

System of Systems Engineering Collaborators Information Exchange (SoSECIE)

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9:30 a.m. to 10:30 a.m. Eastern Time

Measurement and Evaluation for SoS

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Abstract

The assessment of performance and quality is essential to the engineering and evolution of Systems of Systems (SoS); however, there has been limited discussion of SoS measurement and evaluation in the literature. This study reviewed the measurement and assessment literature across multiple disciplines to address this gap and applied constructive research to design principles and a method for SoS evaluation. Relevant challenges, best practice elements and measure generation processes were identified within each discipline for alignment with Systems of Systems characteristics. Applicable best practice was synthesized into three key areas necessary for SoS evaluation: measure development, determination of good metrics, and assessment. Metric generation processes were shortlisted and applied in case studies to identify process elements most suitable for SoS. Insights from case studies were then used to synthesise a generic process for SoS metric generation. An instrument to support the method was then developed and further applied to a case study to confirm the applicability of the process. This study provides practitioners with the core practices, method and an instrument necessary to enable tailored and enhanced SoS assessment.

Biographies

Jaci Pratt holds a BSc (Hons) in geophysics & computer science from Flinders University and is completing a PhD in system-of-systems engineering with the University of Adelaide. She is a System-of-Systems Engineering and Integration researcher in the Defence Science and Technology (DST) Group within the Australian Department of Defence in South Australia. Ms Pratt has worked in DST Group for over 30 years in areas as diverse as Modelling & Simulation, RF Stimulation, Experimentation, IT, Systems Analysis, and Test & Evaluation supporting Land, Air, Maritime, and Intelligence domains.



Stephen Cook is a Systems Engineering Advisor with Shoal Group Pty Ltd. He is also the Professor of Defence Systems at the University of Adelaide where he researches and teaches system engineering and complex project management. Until June 2014 he was the Professor of Systems Engineering at the University of South Australia where he led numerous research concentrations for over 15 years. Preceding this he accumulated 20 years of industrial R&D and SE experience spanning aerospace and defence communications systems. Prof Cook, PhD, is an INCOSE Fellow, a Fellow of Engineers Australia, and a Member of the Omega Alpha Association.

