

The Defense Life-Cycle Logistics Journey

A 10-Year Retrospective of Product Support Transformation

"As DoD moves forward with weapon system acquisition reform, attention to product support must be increased, and life cycle management must be better focused to achieve affordable operational warfighter outcomes"

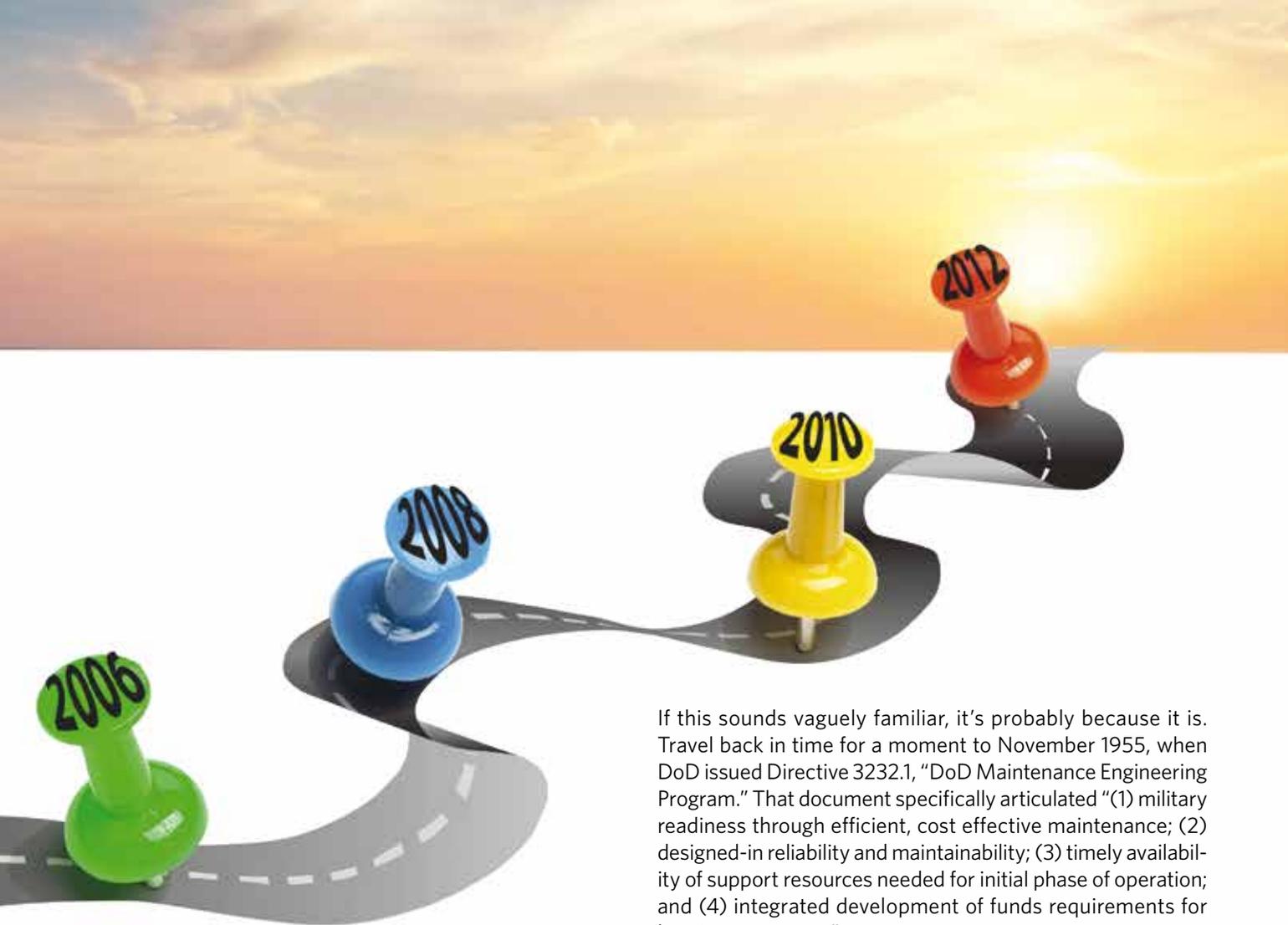
**—Dr. Ashton Carter,
USD(AT&L),
November 2009**

