

Performance-Based Logistics

The Changing Landscape in Support Contracting

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Overview

The Department of Defense is making fundamental changes to the way it buys weapon system support. Driven by the compelling need to have easily deployable, operationally reliable systems at reduced cost, DoD is transitioning its weapon systems, subsystems, and even components to an innovative and highly successful support strategy called “Performance-Based Logistics”. Instead of paying a supplier for unit transactions of various support services such as spare parts, repairs, or hours of technical support, the DoD pays for weapon system performance over the entire life cycle of the system. The ultimate goal of PBL is to increase weapon system operational readiness while minimizing support costs and required logistics footprint. Today, PBL is the DoD’s preferred method for supplier support to increase weapon system readiness. DoD defines PBL as:

The purchase of support as an integrated, affordable, performance package designed to optimize system readiness and meet performance goals for a weapon system through long-term support arrangements with clear lines of authority and responsibility.¹

In short, PBL buys outcomes - not individual parts or services. A simple sentence, perhaps, but this is a seismic concept for very complex, expensive systems. Imagine that you are the prime contractor for one of the new airplanes being developed by the military ... instead of looking forward to a future of profitable, risk-free cost reimbursable contracts for spare parts, the contractor will be expected to maintain the aircraft in mission-ready, serviceable condition, and be paid not for the work done on the airplane, but for the work done by the airplane. If the airplane flies, the contractor earns a profit; and, if it meets specified availability targets, the contractor earns increased profit from incentive bonuses; but if the plane doesn’t fly, the contractor earns little or no profit. This shift in risk is fundamental to the PBL concept – DoD will now pay only for results. The effort and activities needed to produce those results are not only minimally specified, but frankly of little concern to DoD weapon system managers.

This is not just a possibility on some distant, notional horizon. Already there are aviation engines in service where the engine contractor is paid based on a blended formula, weighting missions and hours, rather than the simple level of effort required to keep the engine in working condition. Virtually, every new major DoD acquisition system, such as the F35 Joint Strike Fighter, is being designed with the full expectation that post-fielding support will be under a PBL construct. Rather than being paid for the activity performed, contractors are paid for the value delivered by the system they maintain – if the system outcomes are achieved – the contractor earns the right to increased profits, longer term contracts, and the ability to create even greater profits through value added investments.

One of the key elements of PBL is assigning responsibility for delivering measurable performance outcomes to a Product Support Integrator (PSI), who is incentivized to integrate all sources of support necessary to meet the required levels of performance. DoD PBL guidance directs that PBL agreements include performance

targets that address five key problem areas critical to ensuring warfighter effectiveness.

Metric	Problem Addressed
<i>Operational Availability (A_o)</i>	<i>Are we ready?</i>
<i>Mission Reliability</i>	<i>Will we be effective?</i>
<i>Cost per Unit Usage</i>	<i>What is the cost?</i>
<i>Footprint</i>	<i>How much “stuff” do we need?</i>
<i>Logistics Response Time</i>	<i>Are we sustainable?</i>

Why PBL

What are the benefits of doing business this way? Leading military acquisition and logistics professionals and the contractors that support them believe that the PBL approach creates a win-win situation for both DoD and the defense industrial base. For the contractor, it is an opportunity to exercise greater flexibility in deciding how support is provided, ensure cash flow stability through long term contracts, and increase revenue by rewarding contractor investment in improving support processes, rather than just selling individual parts or services. For the government, it is a chance to obtain guaranteed availability improvements while decreasing costs and logistics footprint through partnering with private business for complete program support.

But PBL's real 'winner' is the warfighter. Use of PBL support strategies have consistently resulted in more reliable and operationally ready systems able to perform missions critical to the welfare of our nation. The success of PBL in improving readiness and availability is consistent, with numerous examples. The Navy has seen material availability improvements, from 67% with the F/A-18 C/D system managed under traditional support contracts to 85% for the F/A-18 aircraft under PBL,ⁱⁱ and from 62% to 94% for the Aegis cruiser.ⁱⁱⁱ

