

INCOSE Panel 2: [Roundtable Format]

“The Role of Systems of Systems Engineering in Systems Engineering of the Future”

Over the past six (6) months, the International Council on Systems Engineering (INCOSE) has started a new initiative focused on Systems Engineering of the Future (SEOTF). The initial discussion included that “The scale of complicated and complex systems and services continues to increase exponentially with intricate and often hidden interfaces and interrelationships, and operating in a dynamic and non-deterministic world.” This initiative has indicated that although there have been many improvements and advancements in SE, there is an urgent need to evolve SE in a manner that enables us to leverage the new technologies and manage the challenges.

In many ways the SoSE community has already been focused on these challenges which often characterize the systems of systems environment, in which multiple independent systems are interacting to support broader capabilities. This community has been looking at ways to address the complexities that result from independencies among elements of systems in the SoS, both those apparent and those which may be discovered over time.

This roundtable discussion will address the following questions:

- How can the experience of the SoSE community provide insights into the drivers for SE of the future to address the dynamic, nondeterministic, and evolutionary environment typical of SoS and increasing characteristic of systems in general?
- How much is the growth in SoS applications driving the future of SE?
- What impact will the use of advanced technologies, such as autonomy and artificial intelligence, have on SoSE?
- How can the current SoSE approaches address the challenges of systems that are self-learning, self-organizing, self-adapting, etc.?

Moderator:

Garry Roedler, Lockheed Martin / INCOSE

Roundtable Participants:

Judith Dahmann, The MITRE Corporation, USA

Jakob Axelsson, Mälardalen University and the Swedish Institute of Computer Science, Sweden

Chris French, Shoal Group, Australia

Vincent Arnould, Naval Group, France

Tom McDermott, Systems Engineering Research Center at Stevens Institute of Technology, USA

Mo Jamshidi, University of Texas, San Antonio, USA

Alan Harding, BAE Systems, UK

Kerry Lunney, Thales, Australia

Mike Yokell, Lockheed Martin, USA

Gerrit Muller, Buskerud University College, Norway

Paul Hershey, Raytheon, USA

Ramakrishnan Raman, Honeywell Technology Solutions Lab, India

Don York, Engility Corporation, USA

Mo Mansouri, Stevens Institute of Technology, USA

Cihan Dagli, Missouri S&T, USA

Francois Coallier, ETS, Canada

Matthew Jordens, Deakin University, Australia