DEFENSE ACQUISITION UNIVERSITY

Performance Based Logistics:

A Program Manager's Product Support Guide

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A Program Manager's Product Support Guide

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Foreword

This document supersedes *Product Support for the 21st Century: A Program Manager's Guide to Buying Performance*, published in November 2001, which has been commonly known as 'The PBL Guide.' *Performance Based Logistics: A Program Manager's Product Support Guide* captures the progress that has been made in implementing PBL over the past three years and presents up-to-date guidance based on the lessons learned from the application of PBL to support activities throughout the Armed Services.

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Executive Summary

Performance Based Logistics (PBL) is the preferred Department of Defense (DoD) product support strategy to improve weapons system readiness by procuring performance, which capitalizes on integrated logistics chains and public/private partnerships. The cornerstone of PBL is the purchase of weapons system sustainment as an affordable, integrated package based on output measures such as weapons system availability, rather than input measures, such as parts and technical services. The *Quadrennial Defense Review* (*QDR*) and the *Defense Planning Guidance* (*DPG*) directed the application of PBL to new and legacy weapons systems. PBL Implementation is also mandated by DoD Directive 5000.1, *The Defense Acquisition System*, May 12, 2003.

This guide is a tool for Program Managers (PMs) and Product Support Managers (PSMs) as they design product support strategies for new programs or major modifications, or as they re-engineer product support strategies for existing fielded systems. It presents a method for implementing a PBL product support strategy. PBL delineates outcome performance goals of systems, ensures that responsibilities are assigned, provides incentives for attaining these goals, and facilitates the overall life cycle management of system reliability, supportability, and total ownership costs. It is an integrated acquisition and logistics process for providing weapons system capability.

Designing and Assessing Supportability In DoD Weapon Systems: A Guide to Increased Reliability and Reduced Logistics Footprint (commonly referred to as the *'Supportability Guide')*, October 24, 2003, is the DoD document that defines a framework for determining and continuously assessing system product support throughout the life cycle. It uses the Defense Acquisition Management Framework (as defined in DoD 5000 series policy) and systems engineering processes to define appropriate activities and required outputs throughout a system's life cycle to include those related to sustainment of fielded systems. A System Operational Effectiveness (SOE) framework is included that shows the linkage between overall operational effectiveness and system and product support performance. This is accomplished through the application of a robust life cycle systems engineering process to identify and continuously assess supportability requirements for the system.

The *Supportability Guide* provides a template for PMs or appropriate responsible activities to use in defining and assessing their program

activities to meet *QDR* and *DPG* objectives and DoD policy requirements throughout the system life cycle. The term PM, as used here, refers to the entire integrated program office team, including program office personnel, other government personnel, and industry. This guide emphasizes designing for increased reliability and reduced logistics footprint, and providing effective, affordable product support through PBL strategies.

Implementation of this disciplined approach, including systems engineering analysis tools such as Requirements Definition, Architecture Development, Failure Mode Effects and Criticality Analysis (FMECA), Fault Tree Analysis (FTA), and Reliability Centered Maintenance (RCM), will produce a Maintenance Task Analysis (MTA) directly linked to a system's Reliability, Maintainability, and Supportability (RMS) attributes. The MTA is based upon detailed technical tasks including those determined by application of an RCM assessment of the design of the system. Close collaboration between engineers and logisticians is critically important during system design and development and throughout the life cycle. These tasks are further refined through PBL Business Case Analysis to determine a cost effective, sustainable product support solution to meet user needs in an operational environment.

A Total System Product Support Package, which identifies support requirements based upon the reliability and maintainability of the system in order to meet top-level operational and support metrics (see Chapter 2, paragraph 2.3, Performance Based Logistics Metrics), is defined in conjunction with the user. The PM and the user then document these support requirements in a Performance Based Agreement. Continuous assessment of in-service system performance will identify needs for system improvements to enhance safety, reliability, maintainability, affordability, obsolescence, corrosion, and other Life Cycle Logistics (LCL) attributes.

The transition to PBL as a product support strategy will evolve based on determination of the provider's product support capability to meet set performance objectives. The major shift from the traditional approach to PBL product support emphasizes what program managers provide to the user. Instead of buying set levels of spares, repairs, tools, and data, the new focus is on buying a predetermined level of availability to meet warfighter objectives.

1 INTRODUCTION

The Department of Defense (DoD) is emphasizing weapons system performance throughout the life cycle to provide assured levels of system readiness with a focus on integrated system management and direct accountability. The DoD 5000 series acquisition regulations direct the integration of acquisition and logistics to enhance the warfighters' capability to carry out their mission. DoD's strategic goals for acquisition logistics, as stated in the most recent *Quadrennial Defense Review (QDR)*, September 30, 2001 (http://www.comw.org/qdr/qdr2001.pdf), *Joint Vision 2020* (http://www.dtic.mil/jointvision/history.htm), and the *Focused Logistics Campaign Plan* (*FLCP*), 2004 Edition (https://acc.dau.mil/simplify/ev.php?ID=52053_201&ID2=DO_TOPIC), are to:

- project and sustain the force with minimal footprint;
- reduce cycle times to industry standards;
- implement Performance Based Logistics.

The **Joint Capabilities Integration and Development System (JCIDS)** translates those strategic acquisition logistics goals into capabilities needs that define systems. Supportability should be a Key Performance Parameter (KPP) consideration defined by JCIDS and fulfilled through Performance Based Logistics.

Performance Based Logistics (PBL) is the purchase of support as an integrated, affordable, performance package designed to optimize system readiness and meet performance goals for a weapons system through long-term support arrangements with clear lines of authority and responsibility. Simply put, performance based strategies buy outcomes, not products or services.

PBL is DoD's preferred product support method. DoD policy states that "PMs [Program Managers] shall develop and implement Performance Based Logistics strategies that optimize total system availability while minimizing cost and logistics footprint. … Sustainment strategies shall include the best use of public and private sector capabilities through Government/industry partnering initiatives, in accordance with statutory requirements." (DoD Directive (DoDD) 5000.1, *The Defense Acquisition System*, May 12, 2003, para. E1.1.17.)

In the PBL environment, a Government/industry team is a key long-term relationship that is developed among public and private stakeholders contractually and/or with performance agreements. The team is based upon a foundation of building trust whereby there is mutual accountability for achieving the outcome performance goals in managing reliability, supportability, and Total Ownership Cost (TOC) over the life cycle of a weapons system.

This guide, *Performance Based Logistics: A Program Manager's Product Support Guide*, provides a PBL implementation tool for the PM, Product Support Manager (PSM), and the product support team. After an initial overview of Total Life Cycle Systems Management (TLCSM) and PBL, it presents a 12-step PBL implementation process and further discussion of key elements in that process. It concludes with a selection of real-world PBL examples. References and additional information are provided in Chapter 6.

The term PM, as used here, refers to the entire integrated program office team, including program office personnel, other Government personnel, and industry; or to the sponsor if no PM has been assigned.

Acquisition logistics professionals should apply the information in this guidebook in context with two other key documents: *The Supportability Guide* (see 1.1 below), which lays a foundation for PBL by emphasizing supportability in systems engineering; and the Product Support Boundaries (see 1.2 below), which establishes the boundaries within which PBL should be implemented.

1.1 *DESIGNING AND ASSESSING SUPPORTABILITY IN DOD WEAPONS SYSTEMS: A GUIDE TO INCREASED RELIABILITY AND REDUCED LOGISTICS FOOTPRINT (THE SUPPORTABILITY GUIDE)*

The *Designing and Assessing Supportability in DoD Weapons Systems: A Guide to Increased Reliability and Reduced Logistics Footprint*, October 24, 2003 (referred to as *The Supportability Guide* throughout this guide), provides a template for PMs or responsible activities to use in defining and assessing their program activities to meet *QDR* objectives and DoD policy requirements throughout the weapons system life cycle. Emphasis is placed on designing for increased reliability and reduced logistics footprint, and on providing for effective product support through PBL strategies.

The Defense Acquisition, Technology and Logistics Life Cycle Management Framework (commonly referred to as the "*Wall Chart*") defines the appropriate activities, including an intensive focus on a robust systems engineering process, to produce the required outputs throughout a weapons system's life cycle, including those related to sustainment of fielded systems. A System Operational Effectiveness (SOE) framework that shows the linkage between overall operational effectiveness and weapons system and product support performance is included in *The Supportability Guide*.

The Supportability Guide provides a reference for PMs and their teams to 'design in' and then assess the effectiveness of their PBL strategies throughout the system's

life cycle. As such, *The Supportability Guid*e provides the foundation upon which this *PBL Guide* is based. PBL design and implementation should flow from the activities described in *The Supportability Guide*.

1.2 PRODUCT SUPPORT BOUNDARIES

Product Support Boundaries (PSB) provides the strategic construct for innovation within a consistent support structure for the warfighter. It includes procedures to explore solutions that extend the support 'envelope' and methods to enhance best value solutions while maintaining optimal military efficiency. The PSB summarizes the support policy memoranda and standards endorsements produced over the past 2 years.

The PSB advances the understanding of support responsibilities within TLCSM. PSB is to be used by PMs, PSMs, Product Support Integrators (PSIs), force providers, and Product Support Providers. It is equally applicable to new and current weapons systems. It provides a source document by which to prioritize operational, personnel, and training issues consistent with existing DoD guidance.

The aim of the PSB is to provide the boundary conditions for product support strategies that allow innovation but ensure consistency and interoperability across programs. The PSB provides strategic guidelines for the development of coherent and consistent sustainment solutions to **optimize operational effectiveness within affordable costs**. Specific objectives of the PSB are to:

- guide PMs in developing sustainment solutions that ensure operational effectiveness and achieve best value;
- ensure sustainment solutions are consistent with policy and standards;
- provide criteria and a baseline for continuous improvement of system sustainment solutions;
- evaluate the impact of innovative sustainment solutions on short- and long-term readiness.

The PSB is organized into 10 Key Support Areas (KSAs):

1. Operational Concepts
2. Logistics Support/Sustainability
3. Engineering and Asset Management
4. Materiel Flow
5. Industry and Innovation
6. Integrated Knowledge Enterprise and Logistics Command, Control, Communications, Computers, and Intelligence (C^4I)

7. People and Training
8. Reduction in Total Ownership Costs (RTOC)
9. Resource Management
10. Environment and Safety (E&S).

Under each KSA, guiding principles define the boundaries within which PMs are expected to design sustainment solutions and through which defense-wide cooperation and collaboration will be achieved. PMs will use PSB guidelines to develop and maintain their sustainment solutions. With the approval of their Service Acquisition Executive, PMs may operate outside the PSB if it proves to be more economically and operationally feasible. Any such deviation should be highlighted in an appropriate Business Case Analysis (BCA) and the TOC benefit quantified.

2 Total Life Cycle Systems Management and Performance Based Logistics

Product support is defined as a package of logistics support functions necessary to maintain the readiness and operational capability of a system or subsystem. It is an integral part of the weapons system support strategy, which is a part of the acquisition strategy. The package of logistics support functions, which can be performed by public or private entities, comprises materiel management, distribution, technical data management, maintenance, training, cataloging, configuration management, engineering support, obsolescence management, technology refreshment, and in-service support analysis; repair parts management, failure reporting and analysis, and reliability growth. Support and engineering activities must be integrated to deliver an effective and affordable product support package. Department of Defense (DoD) policy and guidance regarding the development and delivery of a product support package is embodied in Total Life Cycle Systems Management (TLCSM) and Performance Based Logistics (PBL).

2.1 Total Life Cycle Systems Management

The DoD policy states: "The PM [Program Manager] shall be the single point of accountability for accomplishing program objectives for total life-cycle systems management, including sustainment. … PMs shall consider supportability, life cycle costs, performance, and schedule comparable in making program decisions. 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." (DoD Directive (DoDD) 5000.1, *The Defense Acquisition System*, May 12, 2003, para. E1.1.29.)

Under TLCSM, the PM is responsible for the development and documentation of an acquisition strategy to guide program execution from program initiation through reprocurement of systems, subsystems, components, spares, and services beyond the initial production contract award, during post-production support, and through retirement.

PMs pursue two primary objectives. First, the weapons system should be designed, maintained, and modified to continuously reduce the demand for logistics. Second, logistics support must be effective and efficient. The resources required to provide product support must be minimized while meeting warfighter needs. As a product support strategy, PBL serves to balance and integrate the support activities necessary to meet these two objectives.

The TLCSM is the implementation, management, and oversight, by the designated PM, of all activities associated with the acquisition (such as development,

production, fielding, sustainment, and disposal) of a DoD weapon or materiel system across its life cycle. The TLCSM bases major system development decisions on their effect on life cycle operational effectiveness and affordability. The TLCSM encompasses, but is not limited to, the following:

- single point accountability (the PM) for accomplishing program logistics objectives including sustainment.
- development and implementation of product support strategies.
- continuing reviews of sustainment strategies.

Implementation of the TLCSM business approach means that all major materiel alternative considerations and all major acquisition functional decisions demonstrate an understanding of the effects on consequential operations and sustainment-phase system effectiveness and affordability. In addition, TLCSM assigns the PM responsibility for effective and timely acquisition, product support, availability, and sustainment of a system throughout its life cycle.

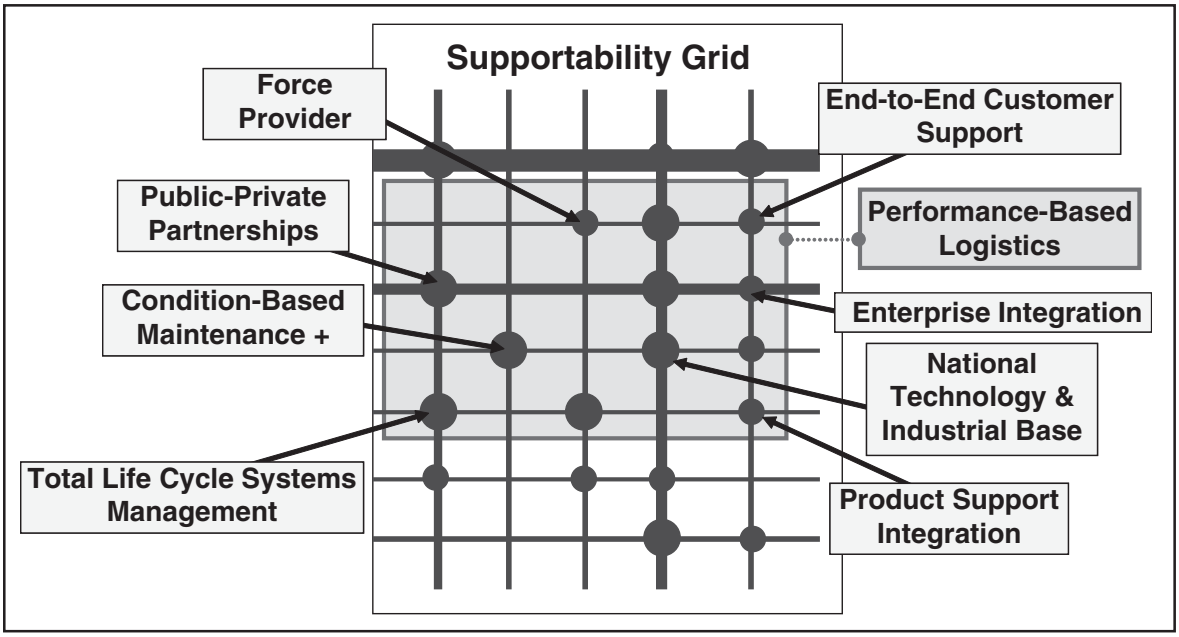


Figure 2-1: PBL Enables Net-Centric Logistics

"To maximize competition, innovation, and interoperability, and to enable greater flexibility in capitalizing on commercial technologies to reduce costs, acquisition managers shall consider and use performance based strategies for acquiring and sustaining products and services whenever feasible. For products, this includes all new procurements and major modifications and upgrades, as well as reprocurements of systems, subsystems, and spares that are procured beyond the initial production contract award." (DoDD 5000.1, para. E1.1.16.)

To successfully accomplish the duties implicit in TLCSM, the PM must ensure a collaborative environment is maintained among all stakeholders. To do that, "The DoD acquisition, capability needs, financial communities, and operational users shall maintain continuous and effective communications with each other by using Integrated Product Teams (IPTs). Teaming among warfighters, users, developers, acquirers, technologists, testers, budgeters, and sustainers shall begin during capability needs definition." (DoDD 5000.1, para. E1.1.2.)

2.2 PERFORMANCE BASED LOGISTICS

The PBL is DoD's preferred approach for product support implementation. The PBL application will meet the warfighter's operational requirements and be cost-effective as validated by a Business Case Analysis (BCA). PBL utilizes a performance based acquisition strategy that is developed, refined, and implemented during the systems acquisition process for new programs or as a result of an assessment of performance and support alternatives for fielded systems. PBL can help PMs optimize performance and cost objectives through the strategic implementation of varying degrees of Government-industry partnerships.

