

## FROM THE EXECUTIVE EDITOR



I am pleased to present Issue 53 of the *Defense Acquisition Review Journal*. We have an exciting and diverse line-up of articles covering a variety of relevant topics for the acquisition community. In the first article, “Command Post of the Future: Successful Transition of a Science and Technology Initiative to a Program of Record” by BG Harry Greene, USA, Larry Stotts, Ryan Paterson, and Janet Greenberg, the authors examine the transition of Science and Technology (S&T) into existing acquisition programs. Historically, only about 25 percent of all S&T programs successfully transition to development and acquisition. One of the major issues is the lack of sufficient technical maturity. Immature technology often causes cost growth and schedule slips while the program manager tries to address this problem during the development cycle. The DoD 5000 series re-write in 2000 shows DoD’s clear intent to improve technology insertion into the acquisition process. As a part of this change, it was recognized that technical maturity must be addressed up front and adequately tested before transitioning, but often this was not done. This article outlines how the CPOF program was successfully transitioned from the Defense Advanced Research Projects Agency to the U.S. Army using a tailored acquisition strategy that allowed the new CPOF technology to be fielded as a technology insertion to the Army Battle Command System of Systems. Key to the success of this transition was the use of robust risk management, early and sustained user feedback, stable funding, and honest and open communication between all stakeholders. This acquisition strategy was an evolutionary approach, tailored to address the risk areas over time rather than trying to develop the perfect product in the first delivery.

The second article, “Lead Systems Integrators: A Post-Acquisition Reform Retrospective” by Kathlyn Hopkins Loudin, addresses concerns about the mid-1990s Acquisition Reform initiatives, which embraced the philosophy of “partnering with industry.” This philosophy led to business relationships with various titles throughout DoD. The “Lead Systems Integrator” (LSI) concept was most used by the Army. Correspondingly, the “Design Agent” concept was used in the Navy, and the “Total System Performance Responsibility” (TSPR) was very popular in Air Force contracts. These concepts were the result of a series of laws, policies, reforms, and initiatives embracing the Acquisition Reform movement of the 1990s. A key assumption of all these concepts was that cost-efficiency could be improved by using contractors more effectively and giving them more powerful roles. The general result of all these business models was to shift more systems development and systems engineering work to the

private sector. While this approach has some advantages, it also resulted in a de-emphasis of organic systems engineering capability within DoD. Recent critics have asserted that these concepts have driven cost growth and have undermined DoD's ability to control major acquisition programs. However, the data suggest that the use of LSI strategies is not, by itself, a good predictor of cost growth. The author analyzes these concepts and makes recommendations about future optimization of these types of roles.

The third article, "Achieving Outcomes-Based Life Cycle Management" by Lou Kratz and Bradd A. Buckingham, explores fundamental changes needed within government and industry to evolve a highly agile and responsive life cycle process. For decades, the Department of Defense has attempted to improve its acquisition and life cycle process through a series of incremental changes to address major challenges, such as requirements creep, evolving threats, cost growth, funding instability, and technical risk. Unfortunately, these changes have not met expectations. Currently, the United States faces significant economic and national security threats from rogue states and transnational terrorist organizations. DoD acquisition and life cycle sustainment processes are straining under the demands of the Global War on Terror and an emerging shortage of skilled acquisition and sustainment professionals. Cost/schedule growth, extended development cycles, schedule delays, elongated logistics response times, and increasing backorders are evidence of those strains. These threats and challenges require an agile, cost-efficient process to mature and sustain military capabilities. This article addresses fundamental changes needed within government and industry to evolve a highly agile and responsive life cycle process.

The fourth article, "Pre-Milestone A Cost Analysis: Progress, Challenges, and Change" by Martha "Marti" A. Roper, deals with one of the most challenging and most important issues early in the acquisition cycle—effective cost estimating and cost analysis. As a result of the 2004 Quadrennial Defense Review's emphasis on earlier investment decision making, the Office of the Under Secretary of Defense (Acquisition, Technology, & Logistics), sponsored a study to examine the opportunities to improve early cost estimating in acquisition programs. A team of Army analysts at the Office of the Deputy Assistant Secretary of the Army for Cost and Economics conducted the 3-year research study resulting in some important lessons learned. Clearly, the biggest challenge was how to develop cost estimates so early in the life cycle, with so little system definition. The analysts found three major elements that enable pre-Milestone A cost estimating. The first is an analysis framework that can make use of qualitative capability data to produce a cost estimate. The second is a cumulative high-level cost data source that links systems to their

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capability sets. The third is an analysis culture with the policy, procedure, and willingness to develop and accept cost estimates that are less precise than those developed at Milestone B or Milestone C. This research makes the case that Pre-Milestone A cost analysis can be the foundation upon which sound investment decision making is built.

