# System of Systems Engineering Collaborators Information Exchange (SoSECIE)

## ****January 14, 202011:00 a.m. to Noon Eastern Time****

#### Complex System Governance: Concept, Utility, and Challenges

***Presenter: Dr. Chuck Keating, Old Dominion University***

#### Abstract

The purpose of this webinar is to introduce Complex System Governance (CSG) as an emerging field extending System of Systems Engineering (SoSE). CSG is focused on advancing the design, execution, and development of nine critical system functions performed by all complex systems. The nine CSG functions provide communications, control, coordination, and integration that ultimately determines the level of system of systems performance. The functions are subject to the ‘laws’ of systems. Violation of ‘system laws’ produces *‘deep system failures’* that are routinely observed (e.g. cost overruns, schedule slippage, excessive employee turnover) in complex systems. CSG identifies observed symptomatic system failures and traces their origins to underlying system deficiencies in design, execution, or development. Following the brief introduction to CSG, utility it examined in four application scenarios. These scenarios demonstrate how CSG is deployed in operational settings and the contributions that the field can make to advance SoSE practice. The Webinar closes with a set of challenges related to CSG development and deployment.

#### Biography

Dr. Chuck Keating is a Professor in the Engineering Management and Systems Engineering department at Old Dominion University. A faculty member since 1994, he also serves as the Director for the National Centers for System of Systems Engineering (NCSOSE) and focuses on teaching and research in the areas of Systems Engineering, System of System of Systems Engineering, Management Cybernetics, and Complex System Governance. He is a Fellow and Past President of the American Society for Engineering Management and in 2015 was awarded the society’s most prestigious award (the Sarchet Award) for his pioneering efforts in the field. He has authored over 130 peer reviewed papers, generated over $20M in research funding, and graduated 25 Ph.D.s. His research has spanned a variety of organizations including defense, security, aerospace, healthcare, R&D, and automotive. Prior to joining the faculty at ODU he served in leadership and technical engineering management positions for over 12 years in both the U.S. Army and private industry. He holds a B.S. in Engineering from the United States Military Academy (West Point), a M.A. in Management from Central Michigan University, and a Ph.D. in Engineering Management from Old Dominion University. He is a member of the American Society for Engineering Management, the International Council on Systems Engineering, and the International Society for System Sciences.