

1 PURPOSE

Telecommunications underpins communities, businesses and governments. Telecommunications stakeholders need ease of use, performance, security and reliability. Telecommunications systems are complex, yet pressures exist for more responsive capability and capacity enhancements within challenging cost constraints. The INCOSE Telecommunications Working Group (WG) proposes that systems engineering is under-represented in this application area and has a major part to play in the design, development, maintenance and operation of telecommunications systems.

The WG aims to enable telecommunications systems stakeholders and providers to better support their users:

- Critical and emergency services personnel;
- Federal and municipal governments, utilities and transportation agencies;
- Enterprise and consumer users of commercial telecommunications services; and
- The broader public.

The WG intends to be:

- A forum for telecommunications practitioners to discuss problems and challenges;
- A forum for systems engineers who are interested in telecommunications applications;
- INCOSE's lead forum to advance the application of systems engineering for telecommunications.

The purpose of the WG is to improve delivery of telecommunications solutions by enhancing the systems engineering body of knowledge for telecommunications applications.

The WG will lead this effort within INCOSE, in liaison with external telecommunications experts, standardization bodies, organizations and communities.

2 GOALS

To improve delivery of telecommunications services and solutions by demonstrating practical application of systems engineering best practices.

To enhance the systems engineering body of knowledge for telecommunications applications.

To develop a community of telecommunications specialists within INCOSE through various efforts including, but not limited to:

- Developing papers to be presented during International Symposia and Workshops;
- Establishing project specific working relations with telecommunications experts, standardization bodies, organizations and communities;
- Enhancing the INCOSE Systems Engineering Book of Knowledge (SEBoK) and the INCOSE Systems Engineering Handbook to show how systems engineering improves delivery of telecommunications services and solutions;
- Initializing project specific working relationships with other INCOSE WGs.

To promote, encourage, supervise and perform research where it improves practice of systems engineering for telecommunications.

3 SCOPE

The WG will address processes, methods and tools; organizational aspects; business and information requirements; as well as human aspects (competencies and user experience) related to the engineering of telecommunications systems. This includes at least needs gathering, requirements specification, design, maintenance, growth, evolution and operation

The WG will collaborate with:

- INCOSE Working Groups and initiatives that provide enabling methods (“Agile Systems and Systems Engineering”, “Architecture”, “Competency”, “Lean Systems Engineering”, “Model-Based Conceptual Design”, “Model-Based Systems Engineering”, “Project Management – Systems Engineering Integration”, “Requirements”, “Resilient Systems”, “Systems and Software Interface”, “Systems of Systems Engineering”, and “Systems Security Engineering”);
- INCOSE Working Groups that apply systems engineering in related application areas (“Automotive”, “Critical Infrastructure Protection and Recovery”, “Transportation” and “Space Systems”); and
- external telecommunications experts and organizations where appropriate.

The WG will also reach out to other professional groups, private and public government agencies, and academia to widen viewpoints and representation within the WG.

4 SKILLS AND EXPERTISE REQUIRED

There are no fixed requirements on the technical background and qualification of WG members; however, most members will have a telecommunications and/or SE related background, but at different levels of depth and experience.

All active members of all INCOSE Working Groups must be INCOSE individual members or identified as a POC in an approved MOU. More than one nation must be represented for the Working Group to keep its charter from INCOSE. More than 5 members must be active to maintain INCOSE’s charter.

Non-INCOSE members are welcome to participate in the WG.

5 OUTCOMES (PRODUCTS/SERVICES)

Based on the WG goals above, the WG aims to:

- Create and maintain a knowledge base, collecting lessons learned from the members’ experience in specific projects. The analysis of the lessons learned will facilitate the identification of common, recurring issues and the formulation of best practices from a system-view standpoint all resulting in an update to SEBoK and/or the INCOSE SE Handbook.
- Take the INCOSE SE Handbook latest version as a baseline and look to further integrate the telecommunications aspects into the next version, while liaising with other relevant WG’s, e.g., requirements, ontologies, MBSE, MBCD, to establish end-to-end life cycle.
- Regularly publish telecommunications systems engineering practice papers at the INCOSE Symposium, INCOSE INSIGHT, and/or INCOSE SE Journal.

