

The Directorate of Defense Systems

Expanded Mission and Focus

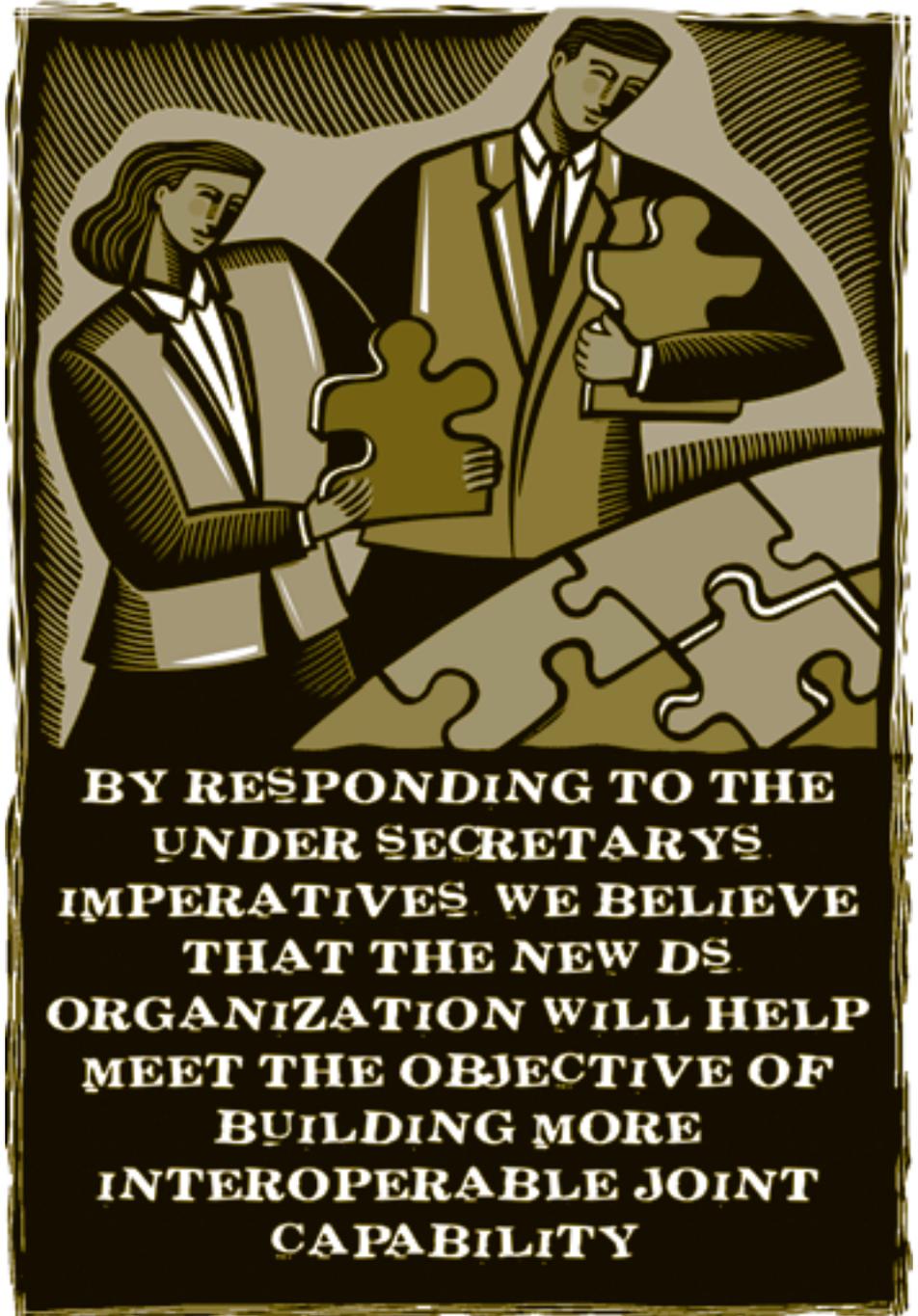
Glenn F. Lamartin

In 2002, the under secretary of defense for acquisition, technology, and logistics (USD(AT&L)) directed a reorganization of his Strategic and Tactical Systems (S&TS) and the Interoperability (IO) Directorates into a new Defense Systems (DS) Directorate.

While DS would retain as its core responsibilities the review and oversight of acquisition programs and an emphasis on interoperability of systems as performed by S&TS and IO, the under secretary expected the new organization to respond also to his belief that we too often lack a mission context within which to make decisions about individual acquisition programs and that we need to drive good systems engineering practice back into the way we do business. He subsequently established three imperatives for the new organization:

- “Provide a context within which I can make decisions about individual programs.”
- “Achieve credibility and effectiveness in the acquisition and logistics support processes.”
- “Help drive good systems engineering practice back into the way we do business.”

