INCOSE Complex Systems Working Group Charter

1 PURPOSE

The INCOSE Complex Systems Working Group (CxSWG) operates to enlarge the intersection of Complex Systems Science and Systems Engineering, focusing on knowledge that is not addressed in current systems engineering documentation such as standards, handbooks, and textbooks. Applicable sciences include chaos, complexity, complex adaptive systems, nonlinear static and dynamics, networks, social science, neuroscience, evolution, power laws, ecology, and others.

2 GOAL

Develop useful products that will help INCOSE members and their organizations perform systems engineering better, based on knowledge from these sciences. The goal of the CxSWG is to make a difference in synthesis (creation of new systems) as well as analytical methods.

We work on:

- Discovering what is available in complex systems sciences that can be applied to systems engineering
- Communicating both science knowledge and systems engineering applications
- Producing guidance and templates to help members do better systems engineering.

The 2012-2013 goals are to increase our knowledge of complex systems and communicate that to INCOSE members, and to define how the systems engineering community currently addresses complexity, noting shortfalls that might be approachable.

3 SCOPE

The INCOSE Complex Systems Working Group (CxSWG) is an evolution of the earlier Systems Science Enabler Group, conceived of, initialized and run by Brian White of Mitre from January 2006 to January 2008. In its previous incarnation as the Systems Science Enabler group, a major accomplishment was an issue of the INCOSE INSIGHT newsletter with a Complex Systems theme.

The INSIGHT issue on Complex Systems provides a scoping for this working group, indicating the breadth of areas commonly considered to be part of the Complex Systems Sciences. Soft copies of this issue are available on the INCOSE CxSWG site.

Our primary interface is with the current Systems Science Working Group (SysSciWG). The SysSciWG focuses on the breadth of the systems sciences, and the CxSWG focuses on the issues of chaos and complexity in particular, especially system characteristics such as emergent behavior, complex adaptive behavior, nonlinear static and dynamics, networking and reflexivity, evolution, and power laws, for example.

4   SKILLS AND EXPERTISE REQUIRED

CxSWG members should have a breadth of curiosity about the complex system sciences and be willing to bring them into systems engineering. We interface with external groups as appropriate, including the ISSS (International Systems Science Society) and those groups who share individual members with us. Acquiring, organizing, and communicating knowledge of the sciences is an ongoing purpose of this group.

5   MEMBERS, ROLES AND RESPONSIBILITIES

List the names of members and briefly describe their responsibilities.

- Lead: Dr. Sarah Sheard
  - o   Set direction, maintain list of members, motivate members, search for more members, coordinate group tasks with individuals, and perform group tasks as desired. These include setting up yearly meetings at the International Workshop.
- Co-Leads: Eric Honour and Dr. Duane Hybertson
  - o   Act in the absence of the lead, and select interesting tasks to pursue.
- Communications Officer: tbd
  - o   The Communications Officer maintains the group web site.
- Board Sponsor(s)/Champion(s): (If applicable) Bill Miller
  - o   Responsibilities. The Board sponsor shall be responsible for resource advocacy and status reporting to the INCOSE BOD and external stakeholders.
- Members
  - o   Core Members commit to perform work for the group. Core members receive all group emails.
  - o   Key Reviewers commit to review work done by the group. These must have a "senior" level of knowledge in the area reviewed. Key reviewers receive all formal group emails.
  - o   Interested Parties receive notice of available work products and, as appropriate, additional working group information such as webinar invitations.

6   OUTCOMES (PRODUCTS/SERVICES)

The group puts on monthly webinars in the area of systems sciences and their application to systems engineering. A position paper is in work..

7   APPROACH

The CxSWG meets at least annually at the International Workshop. Active members, those working on active products, have decision making responsibility jointly, but in the case of controversy, the lead is the ultimate authority.

All groups have access to the email addresses of other group members on the INCOSE web site and are encouraged to communicate directly.
Initiatives may be created within the CxSWG by any member, and may be carried forward if two or more members continue to participate and if the initiative fits within the scope of this charter.

8   MEASURES OF SUCCESS

A. Number of members wishing to be listed as Core Member, Key Reviewer, and Interested Parties.
B. Number of webinars produced.
C. Number of participants in webinars.
D. Number of products with a committed leader, due date, and plan.
E. Number of other products than webinars released in a year.

9   RESOURCE REQUIREMENTS

LiveMeeting webinar support, web and telephone calls, both live and downloading capability for the future, meeting room during IW.

With the Systems Science working group, consideration for some ISSS personnel to attend INCOSE free. (MOU in place)

Travel funds for INCOSE representatives from WG to attend non-INCOSE Complex Systems Sciences meetings. (MOU in limbo).

10   DURATION

No end date; this Charter will remain in effect until rescinded by the signatory.

11   SIGNATURES

Enter the signature block of the submitter   Date

1st Level of Approval

1st Level of Approval

                                                         Date   August 23, 2011

Technical Director, INCOSE

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
2011/8/23	1.0	Initial Draft	
2012/9/10	1.1	Update	Sarah Sheard