# System of Systems Engineering Collaborators Information Exchange (SoSECIE)

## ****July 13, 2021********11:00 a.m. to Noon Eastern Time****

### Developing Meta Systems Architectures for Leading Innovation with Complex Societal and Technical Challenges

***Presenters: Dr. Cihan Dagli***

#### Abstract

Multi-faceted systems of the future will entail complex logic and reasoning with many levels of reasoning in intricate arrangement organized by a web of connections and demonstrating self-driven adaptability. They are designed for autonomy and exhibiting emergent behavior that can be visualized.

In this talk, possible mission engineering approaches for developing meta systems architectures for leading innovation in complex adaptive societal systems will be discussed. Impact of AI in development of these systems will be highlighted. The approaches that can be used in meta-architecture development, assessing that the right system behavior can be generated for a selected meta-architecture and monitoring and predicting the behavior changes through digital twins will be introduced and the way to move to the next innovation is outlined.

#### Biography

Dr. Dagli is a Professor of Systems Engineering and Engineering Management, and is also a Professor of 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. in 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 the International Council of Systems Engineering (INCOSE) 2008 and Institute of Industrial and Systems Engineers (IISE) 2009 and International Foundation of Production Research 2019. His research interests are in systems engineering and systems architecting, cyber physical systems, deep learning, machine learning and computational intelligence.