System of Systems Engineering Collaborators Information Exchange (SoSECIE)

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DANSE – An Effective, Tool-Supported Methodology for Systems of Systems Engineering in Europe

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Abstract
The European Union has placed significant funding for Systems of Systems (SoS) research into its Seventh Framework Programme (FP7). DANSE is an EU-funded FP7 project being executed by an industrial consortium of 12 major corporate partners. Now nearing the end of its 3-year objectives, DANSE has developed an effective, iterative methodology for the evolution and adaptation of a SoS. The methodology is supported by software extensions and add-ons to standard DoDAF/UPDM system architecting tools such as Rhapsody and System Architect. The add-ons to standard architecture diagramming allow

- Joint simulation of UPDM, SysML, and other model forms created in Rhapsody, System Architect, Modelica, Simulink and other tools, such that all models simulate together.
- Statistical model checking of defined goals and objectives during the simulation.
- Automatic generation of architecture variations for analysis, using graph grammar rules.
- Automatic generation and optimization of architecture variants using concise modeling.
- An architectural pattern repository for modifying the SoS architecture, with results linked into Rhapsody UPDM models.
- Automated SoS validation methods.

The methodology is currently being tested in three widely varied SoS developments by industrial partners.

Biography
Dr. Eric Honour, CSEP, INCOSE Fellow, and former INCOSE President, has been in international leadership of the engineering of systems for over 20 years, part of a 45+ year career of complex systems development and operation. His energetic and informative presentation style actively involves participants. He was the founding Chair of the INCOSE Technical Board in 1994, and served as Director of the Systems Engineering Center of Excellence (SECOE). He was selected in 2000 for Who's Who in Science and Technology and in 2004 as an INCOSE Founder. He is on the editorial board for Systems Engineering. He has been a successful entrepreneur, systems engineer, engineering manager, and program manager at Harris Information Systems, E-Systems Melpar, and Singer Link, preceded by nine years as a US Naval Officer flying P-3 aircraft. He has led or contributed to the development of 17 major systems, including the Air Combat Maneuvering Instrumentation systems, the Battle Group Passive Horizon Extension System, the National Crime Information Center, and the DDC1200 Digital Zone Control system for heating and air conditioning. Dr. Honour now heads Honourcode, Inc., a training and consulting firm offering effective methods in the development of system products. Dr. Honour has a BSSE (Systems Engineering) from the US Naval Academy, MSEE from the Naval Postgraduate School, and PhD from the University of South Australia based on his ground-breaking work to quantify the value of systems engineering.