INCOSE Automotive Working Group Charter

1 PURPOSE

To promote the application and advance the practice of Systems Engineering in the automotive industry, encompassing OEMs, suppliers and service providers in the private, commercial and industrial vehicle sectors.

Emphasis will be put on the current needs and future challenges of the industry, covering issues related to product development (complexity, safety and security, diversity, reuse) as well as to business and organizational aspects (new business models, new services and smart or multi-modal transportation systems).

2 GOALS

Missions

- To broaden and improve the application of Systems Engineering to the vehicle development process by tailoring standard SE processes and known best practices to the needs and specificities of the industry.
- To build a common, shared Systems Engineering expertise and body of knowledge for their application by actors across the automotive industry.

Objectives

- To provide value-added services to our members through the production of quality deliverables, the organization of quality events and efficient administration of the group.
- To grow the number of members of the group up to a level of self-sustainment an increase the diversity of the leadership team by:
    - o Performing outreach actions
    - o Helping members learn from each other and from the experience of INCOSE experts
    - o Making sure that the needs of the members are covered by activity plans and are taken into account by INCOSE.
- To support INCOSE's strategy to establish collaborations and partnerships with professional associations by initiating connections between the group and the different associations of the automotive industry.

3 SCOPE

From a global perspective, the Automotive Working Group will address the challenges faced by the actors of the industry when trying to implement SE or improve their application of SE.

Previous work conducted by the *Automotive Interest Group* identified a series of topics covering a large spectrum of automotive concerns. These topics were grouped into generic SE themes (see table 1): organizational, SE processes, MBSE, architecture frameworks, safety and security, links with specialty domains and systems of systems.

The products of the working group (deliverables, events, etc.) will address the needs of the whole automotive industry supply chain, comprising the private, commercial and industrial vehicles sectors. They are intended to be valuable, useful products for both beginners and established SE practitioners.

Table 1. AWG Scope

SE TOPICS
ORGANIZATIONAL
Acquisition: Contract-based processes (enabled by Requirements)
Cooperation with suppliers in a MBSE scheme
Lessons learned in implementing SE
Lean Systems Engineering & Agility
MBSE & ARCHITECTURE FRAMEWORKS
State of the art in system modeling
Mapping of tools used in the industry
Link with Simulation
Link with Safety
Modeling for communication purposes
Common Automotive Architecture Framework
Ontologies & Formal methods
Standards : lobbying @ OMG
SYSTEMS ENGINEERING PROCESSES
Requirements Engineering "top to bottom"
Architecture-Driven design
Reuse / Integration of COTS in a SE approach / Towards an "Automotive Systems List"
Product Line Management
Eco-Design
OUTREACH, TRAINING & OTHER SPECIFICITIES
Connection between INCOSE and other Automotive Associations
Link between Systems and SW Engineering
Electric/Electronic Architecture Management from a SE perspective
Ad-hoc Systems Engineering Training Supports
SAFETY AND SECURITY
Impacts of ISO 26262 on Systems Engineering and vice-versa
Systems and Safety/Security Engineering (unified) processes
SYSTEMS OF SYSTEMS
The automobile product in new mobility concepts and smart transportation systems
Engineering Systems and Services

4   SKILLS AND EXPERTISE REQUIRED

For the intended initial activities of the group, a key requirement is to have actors from within the automotive industry, with some experience in SE or in one of the aspects related to SE. Specifically the group requires actors with a current or past role in systems engineering, system design development, cross-disciplinary interface development and management, systems architecting or those applying overall systems engineering activities/practices at an organizational level or across suppliers.

The purpose of this working group is not to explain the INCOSE Handbook nor give training to its members. However, a good knowledge of SE processes and practice is needed from its leaders or steering committee members to conduct the group activities in an efficient way. The group should greatly benefit from the assistance on INCOSE senior experts and from cross-connections with established working groups, as has been the case during the preparation work of the group.

5 MEMBERS, ROLES AND RESPONSIBILITIES

5.1 Functional Structure.

The proposed functional structure of the group (figure 1) consists of a steering committee whose members are in charge of Coordinating the activities of the group and of organizing actions or tasks related to Outreach, Events, Member Services, Administration and INCOSE Liaisons.

The target for the group, on a yearly basis, is to have eight members on the steering committee, with a maximum of three co-chairs located in different geographical zones (for instance, one co-chair for each of Europe, Americas and Asia).