This article describes the new DS organization, our mission, and the progress we have made to date implementing the under secretary’s imperatives. By re-



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sponding to his mandates, we believe that the new DS organization (Figure 1) will help meet the objective of building more interoperable joint capability. To this end, DS consists of three directorates:

- Systems and Mission Integration (SMI)
- Systems Acquisition (SA)
- Systems Engineering (SE).

Addressing First Imperative: Systems and Mission Integration

SMI, derived from the former Interoperability Directorate, works with the Joint Staff, military services, combatant commands, defense agencies, and other Office of the Secretary of Defense (OSD) organizations to help evolve increasingly effective joint capabilities for the warfighter. The directorate has the lead to develop Department of Defense (DoD)-wide “roadmaps” for critical areas like joint battle management command and control and for integrated air and missile defense. This responsibility also includes leading the development of “systems views” of joint integrated architectures for warfighting capability areas such as precision engagement or combat identification (Figure 2 on page 26).

The organization’s deputy directors and staff specialists act with considerable autonomy as they lead the development of roadmaps and the systems view of joint integrated architectures, defining what systems to bring together in a system-of-systems approach to meet warfighter needs. Of significance, SMI also works with the intelligence, network information, and operational communities to sort out how best to use systems to achieve mission capability.

While the Joint Staff leads the development of the operational view of the architectures—what the warfighter wants to be able to do and how—SMI represents the acquisition community to make clear what is practical and reasonable. Among the tasks assigned to SMI are guiding first-order capability analyses, helping to lay out capability roadmaps, allocating performance and schedule expectations to individual systems, and working to harmonize development plans and schedules. SMI also promotes initiatives that advance integration across capability areas (for example, the common operating picture), identifies technology gaps and shortfalls, and works with the science and technology community to address them.

SMI consists of three offices: **Joint Force Integration (JFI)**, which establishes and leads key initiatives in-

volving families-of-systems focused on capabilities that cut across traditional Service and combatant command boundaries; **Joint Force Application (JFA)**, which focuses on the integration of weapon systems and platforms into joint integrated architectures in a system-of-systems approach; and **Joint Force Operations (JFO)**, which leads our activities aimed at capabilities enabling joint force operations, such as integrated logistics and electronic warfare.

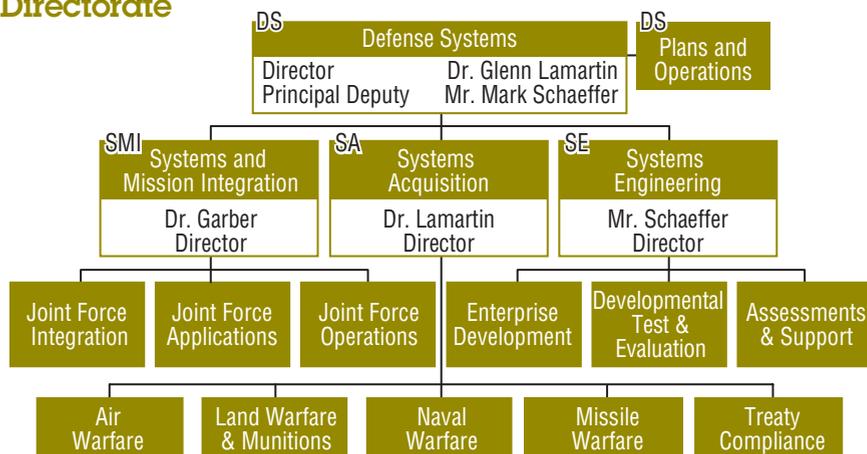
The net effect of SMI’s work is to help meet the under secretary’s first imperative: *to provide a sound context within which he can make decisions about individual programs*. While the Defense Acquisition Board (DAB) continues to focus on program maturity and readiness to proceed to the next phase of the acquisition process, now it can also review them in the context of what capabilities a weapon system contributes. This represents a major shift in the Department’s review process.

Addressing Second Imperative: Systems Acquisition

Program managers (PMs) for major defense acquisition programs (MDAPs) and their senior staffs are probably familiar with the warfare offices that now constitute SA: **Air Warfare, Land Warfare and Munitions, Missile Warfare, and Naval Warfare**. These offices continue to oversee and review acquisition programs in their mission areas. However, with the reorganization, their work has been expanded from acquisition oversight to acquisition support, a more active role of helping ensure that programs succeed as they progress through the acquisition process.