The fifth article, “The Demise of the Federal Government Small Business Program” by Philip G. Bail Jr., traces the history of federal government interaction with small businesses in the United States and offers a warning that the current state of small-business setaside is unsustainable. The author presents a comprehensive summary of federal policy and legislation beginning with the Herbert Hoover administration in 1929. The DoD became directly involved in this issue by the creation of the Armed Services Procurement Act of 1947. The author discusses how numerous laws and public policy decisions regarding small business policy have been implemented by the federal government and DoD. Despite many efforts, the government’s attempts to increase small business’s share of federal contracts have not been totally successful. The author offers recommendations and suggestions on how the federal small business program can become a viable one that benefits small businesses so they truly get an equitable share of government dollars.

The sixth article, “Building on a Legacy: Renewed Focus on Systems Engineering in Defense Acquisition” by Mary C. Redshaw, provides a historical context of the systems engineering discipline in DoD, outlines the evolution of process models and terminologies, and analyzes the implications of terminology changes recently introduced in the Defense Acquisition Guidebook (DAG) released in 2009. Because of DoD’s role in developing and acquiring large and complex systems, defense acquisition managers initially led the effort to formalize the systems engineering process by publishing Military Standard 499 (MIL-STD-499) in 1969. This baseline documented the first formal consensus standard governing the systems engineering community of practice. There have been many iterations and changes in how systems engineering is viewed and applied throughout the DoD and the defense industry since 1969. Redshaw expertly navigates the reader through the evolution of these changes in process and philosophy.

The seventh article, “Open Systems: Designing and Developing our Operational Interoperability” by MAJ James Ash, USA (Ret.) and LTC Willie J. McFadden II, USA (Ret.), makes a case for the growing importance of using an Open Systems approach in defense systems due to today’s complex threat environment and interoperability needs. The authors examine the attributes of an open systems approach to technology insertion and operational readiness. Due to the changing nature of warfare

and increased operational demands, the need for technological innovation is continually increasing; however, insertion of technology brings additional problems and constraints (fiscal, technological, and logistical challenges) that must be addressed. The authors argue that a possible solution to incorporating new technologies into current systems is to intensify efforts to achieve a true open systems environment.

The eighth article, “A Time Study of Scientists & Engineers (S&Es) in the Air Vehicles Directorate” by JoAnn McCabe and Col John Wissler, USAF, addresses the issue of how much time government scientists and engineers actually spend doing technical work, as opposed to other bureaucratic, non-technical work. This article resulted from a case study done at the Air Vehicles Directorate of the Air Force Research Laboratory (AFRL) at Wright-Patterson Air Force Base, where about 600 people are employed. Approximately one-third of these are S&Es who develop advanced flight vehicle technologies in the areas of aerodynamics, flight control, and structural sciences. These technologies can be found in virtually every major weapon system in the Air Force. In response to budget cuts and efficiency reforms, the workforce in the Air Vehicles Directorate has declined 16 percent in the last decade. Many of these cuts resulted in the reduction of non-technical personnel, often leaving additional non-technical work tasks to the S&Es. Concerns have been raised to leadership that the technical workforce is not accomplishing enough technical work. Therefore, the questions for AFRL are: 1) How much real technical work are the S&Es doing? and 2) Is this the right mix? This article summarizes the initial time study completed at the Air Vehicles Directorate and provides several leadership initiatives intended to address this situation.

The final article from the Defense Acquisition University (DAU) Technology Corner is written by DAU’s resident historian, social anthropologist, and technologist Mark Oehlert. Oehlert works in the Global Learning Technologies Center at the DAU. His duties focus on the use of social media in acquisition workforce education and development. He offers a thought-provoking piece providing insight on how to address the challenges of introducing new technologies and communication opportunities within an organizational culture.

I hope you will enjoy this issue as much as we enjoyed putting it together.



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