It is proposed that the steering committee and co-chairs be renewed every other year, in order to ensure continuity between the organization of INCOSE main events, namely the International Workshop and the International Symposium.
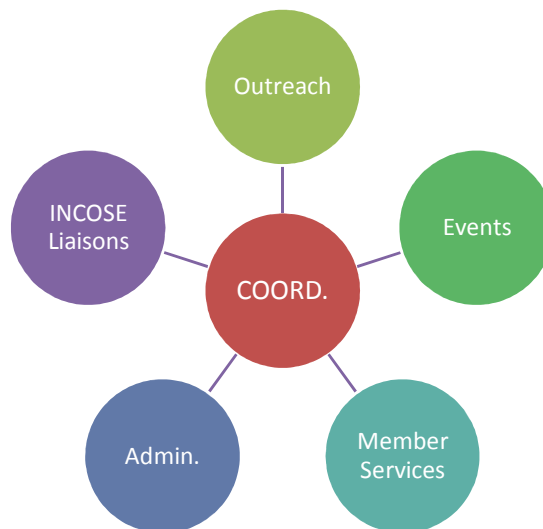

Figure 1: Functional structure of the AWG steering committee.

5.2 Members and responsibilities.

Member roles and responsibilities are subject to change. They will be designated as the group grows and holds its yearly coordination meetings at the beginning of each year.

- **Co-Chairs**: Alain Dauron, Gary Rushton.
    - o Coordinate and organize the overall functioning of the working group
    - o Elaborate and monitor the yearly activity plans and outreach plans
    - o Establish working teams (task forces) and Technical Project Plans with group leaders to tackle specific needs, if required
    - o Report to INCOSE directory
    - o Consolidate, allocate and elaborate yearly budget requests.

- o Conduct the outreach plan and ensure INCOSE liaisons (depending on the number of members of the steering committee)
- **Outreach Leader**: William Bolander
  - o Support the definition of the yearly outreach plan and execute the plan
  - o Generate interest in SE and the working group by showing their value to potential members in different cultural environments and geographical zones
  - o Help identify and formalize the automotive sector needs
  - o Assist Member Services in promoting the AWG events and activities in professional organizations related to the group.
- **Events Leader**: TBD
  - o Organize the AWG programs for the International Workshop and Symposium, with support from co-chairs
  - o Conduct these programs and coordinate with INCOSE events managers for logistics and organization.
- **Member Services Leader**: TBD
  - o Coordinate the deliverables defined by the AWG and publish these in accordance to the group's decision and INCOSE policy
  - o Promote the AWG programs for INCOSE events to members of the group and in other professional organizations related to the group
  - o Provide members with a clear picture of the AWG relations with other INCOSE instances (working groups, chapters, etc.), so that members can network and learn from other's experience.
- **Administration Leader**: TBD
  - o Administer the electronic collaboration supports of the group: mailing list, website, INCOSE connect site (share point), LinkedIn page (TBC)
  - o Ensure the logistics for the group meetings (webinars, conference facilities, invites) and capture meeting minutes
  - o Assist co-chairs in monitoring the yearly activity plan.
- **INCOSE Liaisons Leader**: TBD
  - o Establish contacts with necessary INCOSE instances (IOB, TechOps) and ensure the participation of the group to the activities of these instances
  - o Ensure INCOSE leadership takes into account the needs and concerns of the automotive sector as formulated by the group
  - o Establish links with relevant industry and cross-domain working groups in order to act as a stakeholder for these groups.

Individual member names (the group has currently around fifty members) will be listed in individual Technical Project Plans.
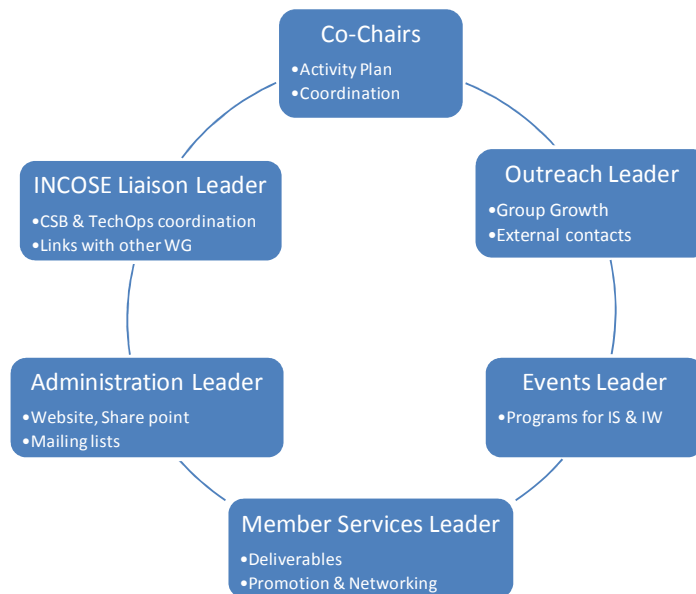
Figure 2: Members and roles of the AWG steering committee.