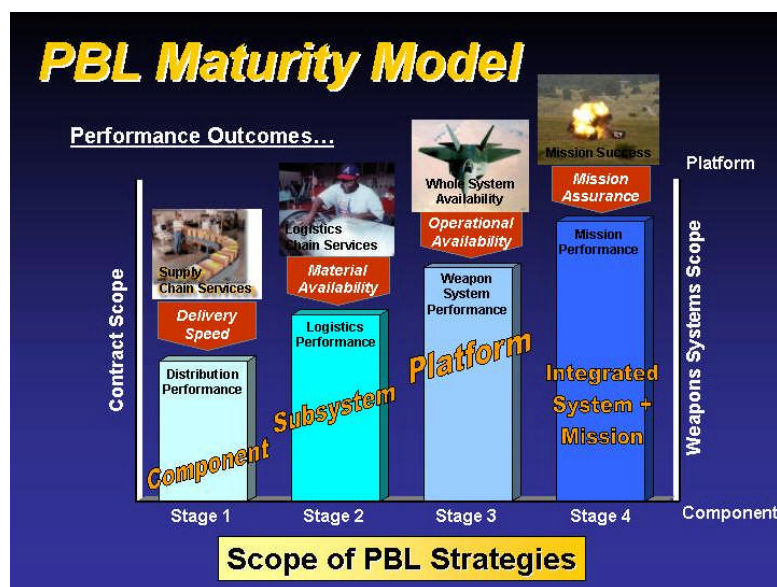
The Changing Landscape

Moving Up the PBL Maturity Level

The genesis of PBL implementation goes back to 1996 with the Base Realignment and Closure (BRAC) decision to close the Sacramento Air Logistics Center, a major support site for the Air Force F-117 Nighthawk stealth fighter. Lockheed Martin Skunkworks of Palmdale, California, designer and developer of the F-117, presented a proposal to the Air Force to assume responsibility for the majority of F-117 non-core support functions in a contracting approach that was based on achieving specified support metrics targets, a significant change from traditional 'providing transactional goods and services' contract support – and at an attractive cost. The Air Force liked the concept, and implemented the new 'performance-Based' approach in 1998 by entering into a Total System Performance Responsibility (TSPR, later renamed Total System Support Partnership (TSSP)) contract with Lockheed Martin. Today, Lockheed Martin is responsible for almost all logistics support of the F-117 at the system level.

This contract laid the foundation for and introduced many of the now standard components of PBL, like the use of relevant metrics to track performance and the assignment of contractor incentives for achieving the metrics targets. This early success – along with many other pilot programs – has helped to make PBL a preferred logistics support strategy for the US DoD. Today there are nearly 200 PBL's in place across all branches of the military.

As PBL becomes more mature within the DoD, we are seeing increased clarity and definition of the varying ways in which PBL can be implemented. The “PBL Maturity Model” shown below reflects the four recognized ‘levels’ of PBL strategy implementation.^{iv}



Level 1 – Component

The lowest level of PBL implementation is at the system component level, such as aircraft tires. At this level the ‘performance’ purchased is the consistent and timely delivery of needed components. The scope of support responsibility for the contractor is generally narrow – focusing primarily on supply chain activities. The in-place government support infrastructure (organizations, processes, and data systems) may continue to be used (a ‘government-owned, but contractor managed’ approach), or in some cases the entire inventory and management responsibility may be transferred to the contractor. The bottom line performance requirement for the contractor is to be sure that the components the government needs are delivered to the right place at the right time.^v At this level the focus is on individual components, not major subsystems or system platform level availability and readiness.

An example of a level 1 PBL is the contract between the Navy and Michelin Tire Company to supply all 23 types of aircraft tires used by the Navy, Marine Corps, and Navy Foreign Military Sales customers. In this agreement, Michelin is tasked to become the single supply chain integrator for Navy aircraft tires and is responsible

for requirements forecasting, inventory management, retrograde management (timely return of repairable tires), storage, and transportation. Tire deliveries are guaranteed within two business days for the continental United States and four business days for overseas requirements. With the implementation of the program, Navy aircraft readiness is at its highest level ever (as of second quarter, FY 2005). During the period from contract initiation in 2001 through 2005 the contractor met availability requirements over 98% of the time, with delivery speed averaging less than half of the contract target time frames. During the same period the number of backorders was driven to zero, where they remain. With this increased confidence in tire availability, the overall tire inventory has been reduced by 66% at the retail level and 92% at the wholesale level. As a result of these efficiencies, the Navy expects to save more than \$48M dollars over the 15 year contract term.