SA helps programs to plan properly, fund adequately, and execute properly. SA also ensures that programs comply with established policy, including the emphasis on capability-based acquisition and use of the spiral development approach. SA surfaces and resolves programmatic issues; assesses progress and ensures that program managers apply best practices in management, acquisition, and en-

FIGURE 1. Organization of the Defense Systems Directorate





**WE HAVE ENABLED THE
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gineering; promotes coordination, cooperation and cross-Service management of joint programs; and promotes initiatives to improve commonality among like systems and processes. SA staff specialists serve as technical representatives to outside organizations and committees on system acquisition matters (providing executive secretaries to Defense Science Board reviews or responding to congressional inquiries, for instance).

Another key element of the SA organization, **Treaty Compliance**, provides technical support to strategic and conventional arms negotiations, makes recommendations concerning treaty implications on the acquisition of new systems, and monitors compliance with treaties and similar agreements.

SA's work is critical to meeting the under secretary's second imperative: *to achieve credibility and effectiveness in the acquisition and logistics support processes*. We believe that SA's staff specialists will be even more effective with the establishment of our new systems engineering directorate.

Addressing the Third Imperative: Systems Engineering

We specifically established the SE directorate to address the under secretary's third imperative: *to help drive good systems engineering practice back into the way we do business*. SE is now working to set policy for systems engineering practice across the Defense Department's acquisition programs and will see to its implementation. The directorate also leads, as needed, assessments of engineering capability and progress and provides independent expert support to program managers who request it. SE will integrate the results of these assessments to gain insight into the causal factors that contribute to problems meeting performance expectations.

SE is divided into three offices: **Enterprise Development (ED)**, **Developmental Test and Evaluation (DT&E)**, and **Assessments and Support (AS)**.

Enterprise Development, at the heart of the systems engineering revitalization effort, is working to raise awareness of the importance of good systems engineering within OSD and the components, to ensure that program managers apply best practices in the planning and execution of programs, and to assess program performance. ED, in collaboration with the military services, academia, professional associations, and industry, is currently defining what constitutes good systems engineering—not in a general or theoretical sense, but in practice—and sharing the results with the acquisition community to ensure the application of best practices in system design, development, production, and support. The office also champions systems engineering training, both for the government workforce and within the private sector. SE promotes the use of sound engineering management tools and the development of new tools and methods.

The **Developmental Test and Evaluation** office ensures the seamless integration of test and evaluation throughout the development process so that systems are ready to proceed to and succeed in formal operational tests. DT&E continues to serve as the primary office on all matters dealing with developmental test and evaluation issues and policy, and is responsible for the review and approval of system T&E master plans (TEMPs). DT&E also promotes the development of new ways for developers, testers, and operating forces to address interoperability among systems. This effort includes the expanded use of modeling and simulation (M&S).

DT&E's staff specialists will provide the focus across DoD to better leverage M&S to establish environments and processes. Our initial goal is to establish a small community of interest across the DoD acquisition community to define a specific vision and roadmap for improving application of M&S in acquisition. This is a significant step toward fielding improved capabilities in less time and with sufficient confidence that the fielded capabilities will perform effectively in both the system and joint mission environments.

The **Assessment and Support** office conducts assessments to improve the balance of cost, schedule, performance, and risk within and across programs that will operate in a system-of-systems environment. AS uses DoD staff resources possessing a wide range of experience and expertise from many organizations. The goal of AS is to help program managers reduce risk through tailored application of an assessment methodology and development of specific recommendations. We conduct two major types of assessments: support and oversight. PMs request support assessments, with the resultant findings and rec-

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Director, Defense Systems, Office of the Under Secretary of Defense (Acquisition, Technology and Logistics)

Assigned to his current position in 2002, Dr. Glenn Lamartin is responsible for matching systems solutions to warfighters' needs, performing technical and programmatic oversight of a wide range of Department of Defense (DoD) acquisition programs for strategic and tactical systems, and for ensuring that individual programs apply good systems engineering discipline.



Lamartin joined civil service in 1972 as a flight test engineer at the Naval Missile Center, Point Mugu, Calif. In 1977, he transferred to Washington, D.C. as a Naval Air Systems Command project engineer and later joined the Joint Cruise Missiles Project Office. In 1984 he was appointed director for Tomahawk system-level test and evaluation.

Lamartin served in a variety of Office of the Secretary of Defense (OSD) positions from 1986 to 2001. He managed shipboard sensors and weapons acquisition programs; and directed design and construction of surface ships and their combat systems, sensors, and weapons. At the end of his first OSD tour, he was responsible for identifying and developing advanced technologies for and the acquisition of ballistic missile defense, cruise missile defense, and offensive strategic weapons systems.

