Supportability as an Affordability Enabler:

A Critical Fourth Element of Acquisition Success Across the System Life Cycle

Bill Kobren

> "Reformed stewardship—driven by improving product support and achieving more cost-effective weapon system readiness outcomes—requires a life cycle management focus, committed leadership, and cooperative efforts from the operational, acquisition, and logistics communities."
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> —DoD Weapon System Acquisition Reform: Product Support Assessment, November 2009

Acquisition professionals have long recognized achieving program cost, schedule, and performance requirements are essential elements of a successful acquisition program. Often overlooked, however, is a fourth, and in some respects, most critical element on that list.

DoD Directive 5000.01, Enclosure 1, Paragraph E1.1.29 states, "The Program Manager (PM) shall be the single point of accountability for accomplishing program objectives for total life-cycle systems management, including sustainment, survivability, safety, and affordability. ***PMs shall consider supportability, life cycle costs, performance, and schedule comparable in making program decisions*** [emphasis added]. Planning for Operation and Support and the estimation of total ownership costs shall begin as early as possible. Supportability, a key component of performance, shall be considered throughout the system life cycle."

The foundational DoD acquisition directive thus identifies supportability co-equal to cost, schedule, and performance. And not just system acquisition cost either, but *life cycle cost.* Note, too, the last sentence: "Supportability, a

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key component of performance, shall be considered throughout the system life cycle." Not just a one-time thing. Not just during system design, development, or acquisition, but after fielding. In sustainment. During combat operations. When upgrade, modification, service life extension, and yes, system retirement and disposal decisions are being made. In short, *throughout the system life cycle!* Because operations and sustainment costs generally comprise between 65-80 percent of life cycle costs, any credible affordability strategy must tackle these costs.

Why is life cycle systems management such an integral part of both supportability and affordability? There are two primary reasons: sustainment of fielded systems comprises the vast majority of life cycle costs. Just as importantly, the majority of life cycle costs are locked in by early design, development, and manufacturing trade-off decisions. If we're going to seriously attack life cycle costs and positively impact long-term affordability, we must aggressively address operations and support costs at every stage of the life cycle.

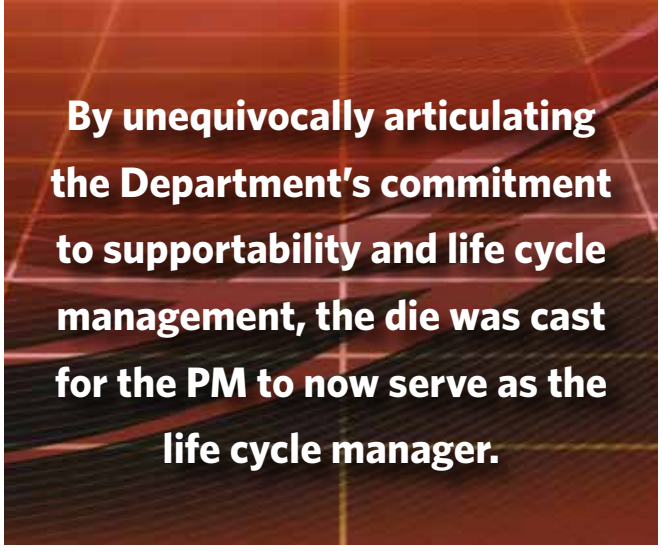
In its November 2009 Weapon System Acquisition Reform: Product Support Assessment report, for example, the USD (AT&L) stated:

> If the Department is going to truly reform the business of delivering weapons system capabilities to the warfighter, it must also reform the stewardship of the $132 billion dollars spent each year in product support. Reformed stewardship—driven by improving product support and achieving more cost-effective weapons system readiness outcomes—requires a life cycle management focus, committed leadership, and cooperative efforts from the operational, acquisition, and logistics communities.

What might this mean in practical terms? Suppose for example that in 1986 the Department had set—and a quarter of a century later had achieved—a goal of reducing sustainment costs by half. The cost avoidance alone would be enough to fund the entire investment budget!

Let's Be Clear What We Mean

Merely understanding the importance of life cycle systems management is not sufficient, so let's first be clear on what exactly the term means. Alternatively referred to as life cycle



management (LCM) and total life cycle systems management (TLCSM), the Manual for the Operation of the Joint Capabilities Integration and Development System (JCIDS) defines the term as "the implementation, management, and oversight, by the designated Program Manager (PM), of all activities associated with the acquisition, development, production, fielding, sustainment, and disposal of a DoD system across its life cycle."