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The Life Cycle Logistics career field comprises professionals responsible for planning, development, implementation and execution of effective and affordable weapons, materiel and information systems product support strategies. Life Cycle Logistics encompasses both acquisition and sustainment activities spanning a weapon system's life cycle. It is today the third largest Defense Acquisition Workforce career field, made up of more than 17,000 civilian and military personnel from the Army, Navy, Marine Corps, Air Force and a range of Department of Defense (DoD) agencies. It has not, however, always been so.

In the months following September 11, 2001, DoD leadership recognized that what was then called the "Acquisition Logistics" functional community was not where it needed to be. Product support planning too often failed

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If this sounds vaguely familiar, it's probably because it is. Travel back in time for a moment to November 1955, when DoD issued Directive 3232.1, "DoD Maintenance Engineering Program." That document specifically articulated "(1) military readiness through efficient, cost effective maintenance; (2) designed-in reliability and maintainability; (3) timely availability of support resources needed for initial phase of operation; and (4) integrated development of funds requirements for logistics resources."

to occur in a timely manner, long-term sustainment execution skills were deemed inadequate and, although long espoused, a true focus on total life-cycle systems management was lacking. Not only had gaps in workforce skills emerged, but real concerns existed concerning the workforce's ability to achieve crucial outcomes across a range of rapidly evolving requirements that included:

- Timely acquisition of weapon systems meeting warfighter performance requirements
- Integration of supportability and maintainability during the acquisition process
- Emphasis on early development and delivery of capability to the warfighter
- Weapon system sustainment to meet or exceed warfighter performance requirements at best value to DoD
- Evolutionary acquisition with early life-cycle emphasis on designed-in reliability
- Intense pressure for systems that can perform and are inherently reliable
- Continuing assessment of sustainment strategy to improve reliability and maintain optimum performance
- Life-cycle focus on logistics considerations both up front and in sustainment

Two decades later, in a 1975 paper titled "An Historical Review of the Integrated Logistic Support Charter," future-Air Force Gen. George Babbitt reviewed the previous 20 years of DoD policy and guidance. He identified "two basic objectives of [what was then called Integrated Logistics Support, or ILS]: (1) Increased supportability of weapons through early consideration of logistics in design, and (2) more efficient logistics support through integrated management of the logistics elements during acquisition." While the terminology has evolved from "integrated logistics support" to "integrated product support" (and from logistics elements to product support elements), in recognition of the multidisciplinary nature of the field, the principles that constitute the foundation of this functional community have remained remarkably consistent for nearly 60 years.

Indeed, then-Maj. Babbitt went on,

... the concept of ILS was formulated by the Services and industry during the late 1950s and early 1960s. Formal DoD policy was first issued as DoD Directive 4100.35 in 1964. The Services were directed to manage the previously independent elements of logistics as an integrated whole and to make logistics a primary consideration from the conceptual phase through the operations phase.

Despite having been written 50 years ago, the standard of “maximum material readiness and optimum cost effectiveness” serves as a prescient vision that guides virtually everything this community is about to this day.



The 1964 DoD Directive 4100.35 in fact stated,

... the primary objective of this Directive is to assure that the development of effective logistic support for systems and equipment is systematically planned, acquired and managed as a whole (by Interlocking the elements of logistic support) to obtain maximum material readiness and optimum cost effectiveness.

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While none of this was new, the DoD still recognized the need to get back to the basics of life-cycle-management practices and principles. Although preliminary changes were under way as early as 2002, with establishment of a sustainment track in the Acquisition Logistics workforce certification requirements, the transition did not begin in earnest until a year later. The culmination came in 2004 with the issuance of a definitive “Life Cycle Logistics Workforce Changes” memo from the Assistant Deputy Under Secretary for Logistics Plans and Programs. The memo stated that “continued evolution of acquisition and logistics transformation, together with the reengineering of the DAU logistics curriculum, make it appropriate to move to a unified Life Cycle Logistics Career Field, Career Path, and Training.”

