprise implications of and for system engineering.

Establish common definitions and understandings of the types of enterprises. E.g. describe the boundaries

- Develop common boundary conditions with respect to other WG working on related topics
- Develop SEBoK content on enterprise thinking

### 7 APPROACH

The working group will:

- Meet physically at the IW and IS with virtual access provided for non-attendees
- Meet virtually as required (proposed schedule a - bimonthly standing meeting with cancellation if necessary)
- Maintain and develop the work product and progress of the group
- Norms or ground rules – Every effort should be made to contribute to and stay abreast of the workings of the group.
- Communications will be through regular email and web meetings. Additionally, a wiki or other group communication tool may be used.
- Major phases or milestones – See annual objectives once group is established



**8 MEASURES OF SUCCESS**

Measures of success include:

- Size of membership
- CAB enterprise participation in the WG
- Contributions to the SEBoK
- Number of products/services under development (as defined by individual TPP's)
- Number of products/services delivered

**9 RESOURCE REQUIREMENTS**

Support from INCOSE Leadership  
Membership involvement and commitment

**10 DURATION**

This Charter will remain in effect until rescinded by the signatory.

**11 SIGNATURES**

Enter the signature block of the submitter Date

**1<sup>st</sup> Level of Approval** 

Technical Director, INCOSE Date 6/3/2015

**2<sup>nd</sup> Level of Approval** (Note this will be added by the INCOSE Technical Director when deemed appropriate.)

INCOSE President Date

**Revision History**

<u>Date</u>	<u>Revision</u>	<u>Description</u>	<u>Author</u>
	1.0	Initial Draft.	
3/25/14	2.0	Initial Draft ESWG Charter	WMD
1/24/15	3.0	Charter submitted after comments and revisions	WMD



# INCOSE Enterprise Working Group (ESWG) Charter

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