# System of Systems Engineering Collaborators Information Exchange (SoSECIE)

## ****April 21, 202011:00 a.m. to Noon Eastern Time****

#### Mission Engineering, Systems Engineering and Systems of Systems Engineering

***Presenter: Dr. Andreas Tolk, The MITRE Corporation***

#### Abstract

Although there is no commonly accepted definition of Mission Engineering (ME) available, within the community of practitioners ME is generally understood to be the deliberate planning, analyzing, organizing, and integrating of current and emerging operational and system capabilities to achieve desired warfighting mission effects. The work presented in this presentation focuses on current directions in Defense ME and approaches to applying SoS and SE approach to ME. The contribution addresses the definition, overlap, and individual contributions of systems engineering for systems, system of systems, enterprises and now missions as a foundation to help for leveraging and adapting current systems engineering approaches and to identify areas for future research. It tries to contribute towards a better understanding of concepts, methods, and tools for ME. The presentation was originally given at the 22nd Annual Systems and Mission Engineering Conference in Tampa, FL, October 2019, and is co-authored by Dr. Judith Dahmann and Dr. Steven Doskey.

#### Biography

Dr. Andreas Tolk is Senior Computer Science Principal in the Modeling, Simulation, Experimentation, and Analytics Tech Center at The MITRE Corporation. He is an adjunct Professor at Old Dominion University. He received his Ph.D. in Computer Science (1995) and his M.S. in Computer Science (1988), both from the University of the Federal Armed Forces, Germany. Before joining MITRE in 2015, he has been Chief Scientist at a Small Business, Professor in the Department of Engineering Management and Systems Engineering at the Old Dominion University holding a joint appointment with the Modeling, Simulation, and Visualization Engineering department, and Senior Research Scientist at the Virginia Modeling Analysis & Simulation Center (VMASC). Dr. Tolk has more than 250 publications in book chapters, journals, and proceedings. He edited 12 books, among them the "Engineering Principles of Combat Modeling and Distributed Simulation" (Wiley, 2012), “Modeling and Simulation Support for System of Systems Engineering Applications” (Wiley, 2015) and “Emergent Behavior in Complex Systems Engineering: A Modeling and Simulation Approach” (Wiley, 2018). Dr. Tolk received multiple prestigious awards for his contributions. He is a Fellow of Society for Modeling and Simulation International (SCS), and a senior member of the Association for Computing Machinery (ACM) Special Interest Group Simulation (SIGSIM) and the Institute of Electrical and Electronics Engineers (IEEE).