The dissolution of the Acquisition Logistics career path, as longtime practitioners had known it, not surprisingly coincided with a major refocus across the department on life-cycle management, concurrently manifesting itself in a series of new

guidance issuances and policies governing acquisition. These included revisions to DoD Directive 5000.01 and DoD Instruction 5000.02, a new *Defense Acquisition Guidebook* and the advent of the Joint Capabilities Integration and Development System (JCIDS), to name just a few.

Moreover, by the early years of the last decade, the Acquisition Logistics workforce had dwindled in size to just over 10,000 due in part to workforce cuts during the 1990s. At the risk of overgeneralizing, those who remained tended to focus on early stages of the life cycle and too often possessed insufficient experience overseeing increasingly complex technical or sustainment-planning activities necessary to achieve efficient and effective long-term product support outcomes. It was in this context that the DoD undertook the most significant changes to this functional community in more than a generation. In the process, over the next 10 years, workforce size, composition, quality, expectations and professional development were completely transformed.

The strategic imperative behind this transformation, perhaps best articulated in the November 2009 “DoD Weapon System Acquisition Reform: Product Support Assessment,” was also crystal clear: “... product support considerations, germane to both acquisition and logistics, are necessary throughout the DoD life cycle framework, beginning with early requirements determination and continuing through system design, development, operational use, retirement, and disposal.”

As a result, as both the 2008 DoD Logistics Human Capital Strategy and the Life Cycle Logistics career field overview on the Defense Acquisition Portal articulate, DoD life-cycle logisticians today perform a principal joint and/or DoD component logistics role during both the acquisition and operational phases of a system’s life cycle. This is to ensure that product support strategies meet program goals for operational effectiveness and readiness; that supportability requirements including cost, schedule and performance are addressed consistently; and that supportability considerations are implemented during systems design in order to meet system materiel availability, materiel reliability, operations and support cost, and mean downtime objectives. The ultimate goal is to deliver optimized, life-cycle product support to their warfighter customers. To be successful in this endeavor, they must be cognizant and proficient in seven key areas identified in the 2008 DoD Logistics Human Capital Strategy (HCS):

- Logistics design influence
- Integrated product support (IPS) planning
- Product support and sustainment
- Configuration management
- Reliability and maintainability analysis
- Technical/product data management
- Supportability analysis

Life-cycle logisticians achieve this by pursuing two primary objectives, namely to work within their program team to

Table 1. Integrated Product Support Elements

- Product support management
- Design interface
- Sustaining engineering
- Supply support
- Packaging, handling, storage and transportation
- Technical data
- Support equipment
- Maintenance planning and management
- Computer resources
- Training and training support
- Manpower and personnel
- Facilities and infrastructure

ensure that weapon systems are designed, maintained and modified to continuously reduce future demand for logistics; and to ensure effective and efficient logistics support. In so doing, the resources required to provide life-cycle product support must be minimized while meeting warfighter needs and ensuring long-term affordable materiel readiness. Life-cycle logisticians achieve these objectives by implementing the 12 IPS elements (Table 1) to maximize supportability, reliability, availability, maintainability, mission effectiveness and affordability of the system throughout its life cycle. They influence system design and provide timely product support capabilities that drive effective, best-value, product support planning and execution. Emphasis is placed on ensuring materiel readiness at optimal life-cycle costs and on integrating life-cycle-management principles by designing and implementing performance-based, life-cycle, product support strategies. Life-cycle logisticians can work directly in a program management office, in support of the program manager or in other supporting and sustainment logistics activity offices. They also can serve as product support managers, which we'll discuss in greater detail in a moment.

