



## INCOSE Natural Systems Engineering Working Group Charter

### 1 PURPOSE

The Natural Systems Engineering Working Group is established to evaluate changes to established System Engineering processes and communications, which will help to take full advantage of natural systems, including biological systems research, bio-mimicry capability, bio-inspired design successes and engineers with relevant skills sets. The group will consider changes to traditional relationships between System Engineering and both Science and Technology, as well as with other external disciplines, such as Enterprise Architecture.

### 2 GOAL

The Working Group will provide the following Assessments and Recommendations:

- (1) **Assess State of the Discipline on a Regular Basis.** Develop associated white papers, presentations, and tutorials, and provide reference material in a retrievable fashion.
- (2) **Establish/cultivate a Natural Systems in System Engineering Community of Practice.** This group will work to extend members' knowledge of design inspired by natural systems and investigate the systematic consideration of natural systems in the System Engineering process. The group will use this information to provide a knowledge service to INCOSE and to influence SE standard process models. Regular teleconferenced briefings will be recorded and stored as accessible webinars to enable later reference by members and grow this community of practice.
- (3) **Develop and Document Best Practices and Success Stories** based on the above assessments and CoP activities and share them with the INCOSE membership. Webinars of at least the CoP presentations will be made accessible on a NSWG website.
- (4) **Recommend Enhancements to Standard Process Models** (such as the INCOSE SE Handbook) that will benefit by inclusion of information from natural systems.
- (5) **Create Growth in numbers and scope** of participants, networking with other groups. Collaboration with outside groups will be encouraged.

### 3 SCOPE

The Natural Systems Working Group will provide a focal point for gathering current information on the application of Natural Systems to Systems Engineering and the disciplines that support it. As such, they will provide a resource for other INCOSE Working Groups and Committees to draw on for relevant inquiries. The group will follow through on recommendations and make periodic updates to the products above as well as make recommendations for other products, sessions, and reports. The NSWG will maintain files and data bases so as to provide easy access to its work by INCOSE members.

### 4 SKILLS AND EXPERTISE REQUIRED

A background in practical application of System Engineering Processes and the Inspired design and mimicry of natural systems will be important. Experts in understanding integrated biological systems and functions, as well as interactions of living as well as non-living systems in various ecosystems will be helpful. We need skills and expertise in INCOSE and AIAA documentation and



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change processes for System Engineering practices. Consultants in Science and Technology processes, as well as Enterprise Architecture, will be important as well.

### 5 MEMBERS, ROLES AND RESPONSIBILITIES

List the names of members and briefly describe their responsibilities.

- Lead: George Studor
  - o Working Group Kick-off Chairman
  - o Responsible for the initial Working Group kick-off and coordinating a functional working group leadership, direction, plans, initial membership, and stakeholders.
  - o Responsible for coordinating selection of long-term leadership.
- Co-Lead(s): Curt McNamara
  - o Responsible to act in the absence of the lead and cooperate in leadership decisionmaking.
- Board Sponsor(s)/Champion(s): Steve Else, Ph.D., Assistant Director, Knowledge
  - o Responsibilities: The Board sponsor shall be responsible for resource advocacy and status reporting to the INCOSE BOD and external stakeholders.
- Members: Larry Pohlmann, Luke Friendshuh, Lenard Troncale, Jamie Carson, Lonnie VanZandt, Roger Burkhart, and Steve Else.

### 6 OUTCOMES (PRODUCTS/SERVICES)

The exact intended deliverables (products/services) that will be produced by those participating in this WG/Initiative will be defined in the technical project plans (TPP's) that support each of the goals and scope identified above. TPP's shall be developed, submitted, and tracked as defined by the applicable Technical Operations procedure.

### 7 APPROACH

#### Meeting Frequency:

Monthly: Planning, Progress, Actions, Issues

Monthly: Community of Practice - Presentation and Communication

Annually: Face-to-Face Planning and Presentations at INCOSE IW or INCOSE IS

**Decision-making:** Leadership will be move forward with an emphasis on evaluation and proposing changes which we expect will be matured with external review. While 100% membership consensus is not required, opportunity for private input and open debate will be provided.

**Norms or ground rules:** Motivation and Inclusion will be promoted along with fact and practicality of the work schedule taken on as well as the changes we promote.

**Accountability:** The leadership is responsible for the products and schedule, group health and growth, communications inside the working group as well as outside groups. Individual





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members will be accountable for their teamwork and individual responsibilities they agree to.

**Communications:** Individual opinions will not be expressed as working group opinions. Leadership will make every effort to clearly document what is or is not an agreed to opinion of the group so as to help team members know which is which.

**Challenge:** This is a broad subject with many implications and a new area for INCOSE as well as many System Engineering disciplines. We hope to build a team and make incremental changes in documentation and implementation, so the challenge will be patience and perseverance to start something that could take a long period of time to see real change.

### 8 MEASURES OF SUCCESS

- Progress and Completion of products that support NSWG Goals
- Number and Satisfaction of Stakeholders
- Number and Satisfaction of Active Members
- Number and Satisfaction of Enterprises involved



### 9 RESOURCE REQUIREMENTS

- Monthly Telecoms - international
- LiveMeeting
- Retrievable Document archive/website
- Annual Workshop support - location, advertising

### 10 DURATION

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

### 11 SIGNATURES

	Typed/Printed Name	Signature	Date
Submitter:	George Studor		25 Feb '13
1 <sup>st</sup> Level of Approval:	Steve Else, Ph.D.		Feb 25, 2013
Technical Director, INCOSE:			
2 <sup>nd</sup> Level of Approval:			
Chairman, INCOSE Board of Directors:			

### Revision History

<u>Date</u>	<u>Revision</u>	<u>Description</u>	<u>Author</u>
Nov 29, 2012	1.0	Initial Draft	George Studor
Feb 20, 2013	1.1	Revised Draft	Steve Else, Ph.D.