- Produce formal INCOSE products in the form of Guide(s) or similar documents for the benefit of INCOSE members and the larger community after having each plan approved according to INCOSE TEC-107.
- Produce one special issue of Insight (SE magazine) about Telecommunications.
- Produce or augment a generic model of telecommunications, describing the architecture and its interfaces to other critical infrastructure.
- Share information at trade shows and findings within telecommunications trade journals.

6 WAY OF WORKING

The WG chair and deputy-chair shall:

- Coordinate INCOSE IS and IW as well as web conference meetings.
- Maintain a list of WG members using the GDPR compliant INCOSE system (INCOSE members registered as WG member);
- Make best use as suitable and appropriate of the existing INCOSE infrastructure (e.g. IT, website, discussion groups, data repositories, leadership, Admin), with arrangements for INCOSE members and non-INCOSE guests;
- Maintain living N2 documents with relations to other telecommunications organizations and INCOSE working groups;
- Arrange for the necessary context to enable the exchange with associate members, i.e. not Regular INCOSE Members of the WG including framework agreements between INCOSE and such bodies or organizations, or suitable means to exchange relevant data;
- Recruit and support champions to lead specific activities;
- Communicate to non-members & members via the WG public page.

The membership of the Telecommunications Working Group shall:

- Meet face to face at international workshops and international symposia (allow Web Conference connection for those attendees not able to join physically);
- Attend weekly virtual meetings via web conferencing;
- Decide on the priority of activities that are on-going or planned, depending on the interests and availability of participants, as well as any relevant other factors;
- Foster strong cross collaboration with other INCOSE working groups to cross pollinate Telecommunications topics within/across the broader INCOSE community.
- Create and maintain future work products (e.g. Guidelines for Telecommunications) in compliance with INCOSE policies & procedures;
- Carry out assignments outside of meetings (e.g. review Telecommunications standards and other resources, collect lessons learned from specific projects);
- Avoid unnecessary overlap and duplication of activities or deliverables or products between this WG and other INCOSE WGs or external bodies or organizations;
- Communicate to WG members and interested INCOSE members via the INCOSE Connect hosted WG Telecommunications website, and via INCOSE tutorials and webinars.

This WG Charter shall be changed as needed and agreed by the majority of the WG members and approved by INCOSE.

7 MEASURES OF SUCCESS

Measures of Success shall include:

- Number of goals achieved by each IS and IW;
- Number of active members engaged at each IS and IW and during regular remote meetings;
- Number of active member minutes engaged with the working group;
- Number of countries represented by active members;
- Number of INCOSE products/services (papers, panels, tutorials, webinars, guidelines, etc.) delivered; and
- Number of members from the telecommunications application domain.

8 RESOURCE REQUIREMENTS

To be developed.

9 DURATION

The formal submission of this charter to establish the WG will take place the first half of 2019.

The WG will review and update the charter content annually, around the time of the annual INCOSE International Workshop.

10 APPROVAL

TBC
1st Level of Approval
Technical Director, INCOSE

Date TBC

Revision History

<i>Date</i>	<i>Revision</i>	<i>Description</i>	<i>Author</i>
15 Dec 2018	0.1	Initial draft.	Various, drawing on the INCOSE CM charter.
17 Dec 2018	0.2	Updates meeting 2018-12-17	Jawahar Bhalla, Michael Bruce, David Gapp, John Risson, Daniel Spencer
16 Feb 2019	0.3	Updates during and after IW2019 Telecommunications Working Group	David Gapp, Thomas Manley, Mike O'Keefe, John Risson, Susan Ronning, Daniel Spencer, L. Mark Walker