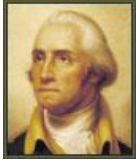


The Nature and Use of Systems of Systems Approaches in Public Policy-Making and Program Management

Location:
The George Washington University
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As human society grows more interconnected and complex, government agencies are faced with evolving needs to provide better services in more timely ways to their stakeholders in domestic as well as foreign affairs. The central challenge for public policy makers and program managers lies in the highly fragmented nature of the enterprises in which they work and the approaches they use to fulfill their responsibilities. Many current issues are hyper-complex, with multiple interdependencies among independent components, and solutions require significantly greater degrees of integration than has historically been the case.

During the past decade there has been increased interest in the use of Systems of Systems (SoS) approaches to help address these challenges, especially within federal agencies of the United States (initially within the Department of Defense, but more recently in other groups like NASA, EPA, and Department of Homeland Security). These emerging approaches focus on developing scientifically rigorous and practically useful ideas, processes, methods, and tools that improve the coordination of independent components systems (highly complex and often self-organizing phenomena) to create different sets of recomposable systems of systems (hyper-complex and self-evolving phenomena) which provide integrated capabilities that cannot be achieved by the component systems themselves.

This presentation summarizes the history and basic natures of these SoS approaches, which are fundamentally based on advanced contributions of systems science/cybernetics, and shares how they are being used in a variety of selected application arenas (national strategy, defense acquisition, defense logistics, critical infrastructure protection, homeland security, elder care, organizational transformation, and nanotechnology policy).

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