Fast forward to the present. So what exactly changed over the last decade, how did we get here and, perhaps most important, why does it matter? In short, the answer to the first question is that *pretty much everything changed*. In the process, key DoD policy and guidance, life-cycle logistics competencies, workforce professional development standards, Defense Acquisition Workforce Improvement Act (DAWIA) certification requirements and DAU learning assets were so transformed that today's product support landscape would have been nearly unrecognizable to practitioners at the turn of the last century.

Workforce Composition, Competency and Size

Because a qualified, motivated, trained, proficient and right-sized workforce is essential, first and foremost, to achieving required life-cycle product support outcomes, the DoD and Services focused their attention on the personnel tasked to carry out this part of the mission. However, transforming

the functional community from Acquisition Logistics to Life Cycle Logistics was just a start. This was followed by key workforce composition, proficiency and competency initiatives including:

- Targeted workforce growth across the Services and DoD agencies of nearly 40 percent has occurred since 2004 (Table 2). While "more is not necessarily better," it is imperative to have the right people—with the right skills, expertise, training and experience—in the right organizations and at the right locations. To the Services' credit, in an early example of "doing more without more," the vast majority of this growth was accomplished without new hires or expansion of the government workforce, but rather through thorough evaluations and targeted coding of existing logistics positions.
- A full-scale revision of career field competencies in 2007-08, as part of the HCS development effort (<http://www.acq.osd.mil/log/sci/hcs.html>), focused on significantly improving integration across both the acquisition and logistics domains. DoD revalidated its commitment to the HCS vision in its July 2010 DoD Logistics Strategic Plan, calling for an "integrated, agile, and high-performing future workforce of multi-faceted, interchangeable logisticians able to succeed in a joint operating environment."
- Building on this foundation, DoD conducted an update in 2011-12 that continued to refine the Life Cycle Logistics career field competencies. This time DoD directly aligned requirements with each of the 12 IPS elements and addressed product support gaps outlined in the November 2009 "DoD Weapon System Acquisition Reform: Product Support Assessment." The result was issuance in 2012 of workforce competency requirements regarded by many as the most comprehensive, interdisciplinary and well integrated of any Defense Acquisition Workforce career field (<https://acc.dau.mil/CommunityBrowser.aspx?id=635971&lang=en-US>).
- Each of the Services has continued to review its respective life-cycle logistics workforces to ensure that they collectively have the requisite skills, authorities, and numbers in the right organizations to succeed. The Air Force, for example, undertook a comprehensive Life Cycle Logistics Workforce Reconstitution initiative beginning in 2007 and a subsequent A3 Life Cycle Logistics Strategic Shift project in 2012, making major Service-wide improvements in workforce professional experience, expertise, assignments and authorizations along the way.
- The April 2013 Better Buying Power 2.0 initiative to "improve the professionalism of the Total Acquisition Workforce" included a series of actions that directly affect the life-cycle logistics community. Among these are the establishment of higher standards for key leadership positions, establishment of stronger professional qualifica-

tion requirements, increased recognition of excellence in acquisition management, and further efforts to increase the cost-consciousness of the Defense Acquisition Workforce.

Product Support Strategic Direction

In addition to life-cycle logistics workforce enhancement, the DoD’s underlying product support strategic direction has inexorably evolved over the last decade as well. Although the magnitude of change in the body of statutory, policy and guidance has been substantial, foundational principles of product support and life-cycle management consistently run throughout—and all remain focused on ensuring cost-effective readiness for our warfighters through available, reliable, maintainable, affordable and supportable weapon systems. In addition to DoD 5000 series acquisition policy, four changes in particular stand out as among the most influential:

- A new Materiel Availability Key Performance Parameter with supporting Materiel Reliability and Ownership Cost Key Systems Attributes was established by the Joint Requirements Oversight Council (JROC) in August 2006.
- Signed into law in October 2009, Section 805 of the Fiscal Year 2010 National Defense Authorization Act reiterated the critical nature of both life-cycle management and weapon system product support. This requirement, along with several subsequent updates now codified in 10 U.S. Code §2337, formally established the DoD product support manager position and formed the statutory foundation for subsequent DoD product support guidance and policy.
- Just a month later, in November 2009, DoD issued the comprehensive “DoD Weapon System Acquisition Reform: Product Support Assessment” discussed earlier. This broad-based study evaluated past successes, identified a long-term DoD life-cycle product-support-strategy roadmap, and served as another key catalyst for the rapid evolution in DoD product support that followed over the subsequent four-plus years.

