INCOSE Oil and Gas Working Group Charter

1 PURPOSE

The purpose of this Working Group (WG) is to advance the state-of-the-art of system engineering into the Oil and Gas sector by seeking alignment on the vision for Systems Engineering and how it should be applied within the Oil and Gas industry. The Working Group aims to co-create the strategies for the advancement of Systems Engineering within this industry and to develop the appropriate work processes, tools and competencies to mature the SE thinking and ways of working. The participants of this WG will be oil and gas operators, Engineering, Procurement and Construction (EPC) contractors, service providers, equipment suppliers, Standards development organizations and universities who have deep vested interest in progressing Systems Engineering in their organizations within the near term and having the long term intent to sustain and strengthen the SE ways of working for Oil & Gas.

All of the technical and non-technical risks need to be accounted for holistically, through an end-to-end approach, where the viability of the solution is tested for each phase of the development (from assess, to detailed design, to operate and through to abandonment). It is the view that Systems Engineering, through its very design, can be applied to achieve this objective where the requirements from the business premise can be clearly decomposed all the way through to the design specifications of the base equipment components to arrive at a design that is always competitively scoped, adaptive to changing external factors and fully leverages the interconnectivities and interdependencies that cross industry boundaries.

It is vital that oil and gas companies adopt this new way of working as the industry is faced with ever more diverse and less malleable environments, necessitating each company to adapt rapidly.

2 GOAL

The long-term vision for this working group is to create the guidelines and best practices for applying Systems Engineering in the Oil and Gas industry.

Missions

- To adopt and tailor relevant elements of SE to the specific needs of the Oil and Gas industry to improve the delivery of engineering, projects and construction
- To build a common and shared SE expertise and Body of Knowledge for their application by members of the Oil and Gas industry

Objectives

- To provide value-added outcomes to members of this working group through the delivery of products and events which fulfils the aspirations of members
- To grow and increase the diversity of the SE community within the Oil and Gas industry to make the effort sustainable and having global reach through

    - Sharing of ideas through face-to-face and web-based fora to strengthen the understanding of SE concepts and their direct application to address members needs
    - Provide the platform for members to learn from the experiences of INCOSE experts
- To build upon the base SE technical and management competencies derived from the varied perspectives and experiences from players of different sectors who are part of the working group
- To support INCOSE's mission to establish possible collaborations and partnerships with other technical working groups which would create value to the SE development efforts in the Oil and Gas industry
- Encourage and support the publication of papers, Panels, Tutorials and Round Table sessions at the INCOSE Int'l Symposium
- Setup face-to-face meetings at INCOSE Int'l Workshops

3 SCOPE

The Oil and Gas Systems Engineering Working Group will address the challenges and work towards a common solution for its members when trying to implement SE and making it a sustained way of working in their organization. The Working Group further aims to identify new or build-upon existing infrastructures that would support the advancement of SE processes specific to the needs of the Oil and Gas industry. The products of the working group (publications, events, etc.) will address the needs of the entire Oil and Gas supply chain, from owner operators, through to EPCs, service providers and equipment suppliers. They are intended to help both beginners and advanced SE practitioners.

Organizational

- Contracts and Procurement enabled by Requirements Engineering
- Cooperation with EPC and suppliers through an SE scheme
- Lessons learned in implementing SE
- Lean SE and agility
- Lean discipline structure (functional vs single)

MBSE and Architecture Frameworks

- State of the art in systems modelling
- Identification/development and mapping of tools and processes used in the industry
- Common risk-based architecture framework to address engineering, operational, safety, commercial and all other non-technical risks
- Common Information Management framework to address the interdependencies across the various owner-supplier domains for effective data flow
- Ontologies and formal methods

Systems Engineering Processes

- Requirements Engineering – realizing the "V"
- Architecture driven design
- Competencies

Training and Development

- Systems Engineering Training Support

4 SKILLS AND EXPERTISE REQUIRED

For the intended work scope of the group, a key requirement is for members to have an in-depth knowledge of the Oil and Gas industry but with a basic knowledge of SE, with some experience in SE or in at least one aspect related to SE. The group requires members with current or past role in system design, cross-disciplinary and cross-functional integration and management, systems architecting, cross-organizational interface development who can support the propagation of SE processes at the organizational level across the supply chain.

5 MEMBERS, ROLES AND RESPONSIBILITIES

Full terms of reference, member participation and roles & responsibilities of the oil and gas working group will be defined with participating members after the announcement of the working group during the INCOSE forum in July. Members identified prior to the July forum could also iterate on this charter to bring it to further maturation prior to the meeting.

Below is a suggested list of working group members and the roles and responsibilities of those members, which are to be discussed further and agreed within the working group.