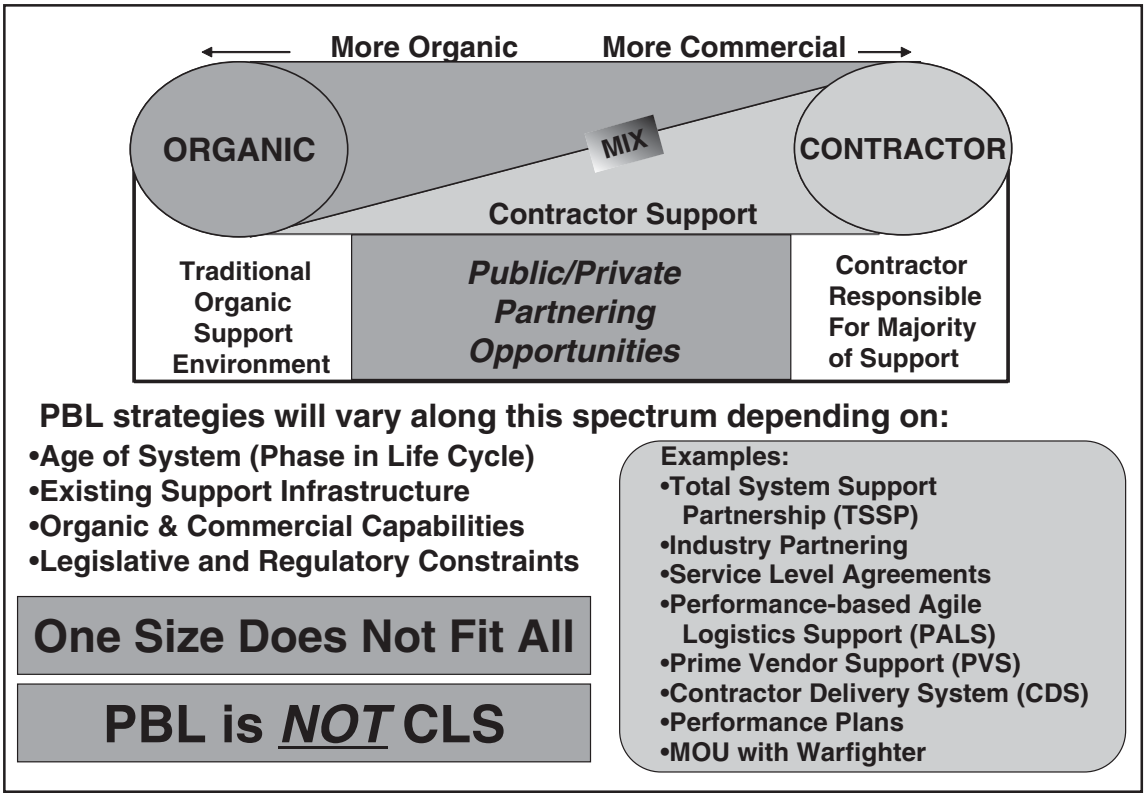


Figure 2-2: Spectrum of PBL Strategies

The essence of PBL is buying performance, instead of the traditional approach of buying individual parts or repair actions. This is accomplished through business relationships that are structured to meet the warfighter's operational needs and align support objectives with required performance outcomes and available resources. PBL support strategies integrate responsibility for system support in one or more PSIs who manage sources of support, public and private, in meeting the negotiated performance outcomes. The PM or their Product Support Manager (PSM), while maintaining TLCSM responsibility, may delegate some level(s) of responsibility for system support to PSIs at the system, subsystem, or component level, to manage public and private sources of support in meeting negotiated performance outcomes. Source of support decisions for PBL do not favor either organic (Government) or commercial providers. The decision is based upon a best-value determination, evidenced through a PBL BCA, assessing the best mix of public and private capabilities, infrastructure, skills base, past performance, and proven capabilities to meet set performance objectives. In simple terms, PBL transitions DoD support strategies from DoD transaction-based purchases of specified levels of spares, repairs, tools, and data, to the purchase of capabilities, such as system availability. This is a fundamental and significant change, in that it transitions the responsibility and corresponding risk for making support decisions to the PSI. PMs will tell the provider ***what*** they want, not ***how*** to do it.

Tailoring. It is important to note that, although the fundamental concept of buying performance outcomes is common to each PBL arrangement, the PBL strategy for any specific program or commodity must be tailored to the operational and support requirements of the end item. While similar in concept, the application of PBL for a tactical fighter aircraft may be very different from a PBL strategy for an Army ground combat system. There is no 'one-size-fits-all' approach to PBL. Similarly, there is no template regarding sources of support in PBL strategies. Almost all of DoD's system support comprises a combination of public (organic) and private (commercial) support sources. Finding the right mix of support sources is based on best value determinations of inherent capabilities and compliance with statutes and policy. This process will determine the optimum PBL support strategy within the product support spectrum, which can range from primarily organic support to a total system support package provided by a commercial Original Equipment Manufacturer (OEM).

2.3 PERFORMANCE BASED LOGISTICS METRICS

A key component of any PBL implementation is the establishment of metrics. Since the purpose of PBL is 'buying performance,' what constitutes performance must be defined in a manner in which the achievement of performance can be tracked, measured, and assessed. The identification of top-level metrics achieves this

objective. The PM works with the user/warfighter to establish system performance needs and then works with the product support providers to fulfill those needs through documentation of the requirements (including appropriate metrics) in Performance Based Agreements (PBAs). An effective PBL implementation depends on metrics that accurately reflect the user's needs and can be an effective measure of the support provider's performance.

Linking metrics to existing warfighter measures of performance and reporting systems is preferable. Many existing logistics and financial metrics can be related to top-level warfighter performance outcomes. Although actual PBL strategies, as implemented, may delineate metrics at levels lower than the warfighter top-level measures (e.g., system availability), it is important that the initial identification of performance outcomes be consistent with the five key top-level metric areas outlined below.

The PBL Top-Level Metric Objectives are defined in Under Secretary of Defense (Acquisition, Technology and Logistics (USD(AT&L)) Memorandum, August 16, 2004, Performance Based Logistics: Purchasing Using Performance Based Criteria:

1. Operational Availability
2. Operational Reliability
3. Cost per Unit Usage
4. Logistics Footprint
5. Logistics Response Time.

Operational Availability ($\mathbf{A_o}$) is the percent of time that a system is available for a mission or the ability to sustain operations tempo.

Operational Reliability is the measure of a system in meeting mission success objectives (percent of objectives met, by system). Depending on the system, a mission objective could be a sortie, tour, launch, destination reached, or other service- and system-specific metric.

Cost per Unit Usage is the total operating cost divided by the appropriate unit of measurement for a given system. Depending on the system, the measurement unit could be flight hour, steaming hour, launch, mile driven, or other service- and system-specific metric.

Logistics Footprint is the Government/contractor size or 'presence' of deployed logistics support required to deploy, sustain, and move a system. Measurable elements include inventory/equipment, personnel, facilities, transportation assets, and real estate.

Logistics Response Time is the period of time from logistics demand signal sent to satisfaction of that logistics demand. 'Logistics demand' refers to systems, components, or resources (including labor) required for system logistics support.

PBL metrics should support these desired outcomes. Performance measures will be tailored by the military departments to reflect specific Service definitions and the unique circumstances of the PBL arrangements.

One of the most critical elements of a PBL strategy is the tailoring of metrics to the operational role of the system and ensuring synchronization of the metrics with the scope of responsibility of the support provider. Support providers, in the form of the PSI, are fully responsible for meeting the metrics defined in the PBAs (and any more formal documents, e.g., contracts) that result, and there must, therefore, be consistency between the scope of the PSI support responsibilities and the identified metrics. If a PSI does not perform or manage all functions contributing to operational availability, consideration must be given to identifying appropriate metrics (other than A_o) for which the PSI may properly be held accountable.

While objective metrics should form the bulk of the evaluation of a PBL provider's performance, some elements of product support requirements might be more appropriately evaluated subjectively by the warfighter and the PM team. This approach allows some flexibility for adjusting to potential support contingencies. For example, there may be different customer priorities that must be balanced with overall objective measures of performance.

3 Implementing Performance Based Logistics

This chapter presents a 12-step Performance Based Logistics (PBL) implementation model and addresses key PBL implementation issues, including Performance Based Agreements and PBL Business Cases Analyses (PBL BCAs). It is important to understand that all PBL implementations are unique, and it is highly unlikely that two different programs will implement PBL in exactly the same way. The implementation model and other guidance presented here must be tailored and adapted to individual weapons systems by the Program Manager (PM) team.

The Defense Acquisition University (DAU) has established a Center of Excellence (CoE), which is available to advise and/or assist the PM in all facets of Performance Based Acquisition and PBLs. Depending upon availability, representatives of the DAU CoE may provide ad-hoc support to a PM's Integrated Product Teams (IPTs).

Candidate System Identification is accomplished by reviewing those elements of cost and support needs to ascertain the potential for candidacy under a PBL support contract. Preliminary analysis is then performed to review factors related to population, remaining logistics life cycle, and any other factors that may promote the pursuit of a PBL support strategy; or eliminate the candidate system from PBL consideration. This quick-look feasibility assessment should be conducted before beginning the 12-step process.

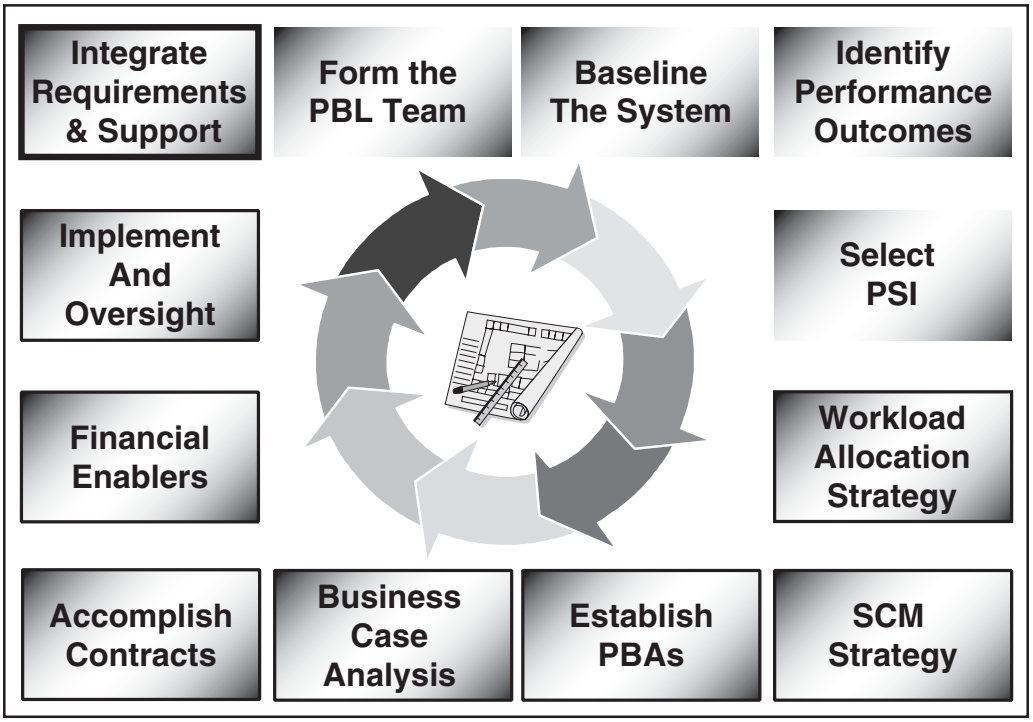


Figure 3-1: PBL Implementation Model

3.1 PERFORMANCE BASED LOGISTICS IMPLEMENTATION MODEL

The PBL process presented here is a guideline for PMs. In an actual PBL implementation, the order in which these steps are taken is flexible and not necessarily sequential. Some steps may be carried out in parallel, omitted, or reordered as appropriate to the system and its corresponding operational environment. The PM and PBL team should tailor this process guideline on a case-by-case basis.

3.1.1 INTEGRATE REQUIREMENTS AND SUPPORT

An effective PBL implementation begins in the Joint Capabilities Integration and Development System (JCIDS) process by focusing capabilities needs on overall performance and linking supportability to performance.

Understanding warfighter needs in terms of performance is an essential initial step in developing a meaningful support strategy. The PM team consults with the operational commands and organizations that support the warfighting combatant commanders. The operational commands are generally the weapons system customers. Their capability needs will be translated into performance and support metrics that will: (a) be documented in Performance Based Agreements (PBAs); and (b) serve as the primary measures of support provider performance. Supportability needs should, as appropriate, also be a Key Performance Parameter (KPP) consideration and/or a testable performance metric. The KPP designation for at least one supportability-related performance parameter among an Acquisition Category (ACAT) subset of KPPs, is highly recommended and increasingly becoming a normal Service practice.

Understanding warfighter requirements is not a one-time event. As scenarios change and the operational environment evolves, performance requirements may also evolve, leading to changes in the supportability strategy and PBL methodology. Thus, meeting warfighter needs and remaining in close alignment with warfighter requirements and logistics personnel are essential and continuous processes for the PM.

To achieve this needed flexibility, PBL strategies should be implemented via agreements (contracts, Memorandums of Agreement (MOAs), Memorandums of Understanding (MOUs), Service-Level Agreements (SLAs)) that specify a range of performance outcomes and corresponding metrics sufficient to accommodate changes to resources, Operating Tempo (OPTEMPO), or other usage requirements. Ideally, the PBL strategy would be aligned across various tiers of support, from peacetime training to wartime surge levels, to the extent that they can be defined, with minimal contact exclusions, mitigating the need to amend or redevelop the PBL agree-

ments. At some point, significant variations in usage may not be able to be defined, and may be accommodated by incorporating language for 'over and above' services in the agreements.

3.1.2 FORM THE PERFORMANCE BASED LOGISTICS TEAM

A critical early step in any PBL effort is establishing a team that includes the user to develop and manage the implementation. Although the PM is the total life cycle systems manager, the foundation of PBL strategies relies on ensuring the participation and consensus of all stakeholders, especially the customer, in developing the optimum sustainment strategy. The team, led by the PM or the PM's Product Support Manager (PSM), may consist of Government and private-sector functional experts and should include all appropriate stakeholders, including warfighter representatives; however, it is important that members are able to work across organizational boundaries. Teambuilding to support PBL is similar to traditional integrated logistics support management, except the focus on individual support elements is diminished and replaced by a system orientation focused on performance outcomes.

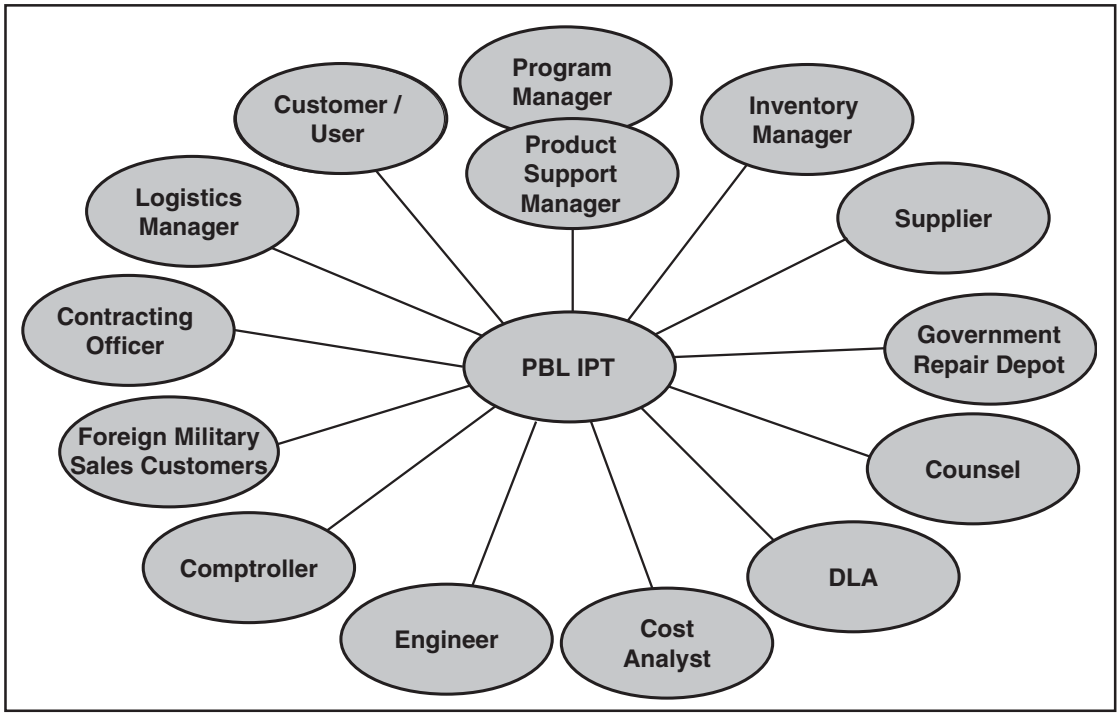


Figure 3-2: A Sample PBL Team

The structure of the team may vary, depending on the maturity and the mission of the program. For instance, during the System Development and Demonstration (SDD) phase, systems design for operational effectiveness[1] has the biggest impact on life cycle sustainment. The PM must know where his or her system is at in the life cycle, understand what major milestones/events are approaching, and provide useful information to the decision makers for the program to move forward through the life cycle successfully.

Before a team can be established, the PM must establish the achievable goals. By knowing what must be accomplished, the PM can best choose who should be on the team to do the work, keeping resource impacts to the minimum. The wrong approach is for a PM to establish a team, and then look to the team to establish goals: this is known as 'having a solution that is looking for a problem,' and provides no initial team focus. By having the goals known up front, the PM can take a competency-based approach to team building (eliminating the stovepipes of function-based organizations), achieve system orientation, and build a management infrastructure.

Integrating Across Traditional Stovepipe Organizational Boundaries. A team could include representatives from a component command headquarters and logistics representatives from supply, maintenance, and transportation staffs. It could also include representatives from operational commands or defense agencies, as well as engineering, technical, procurement, comptroller, information technology organizations, and contract support. After the team is organized, the members establish their goals, develop plans of action and milestones, and obtain adequate resources.

Establishing the Public/Private Support Strategy IPT(s). These IPTs will ensure consideration, throughout support strategy design and development, of all factors and criteria necessary to achieve an optimum PBL strategy that utilizes the best capabilities of the public and private sectors in a cost-effective manner.

3.1.3 BASELINE THE SYSTEM

Defining and documenting the system baseline answers four key questions: What is the scope of your support requirement? Who are the key stakeholders? What are your cost and performance objectives? For fielded systems, what are the historic readiness rates and Operations and Support (O&S) costs relative to the upgraded or new system?

[1] PMs should refer to the OSD guidebook *Designing and Assessing Supportability in DoD Weapon Systems: A Guide to Increased Reliability and Reduced Logistics Footprint* for information on systems engineering.

To develop an effective support strategy, a PM needs to identify the difference between existing and desired performance requirements. Accordingly, the PM identifies and documents the current performance and cost baseline. The life-cycle stage of a program determines the scope of a baselining effort. For new programs with no existing logistics structure, the baseline should include an examination of the cost to support the replaced system(s). If there is no replaced system, Life Cycle Cost (LCC) estimates should be used. For new systems, the business model for supporting the product demonstrates its risks and benefits as part of the systems engineering process. This proof of concept for the support solution is part of the SDD phase. Once identified, the baseline can be used to assess the necessary establishment of, or revisions to, the support concept to achieve the desired level of support.

For existing systems, the baseline assessments form the basis for BCA of PBL approaches being considered. Determination of the sustainment and readiness performance history and associated operations and support cost is essential. Therefore actual data, when available, should be used for fielded systems. Early in the process, the PBL BCA is a rough order of magnitude analysis that provides an overall sense of the planned improvements, benefits, and costs. Paragraph 3.4 provides a detailed discussion of PBL BCAs.

3.1.4 DEVELOP PERFORMANCE OUTCOMES

At the top level, the performance outcomes and corresponding metrics should focus on the warfighter's needs: a system that is operationally available, reliable, and effective, with minimal logistics footprint and a reasonable cost.