6 OUTCOMES (PRODUCTS/SERVICES)

Deliverables and associated action plans of the group will predominantly stem from the list of topics defined and maintained by the group (see the examples on section 3). Some of these topics could be the object of roundtables, panels, webinars or specific working meetings to be programmed during the international workshop or symposium.

Some examples of outputs for the two-year period to come include:

- Report on the state of SE practice in the industry (currently under development)
- Entity-relation diagram of the AWG with respect to other INCOSE entities
- World map of automotive initiatives (projects, associations) with AWG member participation, to show the complementary value brought by the group and identify reach out contacts
- Member survey on MBSE tools
- INCOSE and SE value propositions (short guides)
- Case studies from other industries
- Newsletters (3 to 4-month periodicity)
- Consolidated mailing list, AWG connect site, LinkedIn page.

7 APPROACH

All the activities of the AWG are to be structured and monitored following a Yearly Activity Plan, which should be elaborated at the beginning of a yearly cycle. The typical Yearly Activity Plan of the group would run from *August/year N* until *July/year N+1* and culminate at the INCOSE International Symposium.

The activity plan would be structured around the two main INCOSE events, i.e. the international workshop and the international symposium. It would be completed by:

- Regular meetings, held locally whenever possible, or via telephone or web conference. Between five to six coordination meetings are typically necessary for an efficient organization, half of these being planned as "plenary" meetings.
- Special events or milestones, such as webinars, local events, newsletters, the publication of deliverables/products, coordination meetings with other INCOSE entities.
- Other administrative tasks.
- Finally, a special meeting will be proposed every other year to renew the steering committee members, at a date to be determined by the group.

As stated in the previous section, the themes covered by the activity plan would primarily stem from the list of topics of the group, which is to be regularly prioritized and updated by the members. The decision to work on a specific topic will be based either on a "majority vote" or on the available resources (willing participants or budget) allowing to produce the expected results on time.

It is also proposed that the AWG acts as a stakeholder of the transverse INCOSE WGs, issuing requirements to them and validating/evaluating their technical work products, if this scheme is applicable to a particular WG.

The main risk for successfully conducting the activity plan is the effective number of steering committee members, as it is required that all functions exposed in section 5 be allocated to at least one member. Another challenge, though not necessarily a risk at the moment, is the total number of *active* members of the group, which could hinder the production of quality deliverables as well as the renewal of the steering committee at the end of the two-year cycle.

8 MEASURES OF SUCCESS

Detailed measures of success for specific deliverables will be documented in the respective Technical Project Plan.

Other measures of success of the working group, applicable from its earlier stages, are:
- Membership size and yearly growth
- Number of major OEMs and parts or tool providers participating to the group
- Number of different geographical zones covered by the group
- Coverage of actions in the activity plan (including deliverables, INCOSE reporting, etc.)
- Availability of the group's mailing list and connect site
- Number of contacts with automotive initiatives

9 RESOURCE REQUIREMENTS

Required resource support from INCOSE:
- Dedicated space in the INCOSE connect site
- Access to INCOSE facilities for administrating mailing lists and organizing telephone or web conferences
- Funding for the publication of deliverables (graphic design and printing for distribution at promotion events and INCOSE events)
- INCOSE business cards for steering committee members
- Funding for target outreach actions vis-à-vis automotive initiatives (participation to congresses, meetings, tech days) plus participation of INCOSE leadership, when relevant

- Support and participation of senior SE experts of INCOSE to the events organized by the group
- Promotion of the AWG and of its products
- Facilitating connections with INCOSE working groups, initiatives and chapters.

The estimated funding needed for the group is evaluated at US$ 5,000 (five thousand US dollars) per year. This amount will decrease as a "critical mass" of the group is reached.

10 DURATION

This Charter will remain in effect until rescinded by the signatory. It can be reviewed and modified on a yearly basis.

11 SIGNATURES

Submitted by: Gary Rushton, Alain Dauron   Date   December/14/2016

1st Level of Approval

Technical Director, INCOSE   Date

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

Chairman, INCOSE Board of Directors   Date

Revision History

Date	Revision	Description	Author
Oct/12/2013	1.0	Initial full proposal	Hugo G. Chalé G.
Oct/15/2013	2.0	Minor wording changes	M.LaLande
Oct/16/2013	3.0	Added self-sustainment and diversity objectives plus Steering Committee members	Hugo G. Chalé G.
Jan/24/2015	4.0	Update Co-chairs names	Alain Dauron
Dec/14/2016	5.0	Update Co-chairs names, removed Gauthier as a support person for Outreach Leader and Administration Leader, add William as Outreach Leader.	Gary Rushton & Alain Dauron