Level 2 – Major Subsystem

At level 2 the scope of support and corresponding performance outcomes broadens, and the DoD-contractor relationship begins to become more collaborative. The focus is not just on delivery speed, but on broader improved material availability, which necessitates enlarging the scope of support to include not only supply chain activities but also encompassing repair processes, engineering and technical support, configuration management, and even minor modifications and process improvements. As in the component level PBLs, the objective system may be supported via the government infrastructure with contractor management oversight, or through public-private partnerships as well. Whatever the support framework, it is clear that the contractor has sufficient authority and management responsibility to achieve the specified performance outcomes included in the support agreement. ^{vi} At level 2, major subsystems are being supplied and supported.

One of the best examples of a Major Subsystem PBL is the GE F404 Aircraft Engine. Two F404 engines power the Navy's front line fighter and attack aircraft, the F/A-18 Hornet. The scale of F404 support is massive: there are 1,862 of these engines currently in service, installed in 755 F/A-18 Hornet aircraft deployed around the globe. The US Navy partnered with General Electric Aircraft Engines (GEAE) in a 4½ year base fixed price contract, with 5 additional one year option periods encompassing the repair and overhaul of 36 major F404 sub-assemblies. The contract has resulted in significant improvements. Under this agreement, repair turnaround time reduced from 120 to 47 days while increasing component availability from 50% to 92%, resulting in total cost of ownership savings of \$79M.

The dramatic results have been directly related to the PBL partnership between the US Navy and General Electric, leveraging the Navy's workforce repair skills with the engine OEM's knowledge of the production process. In a partnering arrangement, the Naval Aviation Depot (NADEP), Jacksonville, Florida, accomplishes the 'touch labor' portion of the F404 repair under the management of GEAE, combining the efficient skills base of the Depot while ensuring that GEAE holds overall responsibility for delivering the top-level contract metric of 85% F404 availability to the warfighter. Under this fixed priced agreement, GE is rewarded for exceptional performance with incentives that lead to increased profits, while sub optimal performance will lower profit margins. Afforded the flexibility to make and manage improvements in all aspects of F404 support from modifying repair processes to inserting lean manufacturing and supply chain practices, GE can achieve the dual

objectives of increasing the availability of the F/A-18 Hornet, one of the most important fighter planes in the military arsenal, while also increasing their own profitability.

Level 3- Platform Availability

At this level, we approach the conceptual objective of PBL – buying warfighter performance. The warfighter doesn't think in terms of employing components or subsystems; their focus is on the availability and readiness of weapon system platforms – an aircraft, a ship, or a tank – the tools of combat capability. Consequently, this level of PBL transfers even more responsibility for management of support activities to the contractor. At level 3, the scope of contractor management and performance of support functions is generally limited only by statute, policy, or the realities of the operational environment. In addition to significant roles in supply chain management and repair activities, the contractor will usually have significant roles in portions of configuration management, technical support, training, facilities, data systems, and related areas of support. And, within those areas, the scope of support will usually be broader than in level 2 or 3 PBL implementations.^{vii} At this level the objective is to achieve an agreed upon level of system or platform availability.

One example of a Level 3 PBL is the Lockheed Martin and US Air Force Total System Support Partnership (TSSP) program involving the F-117 Nighthawk. As is often found in platform level PBLs, the contracting strategy is more complex. Originally signed in 1998 for a 5 year base period with a 3 year award term option, the current support contract is a combination of Cost Plus Incentive Fee and Cost Plus Award Fee. Under the Award Fee portion, Lockheed is incentivized to meet 7 top level objective metrics that optimize system availability and readiness, as well as 4 subjective metrics that pertain to overall support management efficiency. In the Incentive Fee portion Lockheed is rewarded for containing total support cost at or under predetermined annual cost targets. Under a 50/50 cost share ratio, Lockheed receives 50% of the amount by which they under run the annual cost target, but also are penalized to the same extent if they over run the target. This contract has been responsible for an additional \$47.5M in savings for the government.