The formal performance agreement with the warfighter (see 3.3.1) states the objectives that form the basis of the PBL effort. The PBL team should focus on a few outcomes, such as weapons system availability, mission reliability, logistics footprint, and/or overall system readiness levels, using the metrics defined in an Acting Under Secretary of Defense (Acquisition, Technology and Logistics (USD(AT&L)) Memorandum, August 16, 2004, Performance Based Logistics: Purchasing Using Performance Based Criteria, and outlined in Chapter 2, paragraph 2.3. Measures of readiness and supportability performance are balanced against costs and schedules.

Linking these metrics to existing warfighter measures of performance and reporting systems is preferable. Many existing logistics and financial metrics can be related to top-level warfighter performance outcomes. The PBL metrics discussed in Chapter 2, paragraph 2.3, should be considered in all PBL contracts. It is

important to select only those metrics that are within the control of each PBL provider.

3.1.5 SELECT THE PRODUCT SUPPORT INTEGRATOR

A fundamental tenet of PBL is single-point accountability for support. That role is encompassed by a PSM or one or more Product Support Integrators (PSIs), who are responsible for integrating all sources of support, public and private, to meet the identified performance outcomes. The PM or PSM selects a PSI (see 3.2 below) from the Government or private sector to coordinate the work and business relationships necessary to satisfy the performance based agreement. Paragraph 3.2 provides a detailed discussion of the PSI role, selection, and management.

3.1.6 DEVELOP WORKLOAD ALLOCATION STRATEGY

The DoD policy requires that "Sustainment strategies shall include the best use of public and private sector capabilities through Government/industry partnering initiatives, in accordance with statutory requirements." (DoDD 5000.1, para. E1.1.17.)

An effective support strategy considers best competencies and partnering opportunities. Building on the previously developed System Baseline, the PM and PBL team must address each discrete workload and assess where, how, and by whom it can best be accomplished, while considering statutory (i.e., Title 10 of the United States Code (10 U.S.C.)), regulatory, and pertinent Military Department (MILDEP) guidance. In general, support workloads will include both system-unique subsystems, commodities, or components; and common subsystems, commodities, and components. Within these categories, there will be various characteristics to be considered as the workload allocation and sourcing decisions are accomplished, to include:

- Title 10 U.S.C. applicability (Core, 50/50);
- existing support process (e.g., contract, organic);
- existing support infrastructure (in-place, to be developed);
- best capabilities evaluation (public, private sector market research);
- opportunities for Public/Private Partnering;
- similar factors.

The development of an effective support strategy will consider all of these factors in arriving at best value decisions, using decisions tools, including BCAs, to develop the optimum support sourcing decisions.

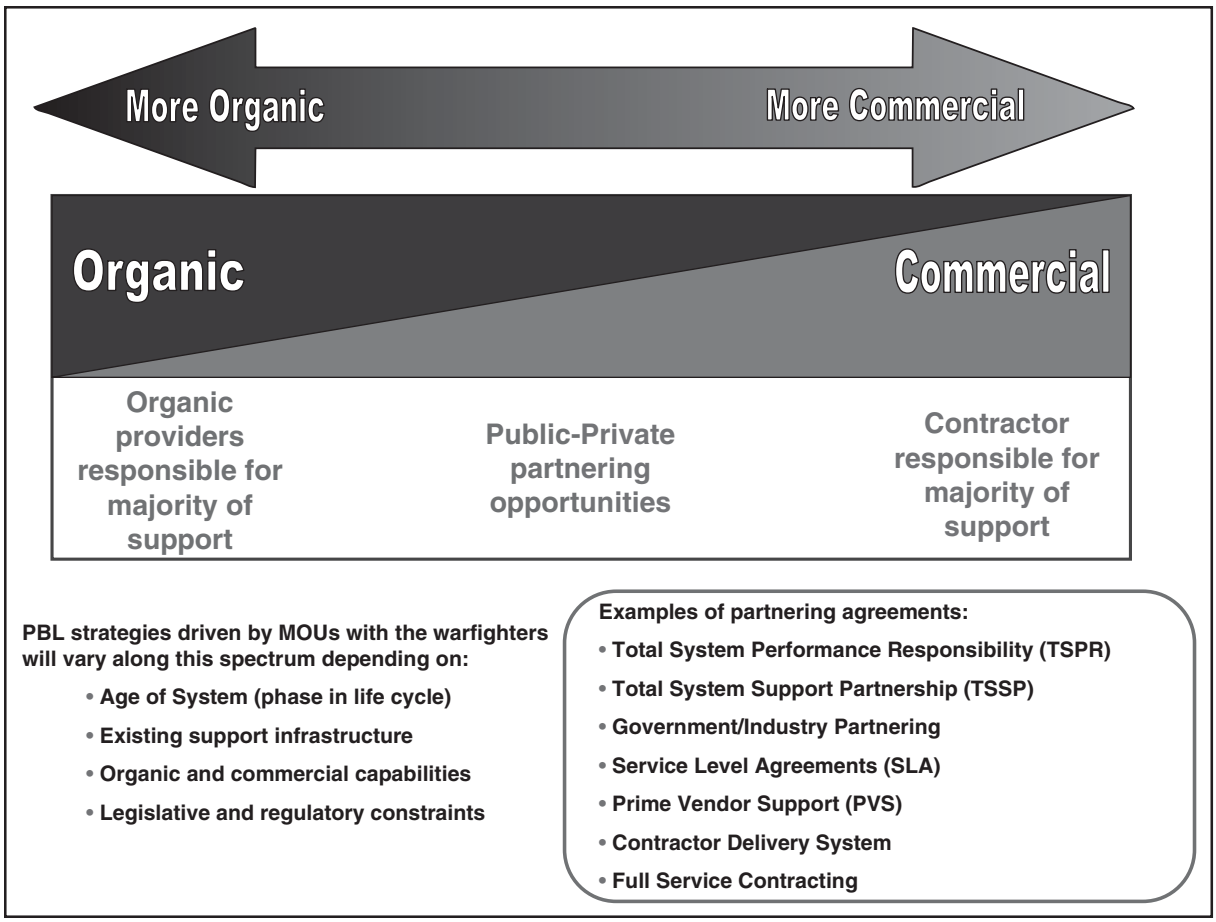


Figure 3-3: Spectrum of Performance Based Logistics (PBL) Strategies

3.1.7 DEVELOP THE SUPPLY CHAIN MANAGEMENT STRATEGY

A Supply Chain Management (SCM) strategy is critical to the success of any PBL effort. Materiel support is a critical link in weapons systems supportability. All the skilled labor, advanced technology, and performance mean little without the 'right part, in the right place, at the right time.' The supply chain is also a primary target for utilizing industry flexibility, capability, and proprietary spares support.

DoD Materiel Management usually addresses four categories of supply support items:

- **Unique Repairable Items**: These are repairable (subject to repair) parts that are unique to the system (not common with other DoD systems). They are usually sourced by the Prime Vendor/Original Equipment Manufacturer (OEM) of the system. Strong consideration should be given to allocating

responsibility for wholesale support of these items to the Prime Vendor, who has readily available technical data and identified sources.

- **Common Repairable Items**: These parts are common with other systems and may have a variety of sources. They are usually managed organically within the DoD materiel management process but are also candidates for corporate PBL contracts.
- **Unique Consumable Items**: These are consumable (discarded after use) items that are used only on the target system and are usually sourced by the Prime Vendor/OEM of the system. Strong consideration should be given to allocating responsibility for acquisition of these items to the Prime Vendor, which may elect to use the Defense Logistics Agency (DLA) as the preferred source of supply.
- **Common Consumable Items**: These are consumable items used across more than a single system and are generally managed and provided by DLA. It may be viable to allow the Prime Vendor to procure these items, as appropriate, should DLA be unable to meet time, cost, or quantity requirements. If needed, the PM should encourage establishing a PBA between DLA and the vendor when total private support is chosen.
- Unique DoD Inventory should always be considered, and a plan for draw down in place, prior to buying spares and repairs from private sources.

Transfer of ownership of spares and equipment, when necessary to support a contract during Low Rate Initial Production (LRIP) or Interim Contract Support (ICS), needs to be managed appropriately to ensure equitability of capitalization and credit issues.

Supply chain management includes the distribution, asset visibility, and obsolescence mitigation of the spare parts. From a warfighter's perspective, transportation and asset visibility have a substantial impact on high-level metrics and should be emphasized in the PBL strategy.

3.1.8 ESTABLISH PERFORMANCE BASED AGREEMENTS

The DoD policy states that "the PM shall work with the users to document performance and support requirements in performance agreements specifying objective outcomes, measures, resource commitments and stakeholder responsibilities." (DoD Instruction (DoDI) 5000.2, *Operation of the Defense Acquisition System*, May 12, 2003, para. 3.9.2.3.)

The intent of the PBA is to ensure that all stakeholders (the user/warfighter, the PM, and support provider) enter into a formal relationship for levels of support. This differs from the usual 'best effort' approach typical of DoD organic support

processes. With a clear delineation of performance outcomes, corresponding support requirements, and the resources required to achieve both, the PBA creates a clear understanding of the outcomes and the commitments required to achieve those outcomes among all stakeholder parties.

Documentation of a completed, approved, and funded product support/sustainment agreement is a critical step in any PBL implementation. A documented Performance Based Agreement between the PM, PSI, and force provider that defines the system operational requirements (e.g., readiness, availability, response times, etc.) is essential. The PM and Product Support Provider(s), or PSPs will define and include the required support metrics necessary to meet the system performance requirements. (DoDD 5000.1, para. E1.1.29.) Support providers may be public, private, or a mix to include public-private partnerships. Examples of public support providers include Service maintenance depots, Service and DLA inventory control points, and DLA distribution depots. Paragraph 3.3 provides a detailed discussion of PBAs.

3.1.9 Conduct a Performance Based Logistics Business Case Analysis

In conducting the PBL BCA, alternative solutions are assessed in terms of the cost to meet the logistics performance objectives of the warfighters compared particularly to existing support strategies. Paragraph 3.4 provides a detailed discussion of PBL BCAs and includes a set of guiding principles to help the PM to conduct a BCA that optimizes system effectiveness at reasonable costs. Each Service has guidelines for the analysis methodology used to make business trade-off decisions.

3.1.10 Award Contracts

A PBL contract specifies performance requirements; clearly delineates roles and responsibilities on both sides; specifies metrics; includes incentives as appropriate; and specifies how performance will be assessed. PBL contracting strategies prefer an approach characterized by use of a Statement of Objectives versus early development of a detailed Performance Work Statement. Ideally, PBL contracts will be implemented as fixed price, guaranteeing needed outcomes at a known price. However, the inherent risk of entering into fixed price contracts prior to establishing firm cost, resource, and materiel baselines necessitates the frequent use of cost plus contracting approaches early in the product support life. As a general rule, until price risk is minimized to a level of confidence for both DoD and the contractor, fixed price contracts should be avoided. Consequently, PBL strategies will generally have a phased contracting approach, initiated by cost plus cost reimbursement type contracts to cost plus incentive contracts to fixed price incentive contracts, over time.

There is a clear preference for long-term contracts when implementing a PBL strategy. PBL inherently self-motivates service providers to do 'good things,' such as improve component and system reliability, since it provides the foundation for increased profit. However, this motivation must be balanced against the ability of the service provider to invest in the needed infrastructure and processes required to achieve reliability improvements. This can only be achieved when there is sufficient contract length to assure the service provider of an adequate return on investment for these actions.

Also, PBL contracts should include adequate exit criteria or 'off-ramps' should worst-case scenarios arise regarding contractor inability to (or loss of interest in) continuing to provide support. In general, these exit criteria should be included as negotiated options for the acquisition, transfer, or use of necessary technical data, support tooling/equipment, and the appropriate conversion training required for reconstitution or recompetition of the support workload.

For organically led PBL strategies, an MOU/MOA will be used to define the terms of agreement, performance outcomes, and stakeholder responsibilities.

All PBL PBAs should include: performance objectives, responsibilities, reliability growth targets, maintainability improvements, term of contract, flexibility (range of support), Diminishing Manufacturing Sources (DMS)/obsolescence, continuous modernization/improvement; incentives/penalties, and cost reduction/stability. Industry PBL contracting priorities include metrics, minimum amount of Contract Line Item Numbers (CLINs), cap on liabilities, risk mitigation, long-term (5 years +), incentives, Return on Net Assets (RONA), and clarity and flexibility.

Those purchasing PBL should follow *Federal Acquisition Regulation* (*FAR*) and *Defense Federal Acquisition Regulation Supplement* (*DFARS*) guidance, as appropriate, for the acquisition of logistics services and support. They should also seek to use *FAR*, Part 12, "Acquisition of Commercial Items" to acquire PBL as a commercial item.

3.1.11 Employ Financial Enablers

In executing performance agreements, the PM must implement a financial process strategy that is an enabler. The PM must estimate annual costs based on operational requirements and review funding streams for applicability. Buying performance is best facilitated by single line items and a single color of money. Once the funds have been appropriated, the customer must ensure that the funds are made available as needed to fund the support as defined in the PBA and (if present) subsequent implementing support contract. The force provider (customer) advocates for the required funding. Although this process does not provide the PM

direct control of the funds for support, it does put them in a clear management and oversight role of the funds used for sustainment. Paragraph 3.6 provides further discussion of financial management strategies, including the Navy's use of its working capital fund to facilitate PBL.

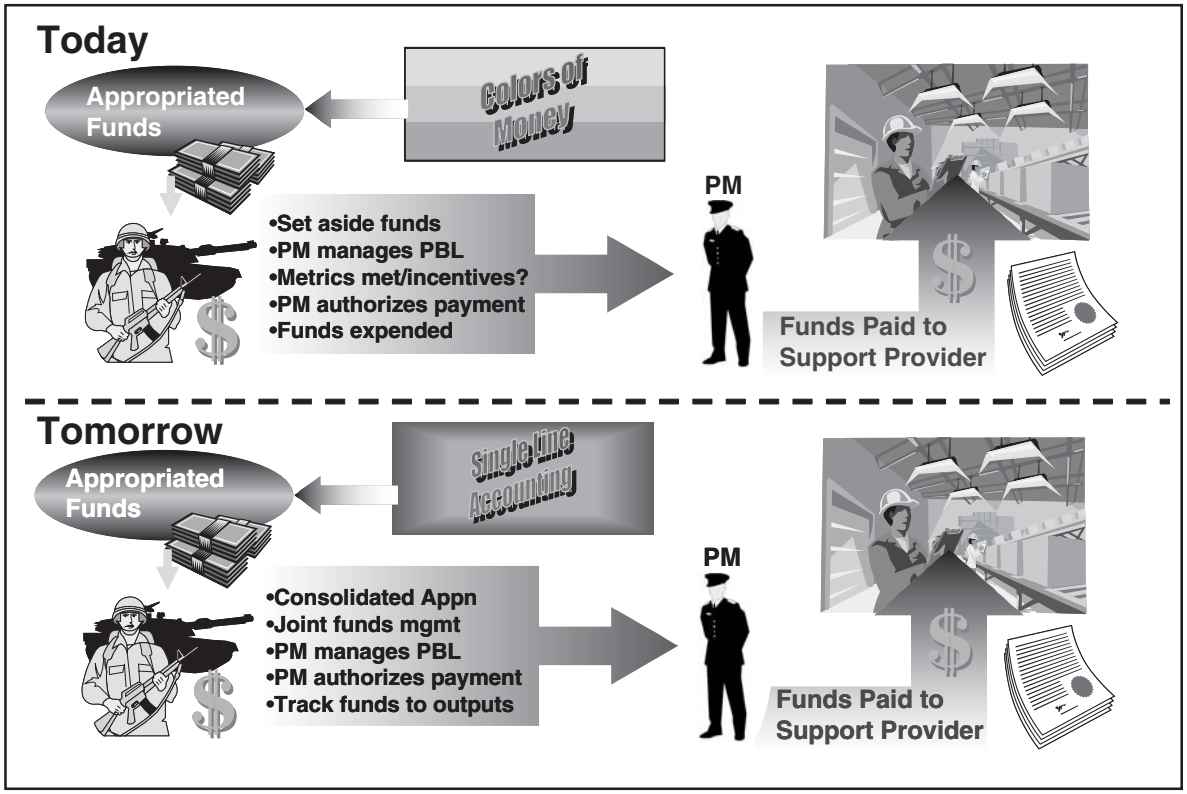


Figure 3-4: Financial Process Strategy

3.1.12 IMPLEMENT AND ASSESS

The PM's oversight role includes developing the performance assessment plan, monitoring performance, and revising the product support strategy and PBAs as necessary. The PM also acts as the agent for the warfighter, certifying PSI performance and approving incentive payments. The PM must take a hands-on approach and not assume that the contracts and/or agreements will be self-regulating.

The Services are required to conduct periodic assessments of system support strategies vis-à-vis actual versus expected levels of performance and support (USD(AT&L) Memorandum, March 7, 2003, Total Life Cycle Systems Management and Performance Based Logistics, p. 9). These reviews occur nominally every 3 to 5 years after IOC or when precipitated by changes in requirements/design or by performance problems, and should at minimum include:

- PSI/PSP performance;
- product improvements incorporated;
- configuration control;
- modification of PBL agreements as needed based on changing warfighter requirements or system design changes.

The PM should perform reviews of PSI/PSP performance against the PBA on at least a quarterly basis and use that data to prepare for the Service-level assessments.

3.1.13 PERFORMANCE BASED LOGISTICS IMPLEMENTATION PROCESS SUMMARY

As noted previously, this PBL implementation process is not intended to be rigid and inflexible. The PM team should apply the steps presented in a manner that is best suited to the needs of their program and its business and operational environments. Key elements of any PBL implementation — the PSM and PSI(s); Performance Based Agreements; PBL BCA; legislative and statutory issues; and financial management issues — are discussed in detail below.

PBLs differ mainly in scale, covering a broad range from component level up to system platform level, as shown in Figure 3-5. On one end of the spectrum is an individual commodity, while at the other end is the entire weapons system. The more systems are affected, the more complex the PBL candidate is to assess. Not only are the requisite BCAs tailored to the candidate list, but the time required to create the BCAs is also affected by the scope of the PBL.

The commodity-type PBL is usually the easiest to implement since it is easier to estimate the current baseline and level of support required, and may often involve only a single commercial manufacturer. This contractor, having the most intimate knowledge of manufacturing processes, system reliability, and potential improvements, may be a prime candidate for entering into a public/private teaming relationship. Risk is one of the major cost drivers for contractors and, where the potential PBL contractor is also the OEM, risks should be reduced. The BCA associated with a single commodity should be relatively easy and quick to prepare.

