CSIS DEFENSE-INDUSTRIAL INITIATIVES GROUP LAUNCHES NEW PROJECT
Organizing for a Complex World:
Designing, Developing and Deploying Complex Weapon and Net-centric Systems – Lessons of the Past and the Way Forward

The CSIS Defense-Industrial Initiatives Group is excited to announce the launch of a new project in partnership with the M.I.T. Security Studies Program, and the support of the OSD Systems and Software Engineering Directorate, focusing on one of the most challenging issues facing the Department of Defense today: the development and fielding of large, complex, systems-of-systems.

When faced with prior leaps in complexity, the defense community invested in and developed new management and analytical tools, created new organizational structures and fundamentally changed policies. For example, in the early days of the Cold War, PERT was developed to help manage the Polaris Missile program and new organizational constructs such as the FFRDC were created. Today, the Department of Defense faces a similar leap in complexity as the information revolution presents the opportunity to create large, complex net-centric systems-of-systems. Furthermore, individual weapon systems are becoming more complex as more technology is inserted, requirements mount and capabilities increase. Gaining maximum benefit from these innovations requires not only overcoming the technical challenges, but also confronting fundamental and profound policy, organizational and doctrinal issues. Both Deputy Secretary of Defense Gordon England and Undersecretary of Defense (AT&L) Ken Krieg have identified the issue as critical.

The CSIS/M.I.T. project will take on two major topics:

- How do you best organize to create these large systems-of-systems/system architectures and more complex weapon systems?
- What metrics, tools, and analytics can policy makers/managers use to assess, measure and manage these system-of-system integration/architecture integration projects and more complex weapon systems?

The core of the program will be six bi-monthly, full-day workshops focused on a particular aspect of the identified topics. These workshops will be supplemented with sponsored research papers by academics, think tankers, and practitioners. In addition, three senior policymaker sessions will be interspersed throughout the year. The ultimate output of the series will be a "handbook" for senior policy makers.

We solicit your involvement in this series, to serve as working group members (must be willing to attend at least three workshops), panel speakers, and to nominate others you may think useful to this inquiry. Please forward this announcement to anyone you believe may have such an interest. A description of the working groups follows, and more details are available from Judy Siegal, 202-775-3128 or jsiegal@csis.org.

Pierre Chao, CSIS DIIG, and Harvey Sapolsky, M.I.T. Security Studies Program

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The current schedule of workshops includes:

Workshop #1: **What Is A "Smart Buyer" in a Complex World?**

What decisions, processes and skills must the government control in order to effectively produce complex systems? What elements can be managed and/or outsourced? Are there lessons from prior leaps in complexity where the definition of "inherently governmental" changed? What analogues in the commercial world can be applied to national security? How are other nations dealing with this issue?

Workshop #2: **Defining Complex Systems: Eccentric or Netcentric**

What is the best way to define and design the large net-centric systems and complex weapon systems needed today and in the future? Are systems being defined by technology and technologists vs. policy and policy makers? What role does the user/war fighter play in defining the system? How do current mechanisms used to define/design systems contribute to or mitigate the complexity of these systems?

Workshop #3: **Competition and Innovation in a Complex Environment**

The government uses competition among industry contractors to determine best value and a way to stimulate innovation. Competition can also be established between government agencies or military services over a particular mission, or between industry contractors to see who can best deliver a solution to a problem. At what level should competition be set and are particular competition solutions better suited for particular types of problems?

Workshop #4: **The Metrics of Complex Systems**

What metrics are appropriate for measuring the effectiveness of complex, net-centric systems? What tools and analytics are currently being used? What is the appropriate level of analysis? Might other analytics and tools being used in the non-defense defense world be of use? Are there out-of-the-box analytics that may be of use (real options, etc.)? How is/should test and evaluation evolve?

Workshop #5: **Complex Weapon Systems Development – Organizational Alternatives for DoD**

DoD currently uses multiple organizational constructs to develop complex weapons and net-centric systems. What are the pluses and minuses of each construct? What is the track record of performance for each construct? Do certain characteristics in a program lend them towards a particular organizational construct?

Workshop #6: **Complex Weapon Systems Development – Organizational Alternatives for Managing the Industrial Base**

DoD currently uses multiple mechanisms to manage and monitor its relationship with its contractors, ranging from program office as systems integrator, to lead systems integrators, SETA contractors and FFRDCs. What are the pluses and minuses of each? Do certain characteristics in a program lend them towards a particular organizational answer?