Additionally, a fundamental component of life cycle management is product support. According to the November 2009 Product Support Assessment, "Product support, also referred to as system sustainment, is the package of support functions required to maintain the readiness and operational capability of weapon systems, subsystems, software, and support systems. It encompasses materiel management, distribution, technical data management, maintenance, training, cataloging, configuration management, engineering support, repair parts management, failure reporting and analysis, and reliability growth. 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." Product support is indeed a multidisciplinary enterprise.

In a traditional cost, schedule, performance worldview, we risked not having a true life cycle manager. Frequently the program manager's role, responsibilities, and authority tended to diminish once a system was "in sustainment." By unequivocally articulating the Department's commitment to supportability and life cycle management, the die was cast for the PM to now serve as the life cycle manager. The question remains, however: Is the PM truly the life cycle manager? Does he/she have the authorities, incentives, funding, long-term focus, and expertise to effectively serve in this capacity? If not, what needs to change? Who can assist the PM to succeed in this endeavor?

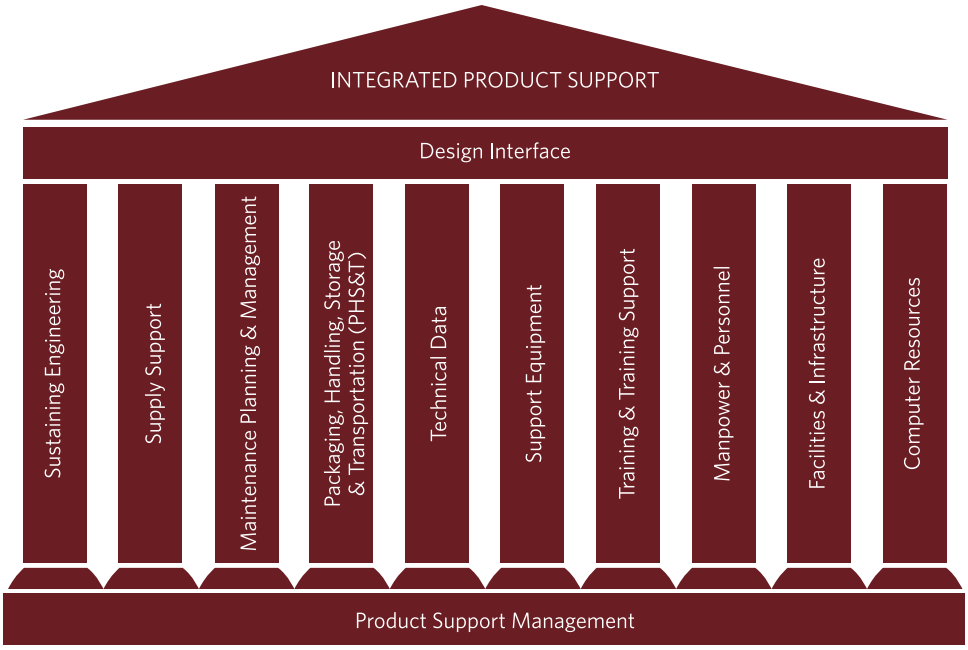
What's Already Been Achieved?

In many respects, "the ball has already been moving ahead" with answers to these questions, through implementation of a series of product support initiatives, policies, and guidance designed to drive life cycle systems management forward and more closely align acquisition and sustainment, including:

- Creation of two seminal guidebooks addressing performance, reliability, and affordability, the October 2003 "Designing and Assessing Supportability in DoD Weapon Systems: A Guide to Increased Reliability and Reduced Logistics Footprint" and the March 2005 "Performance Based Logistics: A Program Manager's Product Support Guide"
- Establishment of key Life Cycle Sustainment Outcome Metrics (including Availability KPP, and Reliability & Cost KSAs) in March 2007 which institutionalize the design, management and sustainment of critical Materiel Readiness outcomes throughout the life cycle
- Transitioning the Acquisition Logistics community into a unified Life Cycle Logistics career field by incorporating product support and sustainment personnel, courseware, and new certification requirements
- Reengineering life cycle logistics competencies from the 2008 DoD Logistics Human Capital Strategy embedded DAWIA certification training
- Deployment of a comprehensive multi-service Logistics Assessment and integrated Air Force and Logistics Health Assessment processes and tools
- Enhancement of the emphasis on outcome-based product support strategies, supportability analysis, and RAM through alignment of *Defense Acquisition Guidebook* Systems Engineering and Life Cycle Logistics Chapters 4 and 5 respectively
- Publishing of a comprehensive DoD Reliability, Availability, Maintainability, and Cost (RAM-C) Rationale Report Manual in June 2009 coupled with the subsequent March 2011 issuance of Directive-Type Memorandum (DTM) 11-003—Reliability Analysis, Planning, Tracking, and Reporting to ensure DoD "acquires reliable and maintainable products that are of high quality, readily available, and able to satisfy user needs with measurable improvements to mission capability and operational support, in a timely manner, and at a fair and reasonable price"
- Issuance and aggressive implementation of recommendations from the wide-ranging November 2009 Weapon System Acquisition Reform: Product Support Assessment report, including new training courses, tools, references, resources, and guidebooks focused on the PSM, Business Case Analysis, Logistics Assessments, and Post-Initial Operational Capability Sustainment Reviews, among others
- Creation of a new sustainment governance structure in an April 5, 2010 "Strengthened Sustainment Governance for Acquisition Program Reviews" USD(AT&L) policy memo
- Issuance of comprehensive Product Support Manager (PSM) guidance in the October 6, 2010 Directive-Type Memorandum (DTM) 10-015 "Requirements for Life Cycle Management and Product Support (as updated in Change 1, dated April 29, 2011)"
- Transitioning the traditional 10 Integrated Logistics Support (ILS) elements into 12 comprehensive Integrated Product

Support (IPS) Elements including new Product Support Management and Sustaining Engineering elements, as well as adding Infrastructure to Facilities and Management to Maintenance Planning (Figure 1).

Figure 1. Integrated Product Support Elements



What More Can Be Done?

These initiatives and many others are an outstanding start by any measure, but there is always more that can be done, particularly in achieving the Department's affordability and readiness goals, and required life cycle systems management outcomes. Several potentially include:

- Effective implementation of DTM 10-015 requirements for life cycle management and product support managers. The components must identify, train, promote, and prepare their best and brightest to serve as PSMs.
- Develop a comprehensive Enclosure 13 to DoD Instruction 5000.02 "Operation of the Defense Acquisition System" to capture key life cycle management and product support policy, emphasizing optimization of system readiness, availability and life cycle cost across the entire system life cycle.
- Broaden the focus on life cycle systems management and product support in DoD training and education beyond just the Defense Acquisition University.
- Institutionalize comprehensive well-thought out means of determining and justifying your program's technical data rights strategy, recently reaffirmed by the Government Accountability Office (GAO 11-469) which recommended DoD "issue instructions for program managers to use when conducting business-case analyses that are part of the process for determining the levels and types of technical data and technical-data rights needed to sustain DoD's systems."
- Demand greater fidelity of outcome-based life cycle product support business-case analysis (BCA) through broad application of processes contained in the new PSM and BCA Guidebooks and rigorous BCA training for the DoD life cycle logistics workforce.
- Increase focus on and training of supportability analysis and sustaining engineering.
- Provide more guidance and tools for tailoring LCM approaches to rapid fielding initiatives and rapid acquisition programs.
- Continue to emphasize long-term sustainability and energy efficiency of weapon systems, including linkage to Section 864 of the FY11 NDAA.
- Continue to inculcate life cycle systems management thinking into the DoD culture. Acquisition and sustainment are inextricably linked. Leverage articles in professional journals such as this, blogs on the Defense Acquisition Portal, and emphasis in interdisciplinary training for acquisition professionals to get the word out.

This is all well and good, especially in view of the fact many of these recommendations and initiatives are already underway. So perhaps a more practical question is "What can I do, as a member of the Defense Acquisition Workforce?" Glad you asked!

What Can I Do as an Acquisition Professional?