The weapons system-level PBL introduces a much higher degree of complexity. Not only must historical costs, reliability, and supportability be captured for a much larger number of parts, but there may be many different commercial support providers contributing to the support effort. When a single contractor or contractor team is being solicited for interest as a PSI in a weapons system-level PBL, the Government team needs to understand that the contractor(s) will perceive numerous risks. Some of these risks arise from the fact that the single integrating

	Logistics Support Elements		
	All	Multiple	Single
System Level	All elements for entire system	Multiple elements for entire system	Single element for entire system
Sub-System Level	All elements for sub-system	Multiple elements for sub-system	Single element for sub-system
Component Level	All elements for a single component	Multiple elements for a single component	Single element for a single component

Figure 3-5: PBL Support Integration

contractor(s) may not be the OEMs for the majority of support items and services, and will find it necessary to subcontract with a broad range of manufacturers to achieve system-level support. Compounding this complexity will be the existence of varying degrees of organic support. The challenge of integrating a broad range of public and private support organizations to achieve system-level performance outcomes requires careful analysis, design, development, and implementation of a well-thought-out support strategy, and must be tailored to the requirements, resources, and operational role of the objective system.

3.2 THE PRODUCT SUPPORT MANAGER AND PRODUCT SUPPORT INTEGRATOR(S)

The PM's responsibilities for oversight and management of the product support function are typically delegated to a PSM (an overarching term characterizing the various Service function titles, i.e., Assistant PM for Logistics, System Support Manager, etc.) who leads the development and implementation of the product support and PBL strategies and ensures achievement of desired support outcomes during sustainment. The PSM employs a PSI, or a number of PSIs as appropriate, to achieve those outcomes. The PSI is an entity performing as a formally bound agent (e.g., contract, MOA, MOU) charged with integrating all sources of support, public and private, defined within the scope of the PBL agreements to achieve the documented outcomes. The product support manager, while remaining **accountable** for system performance, effectively delegates the **responsibility** for delivering warfighter outcomes to the PSI. In this relationship, and consistent with 'buying

performance,' the PSI has considerable flexibility and latitude in **how** the necessary support is provided, so long as the outcomes are accomplished.

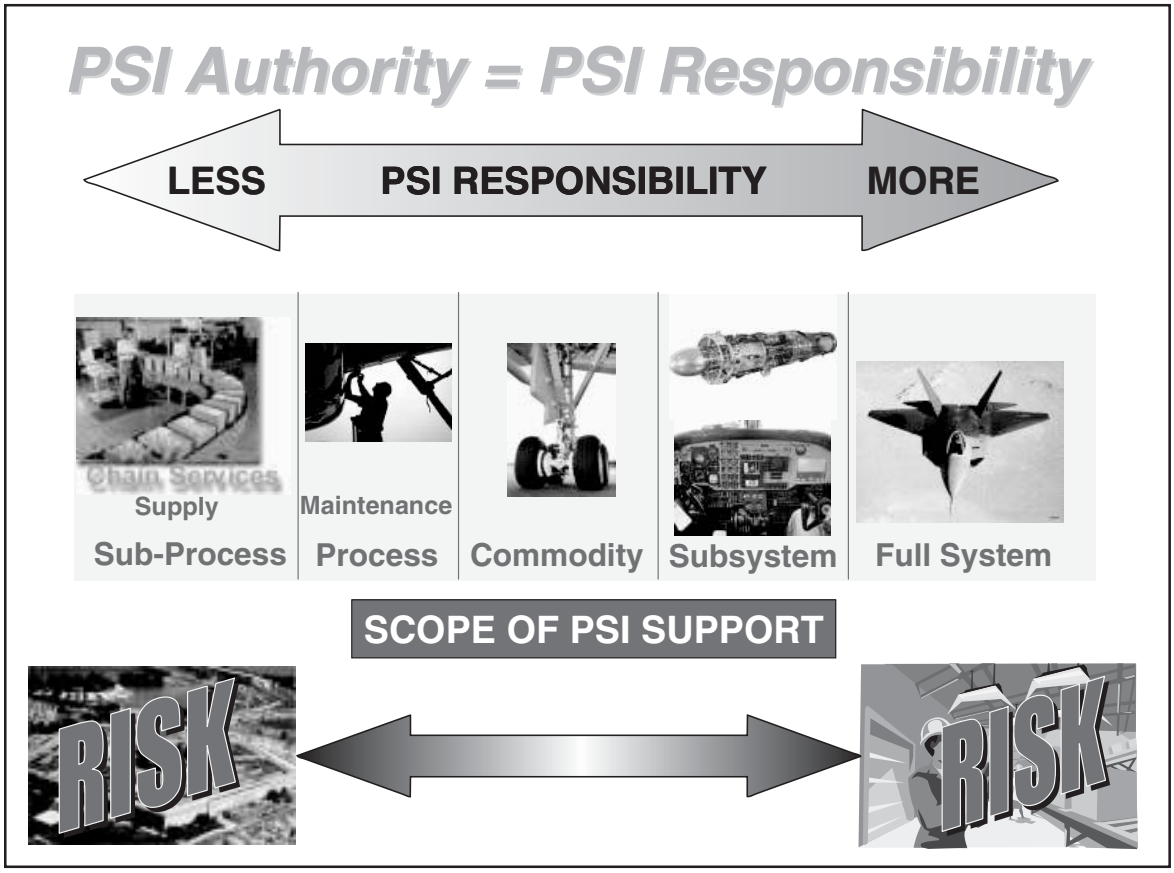


Figure 3-6: The PSI Responsibility Spectrum

The PM or PSM selects a PSI from DoD or the private sector. Activities coordinated by support integrators can include, as appropriate, functions provided by organic organizations, private sector providers, or a partnership between organic and private sector providers. The PM ensures that the product support concept is integrated with other logistics support and combat support functions to provide agile and robust combat capability. The PM invites the Service and DLA logistics activities to participate in product support strategy development and IPTs. These participants help to ensure effective integration of system-oriented approaches with commodity-oriented approaches (common support approaches), optimize support to users, and maximize total logistics system value.

As with the PBL strategy and the agreement with the warfighter, the product support integration function is a key component of the product support strategy documented in the acquisition strategy. While product support execution is accomplished by numerous organizational entities, the PSI is the single point of

accountability for integrating all sources of support necessary to meet the agreed-to support/performance metrics. The most likely candidates for the integrator role are:

- the system's original equipment manufacturer or prime contractor;
- an organic agency, product, or logistics command (e.g., DLA, Naval Inventory Control Point (NAVICP), depots);
- a third-party logistics integrator from the private sector;
- the PM's own logistics organization.

Once the PM has answered some key questions, he or she is better able to evaluate the PSI options and select the alternative that provides the greatest benefits. Typical questions the PM may want to answer are:

- What sustainment functions are planned to be included in this product strategy?
- What specific capabilities are required to perform these functions?
- Are these functions inherently Governmental?
- Are there statutory or regulatory limitations associated with performance of these functions?
- Are the desired functions more commonly performed in the commercial sector?
- Which provider offers the optimal mix of required performance at the lowest LCC (also frequently referred to as best value)?

Anyone who provides products or services in the sustainment of an acquisition system is a PSP. The primary role of the PSI is to integrate the activities of the various PSPs.

The PSI function can be aligned along vertical (weapons system platform) or horizontal (at the sub-system, commodity, or component level) axes. As shown on the following page, the primary difference in the two approaches is whether or not the PSI is assigned the responsibility of implementing and managing the support functions from the top down (a weapons system platform approach), or implements support incrementally across a range of subsystems, etc., that may support multiple platforms.

3.3 Performance Based Agreements

One of the most significant aspects of PBL is the concept of a negotiated agreement between the major stakeholders (e.g., the PM, the force provider(s), PSI, and/or support provider(s)) that formally documents the performance and support expectations

and commensurate resources to achieve the desired PBL outcomes. Per DoDI 5000.2, para. 3.9.2.3: "The PM shall work with the users to document performance and support requirements in performance agreements specifying objective outcomes, measures, resource commitments, and stakeholder responsibilities." The term 'performance agreements,' as cited in DoD 5000 series policy, is an overarching term suitable for policy guidance. In actual PBL implementation guidance, the more specific term 'performance based agreements' is used to ensure clarity and consistency.

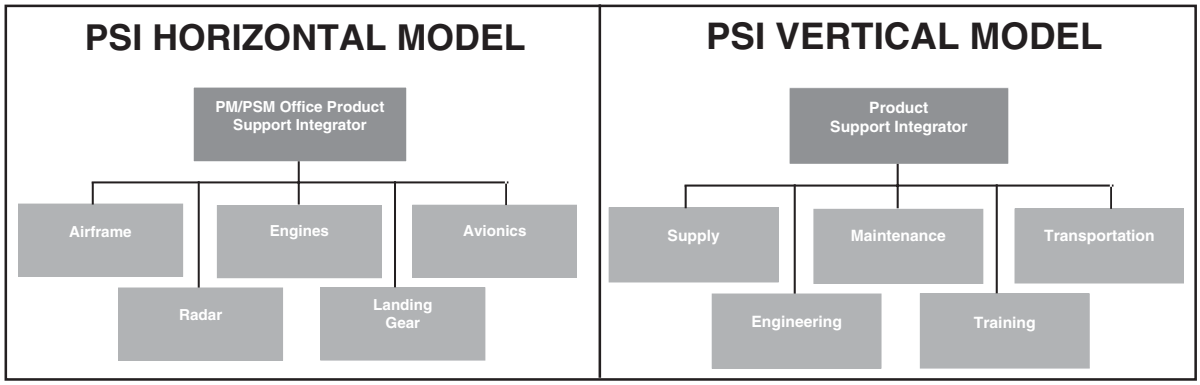


Figure 3-7: PSI Models

Performance Based Agreements are one of the key components of an effective product support strategy. (See DoDD 5000.1, para E1.1.16.) They establish the negotiated baseline of performance, and corresponding support necessary to achieve that performance, whether provided by commercial or organic support providers. The PM, using the performance objectives required by the warfighter, negotiates the required level of support to achieve the desired performance at a cost consistent with available support funding. Once the performance, support, and cost are accepted by the stakeholders, the PM enters into PBAs with users, which specify the level of operational support and performance required by the users; and into PBAs with the support providers, which specify the performance parameters that will meet the requirements of the warfighter. Further guidance regarding PBL agreements and recommended metrics is provided by the Acting USD(AT&L) Memorandum, August 16, 2004, Performance Based Logistics: Purchasing Using Performance Based Criteria. As discussed on the next page, there are generally two categories of PBAs: user agreements (PBAs with force providers for availability) and support provider agreements (PBAs for source, a contract with industry or an MOA/MOU with an organic support provider).

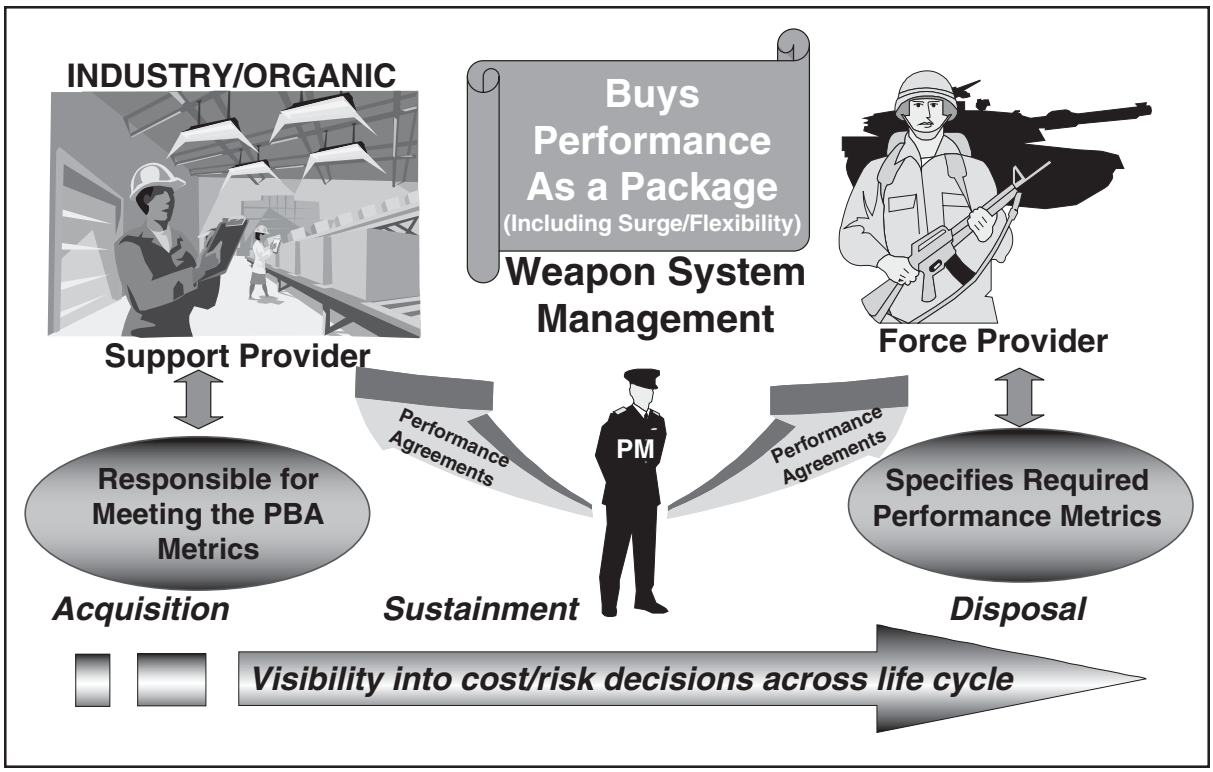


Figure 3-8: PBL: Performance Based Agreements

3.3.1 USER AGREEMENTS

A written PBA between the PM and the user is the centerpiece of the PM's overall PBL support strategy. Typically, the agreement identifies ranges of outcome performance with thresholds and objectives, and the target price (cost to the user) for each level of PBL capability. The agreement also delineates any constraints or boundary conditions and will reflect normal operations. The execution performance level will be dictated by the allocation of funds to a weapons system during the execution year. It must include specific terms and conditions related to surge and warfighting operations that will be considered 'over-and-above' activity.

User PBAs provide the objectives that form the basis of the PBL effort. Generally, a focus on a few performance based outcome metrics — such as weapons system availability, mission reliability, logistics footprint, and/or overall system readiness levels — will lead to more effective solutions. However, in developing the actual PBL support arrangements, it may not be possible to directly state the warfighter performance objectives as support metrics because of lack of support provider control of all support activities necessary to produce the warfighter performance (e.g., availability). Most Service logistics policies and/or guidance mandate a preference for Service-performed organizational level maintenance and retail supply functions.

PBL agreements should be flexible enough to address a range of support requirements, so as to accommodate changes in OPTEMPO or execution year funding, including surge or contingency requirements to the extent that they can be defined. PBL agreements should clearly articulate cost versus price considerations, attendant risks associated with requirements definition, performance failure, etc., and should capture alternatives.

3.3.2 SUPPORT PROVIDER AGREEMENTS

The PMs enter into PBAs with organic sources and contracts with commercial sources. The agreements should be written to maintain flexibility to spend year-of-execution funding and/or accept priority revisions. PBAs should also reflect a range of support levels to allow revisions in support requirements without the need to prepare a new PBA. In most cases, PBL PBAs should be structured to include both training and contingency OPTEMPOs.

For support provided by commercial organizations, the contract is, in most cases, the PBA. Accordingly, the contract contains the agreed-to performance and/or support metrics that have been identified as meeting the requirements of the warfighter. In most cases, the ultimate performance requirements (e.g., availability) may be precluded as contract metrics because the contractor may not have total influence or authority over all of the support functions that produce system availability — some support functions may continue to be performed by organic organizations or other support providers. Accordingly, the contract should include the highest level metric(s) critical to producing the desired performance outcome(s). In order to motivate the contractor to achieve the desired metrics, appropriate contract incentives include award fee, award term, and share in savings.

For support provided by organic organizations, a PBA, similar in structure to an MOA, MOU, or SLA may be used in lieu of a contract to represent and document the terms of the PBA for organic support. One important distinction, however, between PBAs and other non-PBA type MOAs/MOUs is that PBAs contain the agreed-to performance and/or support metrics that have been identified as meeting the warfighter requirements and to which the warfighter has agreed to commit funding. The intent of agreements with organic support providers is to formally document the agreed-to level of support and associated funding necessary to meet performance requirements. Organic providers, like commercial providers, will have a set of performance metrics that will be monitored, assessed, incentivized, and focused on the target weapons system.

A support provider in a PBL arrangement cannot be held accountable for functions he or she does not directly perform or manage. Accordingly, the PM may need to

select the next echelon of metrics for which the support provider can be held accountable and which most directly contributes to the warfighter performance metrics. The use of properly incentivized ranges of performance to define metrics can provide flexibility and is recommended. Many existing logistics and financial metrics can be related to top-level warfighter performance outcomes. These include, but are not limited to Not Mission Capable Supply (NMCS), ratio of supply chain costs to sales, maintenance repair turnaround time, depot cycle time, and negotiated time definite delivery. In structuring the metrics and evaluating performance, it is important to clearly delineate any factors that could affect performance but are outside the control of the PBL provider(s).

While objective metrics form the bulk of the evaluation of a PBL provider's performance, some elements of product support requirements might be more appropriately evaluated subjectively by the warfighter and the PM team. This approach allows some flexibility for adjusting to potential support contingencies. For example, there may be different customer priorities to be balanced with overall objective measures of performance.

The Defense Logistics Agency (DLA) will often be an important stakeholder in a PBL effort. In addition to its role as a support provider, DLA works with the Services to develop guidance and policy that facilitate common approaches and effective, efficient competitive sourcing decisions. Through Strategic Supplier Alliances (SSA), DLA partners with DoD organizations to leverage areas of common strategic importance between stakeholders and industry partners. PBL contract provisions should permit use of DLA (for more information, see *FAR*, Part 51).

3.3.2.1 CONTRACTING FOR PERFORMANCE BASED LOGISTICS

The preferred PBL contracting approach is the use of long-term contracts with incentives tied to performance. Award-term contracts should be used where possible to incentivize optimal industry support. Incentives should be tied to metrics tailored by the MILDEPs to reflect their specific definitions and reporting processes. Award and incentive contracts shall include tailored cost reporting to enable appropriate contract management and to facilitate future cost estimating and price analysis. PBL contracts must include a definition of metrics and should be constructed to provide industry with a firm period of performance. Wherever possible, PBL contracts should be fixed-price (e.g., fixed price per operating or system operating hour).

Lack of data on systems performance or maintenance costs, or other pricing risk factors, may necessitate cost-type contracts for some early-stage PBLs. Full access to DoD demand data will be incorporated into all PBL contracts. PBL contracts should

be competitively sourced wherever possible and should make maximum use of small and disadvantaged businesses as subcontractors, and may be incentivized to do so through PBL contractual incentives tied to small and disadvantaged business subcontracting goals. See Acting USD(AT&L) Memorandum, August 16, 2004, Performance Based Logistics: Purchasing Using Performance Based Criteria. The applicability of *FAR* Part 12 for PBL is discussed in Paragraph 3.3.6.