In 2001, Lamartin accepted a position in the Missile Defense Agency where he developed missile defense policy and programmatic guidance, designed acquisition strategies, determined best value for future investments, allocated fiscal resources, established agency management processes, and directed internal reviews of agency operations.

Lamartin received a bachelor's degree in aerospace engineering from the University of Maryland, and a master's in systems management and a doctorate in public administration, both from the University of Southern California.

ommendations developed exclusively for the PM's use. Oversight assessments, on the other hand, provide independent, predictive views on the health of programs as part of the DAB process. We will ensure both types of assessments are constructive, providing actionable recommendations to position programs for success.

AS also conducts systemic analysis on the collected findings from multiple individual assessments. From this analysis, we will develop a set of systems engineering best practices. We will then share these best practices with the acquisition community, including PMs, military services and OSD acquisition staffs, the Defense Acquisition University, industry, and professional associations.

Working Across Directorates

DS's three directorates must work closely together to carry out DS-assigned tasks successfully and meet the under secretary's imperatives. The SMI directorate depends on the product experts in the SA warfare offices for insights into system capabilities and programmatics. In turn, the SA offices look to SMI to provide the system-of-systems context; allocate expectations to individual systems; and lay out mission area capability, roadmaps, and investment plans. The warfare offices also look to SE for advice on what constitutes good engineering practice and to assist in assessments of program plans and progress. In turn, SE relies on the warfare office program experts to ensure that programs properly implement systems engineering policy and best practices.

To help with the integration of the three directorates' efforts and to engage with outside agencies on selected actions, we have established a DS planning and analysis team (PAT). This is not an organizational unit. Rather, it operates as an integrated process team. The PAT is the DS focal point for interaction with the policy community on issues such as strategic planning guidance and joint programming guidance; engagement on Joint Capabilities Integration Development System (JCIDS) strategy and top-level, cross-cutting architecture matters; coordination of all formal study and analysis activities across DS and with outside groups; and engagement in planning, programming, budgeting, and execution system (PPBES) activities. All the DS directorates contribute people to the PAT.

This integration helps to remove organizational boundaries within DS in the daily conduct of our business. Its success depends on an open, collaborative approach.

Recent Accomplishments

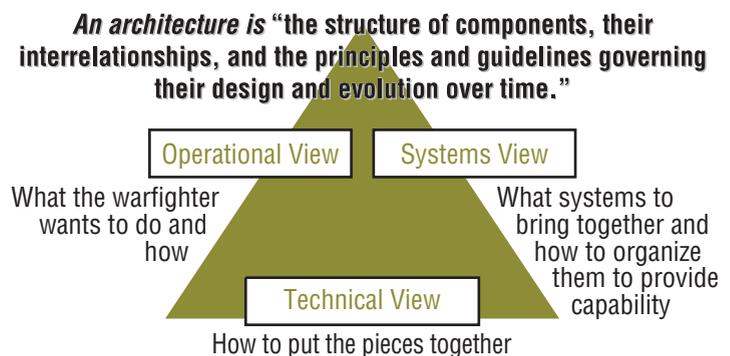
In the past year, the Defense Systems directorate has compiled an impressive record of accomplishments. We have enabled the DoD to make better decisions about where to invest scarce

defense resources by reducing to practice the concept of joint integrated architectures and the use of system-of-systems constructs. This work proved important to make the case to establish the \$3.9 billion Joint-Unmanned Combat Air System (J-UCAS) program.

DS-led analytical work has contributed to the definition of systems architecture views and has produced capability roadmaps and investment strategies for air and missile defense, combat identification, and precision engagement. These have served as a guiding example of how to do it right in setting cost, schedule, and performance expectations for individual programs. We are conducting a new "capability area" review for our air and missile defense mission. Our aim is to help make decisions about individual programs in the context of how their attributes contribute to the overall mission, rather than making a decision about an individual program based on narrowly defined requirements. This means proper execution is a necessary, but not necessarily sufficient, basis for a program to move to the next acquisition phase. Of equal importance is the Department's understanding and acceptance of the fact that the program adequately contributes to the overall mission. This is a major shift in the Department's thinking. DS has built on this by further organizing and leading the development of a roadmap to guide investment and assure interoperability and battle management, command, and control capability across the Joint Force.