- September 2011 saw the establishment of the requirement for a stand-alone Life Cycle Sustainment Plan (LCSP) “designed to be a tool for programs to effectively and affordably satisfy life-cycle sustainment requirements. This plan articulates the product support strategy, and it must be kept relevant as the program evolves through the acquisition milestones and into sustainment.”

Professional Development and Support

With key statute, policy and guidance in place, how has Defense Acquisition University (DAU) responded to this rapidly evolving product support environment? From the perspective of workforce tools, training and professional development, the university sought to remain in lockstep with key stakeholders in the Services, DoD agencies and Office of the Secretary of Defense. For learning asset development, DAU applied proven integrated product and process development strategies. The aim was to reduce the time between establishing new requirements and deploying learning assets to ensure the workforce has access to the most current information. Consequently, virtually every learning asset the university offers is either new or substantially revamped.

The first phase of a two-part transformation of DAU life-cycle logistics training (2003–2008) focused on supporting the DoD-mandated migration from Acquisition Logistics to Life Cycle Logistics. This was accomplished by incorporating life-cycle management, addressing DoD Performance Based Logistics proficiency requirements and integrating acquisition and sustainment through the launch of a series of new training courses beginning in 2003.

The second, but no less important phase of life-cycle logistics training focused on incorporating product support management and addressing remaining gaps in technical training requirements. This included the launch of new courses in 2010 (LOG 103: Reliability, Availability and Maintainability), in 2011 (LOG 340: Life-Cycle Product Support), and in 2012 (LOG 211: Supportability Analysis). Additional new courses (LOG 215: Technical Data Management, and LOG 365:

Table 2. Life Cycle Logistics Workforce 2004–2013

As of end of:	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Army	4,936	6,128	6,320	6,545	7,134	7,952	9,045	8,962	8,677	8,104
Navy/USMC	4,156	4,206	4,155	4,219	4,355	4,784	5,219	5,415	5,497	5,538
Air Force	1,379	2,079	1,781	1,700	1,727	1,989	2,427	2,762	2,789	2,859
DCMA	29	29	28	40	29	35	37	91	132	128
DLA	6	9	7	63	39	22	21	21	317	359
OSD/Other	47	42	41	37	77	70	112	118	127	134
Total	10,553	12,493	12,332	12,604	13,361	14,852	16,861	17,369	17,539	17,122

Source: DoD Datamart

Product Support Manager) are both on track to deploy in 2014. In the process, not only did the DAWIA certification requirements evolve, but the annual number of graduates from DAU life-cycle logistics training courses increased a remarkable five fold during this two-phase transformation.

In addition, DAU undertook development and refinement of a series of Web-based tools to assist the workforce by providing 24-7 access to on-the-job resources to enhance knowledge, performance and ultimately mission accomplishment. This effort included the following initiatives:

- DAU established a readily accessible, web-based, continuous learning module portfolio, which has grown from just two modules a decade ago to 53 today (with four more currently in development). Student graduations from these topical training opportunities increased from just a few hundred a year to more than 47,000 annually by 2013.
- In the five years since its 2009 launch, the number of Life Cycle Logistics ACQuipedia articles has grown from none to 82 today, with thousands of workforce members leveraging the site's resources each year.
- Since its initial deployment in April 2012, the DoD Product Support Analytical Tools Database has cataloged more than 330 tools, with more than 187,000 visits in its first 22 months of availability.
- Completely revamped in late-2013, with more than 3,000 knowledge objects and more than 25 million lifetime page views, the Life Cycle Logistics Community of Practice (<https://acc.dau.mil/log>; Figure 1) remains the single most visited of the more than 50 communities on the Acquisition Community Connection. Coupled with a new interdisciplinary Performance Based Logistics Community of Practice (<https://acc.dau.mil/pbl>), launched in February 2013, life-cycle logisticians have one of the most comprehensive, cross-functional repositories of on-the-job product support resources available.