Over the life of this contract, Lockheed Martin has been able to improve mission readiness in the F-117 by reducing the overall Mission Capable (MICAP – any non-availability of a needed part or repair that causes the system to not be capable of performing its mission) response time from 80 hours to 23.4 hours and engineering disposition response time from 190 hours down to a mere 2.1 hours. This is the equivalent of the Air Force having one additional aircraft available per day. Implementation of this contract also enabled the Air Force to reduce government Program Office manning from 265 people to 48 people, achieving an additional \$90M savings. The total estimated savings recognized by the US Air Force is over \$217.5M. The PBL partnership agreement has been so successful the contract is currently being renewed for another 8 years.

Level 4 – Mission: Setting the Stage for the future – achieving true pay for performance

While level 3 PBLs optimize weapon system availability for the warfighter, what the warfighter ultimately needs in combat is not only for the system to be available to

perform its mission, but to successfully complete the mission. Many say that this level of PBL – mission effectiveness, will be difficult if not impossible to achieve, given constraints which range from concerns regarding Contractors on the Battlefield (COTB) to the realistic expectation of just how far the scope of contractor support can extend in-theater. Nevertheless, DoD is seeing a few early examples of PBL contracts that approach this objective. One of the best examples is the Army Shadow Tactical Unmanned Aerial Vehicle program.

The Shadow provides Army battlefield commanders with improved over the horizon 'situational awareness' through day or night reconnaissance, surveillance, and target acquisition, and is currently in use in IRAQ and other theaters. Produced and supported by AAI Corporation, Shadow uses a PBL support strategy with a primary metric of maintaining 85% availability. It is expected that the next iteration of the support contract will also include a compensation factor driven on system reliability. The strong collaborative relationship between AAI, the Shadow program office, and operational in-theater users exemplifies how PBL can produce not only system availability but significantly contribute to mission completion as well. While Army 'green suit' personnel operate and maintain the system, AAI has contractor field teams on-site that provide 'over the shoulder' support and rapid access to critical technical information that extend beyond availability into actual mission duration corrective actions.

Implications Across the Supply Chain

Performance-Based Logistics initiative is not a concept unique to weapons platforms. It's a concept that can be applied in a variety of environments, aligning the "post-sale" compensation stream with the ultimate requirement. With PBL, a service provider is not compensated for the cost of their work; a service provider is compensated, in effect, for the value delivered. If the service provider does their job well, the customer will be delighted, and the shareholders will reap the reward. Increasing use of performance-based forms of support such as full-service leases, warranties, or guaranteed level of service contracts minimize administrative processes while mitigating contractual 'interpretation' conflicts and greatly simplify the supplier-seller relationship.

Consider other examples:

- Retailers do it with consumer electronics. For a fixed fee at the time of purchase, many big box retailers will provide a warranty on the unit sold, no questions asked.
- Auto manufacturers do it with new cars, offering bumper-to-bumper warranties and extended warranties. And, we are seeing increased offerings of 'full service' leases – a true variant on performance-based logistics. So long as the use of the car remains within pre-determined limits, all maintenance is included under the lease.
- Websites do it with lead generation. The purpose of promotion is the generation of qualified leads, and websites often get paid for the qualified leads they generate, not the traffic visiting their site. No wonder "traditional" advertising vehicles are scratching their heads . . . signing up to deliver qualified leads is a lot different from selling access to a broad audience.

- Semiconductor equipment providers do it, guaranteeing mean time between failure and downtime limits, all under a flat fee arrangement.
- Guaranteed performance contracts for services ranging from building and grounds maintenance to maintaining information systems network infrastructure, provided at fixed annual fees dependent on the size, complexity, and scope of work included.

The Aerospace and Defense industry is waking up to the possibility of PBL. Long entrenched in the design and development of systems, with only marginal involvement in sustainment, the A&D industry is beginning to realize that PBL presents an entirely new business area, with unparalleled growth opportunities clearly tied to their core competencies. Its application by DoD is ambitious and far-reaching, but founded on sound, long term use and precedents in the commercial marketplace – PBL is truly all around us.