3.3.3 RISK

Inherent in any business transaction where a level of performance is purchased, rather than discrete goods and services, there is a *de facto* shift of risk to the provider of support. This is true of PBL relationships as well. While DoD can never completely delegate risk for system operational performance, PBL strategies move the level of risk away from DoD to the support provider, commensurate with the scope of support for which the support provider is responsible. If structured with the right metrics, incentives, and strictly limited exclusions to coverage, a PBL support package will highly incentivize contractors to make decisions beneficial to both themselves and the Government, while avoiding the financial consequences of bad decisions. Correctly structured PBL support will significantly reduce, but not eliminate, risk to the Government.

In traditional support strategies, where DoD purchases transactional goods and services, it is incumbent upon DoD to specify which goods and services are desired, and how many of each are desired. The support provider's only responsibility is to provide the goods or services requested. If DoD managers make inaccurate decisions about which items need to be repaired or what quantity of items need to be purchased, then responsibility for the subsequent degradation of system operational effectiveness lies with DoD, not the support provider. Conversely, when DoD buys a level of support or performance, then the responsibility for the subordinate decisions (i.e., which items to repair, what quantity of items to procure) transitions to the support provider, along with the risk for operational effectiveness.

A PBL business relationship also entails the effective identification and development of risk-sharing strategies to mitigate or compensate parties for taking on risks. Although the degree of DoD risk is minimized, as mentioned above, it is still important to identify any potential shared-risk factors and ensure that they are carefully managed by the PM and the PBL provider.

3.3.4 INCENTIVES AND REMEDIES

One of the key characteristics of PBL contracts is that they are based on a private sector business model — paying for performance. As is often done in commercial

contracts, incentives are included to motivate contractor behavior. It is not uncommon for contractors engaged in PBL contracts to have the majority — or even all — of their profit tied to performance based metrics and dependent on earning the contractual incentives included in the contract. Incentives for organic PBL providers, such as depots, are also important. Properly defining what is expected of the organic provider and incentivizing them to achieve PBL goals are critical to shifting processes away from traditional support methods to PBL.

PBL contract/agreement incentives can include:

- award fee earned based on subjective assessment by Government on how well contractor meets/exceeds performance standards;
- **i**ncentive fee based upon the control of costs in the performance of a cost-plus-incentive-fee contract;
- **a**wards additional periods of performance based on contractor performance (Note: DoD limit on contracts is currently 5 years, with one-year options thereafter);
- **shared savings** (implemented within an Award Fee or Incentive Fee structure) whereby contractor and Government share in any savings reductions achieved by the contractor resulting from cost or other efficiencies, design improvements, or performance/producibility enhancements;
- **reliability-based profits** whereby firm-fixed price contracts may be structured to provide an inherent profit incentive for a PBL provider to lower operating costs by achieving higher product reliability and to retain all or a portion of the savings achieved as a result of providing a better product;
- positive past performance ratings, which increase the chances of being awarded competitive contracts or follow-on efforts;
- investment by the industry prime in technical infrastructure that enhances the public partner's ability to perform (e.g., applications, computers, network services, tooling);
- investment in training and certification or education;
- investment in Lean, Six Sigma, and Theory of Constraint principles;
- the award of additional business.

Remedies for non-performance under PBL contracts can include:

- requiring the contractor to perform a service at no additional cost;
- reducing the price;
- reducing/eliminating award fee or profit earned under an incentive fee arrangement;

- not exercising the award term contract extension if performance goals in the contract fail to be attained (cost, quality, cycle time, etc.);
- unfavorable Contractor Performance Assessment Report (CPAR) ratings that become part of the contractor's past performance formal record in the DoD Past Performance Automated Information System (PPAIS) database;
- terminating the contract;
- terminating the contract and re-awarding the effort to be performed at the original contractor's expense.

Remedies for non-performance by organic PBL providers can include:

- requiring the organic provider to perform services at no additional cost until performance metrics are met;
- reducing the price;
- discounting cost-reimbursement payments as a result of non-performance within established metric timeframe;
- not exercising the award-term agreement extension if performance goals are not attained;
- terminating the agreement without losing provider termination fees;
- terminating the agreements and transitioning the effort to an alternate provider;
- transition to be performed at the expense of the default organization.

Organic depots are motivated differently to meet performance requirements. While depots are not driven by profit, they are driven to break even and to keep their workers employed. When higher headquarters controls depot workload and has strong influence with the depot's leadership, it is imperative to have concurrence and support from the headquarters staff.

Reducing operating costs makes the depots more competitive in retaining their business base. If the depot is unable to meet production and costs requirements, workload will (possibly) be moved to a commercial entity to meet warfighter needs. Failure to meet contractual/business agreements is bad for business and the reputation of the facility.

Depots can also provide financial incentives for exceptional individual and group performance just as companies can. Individuals can be rewarded for cost savings ideas through the processing of beneficial suggestions.

Public Law (PL) 107-107, *The National Defense Authorization Act for Fiscal Year 2002*, amends 10 U.S.C. 2563(c)(B) concerning so called 'hold harmless' language. The net result of this amendment is that the phrase "willful misconduct or gross negligence"

is expanded to include cost, schedule, and quality as bases to file claims if the public sector (e.g., maintenance depots) fails to comply with contracts for delivery of goods and services. It provides additional protection to the purchaser.

3.3.5 PERFORMANCE BASED LOGISTICS CONTRACTING EXAMPLES

Two examples of well structured PBL performance agreements are the support contracts for the Shadow UAV and TOW-ITAS (Improved Target Acquisition System) systems.

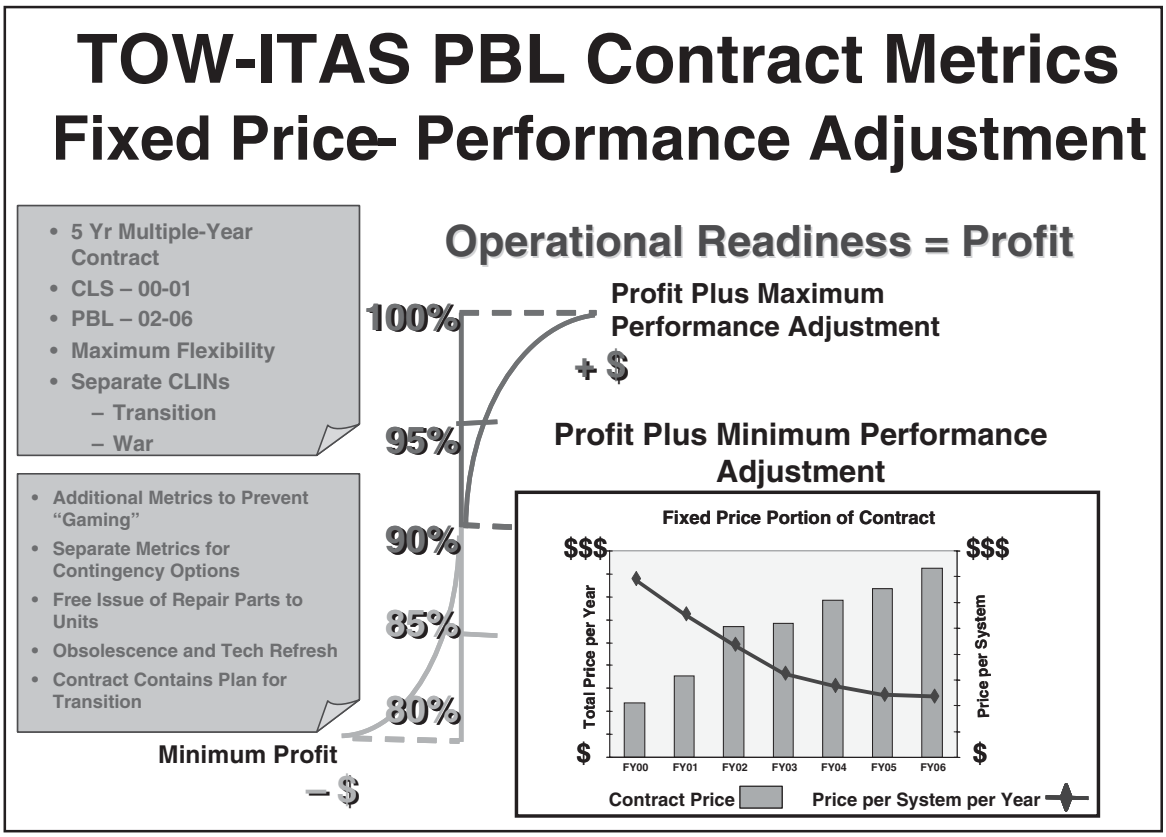


Figure 3-9: TOW-ITAS PBL Example

3.3.5.1 EXAMPLE: TOW-ITAS

The TOW-ITAS contract directly links profitability to availability — the higher the availability the greater the profit the supplier can earn. Availability, as defined by the Army, is measured using standard Army reporting data. This PBL arrangement, as depicted in Figure 3-9, has resulted in 98-100 percent operational availability since February 2001.

3.3.5.2 EXAMPLE: SHADOW UNMANNED AERIAL VEHICLE

The Shadow UAV PBL contract procures performance using measurable metrics instead of buying spares and repairs in the traditional manner. As depicted in Figure 3-10, this PBL has exceeded all of its performance goals in the 6 months including Operation Iraqi Freedom (OIF).

This example demonstrates the establishment of a schedule for the transition from Contractor Logistics Support (CLS) to PBL based on lessons learned from operational usage in the user environment.

3.3.6 *FEDERAL ACQUISITION REGULATION* PART 12

The PM teams implementing PBL should seek to use the *FAR* Part 12 — "Acquisition of Commercial Items" for procurement of total weapons system support under the PBL concept.

In order to execute a *FAR* Part 12 contract, a determination of commerciality must be made. In reviewing *FAR* guidelines pertaining to commerciality, *FAR* 2.101 provides various definitions of commerciality of which any one or combination of these can be used to justify commerciality. Justification for commerciality does not have to be made at the item level; it can be made at the repair process level or at the support concept level. So if a specific weapons system cannot be determined to be a commercial item, the commercial nature of the program supporting such system can be demonstrated to be the commercial item. The following discussion focuses on demonstrating the applicability of *FAR* Part 12 to Power by the Hour-concept total weapons system support under PBL. Keep in mind that this is just one example of justifying commerciality.

A key aspect of PBL is the inclusion of a pricing arrangement to incentivize the contractor to reduce costs through increased reliability and at the same time, continue to make a profit. One such arrangement that has been in widespread use in the commercial sector is the 'Power by the Hour' (PBH) concept. Under PBH, an hourly rate is negotiated and the contractor is paid in advance based on the forecasted operational hours for the system. Actual hours are reconciled with projected hours, and overages and shortfalls are either added to or credited from the next period's forecasted amounts. Since the contractor receives funding independent of failures it is then incentivized to overhaul the asset the first time it fails so that it stays in operation as long as possible. Bottom line: under the PBH concept, the fewer times the contractor touches a unit, the more money it makes.

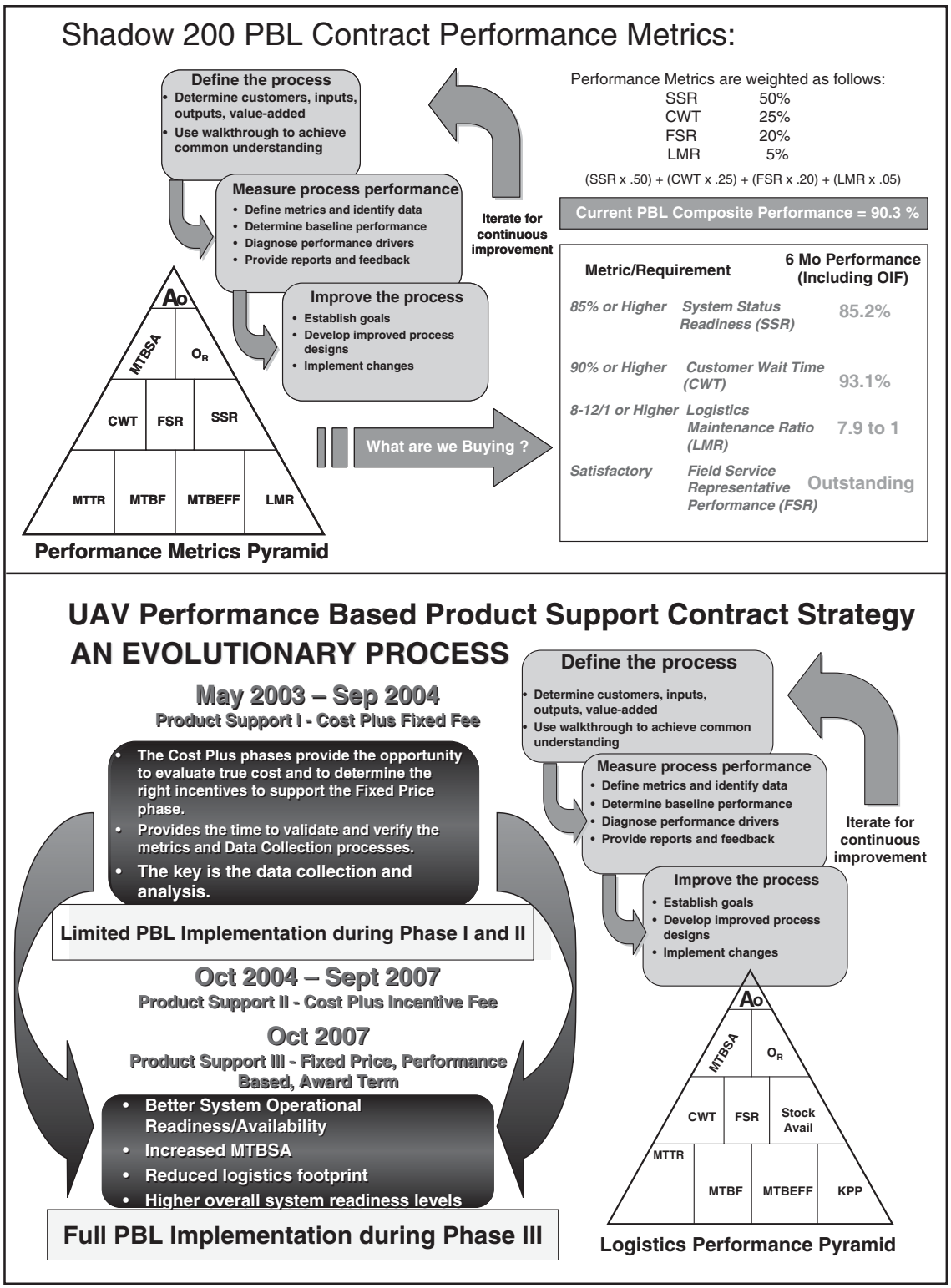


Figure 3-10: UAV Performance Based Logistics

Implementing PBL

The PBL support concept is composed of the same features as PBH programs in the private sector. Both efforts include repair/overhaul of repairables or replacement of assets at the contractor's option in order to meet availability goals. Both PBH and PBL require the contractor to develop and implement materiel management processes, such as inventory management, requirements forecasting to include repairable and consumable parts, procurement make-or-buy decisions and subcontractor selection, receiving and inventory management, and the holding of inventory for distribution to field users as needed. Maintaining configuration control and data management for changes not impacting form, fit, or function (Class II) is also common between the programs, thus enabling the contractor to make timely technology upgrades, including obsolescence, based on its own internal affordability decisions.

An excellent example of this approach is the NAVICP-initiated PBL contract for support of Auxiliary Power Units (APUs), using a Total Logistics Support PBH strategy. Honeywell Corporation serves as the Product Support Integrator, and the emphasis on buying an 'outcome' — availability of APUs, rather than purchasing specific stock numbered items — enables the use of a commercial services contracting approach. The Government's Statement of Work (SOW) for TLS includes the following:

- repair/replace/overhaul;
- material management;
- engineering and logistics support;
- packaging and shipping;
- configuration management.

All of those activities are also performed by Honeywell in their Maintenance Service Agreements (MSAs) with the airlines. Since the TLS program is of the same type provided as part of Honeywell's MSAs with their commercial customers, it was therefore concluded that the TLS program provided by Honeywell to the Navy is, in fact, a commercial item.

The spirit and intent of the *FAR* Part 12 is to encourage the Government to evolve toward commercial practices and processes. The improvements and savings achieved will be more likely to accrue if the contractor, under Government oversight, is allowed to implement the efficient practices already in place in the private sector. These efficiencies and cost savings will ultimately yield improved readiness, which is DoD's primary objective.

3.4 PERFORMANCE BASED LOGISTICS BUSINESS CASE ANALYSIS

A formal decision to adopt a PBL product support strategy should require a completed, tailored BCA. A PBL BCA provides a best-value analysis, considering not only cost, but other quantifiable and non-quantifiable factors supporting an investment decision. This can include, but is not limited to, performance, producibility, reliability, maintainability, and supportability enhancements. It is important and frequently necessary to make up-front investments in Reliability and Maintainability (R&M) improvements that result in short-term increases in system costs to generate the requisite LCC savings later. To effectively provide this justification, it is critical that the process, scope, and objectives of the PBL BCA developers be clearly understood and communicated. A PBL BCA should be developed in an unbiased manner, without prejudice, and not constructed to justify a preordained decision. The analysis must stand on its own and be able to withstand rigorous analysis and review by independent audit agencies. Depending on the type of PBL contract, the PBL BCA may be used throughout the life cycle of the project. Specifically, the PBL BCA:

- is used in the initial decision to invest in a project;
- guides the decision to select among alternative approaches;
- is used to validate any proposed scope, schedule, or budget changes during the course of the project;
- should also be used to identify the various budget accounts and amounts affected by the various product support strategies;
- should be a living document — as project or organization changes occur they should be reflected in updates to the business case;
- should be used to verify that planned benefits are realized at the completion of the project.

This information should be used in further decisions to sustain or enhance the solution and to refine estimation of benefits and costs for future projects in the organization.

