



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