Summary - Call for Action

In spite of unprecedented success in improving operational readiness and stemming rampant weapon system support costs, PBL continues to face pockets of resistance. In a recent General Accountability Office (GAO) report on PBL, 15 programs utilizing PBL support strategies were examined. GAO findings showed that 10 of the 15 exceeded the performance requirements specified in their PBL agreements, and the remaining 5 programs met all performance requirements – a 100% success rate in terms of meeting the objective of ‘buying performance outcomes’. No previous DoD support strategy has approached that level of success, yet GAO still found room to question whether the success “could be attributed directly to their use of performance-based logistics arrangements.”

Clearly, there are still challenges ahead. DoD financial processes, particularly those that dictate the use of various ‘colors’ (appropriations) of money, are problematic. While most weapon system support costs are funded with ‘Operations and Support (O&S)’ funds, full scope sustainment also requires Procurement and Research, Development, Test, and Evaluation (RDT&E) funding for modifications to counteract obsolescence and improve support processes. PBL transfers many of the ‘make or buy’ decisions to the prime support contractor, yet DoD financial rules still require government managers to include separate appropriation funding requirements in contracts – in other words forcing them to ‘estimate’ what kind of support decisions the support contractor will make, and in doing so setting arbitrary boundaries that constrain contractor flexibility to make best value decisions. The recent DoD Management Initiative Directive 917 (MID917) attempts to test single line accounting for 6 pilot PBL programs, but the results of that prototype are still undetermined.

Industry has done a great job in joining with DoD in utilizing PBL to deliver real results on the battlefields of today. Systems such as the Stryker, F/A-18 Super Hornet, C-17, and Joint STARS have all demonstrated historically high mission availability rates in both Operations Iraqi Freedom and Enduring Freedom. Still, PBL has yet to be implemented on very complex ‘system of systems’ platforms, such as Navy Carriers, or the developmental Army Future Combat System and Joint Strike Fighter programs. PBL’s concept of buying customer (warfighter)

performance outcomes will be challenged with these multi-user, multi-variant, and in some cases multi-national systems.

In spite of the doubters, there are PBL champions as well. On September 21, 2005, Ken Krieg, the new USD/AT&L spoke to the National Defense Industry Association (NDIA), and said, "Obviously, there are a number of tools, but one answer is Performance-Based Logistics. When Performance-Based Logistics, or PBL, is done right, it focuses energy on the necessary outputs and can provide both effectiveness and efficiency."

PBL has produced too many 'wins' to warrant slowing its progress. DoD desperately needs consistent operational readiness and more reliable, easily deployable systems in today's global engagement threat environment, and PBL has shown consistently that it can achieve those results. DoD should press ahead with vigor, and work towards alleviating any remaining financial, statutory, or policy barriers that limit the full potential of PBL. DoD has made a commitment, through continued downsizing of the base and Depot infrastructure, to rely on public-private partnerships for weapon system support. There is indeed best value in utilizing the immense capabilities, flexibility, and entrepreneurial approach of the private sector. PBL is the best available strategy that takes full advantage of those benefits, and should receive commensurate continued support and implementation emphasis.

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- ⁱ Performance-Based Logistics: A Program Manager's Product Support Guide
 - ⁱⁱ Larry Garvey, Director, Supply Chain, Solutions Division, NAVSUP Naval Inventory Control Point, "Navy Success with PBL," DAU / PMI Conference, Transforming DoD Logistics, September 15 2005
 - ⁱⁱⁱ Lou Kratz, Assistant Deputy Under Secretary of Defense, Keynote Address, "Logistics Transformation," Mid-Atlantic Logistics Conference, International Society of Logistics, March 30, 2005.
 - ^{iv} "Introduction to Performance-Based Logistics, Defense Acquisition University, Fall 2005. Adaptation of the PBL Maturity Framework, "Benchmarking Study of Performance-Based Logistics," PRTM, Fall 2005
 - ^v Patty Martin, Director, Material Sustainment Group 542 Combat Sustainment Wing, Robins AFB, GA
 - ^{vi} Patty Martin, Director, Material Sustainment Group 542 Combat Sustainment Wing, Robins AFB, GA
 - ^{vii} Patty Martin, Director, Material Sustainment Group 542 Combat Sustainment Wing, Robins AFB, GA