Figure 1. Life Cycle Logistics Community of Practice (LOG CoP)



- The December 2013 deployment of an entirely new IPS element-based *Core Plus Development Guide* will assist workforce members in identifying targeted, multidisciplinary, continuous-learning training opportunities.
- Nearly 600 topical and timely life-cycle logistics-related posts on the Defense Acquisition Portal since August 2009 are aimed at keeping the workforce cognizant of current initiatives and issues
- The deployment of a comprehensive suite of product support performance-learning tools since 2010 includes a *Product Support Manager (PSM) Toolkit*, a dedicated Life Cycle Logistics chapter in the *Program Manager's eToolkit*, a Web-based *LCSP Outline*, and a comprehensive joint service DoD *Integrated Product Support Implementation Roadmap*.

Where Next?

Clearly, the transition from the Acquisition Logistics to the Life Cycle Logistics functional career field back in 2003-04 was merely a first step, albeit critically important. It is impossible to overstate the importance the DoD today places on life-cycle management, on integrated and interdisciplinary product

support, and on designing for reliability, maintainability and supportability. Given how much has been achieved over the last decade, it would be easy to simply declare victory, “rest on our collective laurels,” or throttle back as budgets decline. The reality, however, is that product support and sustainment still constitute the majority of weapon system life-cycle costs (and the majority of those costs generally is locked in early in system design and development), and so our task as DoD life-cycle logisticians, as product support managers, or as defense acquisition professionals, is never done. Because much work still lies ahead, the transformation continues unabated. The great news, however, is that past successes have laid a solid foundation for future success as we move forward.

So you may again ask, where next? While none of the philosophical underpinnings of life-cycle management or product support are truly new, it is imperative that the focus remain on optimizing system availability and affordability. It is essential to increase focus on “should cost” savings derived from innovative, outcome-based product support strategies. Our workforce must understand how to develop and implement product support strategies that optimize system readiness and system support costs. We must understand how to conduct supportability analysis in order to drive reliability and maintainability into system designs. We must seek to leverage emerging technologies to drive greater efficiencies and effectiveness. We must continue to work to enhance the quality, expertise and capabilities of the DoD life-cycle logistics workforce. Continuing to drive greater cross-functional, interdisciplinary integration across both the Defense Acquisition Workforce and across DoD logistics, we must seek every chance to inculcate life-cycle-management thinking throughout the defense acquisition and sustainment culture.

To workforce members we say, seize every opportunity to improve your knowledge, skills and breadth of experience. Leverage the extensive training and knowledge resources available to you. Seek out experienced mentors and trusted leaders to guide your professional development. Strive to grow your interdisciplinary skills, perhaps by seeking secondary certification in another functional discipline. If you’re not one already, work to become a true subject matter expert, sought out by your boss, peers and subordinates as a “go-to” source of knowledge. Take every opportunity to drive unnecessary costs out of product support strategies, eliminate inefficiencies, improve processes, and enhance system readiness. In the current budgetary environment, such initiatives are not just important, but essential.

For those of us here at the schoolhouse, refining, maintaining, sustaining, integrating and enhancing the existing portfolio of DAU learning assets is imperative for ensuring that the Life Cycle Logistics community—and indeed the entire Defense Acquisition Workforce—has the very best and most current resources, references, tools and training. Continuing to grow the expertise and capabilities of our workforce by establishing stronger professional qualification and experiential requirements will play an even greater role in the coming months and years.

Perhaps most important, the answer to the question “where next?” must be to collectively provide both the American taxpayer and our warfighter customers with efficient and effective combat capability that ensures current and future mission success. 

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