A DS assessment established the context for the Milestone B decision for Future Combat Systems (FCS), a highly complex, transformational program that is a key to building the Army's future force. The DS-led team found nearly 50 areas where the Army and its lead contractor could improve their systems engineering approach. The innovative process met with favorable reviews by both the Army and the lead contractor's senior engineering staff. As a result, the program has already adopted almost all of the recommendations and is working on the others. This assessment was a major factor in the under secretary's decision to approve the program's entry into sys-

FIGURE 2. Development of Systems Views of the Joint Integrated Architectures



Source: DoD Integrated Architecture Panel, 1995 • Based on IEEE STD 610.12

tem design and development and the concurrent commitment of about \$15 billion. Because of this engagement, the Department is more confident of the FCS' contributions to warfighter capability and in the Army's ability to execute the program successfully.

Defense Systems' traditional role in the DAB review and decision process continues to be a major thrust of the organization. Over the last 18 months, DS has organized 15 DAB reviews for many of the Department's key weapons programs and led the overarching integrated product team (OIPT) to ensure that the Department's leadership has the right information, at the right time, to be able to make sound technical, business, and programmatic decisions. We have improved the OIPT process by reaching beyond the DoD to include representatives of the Office of Management and Budget (OMB) and the National Geospatial-Intelligence Agency (NGA). By inviting the OMB to see and understand the rationale for our acquisition decisions and their impact on the president's budget, we have taken a major step toward approval of our budget requests, and the inclusion of NGA has helped strengthen ties with the intelligence community. Among the major programs DS has guided to successful DAB outcomes are the FCS, the Virginia Class Submarine (SSN-774), F/A-22, Global Hawk UAV, V-22 Osprey, and Patriot. Each of these programs is critical to our future warfighting capability.

To win over the military services to the value of sound systems engineering, DS has moved quickly to establish systems engineering assessments as a key part of OSD engagement with acquisition programs. In addition to the FCS assessment, DS has conducted collaborative engineering assessments of such high-visibility programs as the F/A-22 and the Joint Strike Fighter. This renewed emphasis on systems engineering, corresponding with the under secretary's goals and objectives, has been met with enthusiasm by PMs and senior corporate executives.

As the DoD retools its acquisition, requirements, and budget processes to enable joint interoperability, Defense Systems is on track to implement the changes and to meet the imperatives set for it by the USD(AT&L). There remains much for us to do, however, including implementing additional tools to support decision-making by the under secretary; strengthening relationships with other OSD staffs, the Joint Staff, Services, combatant commanders, and other stakeholders; and continuing to enable the Department's transition from legacy activities to the new capability-based planning paradigm. Defense Systems, from its directors to the staff specialists, is committed to meeting its mission in support of the success of the AT&L community and the Defense Department in national defense.

Editor's note: The author welcomes comments and questions and can be reached at glenn.lamartin@osd.mil.

Bradley M. Berkson

Designated Acting Senior Official for DoD Logistics and Materiel Readiness

Bradley M. Berkson was designated Acting Principal Assistant Deputy Under Secretary of Defense for Logistics and Materiel Readiness (Acting PADUSD(L&MR)), in January 2004. Berkson joined Office of the Secretary of Defense in January 2003 and is serving as Director, Studies and Analysis for the Senior Executive Council. The Senior Executive Council is the Secretary of Defense's senior management team and includes the Deputy Secretary, the Secretaries of the Military Departments, and the Under Secretary of Defense for Acquisition, Technology and Logistics.



Prior to his appointment, Berkson was president of NEW Customer Service Companies, Inc. He came to that position from IP-Mill, Inc., that he, as founder and CEO, sold to NEW in 2000. IP-Mill, Inc. was engaged in efforts to commercialize business process technology using unique identifiers across the supply chain. Prior to his entrepreneurial efforts at IP-Mill, Inc., Berkson was a Partner at McKinsey & Company, Inc., a leading international management consultancy. At McKinsey, Berkson co-led the firm's Corporate Strategy and Finance, Innovation and Technology Management, and Energy Practices. His client efforts included leading global electronics, energy, and technology companies in work including product development, organizational and financial restructuring, merger, acquisitions and alliances, and operational performance improvement. Berkson also co-led McKinsey's work with the U.S. Marine Corps and Southwest Airlines on best practices in front-line performance. Prior to graduate school, Berkson worked as a Senior Engineer in Exxon's Prudhoe Bay operations on the North Slope of Alaska.

Berkson received a bachelor of science degree in Engineering cum laude from the University of Tulsa in 1985, where he was selected as one of the university's top 10 graduates. He also graduated with a master's in business administration with scholastic honors from Harvard University in 1991. Berkson is married, has two sons, and is a licensed pilot. He flies as a volunteer for several mercy medical airlift organizations, transporting cancer and other patients and their relatives for treatment.