- Working Group Chair

- Co-Chair(s) – Shell and GE Oil and Gas
  - Overall leadership of WG activities and INCOSE Focal Point for Oil & Gas collaboration (INCOSE Central, Outreach, Cross WG Integration)
  - Represents Oil & Gas WG to Technical Operations and Assistant Director
  - Elaborate and monitor the annual budgets and activity plans
  - Establish working teams (task forces) and Project Plans with group leaders to tackle specific needs and ensure the correct value is being delivered
  - Report to INCOSE Technical Leadership
  - Consolidate, allocate and elaborate yearly budget requests
  - Participate in Technical Operations monthly teleconferences (not mandatory)

- Members: Potential members are: Systems Engineers working in the industry or academia with interest in Oil and Gas issues (For example SHELL, GE Oil and Gas, IBM, FLUOR, Siemens, FLOWSERVE, Kongsberg Univ. Norway, Georgia Institute of Technology)

  - Individual WG members to help deliver against the working group schedule
  - Contribute the direction and purpose of the oil and gas working group
  - Align to the working group Initiative
  - Able to bring either Systems Engineering or domain experience

- Administration Leader: TBC
  - Administer the electronic collaboration supports of the group: mailing list, website, INCOSE connect site (share point), LinkedIn page (TBC)
  - Ensure the logistics for the group meetings (webinars, conference facilities, invites) and capture meeting minutes
  - Assist co-chairs in monitoring the yearly activity plan

- INCOSE Liaisons Leader: TBC (Paul Schreinemakers)
  - Establish contacts with necessary INCOSE instances (IOB, TechOps) and ensure the participation of the group to the activities of these instances
  - Ensure INCOSE leadership takes into account the needs and concerns of the Oil & Gas sector as formulated by the group
  - Establish links with relevant industry and cross-domain working groups and act as a stakeholder to align these groups, such as: Power & Energy WG, Requirements WG, Architecture WG, MBSE Initiative.

6 OUTCOMES

Deliverables and associated action plans of the group will predominantly stem from the list of topics defined and maintained by the group. Some of these topics could be the object of roundtables, panels, webex's or specific working meetings to be held during the international workshop or symposium.

Some examples of outputs in the first year of formation of the group are to include:

- Report on the state of SE practice in the industry
- Member survey on MBSE tools
- SE process maps pertaining to the various segments of the oil and gas industry
- Case studies from other industries
- Newsletters (on a quarterly basis)
- Consolidated mailing list, SE O&G connect site, LinkedIn page

7 APPROACH

All the activities of the oil and gas working group will be clearly defined in the INCOSE Oil & Gas delivery schedule. This schedule will be monitored and updated on a quarterly basis (held locally or via webex) to ensure adherence to the plan's key activities and milestones.

General themes that will be covered in this plan (but not exclusive to) are:

- Key topics and actions/tasks discussed within the working group, which will then be reviewed and prioritized by the working group 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 schedule

The schedule will then be reviewed during the two main INCOSE events (International Workshop and International Symposium).

Delivery against this schedule will require the right resources to be aligned with the key activities in the schedule and committed to the various meetings/reviews that will be planned throughout the year. It is expected that all organizations detailed in Section 5 provide at least one resource to the various initiatives to allow successful delivery of these activities.

8 MEASURES OF SUCCESS

Detailed measures of success for individual products and services produced will be contained in the Technical Project Plan. Other measures of success of the working group include:

- Membership size and yearly growth
- Number of oil and gas operators, EPCs, service providers, OEMs, Standards organizations and universities participating in the group
- Number of Corporate Advisory Board members identified with the Oil and Gas Industry
- Number of different geographical zones covered by the group
- Coverage and rate of completion of products and services as defined in the Technical Project Plan
- Number of SE-related successful initiatives within member organizations

9 RESOURCE REQUIREMENTS

The following resources will be required from INCOSE:

- A Dedicated space in the INCOSE website
- Access to INCOSE mailing lists and organizing telephone or webex's, including infrastructure support (e.g. telecoms, Microsoft LiveMeeting)
- Funding for the publication of deliverables (graphic design and printing for distribution at promotion events and INCOSE events)
- Promotion of the Oil & Gas working group and its products/purpose
- Support and participation of senior SE experts of INCOSE to the events organized by the group
- Facilitating connections with INCOSE working groups, initiatives and chapters.

Resources from participating organizations within the working group will also be required to ensure a meaningful and successful working group is created. These resources have also been mentioned in Sections 5 & 7. It will be expected that at least 1 resource from each participating organization will attend the planned working group meetings/calls.

The estimated resource required for this working group will be finalised after the first working group meeting currently planned to take place at the International Symposium in July 2016.

10 DURATION

This Charter will remain in effect until rescinded by the signatory. It will be reviewed on an annual basis and modified if needed.

11 SIGNATURES

Enter the signature block of the submitter(s) Date

1st Level of Approval

Technical Director, INCOSE Date 24 June 2016