First and foremost, recognize supportability as a critical fourth element of acquisition. Be familiar with DoD policy on the subject. Understand LCM practices and principles. Mentor your colleagues, both inside and outside of your career field. If you're a program manager, understand and embrace your responsibilities as life cycle manager. Do not defer, or worse, ignore long-term product support, sustainment, and supportability planning simply because there may be more pressing programmatic or milestone-driven requirements. For non-program managers, understand what LCM is, and embrace the concept, both philosophically and practically. Recognize that you are also responsible for supporting the PM achieve the expected outcomes, bridging the gap between acquisition and sustainment, and planning for long-term product support, often long after the system is out of production.

Each of us, regardless of our functional background or program, must understand and advocate for establishment and successful achievement of the "big four" sustainment metrics (availability, materiel reliability, ownership cost, and mean down time) across the system life cycle. It's not enough to

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achieve just two or three. An unreliable system, for example, can achieve availability targets with enough spares, but at what cost? The four must be integrated, optimized, well understood, and achievable.

Acknowledge that product support is an integrated, multi-disciplinary endeavor that goes beyond traditional logistics. Commit to getting product support and sustainment requirements right from the beginning, regardless of your Defense Acquisition Workforce career field. Seek to become more knowledgeable of requirements management processes. Take a requirements management course. Seek to better understand how to effectively translate warfighter performance requirements into tailored, affordable, effective product support spanning the entire system life cycle, leveraging outcome-based product support arrangements and the best capabilities of both the public and private sector to achieve that goal. And if you are a life cycle logistician or product support manager, focus with laser-like intensity on continuously reducing the demand for logistics during weapon system design, maintenance planning, and system modifications and upgrades.

Recognize that traditional functional stovepipes risk adversely impacting system readiness, availability, and life cycle cost. Be a strong proponent for interdisciplinary integration, and seek to understand linkages and shared competencies between functional disciplines, particularly, but certainly not limited to the program management, systems engineering, life cycle logistics, contracting, budgeting and cost estimating communities. Regardless of your background or current position, be a strong proponent of supportability and life cycle system management.

Regardless of your career field, embrace aggressive obsolescence and diminishing manufacturing sources and material shortages (DMSMS) mitigation strategies both during development/acquisition and once a system is fielded. Be a strong proponent for technology insertion and continuous modernization. Read and implement the process and practices outlined in the SD-22 DoD Diminishing Manufacturing Sources and Material Shortages (DMSMS) Guidebook.

If you are a life cycle logistician or anticipate becoming a product support manager, aggressively prepare to be the best PSM possible. Avail yourself of requisite training. Become certified at level III in the life cycle logistics career field, but don't stop there. Seek cross-certification in program management, systems planning research development and evaluation/systems engineering, or business-financial management. Broaden your experience on a variety of programs, at a variety of ACAT levels, as well as on systems in early design, development and acquisition, as well as with fielded systems already in sustainment.

Strive to develop and implement best-value, long-term outcome-based product support strategies that leverage performance-based agreements with both industry and government product support providers. Optimize life cycle cost and product support requirements. Seize every opportunity to design out logistics requirements, better meet system requirements, and enhance long-term product support strategies. Remain aligned with your warfighter customer, recognizing they may not always be fully cognizant of the ramifications and cost implications of their requirements. Keep the lines of communication open, dialog constantly, and seek to constantly ensure their product support requirements are captured and well documented in your life cycle sustainment plan and your performance based product support arrangements.

Finally, and in some ways, perhaps most importantly, seek to drive reliability, availability, and maintainability (RAM) into system design and product support strategies throughout the life cycle. Fight for supportability requirements and O&S cost saving initiatives during early system development design trades. Commit to investing in RAM, DMSMS/obsolescence mitigation, advanced diagnostics, prognostics and health management (PHM), technology insertion and upgrades. In many instances, long-term life cycle cost reduction benefits will far outweigh the near-term investment costs. Ensure a comprehensive supportability analysis and regular product support strategy BCAs are performed. Document your life cycle product support strategy in robust and constantly evolving and regularly updated life cycle sustainment plan (LCSP). Resolve not to abandon these critical enablers of achieving supportability requirements when the funding gets tight, system weight becomes an issue, your program finds itself being "taxed" to meet other more urgent requirements, or other competing priorities start crowding in—because these things are almost certain to occur.

At the end of the day, supportability is a key enabler of optimized readiness, affordability, and life cycle cost. Coupled with a robust commitment to life cycle systems management principles and enhanced product support processes and tools, supportability, as the integral fourth element of the acquisition system, serves to facilitate acquisition success across the system life cycle. So let's get on with it!

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