A PBL BCA is an expanded cost/benefit analysis created with the intent of determining a best-value solution for product support. Alternatives weigh total cost against total benefits to arrive at the optimum solution. The PBL BCA process goes beyond cost/benefit or traditional economic analyses by linking each alternative to how it fulfills strategic objectives of the program; how it complies with product support performance measures; and the resulting impact on stakeholders. A PBL BCA is a tailored process driven by the dynamics of the pending investment decision to adopt a PBL strategy. Ideally, it will independently and without prejudice identify which alternative provides optimum mission performance given cost and

other constraints, including qualitative or subjective factors. Development of PBL BCA should determine:

- the relative cost versus benefits of different support strategies;
- the methods and rationale used to quantify benefits and costs;
- the impact and value of performance/cost/schedule/sustainment trade-offs;
- data required to support and justify the PBL strategy;
- sensitivity of the data to change;
- analysis and classification of risks;
- a recommendation and summary of the implementation plan for proceeding with the best value alternative.

As a minimum, a PBL BCA should include:

- An introduction that defines what the case is about (the subject) and why it is necessary (its purpose). The introduction presents the objectives addressed by the subject of the case.
- The methods and assumptions that state the analysis methods and rationale that fix the boundaries of the case (whose costs and whose benefits examined over what time period). This section outlines the rules for deciding what belongs in the case and what does not, along with the important assumptions.
- The business impacts that are the financial and non-financial business impacts expected in one or more scenarios.
- Risk assessment that shows how results depend on important assumptions ('what if'), as well as the likelihood for other results to surface.
- Conclusions and recommendations for specific actions that are based on business objectives and the results of the analysis.

The PBL BCA becomes an iterative process, conducted and updated as needed throughout the life cycle as program plans evolve and react to changes in the business and mission environment.

3.4.1 PERFORMANCE BASED LOGISTICS BUSINESS CASE ANALYSIS GUIDING PRINCIPLES

DoD has promulgated the following guiding principles for conducting a PBL BCA in the Acting USD(AT&L) Memorandum, January 23, 2004, Performance Based Logistics (PBL) Business Case Analysis (BCA):

- All BCAs will be based on warfighter-stated performance requirement(s), which are documented in PBAs.

- BCAs will be conducted to assess changes from existing product support strategies for legacy systems and to support the product support strategy for new weapons systems. Over time, BCAs will need to be updated or repeated to validate the approach taken and to support future plans.

- BCAs will evaluate all services or activities needed to meet warfighter performance requirements using 'best value' assessments. Best value is the expected outcome that, in the Department's consideration, provides the greatest overall benefit in response to requirements. The assessments will include cost per output, performance measures, capitalization/asset ownership, size of footprint, reliability growth, LCC, Diminished Manufacturing Sources (DMS) management, obsolescence/obsolescence mitigation plan, technology insertion, and risk management. The value added in terms of benefits and outcomes of all services and activities will be identified.

- Initial strategies for ACAT I programs will be developed prior to Milestone B, including definition of the metrics that will be used to define a program's ability to meet future logistics and operational performance requirements. These strategies shall provide the foundation for detailed PBL BCAs to be completed prior to Milestone C and/or contract award that are based on the detailed design. BCA estimates shall be accomplished at significant subsystem/repairable-item levels that provide the information necessary to initiate cost-effective maintenance and repair actions.

- BCAs will continue through life cycle process with oversight to ensure reassessment at appropriate trigger points, including LCC updates; Reduced Total Ownership Costs activities; and/or continuous improvements actions. The Services will evaluate PBL performance at appropriate decision points.

- The cost and performance baselines for legacy systems will be determined by historic experience and costs. The cost baseline will include all appropriate Government and/or contractor costs, including indirect costs, overhead, and handling fees. Consideration shall be given to the cost, performance, and risk aspects of all elements of ILS. For new system BCAs, detailed Milestone C baselines will be established considering reliability and maintainability projections at the major system repairable level. These individual estimates will be sufficiently detailed to provide the basis for contractual actions leading to the implementation of support strategy actions. Although these estimates sum up to the validated Service cost position, Cost Analysis Improvement Group (CAIG) risk concerns must be considered within the overall process.

- BCAs will reflect operational requirements and existing DoD guidance for contractors on the battlefield; 10 U.S.C. 2464 (the necessity for the Department to maintain core logistics capabilities); 10 U.S.C. 2466 (the limit on contracting for depot-level maintenance); ability to synchronize with the Defense Transportation System; and flexibility to support contingencies and surges. The BCA will specifically consider the full range of minimum and maximum essential logistics capabilities (peacetime to full mobilization requirement), existing infrastructure, and common consumables support.

- BCAs will include risk assessment of expected performance, supply chain responsiveness, and surge capabilities. Consideration of performance and cost risk will explicitly consider contract versus organic risk management, financial accountability, and recovery actions. The risk assessment should address the probability and confidence level of the following events: poor performance, cost growth, extended labor disputes, and changeover in PSI/PSP.

- For all PBL contracts, warfighter requirement(s) will be linked to metrics and metrics to contract incentives. For all organic PBL PSIs, warfighter requirement(s) will be linked to metrics and metrics to PBAs between the PM and the organic PSIs.

- BCAs will be developed using information provided by all appropriate product-support stakeholders, including Government and industry providers. In order to maintain a competitive environment, industry participation will be determined in accordance with the *FAR*.

- BCAs will be conducted using analytic tools approved by the Services.

These guiding principles are structured to support 'best-value' assessment of product support strategies, consistent with existing PBL guidance. All efforts to develop a BCA should be consistent with these guiding principles. See Acting USD(AT&L) Memorandum, January 23, 2004, Performance Based Logistics (PBL) Business Case Analysis (BCA).

Acting USD(AT&L) Memorandum, May 20, 2004, Performance Based Logistics (PBL) and the Business Case Analysis (BCA), provides additional guidance to the Services for consistency with performing Strategic Planning Guidance mandated PBL BCAs on all fielded ACAT I and II programs by September 30, 2006. This Memorandum defines the criteria to be used in the analyses and reemphasizes the PBL guiding principles previously detailed.

3.5 LEGISLATIVE AND STATUTORY ISSUES

The PBL approach must ensure compliance with all statutory and regulatory requirements, and in particular, the statutory limitations of 10 U.S.C. 2460, 2464, 2466, 2469, and 2474.

Congress has enacted a number of statutes that place controls on what actions DoD can take in using commercial sector maintenance capabilities. These legislative and statutory issues must be considered as an integral and evolving aspect of product support acquisition decisions. For example, 10 U.S.C. 2464 directs DoD to maintain a core logistics capability in order to perform maintenance and support of mission-essential equipment.

Title 10 U.S.C. 2466 requires that not more than 50 percent of the funds available to a MILDEP or Defense Agency in a Fiscal Year (FY) for depot-level maintenance and repair workload be used to contract for the performance of this workload by non-Federal Government personnel. Title 10 U.S.C. 2460 defines depot-level maintenance and repair.

Title 10 U.S.C. 2469 stipulates that existing depot-level maintenance or repair workload valued at $3 million or more must not be contracted out or moved to another depot-level activity without using public/private competition procedures or DoD depot merit-based selection procedures. This requirement may be waived for workloads performed on public depots designated Centers of Industrial and Technical Excellence (CITE) that are pursuant to a public private partnership under 10 U.S.C. 2474(b).

Public Law 105-261, Section 346 of the *National Defense Authorization Act for FY 1999*, as amended by Public Law 106-65, Section 336 of the *National Defense Authorization Act for FY 2000*, requires a report to Congress prior to the award of a prime vendor contract for depot-level maintenance or repair of a weapons system. The Congressional report must address four specific areas. Section 346 of the *1999 Authorization Act* requires Services to describe the competitive procedures used to award the contract and provide an analysis of costs and benefits that demonstrate Government savings over the life of the contract. Section 336 of the 2000 Authorization Act further requires an analysis of the extent the contract conforms to 10 U.S.C. 2466 (50/50) and 10 U.S.C. 2464 (core logistics requirements). A 30-day waiting period after submission of the report to Congress applies.

Title 10 U.S.C. 2474 requires the Services to designate CITE, authorizes and encourages public-private partnerships, permits performance of work related to core competencies, permits use of facilities and equipment, and permits sale proceeds

from public-private partnerships to be credited to depot accounts. This section also includes an exemption for work performed by non-Federal personnel at designated CITE (certain maintenance depots) from the 50 percent limitation on contracting for depot maintenance.

These statutory and regulatory requirements are not roadblocks to PMs in implementing successful PBL strategies that meet the needs of the warfighter. Teaming and partnerships between the PM, the PSI, and the performance providers, whether organic or commercial, benefit the user by optimizing the skills available in both the DoD and the Defense industrial base.

3.6 Financial Management Issues

As the Department heads towards full implementation of PBL, new financial mechanisms will enable a true focus on buying performance output rather than separate contractual line item transactions. Warfighter logistics improvement is the primary outcome of this approach, and performance measures will be the chief tool to ensure that improvement happens.

The Defense Business Practice Implementation Board has identified PBL as a 'best business practice' and recommends a more aggressive approach to implementing PBL across the Services. In February 2004, the Deputy Secretary of Defense directed the USD(AT&L) and the USD(Comptroller) to issue clear guidance on purchasing using performance criteria, which led to the Acting USD(AT&L) Memorandum, August 16, 2004, Performance Based Logistics: Purchasing Using Performance Based Criteria. The Services have been directed to provide a plan to aggressively implement PBL, including transfer of appropriate funding, on current and planned weapons system platforms for FYs 2006-2009.

PBL programs are currently financed through a mix of appropriated (i.e., procurement and O&M) and Working Capital Fund (WCF) accounts, Service-unique accounts, such as Procurement; Research, Development, Test and Evaluation (RDT&E); Defense Working Capital Fund (DWCF); and O&M and multiple sub-accounts, making it difficult to baseline current performance execution. As new and legacy programs build PBL strategies, the Services should identify single lines of accounting within O&M appropriations to allow greater flexibility in managing performance as well as ease of tracking/baselining of sustainment costs.

The Navy has been very successful in using the Navy Working Capital Fund (NWCF) to implement PBL. The NWCF is a non-expiring, revolving fund that finances the repair and procurement of Navy depot-level repairables, and select consumables at the wholesale level. The structure of the NWCF allows for

contracts with multiple-year performance periods, a necessity for PBL arrangements. PBL contracts citing the NWCF have been executed with 5-year initial performance (base) periods and multiple 5-year option periods. These long-term contracts incentivize contractors to make long-term investments to improve weapons systems support and performance that otherwise would have been insupportable under the contractor's internal investment criteria. Congressional multi-year contract authority is not required for these contracts, which greatly simplifies contract execution. Funding is applied to these long-term contracts in annual increments, reducing the amount of funding that must be obligated at any given time. The NWCF provides for the required contract termination liability by virtue of its size and its composition as a non-expiring revolving fund.

The size of the NWCF also accommodates the execution of the most mature form of PBL arrangements, which may be established PBH or other performance basis. Using the NWCF to fund a PBH PBL allows for costs to be tied directly to weapons system utilization and to O&M budgets. The NWCF obligation authority is tied to fleet O&M funding, and thus the substantial size of the NWCF permits these annual cost changes to be absorbed. This would not be the case if a single line of accounting was programmed to provide logistics support for a single platform.

The NWCF includes a Cost Recovery Rate (CRR) that provides the funding stream for a wide variety of program logistics support functions, some of which are not highly visible but are, nonetheless, essential:

- Material Maintenance (Inventory Losses, Obsolescence, Depot Washout, Carcass Losses);
- Supply Operations Costs (NAVICP/Fleet and Industrial Supply Center (FISCs);
- Requisition processing and Defense Automatic Addressing System (DAAS) support;
- Transportation;
- Payment to others (DLA Depots, Defense Finance and Accounting Service (DFAS);
- Logistics Engineering Change Proposal (LECP) Management;
- Material Turned In To Store (MTIS)-Reutilization;
- Disposal.

The Naval Inventory Control Point (NAVICP) has successfully executed holistic PBL arrangements for the Navy that provide all of the benefits desired from a single line of accounting. In addition, NAVICP has accommodated program offices' desires to expand PBL coverage beyond logistics elements traditionally supported by NAVICP by including other logistics support requirements and by

citing the associated program office appropriated funding in these PBL arrangements.

One of the critical facilitating elements of PBL contracts is contract length. Industry leaders have indicated a clear preference for long-term (i.e., 5- to 10-years) contracts, for several reasons. First, they provide confidence in continuing cash flow, compared with the risk of single-year contracts recompeted annually. Second, they provide the time horizon sufficient to allow contractor investment to improve products and processes, confident that they will receive an adequate Return On Investment (ROI). These improvements create opportunities for contractors to reduce their costs and thus create more profit, while at the same time provide DoD with more reliable systems. The actual length of contracts will be dictated by the type of funds utilized; for example, some WCF contracts are currently in place with contract terms of 5 or more years, while PBLs funded with appropriated fund accounts may be placed with multiple 1-year options.

PMs face a significant challenge in identifying and budgeting for costs of meeting performance capabilities. First they must work with users to develop cost estimates used to advocate funding during the budget process. A thorough PBL BCA should precede this step in the process. Out of this effort comes the identification of the specific appropriation elements necessary to fund the planned product support strategies. Ultimately, this approach will result in clear lines of visibility and accountability, which will in turn support improved readiness and resource management.

It is critically important that PM teams remain informed of DoD initiatives and incorporate their lessons learned into their own PBL implementations. The Defense Acquisition University's Logistics Community of Practice is an excellent resource for this information. Improving financial processes is a key enabler to successfully implementing PBL.

4 Key Product Support Issues

The Program Managers (PMs) must be sensitive to the following issues when carrying out their product support responsibilities and implementing Performance Based Logistics (PBL).

4.1 Configuration Management

Configuration Management (CM) is a process for establishing and maintaining the consistency of a product's physical and functional attributes with its design and operational information throughout its life.

Configuration management and control are important factors to consider when designing the PBL strategy. In order to create the appropriate support environment and to be responsive to evolving technology and changing warfighter capabilities, the providers assigned the responsibility for delivering the weapons system capability must have the appropriate level of CM and control. As Department of Defense Directive (DoDD) 5000.1, *The Defense Acquisition System*, May 12, 2003, para. E1.1.16 states, "Acquisition managers shall base CM decisions on factors that best support implementing performance based strategies throughout the product life cycle." Integral to successful CM is the development of a CM plan.

The PMs establish and maintain a configuration control program. The approach and activity that have responsibility for maintaining configuration control will depend on a number of program-specific factors, such as design rights, design responsibility, support concept, and associated costs and risk. The Government maintains nominal configuration control of the system performance specification, and the contractor(s) perform CM for the design. The Government retains the authority/responsibility for approving any design changes that impact the system's ability to meet specification requirements. The contractor(s) have the authority/responsibility to manage other design changes. The Government maintains the right to access configuration data at any level required to implement planned or potential design changes and support options. Configuration Management of legacy systems should be addressed on a case-by-case basis as design changes are contemplated.

The following are attributes of the CM process:

- **Configuration Identification** — uniquely identifying the functional and physical characteristics of an item;
- **Configuration Change Management** — controlling changes to a product using a systematic change process;
- **Configuration Status Accounting** — capturing and maintaining metadata about the configuration of an item throughout the life cycle;

- **Configuration Verification and Audit —** ensuring product design is accurately documented and achieves agreed-upon performance requirements.

The PM should consider industry standards and best practices. Those standards are documented in the following:

- American National Standards Institute/Electronic Industry Alliance (ANSI/EIA) 649A, *Configuration Management,* located on the Government Electronics & Information Technology Association (GEIA) Web site, http://www.geia.org, and click on STANDARDS.
- International Organization for Standardization (ISO) 10007, *Quality Management – Guidelines for configuration management*
- EIA 836, *Configuration Management Data Exchange and Interoperability,* located on the GEIA Web site, http://www.geia.org, and click on STANDARDS.
- Handbook (HDBK) 649, *Configuration Management* — (in development, expected 12/05).

4.2 DATA MANAGEMENT

Data Management (DM) is an important part of Total Life Cycle Systems Management (TLCSM), and PBL and should be considered early in the acquisition life cycle. Data systems supporting acquisition and sustainment should be connected, real-time or near real-time, to allow logisticians to address the overall effectiveness of the logistics process in contributing to weapons system availability and Life Cycle Cost (LCC) factors. Melding acquisition and sustainment data systems into a true total life cycle integrated data environment provides the capability needed to reduce the logistics footprint and plan effectively for sustainment, while also ensuring that acquisition planners have accurate information about total LCCs.

Data created during the design, development, and manufacturing of a system have value to both the data provider and the PM. The PM should adopt a performance based approach to identify the minimum data required to cost-effectively maintain the fielded system and foster source of support competition throughout the life of the fielded system. In most cases, access to the contractor's data system is the best solution. The PM should determine the system's competition strategy early in the life of the program and determine minimum data needs to support the strategy and a performance based approach to managing the data over the life cycle of the system. Planning should include possible Foreign Military Sales (FMS) applications including applications after the system is out of the DoD inventory.

Should the PM select data access versus delivery, provisions should be made for future availability of data to support competitive sourcing decisions; maintenance and sustainment analyses; conversion of product configuration technical data to performance specifications when required for enabling technology insertion to enhance product affordability and prevent product obsolescence; and contract service risk assessments over the life of the system. When future delivery is required, the PM should require final delivery of data in both its native and neutral digital formats. The PM should never require paper or hardcopy delivery of data created in a digital format.

Whether the data are stored and managed by the Government or by industry, the PM is responsible for protecting system data. DoD policy with regards to data marking and release can be found in the following: DoDD 5230.24, *Distribution Statements on Technical Documents*, March 18, 1987; DoDD 5230.25, *Withholding of Unclassified Technical Data From Public Disclosure*, November 6, 1984; and DoD 5400.7-R, *DoD Freedom of Information Act Program,* September 4, 1998.

A guide that may be helpful for PMs and data managers is the industry *Consensus Standard for Data Management*, EIA-859. This specification is an industry consensus document for trading partners participating in DM. It outlines principles and processes for the management of data, including data quality; interoperability and longevity; best practices; and long-term electronic data storage, use, and recovery.

In considering the best approach to DM, an analysis of all customers' data needs and capabilities must be undertaken. Areas of consideration include, but are not limited to:

- user's minimum data requirements and use of the data (i.e., view, edit, management of Freedom of Information Act (FOIA) requests, archiving, etc.);
- user's environment and workplace (e.g. depots, deployed unit, etc.);
- user's digital capability profile (e.g., access capability, download capability, portable devices, etc.);
- user's requirements for common look and feel (e.g., the style, format and navigation requirements for the data);
- user's requirements for viewers (e.g., proprietary viewers versus neutral viewers);
- user's requirements for integration with existing DoD processes, indices, tools and repositories, etc.

With the competition strategy, FMS plans, and analysis of user requirements in hand, the PM determines performance based approach to acquiring and sustaining data over their life cycle. Strategies may include:

- access versus delivery to the Government;
- incentives for maintaining up-to-date configuration current data.

