

System of Systems Engineering Collaborators Information Exchange (SoSECIE)

June 25, 2019
11:00 a.m. to Noon Eastern Time

A Tool for Architecting Socio-Technical Problems: SoS Explorer *Presenter: Dr. Cihan Dagli, Missouri University of Science and Technology*

Abstract

Socio-Technical systems entail complex logic and reasoning with many levels of reasoning in intricate arrangement organized by web of connections and demonstrating self-driven adaptability. They exhibit emergent behavior that can be visualized. The challenge in Socio-Technical system design is to create an organized complexity that will allow a system to achieve its goals that are dynamically changing. They have dynamically changing meta-architectures. Finding a series of satisfying architectures for these systems is a multi-criteria decision making problem often involving many objectives in the order of 20 or more. This creates a “Pareto Breakdown”. In this talk SoS Explorer developed at Missouri S&T will be introduced as a tool that allows an architect to computationally produce optimal meta-architectures for solving Socio-technical problems will be explained and demonstrated using a notional problem such as cyber security.

Biography

Dr. Dagli is a Professor of Systems Engineering and Engineering Management and also a Professor Computer and Electrical Engineering. He is the founder of Missouri S&T’s Systems Engineering Graduate Program and the director of the Smart Engineering Systems Lab (SESL). He received B.S. and M.S. degrees in Industrial Engineering from the Middle East Technical University and a Ph.D. Applied Operations Research in Large Scale Systems Design and Operation from the University of Birmingham, United Kingdom, where from 1976 to 1979 he was a British Council Fellow. Dr. Dagli is a fellow of International Council of Systems Engineering INCOSE 2008 and Institute of Industrial and Systems Engineers IISE 2009. His research interests are in systems engineering and systems architecting, cyber physical systems, deep learning, machine learning and computational intelligence.