An integrated DM system captures and controls the system technical baseline (configuration documentation, technical data, and technical manuals) and serves as a ready reference for data correlation and traceability (among performance requirements, designs, decisions, rationale, and other related program planning and reporting elements). Integrated DM also:

- facilitates technology insertion for affordability improvements during re-procurement and post-production support;
- supports configuration procedures;
- serves as a ready reference for the systems engineering effort;
- supports TLCSM and provides the data required for PBL implementation;
- provides long-term access to data to support
  - Competitive sourcing decisions;
  - Maintenance and sustainment analyses;
  - Conversion of product configuration technical data to performance specifications when required for enabling technology insertion to enhance product affordability and prevent product obsolescence; and
  - Contract service risk assessments over the life of the system.

Public Law, the *Federal Acquisition Regulation* (*FAR*), and *Defense Federal Acquisition Regulation* (*DFAR*), the Office of the Secretary of Defense (OSD), Services, and agencies implementing documents provide guidance and requirements for DM. Industry standards-making bodies such as GEIA, ISO, and ANSI provide high-level principles to guide integrated DM planning and provide currency to industry best practices.

All new data should be acquired, developed, and delivered to the Government using international or industry standards. Examples of those standards are:

- S1000D, *International Specification for Technical Publications Utilizing a Common Source Database*.
- ISO 10303, *Standard for the Exchange of Product Model Data (STEP)*.

Examples of DM process and guidance documents are:

- Data Management Community of Practice (CoP), located on the Acquisition Community Connection on the DAU Web site at: http://acc.dau.mil/dm.
- DoD 5010.12-M, *Procedures for the Acquisition and Management of Technical Data*, May 1993.

- DoD 5200.1-M, *Acquisition System Protection Program*, March 1994.
- GEIA-859, *Consensus Standard for Data Management*, located on the GEIA Web site, http://www.geia.org, and click on STANDARDS. (Note: This document is currently being published.)
- *Intellectual Property: Navigating Through Commercial Waters*, October 15, 2001, Web site http://www.acq.osd.mil./dpap/Docs/intelprop.pdf.

4.2.1 PARTS CATALOGING

Identification and cataloging of spare parts in accordance with the Federal Catalog System provide a framework for data integration and interoperability of logistics support during sustainment and serve as useful tools in systems engineering decisions and reducing logistics footprint. Screening the existing Federal Catalog through the Federal Logistics Information System, also known as FED LOG ,or other related commercial products serves to identify existing in-use items, which can preclude unnecessary added costs of development or procurement. Likewise, screening serves to identify where new items require development or existing items need to be modified for improved performance or other considerations. Promoting access to technical data for the purposes of cataloging these new items in the Federal Catalog System should be strongly encouraged, regardless of whether the weapons systems program will purchase data for other support purposes.

4.3 DIMINISHING MANUFACTURING SOURCES AND MATERIAL SHORTAGES AND OBSOLESCENCE

Diminishing Manufacturing Sources and Material Shortages (DMSMS) is the loss or potential loss of manufacturers or suppliers of parts, raw materials, or other items needed to support and maintain a system. Materiel obsolescence may occur at the part, module, component, equipment, or other system indenture level. DMSMS is particularly troublesome for systems that rely on commercial electronics, which often have a product life cycle of 18 months or less. The DMSMS obsolescence can occur in any program phase and can severely impact the program schedule, system availability, capability, or cost.

Open systems design can help mitigate the risks associated with technology obsolescence by eliminating the danger of being locked into proprietary technology or relying on a single source of supply over the life of a system. Spiral development also helps to alleviate obsolescence concerns. However, the PM must ensure that PBL product support efforts include an active DMSMS process to anticipate occurrences and take appropriate actions. This can often be carried out by the Product Support Integrator (PSI). Actively addressing DMSMS will ensure effective

support throughout the system life cycle and prevent adverse impacts on readiness or mission capability. The Services and the Defense Logistics Agency (DLA) have DMSMS efforts that can assist the PM in addressing DMSMS.

The DMSMS should be considered in the PBL Business Case Analysis (BCA), and enterprise integration efforts should accommodate DMSMS. When confronted with a DMSMS problem, the PM or PSI should respond in accordance with pertinent Service or DLA guidance. A basic DMSMS resolution process contains four basic steps: Identification/Notification; Case Verification; Case Analysis, including Proposed Resolution Alternatives; and Resolution Selection and implementation. For further information on this topic, refer to: http://www.dmsms.org.

4.4 Corrosion Prevention and Control

The cost of corrosion to DoD is many billions of dollars annually. Therefore, corrosion control can contribute significantly to the total cost of system ownership and is a key element of system supportability. Corrosion is a long-term issue that usually impacts system operation after the system is procured, but the optimal time to address the impact of corrosion is early in system development. Proper consideration of corrosion in the design phase of a system will lead to significant cost savings over the life of the system. PBL efforts must support the tracking, costing, and prevention or control of systems and structures corrosion. In implementing PBL, PMs must concentrate on implementing best practices and best value decisions for corrosion prevention and control in systems and infrastructure acquisition, sustainment, and utilization.

All programs that are subject to Defense Acquisition Board (DAB) review are required to demonstrate Corrosion Prevention and Control (CPC) planning implementation. For this review, PMs must prepare a CPC Plan (CPCP) document, which should be completed as early as possible, but in the case of weapons systems, no later than Milestone B. The plan should do the following:

- define CPC requirements;
- list applicable specifications and standards;
- address facility or system definition, design, engineering development, production/construction, and sustainment phases, consistent with the design life and affordability of the system;
- establish the management structure to be used for the specific system being designed, procured and maintained, including a Corrosion Prevention Advisory Team (CPAT).

Before beginning any CPC program, PMs should consult the ***Corrosion Prevention and Control Planning Guidebook*** for policies regarding corrosion prevention and examples of ways to implement a CPCP. Additionally, PMs should also consult the DoD Corrosion Exchange, (http://www.dodcorrosionexchange.org), which provides a forum for the DoD corrosion prevention community to exchange helpful information.

4.5 EARNED VALUE MANAGEMENT

Earned Value Management (EVM) is a program management tool that integrates the functional stovepipes of cost, schedule, and work scope to create an aggregate picture of performance. EVM provides an early warning system for deviations from plan and quantifies technical problems in cost and schedule terms, providing a sound objective basis for considering corrective actions.

EVM gives the Cost Analysis Improvement Group (CAIG) the data necessary to provide accurate estimates of total program cost. Through EVM reporting, the contractor provides cost data as often as is necessary to ensure implementation of program objectives and to facilitate PM oversight responsibilities as required by the CAIG. PMs must ensure earned value data reporting is specified in the contract. Requiring an EVM for all firm fixed-price contracts, subcontracts, and other agreements is a risk-based decision left to the discretion of the PM.

4.6 SUSTAINED MATERIEL READINESS

The Department acquires, operates, maintains, and sustains a vast array of materiel through complex processes intended to provide the warfighters with reliable and technically superior weapons systems in a timely, cost-wise manner. Sustainment of weapons system materiel readiness necessary to meet the warfighter's requirements must be efficiently and effectively achieved through the application of life cycle systems engineering, process excellence and responsiveness throughout the end-to-end value chain. Implementing PBL requires PMs to institutionalize sustained materiel readiness through sound Lean/Six Sigma/Theory of Constraints concepts, Condition Based Maintenance Plus (CBM+) principles, Sustaining Engineering (SE) practices, and other efficiency methodologies in all DoD weapons system acquisition and sustainment processes.

The overall objective is to maximize weapons system readiness through optimum reliability and repair cycle time with a reasonable balance of costs across the value chain — we know when we employ such efficiencies we can provide much better readiness at much less cost. The value delivered by the DoD enterprise is weapons system and combat support equipment materiel readiness, specifically weapons

capable of being safely and effectively employed by combat forces in the manner intended by the equipment designer and manufacturer.

Key objectives include, but are not limited to:

- developing an overall framework for end-to-end employment of sustained materiel readiness concepts and techniques within the weapons system value streams, including the weapons system-related support functions that impact product value;
- establishing performance standards that support the key sustained materiel readiness objective of optimum reliability and repair cycle time with a reasonable balance of costs across the weapons systems' end-to-end value chain;
- aggressively seeking opportunities to continuously improve processes by eliminating waste, ensuring quality, increasing weapons systems and commodities reliability, and reducing repair turn-around times within the end-to-end value stream;
- applying life-cycle systems engineering for fielded systems (see *The Supportability Guide*, Sections 3.6-3.9).

5 Case Studies/Success Stories

The examples presented below are a sampling of successful Performance Based Logistics (PBL) programs. Program Managers (PMs) are encouraged to consider relevant examples for application to their own PBL efforts and are also encouraged to contact the program offices' Product Support Manager (PSM) for additional guidance or information.

5.1 F/A-18E/F

The single-seat F/A-18E and the two-seat F/A-18F Super Hornets perform a variety of missions, including air superiority, day and night strike with precision-guided weapons, fighter escort, close air support, suppression of enemy air defense, maritime, reconnaissance, forward air controller, and tanker. The F/A-18E/F has 11 weapon stations, which allows for a significant degree of payload flexibility with the capability to carry a variety of both air-to-air and air-to-ground ordnance on one mission, including the complete complement of Precision-Guided Munitions (PGM).

The F/A-18E/F Integrated Readiness Support Team (FIRST) PBL contract covers approximately 73 percent of F/A-18 E/F materiel support, including 3,889 E/F WRAs, 653 I-Level Repairables, 349 Support Equipment Items, 130 Defense Logistics Agency (DLA) Consumables, and over 10,000 Non-DLA Consumables. The Naval Inventory Control Point (NAVICP) is a major Product Support Integrator (PSI) and Boeing is the PBL Contractor. DLA is the primary source for common consumables. Through the FIRST contracts, Boeing provides total aircraft support including supply chain support, reliability improvements, obsolescence management, E/F squadron activation, technical publication, and support equipment management. Additionally, Boeing has commercial services agreements with all three Naval Air Depots (NADEPs) for depot-level repairs. For further information contact: PMA 265 F/A-18 Fleet Support DPM & F/A-18 APML, 301-757-7578.

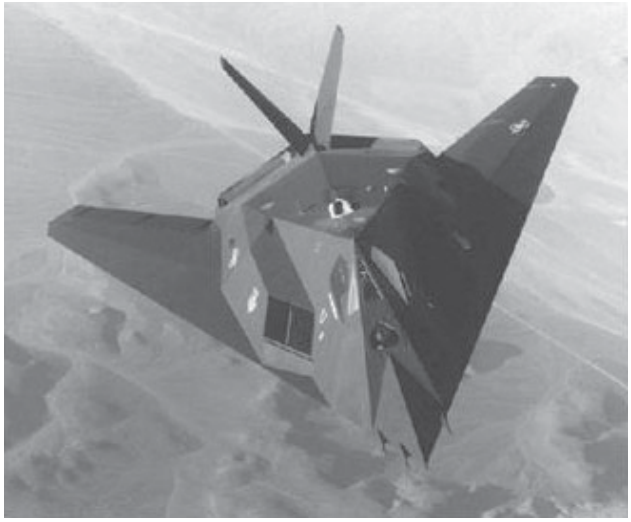
5.2 COMMON GROUND STATION

The Army's Common Ground Station (CGS) is designed, manned, and equipped to provide tactical commanders a single system from which to receive information from a variety of tactical, theater, and national sensors. Its primary goal is to keep the commander aware of the current situation and to support Battle Space Visualization.

The CGS takes advantage of both Government and industry strengths with product support integration being managed organically at the Tobyhanna Army Depot. Performance based negotiations are ongoing between the PSI and the support providers. The goal of the CGS program was to develop a fully capable weapon system with a support infrastructure that would meet the sustainment requirements, yet reduce life cycle (Operations and Support (O&S)) costs.

These challenges in product support were approached by the PSI establishing a Supportability Integrated Process Team (SIPT) that capitalized on the competencies within industry, the DLA, and the Army Communications Electronics Command (CECOM). Each support provider is a member of the CGS SIPT, providing relevant support to the CGS fleet of over 100 systems deployed worldwide. Further information can be found at the following Web site: http://www.tobyhanna.army.mil.

5.3 F-117



The F-117 Nighthawk is the world's first operational aircraft designed to exploit low-observable stealth technology. This precision-strike aircraft penetrates high-threat airspace and can employ a variety of PGM against critical targets. The F-117 is equipped with sophisticated navigation and attack systems integrated into a digital avionics suite that increases mission effectiveness and reduces pilot workload.

Lockheed Martin Aeronautics Company at Palmdale (LMAC-P) is the F-117 prime contractor and has Total System Performance Responsibility (TSPR) for the F-117 weapon system. Modification programs are sole source to LMAC-P as part of the larger TSPR effort. Research, Development, Test, and Evaluation (RDT&E) funds are executed to develop improved capability, reliability, maintenance, and safety modifications. Operational Flight Program (OFP) software is continuously updated as needed to complement modification development efforts. The contracting approach varies by individual effort and involves Cost Plus Fixed Fee (CPFF) and Cost Plus Award Fee (CPAF) contract types. For further information contact: F-117 Product Support /Logistics, ASC/YNL, 937-904-5456.

5.4 TOW IMPROVED TARGET ACQUISITION SYSTEM

The TOW Improved Target Acquisition System (ITAS) is a materiel change to the current target acquisition and fire control subsystem used by light infantry forces. The ITAS increases target detection, acquisition, recognition, and engagement ranges, using a second-generation Forward-Looking Infrared Radar (FLIR), an eye-safe laser rangefinder, and other digital components. TOW ITAS provides a highly mobile, adverse weather, day or night capability needed by early entry forces to destroy advanced threat armor at greater stand-off ranges. ITAS fires all versions of the TOW missile from both the M41 ground launcher and the M1121 HMMWV platform and provides a growth path for future missiles.

A PBL Contractor Logistics Support Contract for TOW-ITAS was signed with Raytheon in Fiscal Year (FY) 2000. Fielding to 1st and 2nd Brigade 82nd Airborne Division began in late 2001. Many other active Army and National Guard units are to receive ITAS. PBL was implemented in early 2002 with free-issue spares delivered to units and loaded as shop stock. The contractor is the item manager for ITAS-peculiar parts and provisions for field and depot. The contractor provides the Standard Army Retail Supply System (SARSS) interface with Defense Automatic Addressing System (DAAS) and has a Routing Identifier Code (RIC). For further information on this topic refer to: http://www.msl.army.mil/ccws.htm.

5.5 T-45

The T-45 Goshawk two-seat, single-engine aircraft is the jet trainer for Navy pilots and is designed to excel in the rigorous naval aviation training environment, including catapult launches and arrested landings. Training in the T-45 shortens the transition to fleet jets, requiring 31.5 fewer flight hours over previous training jets, as pilots concentrate on their primary mission of learning how to perform key tactical maneuvers. The T-45 uses a 1553 bus and has 2 multi-function displays in each cockpit providing navigation, weapon delivery, aircraft performance, and communications data.

The PBL performance is based on Aircraft Ready for Training (RFT) and Sortie Completion Rate (SCR) each normal workday, including a bonus that is calculated daily and paid once a month. The aircraft PBL contractor shall have a minimum number of aircraft RFT at 11 am, Monday thru Friday (excluding Federal holidays) and each Surge Day (as delineated in paragraph 4.1.6 of this PWS). This minimum number of RFT aircraft each day shall be computed.

The T-45's F405-RR-401 engine is supported through a PBL Power by the Hour (PBH) contract with Rolls Royce. Performance is based on aircraft flying time and paid per flight hour. The engine contractor provides a minimum number of RFI engines to the aircraft PBL contractor. The ACO will be responsible to make any adjustments to the actual engine inventory. For further information contact: PMA 273, Director of Logistics, 301-757-5169.

5.6 JOINT SURVEILLANCE TARGET ATTACK RADAR SYSTEM

The E-8C Joint Surveillance Target Attack Radar System (JSTARS) is an airborne battle management, Command and Control (C^2) platform. From a standoff position, the modified 707-300 manned by a joint Army-Air Force crew, detects, locates, tracks, and targets hostile surface movements,

communicating real-time information through secure data links to Air Force and Army command centers.

Northrop-Grumman is the prime contractor under a Total System Support Responsibility (TSSR) arrangement for sustainment of JSTARS over a maximum contract period of 22 years. Warner-Robins Air Logistics Center (WRALC) performs core sustaining workloads (e.g., repair of prime mission equipment and system software maintenance) and other workloads (e.g., ground support software maintenance and various back shop functions) under a work-share partnership with Northrop-Grumman. DLA is the primary provider for common consumable parts and almost all JSTARS-unique consumable parts. For further information contact: JSTARS Product Support/Sustainment, WRALC/LXJ, 478-222-3615.

5.7 SHADOW TACTICAL UNMANNED AERIAL VEHICLE

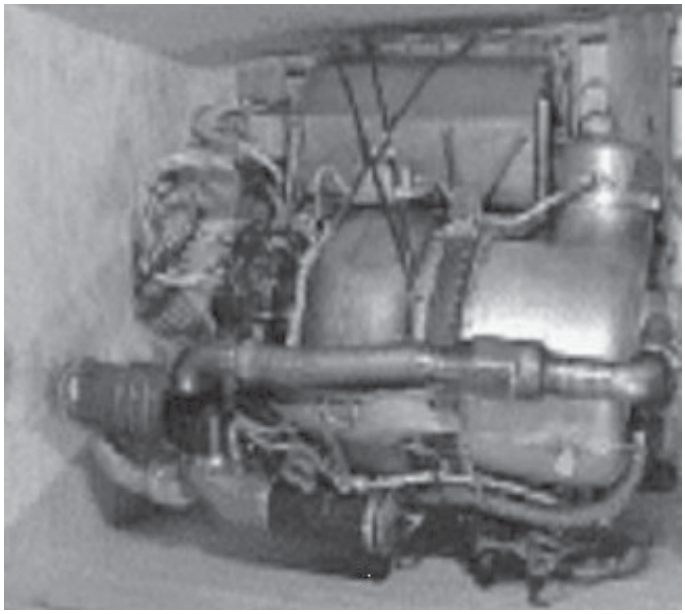
The Shadow Tactical Unmanned Aerial Vehicle (TUAV), Ground Control Station, and related systems are designed to meet the Army's Unmanned Aerial Vehicle System (UAVS) requirement for flexible, responsive, near-real-time Reconnaissance, Surveillance, and Target Acquisition (RSTA), Battle Damage Assessment (BDA), and battle management support to maneuver commanders.

Under PBL, the contractor is responsible for providing total product support for the UAV system using a performance based, contractor-managed supply and maintenance system that imposes performance metrics designed to support the system operational requirements. Performance will be measured on a recurring basis, and the contractor is incentivized to exceed defined contract performance metrics. For further information on this topic refer to: http://www.tuav.redstone.army.mil.

5.8 Naval Inventory Control Point: Aircraft Tires

The Naval Inventory Control Point (NAVICP) Aircraft Tires PBL contract transfers traditional Department of Defense (DoD) inventory management functions to the contractor, which will guarantee a level of tire availability versus physical inventory. Under this vehicle, the contractor is tasked to become the single supply chain integrator for Navy aircraft tires and is responsible for requirements forecasting, inventory management, retrograde management, stowage, and transportation. The contractor provides a full-service 24/7 service center with Web-based access. In addition, the contractor is committed to providing surge capability to support up to twice the normal monthly demand. Finally, the Navy expects to achieve significant transportation, warehousing, and inventory savings over the system life cycle. Performance benefit: 96 percent materiel availability during initial performance review with 8,000 fleet orders filled and zero backorders. For further information on this topic refer to:
http://www.navicp.navy.mil.

5.9 Naval Inventory Control Point: Auxiliary Power Unit/Total Logistics Support

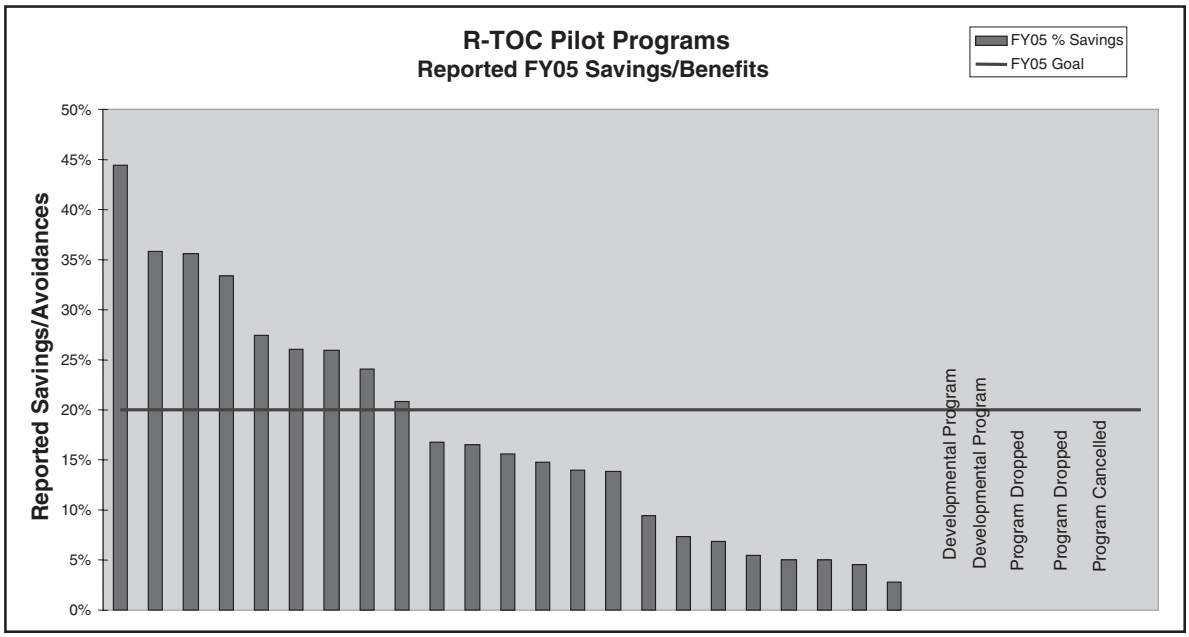


The Auxiliary Power Unit/Total Logistics Support (APU/TLS) PBL contract shifts total management responsibility for APU types used on the F/A-18, S-3, C-2, and P-3 aircraft, including all peculiar components and accessories. The APU/TLS PBL contract represents the first public/private partnership in Naval logistics. In this groundbreaking arrangement, the contractor provides program management while Naval Aviation Depot Cherry Point provides the touch-labor. The contract provides 30 percent to 60 percent reliability improvement guarantees, 2-day delivery guarantees for high-priority requirements, obsolescence management, product support engineering, and surge capability up to 120 percent of

annual flight hours. In addition, the arrangement provides the government gain-sharing opportunities if reliability is improved, and it includes downward price adjustments if the contractor fails to meet reliability or performance guarantees. Life Cycle Cost (LCC) savings should exceed $50 million. The contract is a 'corporate contract,' structured to facilitate adding any Honeywell product from any of the Services to TLS. Additions include the C-130 APU, F/A-18 F404 Engine Main Fuel Control, and the P-3 Engine Driven Compressor. Performance benefit: G Condition at the Depot (awaiting parts) reduced from 232 to 0, backorders reduced from 125 to 0, supply materiel availability increased from 65 percent to over 90 percent, over 75 reliability improvements, and 98 percent of requisitions received during Operation Enduring Freedom filled within contractual requirements despite a 60 percent increase in demand. For further information on this topic refer to: http://www.navicp.navy.mil.

5.10 REDUCTION IN TOTAL OWNERSHIP COST

Over the past 5 years, the Reduction in Total Ownership Cost (RTOC) program has supported pilot program initiatives to achieve operations and support cost reduction. The previously discussed F-117, JSTARS, and TOW ITAS are RTOC pilot programs. The program has been highly successful, reaping significant cost savings/avoidance and identifying lessons learned which are now being institutionalized throughout DoD. These lessons learned will be applied to recently identified



RTOC special interest programs such as the F-18, also previously discussed.

Identified RTOC Best Practices and their associated programs include:

- R-TOC Management
  - Coordination of R-TOC initiatives: Common Ship, AEGIS cruisers, LPD-17, CVN-68 carriers
  - Development of tools for R-TOC tradeoffs (JSTARS), analysis of maintenance requirements (CH-47), and recapitalization (Apache);
- Reliability and Maintainability Improvements
  - Design for reduced O&S: LPD-17, EFV, MTVR
  - Government/industry partnerships: Abrams
  - Recapitalization and system upgrade: Apache, HEMTT, CH-47, EA-6B, C-5, F-16, C/KC-135
  - Replacement of high O&S cost components and subsystems with COTS: C/KC-135, F-16, Common Ship, AEGIS cruisers;
- Supply Chain Response Time
  - Direct vendor delivery: HEMTT, H-60
  - Commercial maintenance agreement: Aviation Support Equipment (ASE)
  - Industrial/virtual prime vendor: C/KC-135, F-16, and C-5
  - Reliability-centered maintenance: EA-6B, ASE
  - Team Armor Partnership: Abrams Tank System
  - Electronic tech manuals: F-16, C/KC-135;
- PBL
  - Systems sustainment responsibility: F-117, JSTARS
  - Contractor logistics support: ITAS
  - Flexible sustainment: C-17
  - Life cycle support study: LPD-17
  - Performance based product support: Abrams, EA-6B, and Guardrail.

For more information on this topc refer to: http://rtoc.ida.org.

6 Resources and References

6.1 The Acquisition Community Connection and the Logistics Community of Practice

The Acquisition Community Connection (ACC), sponsored by the Defense Acquisition University (DAU), is a tool to facilitate collaboration, sharing, and the transfer of knowledge across the Department of Defense (DoD) Acquisition, Technology, and Logistics (AT&L) workforce. ACC is a collection of Communities of Practice (CoPs) centered on different functional disciplines within the acquisition community. Access to ACC is available at: http://acc.dau.mil. The Logistics Community of Practice (LOG CoP) is one of the communities currently residing within the ACC framework. LOG CoP provides a number of resources for implementing life cycle logistics. The community space also allows members to share (post to the Web site) their knowledge, lessons learned, and business-case related material so that the entire logistics community can access and benefit. DoD's intention is to make LOG CoP the 'go to' resource for the logistics community. Access to LOG CoP is available at: http://log.dau.mil.

Total Life Cycle Systems Management (TLCSM) Template: The TLCSM template, developed by the USD(AT&L), provides a synopsis of the key activities and outputs to assist Program Managers (PMs) in effectively implementing TLCSM and Performance Based Logistics (PBL) within the defense acquisition management framework. The template is a useful bench mark for assessment of program implementation of PBL in the design and development of weapons systems and associated sustainment strategies. It can be found in the LOG CoP at: http://acc.dau.mil/simplify/ev.php?URL_ID=11679&URL_DO=DO_TOPIC&URL_SECTION=201&reload=1062159864.

Business Case Guidance: Business case development and analysis are tailored processes. The scope of a product-support investment decision substantiated by the business case can range from a complete system-of-systems, to that of individual subsystem components. Likewise, each Service component has established ownership and structure of how business case development and analysis are conducted to support their investment decisions. For this reason, one specific approach, format, or template may not fit all situations. The LOG CoP contains numerous references, guides, and templates to assist in business case development and analysis. It can be found in the LOG CoP at: http://acc.dau.mil/simplify/ev.php?URL_ID=11167&URL_DO=DO_TOPIC&URL_SECTION=201&reload=1054568385.

PBA Templates and Guidance: In addition to providing guidance and detailed explanations of PBL and related concepts, sample PBAs, policy and guidance, contractual incentives, and other resources are available under the PBL section of

LOG CoP at: http://acc.dau.mil/simplify/ev.php?URL_ID=11165&URL_DO=DO_TOPIC&URL_SECTION=201&reload=1066393478.

6.2 SERVICE TOOLS AND DATABASES

Each of the Military Services has developed methodologies and approaches for conducting program baseline assessments. The Army has also established a handbook for initiatives seeking a Reduction in Total Ownership Costs (R-TOCs). The Navy has an 'affordable readiness' template and methodology for PMs to use to assess potential alternative logistics approaches that improve performance and reduce cost. The Air Force has also developed a guidebook as part of its R-TOC initiative. The Web sites for the Service initiatives are:

Army: http://www.saalt.army.mil/armytoc/Organization.htm
Navy: http://www.navair.navy.mil/toc/
Air Force: http://www.safaq.hq.af.mil/mil/transformation/rtoc/index.html

The Army, Navy, and Air Force have all established Web-based logistics databases that are accessible with authorized passwords. The Army has a database link called WEBLOG that provides a wide range of logistics data and information. The Navy has established a Naval Aviation Logistics Data Analysis (NALDA) database/repository that provides various information sources on not only cost, but also performance. The Air Force has online access to cost data. The Web sites are provided below:

Army: https://weblog.army.mil
Navy: http://logistics.navair.navy.mil
Air Force: http://www.saffm.hq.af.mil

6.3 DEPARTMENT OF DEFENSE, SERVICE, AND AGENCY GUIDANCE:

The following are relevant guidance and references for implementing PBL.

6.3.1 DEPARTMENT OF DEFENSE GUIDANCE

DoD Directive (DoDD) 5000.1, *The Defense Acquisition System*, May 12, 2003. http://dod5000.dau.mil/DOCS/DoD%20Directive%205000.1-signed%20(May%2012,%202003).doc

DoD Instruction (DoDI) 5000.2, *Operation of the Defense Acquisition System*, May 12, 2003. http://akss.dau.mil/dag/DoD5000.asp?view=document&doc=2

The Defense Acquisition Guidebook
http://AKSS.DAU.MIL/DAG/

Joint Depot Maintenance Activities Group (JDMAG)
http://www.jdmag.wpafb.af.mil

6.3.2 ARMY GUIDANCE

Army Regulation (AR) 70-1 — *Army Acquisition Policy*, December 31, 2003.
http://www.usapa.army.mil/pdffiles/r70_1.pdf

AR 700-90, *Army Industrial Base Process*, December 14, 2004.
http://www.apd.army.mil/pdffiles/r700_90.pdf

AR 700-127, *Integrated Logistics Support*, November 10, 1999.
http://www.usapa.army.mil/pdffiles/r700_127.pdf

Field Manual (FM)-100-10-2 *Contracting Support on the Battlefield*, August 4, 1999.
http://www.adtdl.army.mil/cgi-bin/atdl.dll/fm/100-10-2/toc.htm
Or:
http://library.saalt.army.mil/archive/regs/1999/
FM%20100%2D10%2D2%20Contracting%20Support%20on%20the%20Battlefield.doc

Army Policy Memorandum — Supportability Co-equal with Cost, Schedule and Performance, February 27, 2000.
http://www-tradoc.army.mil/dcscd/documents/
suportability%20coequal%20feb%2000.pdf

Army Policy Memorandum — Life Cycle Management.
http://acc.dau.mil/simplify/file_download.php/LCM+MOA.pdf?URL_ID=
48727&filename=10923989381LCM_MOA.pdf&filetype=application%2Fpdf&
filesize=240892&name=LCM+MOA.pdf&location=user-S/

Army Policy Memorandum — Management of the Total Life Cycle for Acquisition Category (ACAT) Systems, April 29, 1997.
http://www.amc.army.mil/amc/rda/milspec/memo29april97.html

Army Policy Memorandum — Total Ownership Cost Reduction.
http://acc.dau.mil/simplify/file_download.php/ArmyTOCRPolicy.pdf?URL_ID
=6606&filename=103436114811ArmyTOCRPolicy.pdf&filetype=application%2F
pdf&filesize=730337&name=ArmyTOCRPolicy.pdf&location=user-S/

6.3.3 Navy Guidance

Secretary of the Navy Instruction (SECNAVINST) 5000.2B, *Implementation of Mandatory Procedures for Major and Non-Major Defense Acquisition Programs*
http://neds.nebt.daps.mil/5000.htm

SECNAVINST 4105.1, N432, *Integrated Logistics Support: Assessment and Certification Requirements*, January 28, 1995.
http://www.navsea.navy.mil/download.asp?iDataID=8673

Naval Air Systems Command (NAVAIR) — *Maintenance Trade Cost Guide*, December 1, 2004.
http://www.navair.navy.mil/toc/tools/mtcg_external.doc

NAVAIR — *Contracting for Supportability Guide*
https://logistics.navair.navy.mil/cfsg/library/CFSG1.doc

NAVAIR Instruction (NAVAIRINST) 4081.2A, *Policy Guidance for Alternative Logistics Support Candidates*, December 1, 2004.
https://directives.navair.navy.mil

6.3.4 Air Force Guidance

Air Force Instruction (AFI) 63-107, *Integrated Product Support and Planning Assessment*, November 10, 2004.
http://www.e-publishing.af.mil/pubfiles/af/63/afi63-107/afi63-107.pdf

AFI 63-111, *Contract Support for Systems and Equipment*, February 26, 2001.
http://www.e-publishing.af.mil/pubfiles/af/63/afi63-111/afi63-111.pdf

AFI 63-124, *Performance Based Service Contracts (PBSC)*, February 9, 2004.
http://www.e-publishing.af.mil/pubfiles/af/63/afi63-124/afi63-124.pdf

AFI 63-1201, *Assurance of Operational Safety, Suitability, and Effectiveness*, April 5, 2000.
http://www.e-publishing.af.mil/pubfiles/afmc/63/afmci63-1201/afmci63-1201.pdf

AFI 10-601, *Capabilities Based Requirements Development*, July 30, 2004.
http://www.e-publishing.af.mil/pubfiles/af/10/afi10-601/afi10-601.pdf

AFI 10-602, *Determining Mission Capability and Supportability Requirements*, September 13, 2003.
http://www.e-publishing.af.mil/pubfiles/af/10/afi10-602/afi10-602.pdf

AFI 25-201, *Support Agreements Procedures*, December 1, 1990.
http://www.e-publishing.af.mil/pubfiles/usafa/25/afi25-201_usafasup1_i/afi25-201_usafasup1_i.pdf

AFI 21-101, *Aerospace Equipment Maintenance Management*, June 1, 2004.
http://www.e-publishing.af.mil/pubfiles/af/21/afi21-101/afi21-101.pdf

6.3.5 DEFENSE LOGISTICS AGENCY GUIDANCE

***DLA The One Book* (DLAD 5025.30)** Chapter: Engagement of Military Services' Contractor Logistics Support (CLS), Performance Based Logistics (PBL), Product Support Reengineering, and Reduction of Total Ownership Cost (RTOC) Initiatives for Weapon Systems. The book can be accessed at:
https://today.dla.mil/onebook/process/152.htm

The Program Manager's Tool (PMT) will provide program offices and the many organizations that support them with a tool to assist in the selection of 'other than information technology' standards to help document requirements for interoperability, logistics readiness, safety, and other operational needs. It will categorize standards by importance and by product category using the Work Breakdown Structure. While the PMT will include a small number of standards mandated by law or regulation, it will for the most part, contain preferred standards that PMs should consider using. For each preferred standard, PMs will find a description of the reason for preference, the impact of not using the standard, and a link to the full text of the document. The PMT is not intended to be a mandatory architecture, but it will be guide for program offices to make informed selection of which standards to implement on their programs. The PMT can be accessed at:
http://12.109.46.136

6.4 STATUTORY REQUIREMENTS

The PM should be aware of the following statutory requirements that affect various aspects of product support. The complete statutes can be found at:
http://uscode.house.gov/title_10.htm

United States Code (U.S.C.): Title 10, Chapter 131 — Planning and Coordination.

- Section 2208 — Working-capital funds.
- Section 2208(j) — Direct sales of items.

Resources and References

U.S.C.: Title 10, Chapter 146 — Contracting for Performance of Civilian Commercial or Industrial-Type Functions.

- Section 2460 — Definition of depot-level maintenance and repair.
- Section 2461 — Commercial or industrial-type functions: required studies and reports before conversion to contractor performance.
- Section 2461a — Development of system for monitoring cost savings resulting from workforce reductions.
- Section 2462 — Contracting for certain supplies and services required when cost is lower.
- Section 2463 — Collection and retention of cost information data on converted services and functions.
- Section 2464 — Core logistics capabilities.
- Section 2465 — Prohibition on contracts for performance of firefighting or security guard functions.
- Section 2466 — Limitations on the performance of depot-level maintenance of materiel.
- Section 2467 — Cost comparisons: inclusion of retirement costs; consultation with employees; waiver of comparison.
- Section 2469 — Contracts to perform workloads previously performed by depot-level activities of the Department of Defense: requirement of competition.
- Section 2470 — Depot-level activities of the Department of Defense: authority to compete for maintenance and repair workloads of other Federal agencies.
- Section 2472 — Management of depot employees.
- Section 2473 — Procurements from the small arms production industrial base.
- Section 2474 — Centers of Industrial and Technical Excellence: designation; public-private partnerships.
- Section 2475 — Consolidation, restructuring, or reengineering of organizations, functions, or activities: notification requirements.

U.S.C.: Title 10, Chapter 152 — Issue of Supplies, Services, and Facilities.

- Section 2563 — Articles and services of industrial facilities: sale to persons outside the Department of Defense.