



EXCERPT FROM THE PROCEEDINGS

OF THE
SEVENTH ANNUAL ACQUISITION
RESEARCH SYMPOSIUM
WEDNESDAY SESSIONS
VOLUME I

**Acquisition Research
Creating Synergy for Informed Change
May 12 - 13, 2010**

Published: 30 April 2010

Approved for public release, distribution unlimited.

Prepared for: Naval Postgraduate School, Monterey, California 93943



The research presented at the symposium was supported by the Acquisition Chair of the Graduate School of Business & Public Policy at the Naval Postgraduate School.

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Contractor Incentives for Success in Implementing Performance-Based Logistics: A Progress Report

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Abstract

In implementing performance-based logistics (PBL), the need for several resources like inventory investment decreases. Therefore, the contractor's profit, which was based on the level of these resources, may decrease. Therefore, a contractor may have disincentives to implement and use PBL. One way to handle such a situation is to develop financial models to assist with profit/cost sharing during the implementation of PBL. Another way is to study the broader topic of contractor incentives in PBL to find appropriate ways to motivate the contractors to enhance their performance. While most literature in PBL mentions the importance of contractor incentives, not much research has been conducted in this topic. With such situations in mind, this research program proposes a framework to study and develop appropriate possible contractor incentives to succeed in the PBL environment. Our proposed framework considers the possibility of financial and non-financial contractor incentives to ensure PBL success. We anticipate that the final results of this research program will be useful in the defense and related public- and private-sector organizations to maximize the overall benefits of PBL projects. This paper provides a progress report in developing our proposed framework and outlines the remaining work to be completed.



Introduction

PBL is the desired product support strategy in the DoD, and it is being integrated into legacy programs as well as into new contracts (Berkowitz, Gupta, Simpson & McWilliams, 2005; Vitasek et al., 2008; Vitasek & Geary, 2008). It is used by all services at the component, system, and subsystem levels of procurement, sustainment and support (Geary & Vitasek, 2008). PBL came to the forefront of government procurement because a better method was needed. Therefore, the implementation of PBL was included in September 2001 in “the Quadrennial Defense Review and initial guidance was issued by the Office of the Secretary of Defense (OSD)” (Aguilar, Estrada & Myers, 2005, p. 13). The implementation of PBL is important because it gives the program manager (PM) the ability to improve reliability, reduce the logistical burden, and save money on Total Life Cycle Costs (Kim, Cohen & Netessine, 2007).

Since PBL is relatively new, it had to be successfully integrated into thousands of legacy contracts and new programs. To effectively do this, the idea of Total Life Cycle Systems Management was propagated around the service branches (Edwards & Nash, 2007; Kratz & Buckingham, 2010). “Total Life Cycle Systems Management emphasizes an early focus on sustainment in the program management office, making the PM responsible for all activities associated with the acquisition, development, production, fielding, sustainment, and disposal of a weapon system across its life cycle” (Aguilar et al., 2005, p. 13). This is the main difference from older procurement methods because they focused solely on the early phases. PBL is a major jump forward in how government procurement and sustainment is done and contract types and incentives need to readapt so they can successfully support the contract (Barber, 2008).

The Department of Defense and the Military Services are transforming from traditional methods of logistics support to PBL as a methodology of product support for the 21st century (Fowler, 2010; Kratz & Buckingham, 2010). It makes the program managers responsible for total life cycle costs (DAU, 2005). Traditionally, support for MWSs in the DoD centered around 10 logistics elements, split between acquisition-related activities at the front end of the life cycle and sustainment-related activities at the back end. Metrics focused on the logistics elements themselves and on internal processes often having little direct relationship to warfighter requirements. The shift toward Integrated Logistics Support attempted to combine distinct logistics elements into a coordinated approach, but there was still the disjointed acquisition versus sustainment-support issue and the lack of a linkage between supportability measures and warfighter needs (Vitasek & Murray, 2009). The advent of Total Life Cycle Systems Management (TLCSM) and performance-based logistics (PBL) addressed all of these issues (DeVries, 2005).

TLCSM mandated a new focus by PMs toward the entire life cycle, firmly linking acquisition and sustainment activities into an integrated process. This was a significant paradigm shift from PMs traditional focus on the early stages (acquisition, development, fielding) of the life cycle. To measure success, PBL required that supportability metrics be directly related to performance outcomes for the warfighter. PBL also offered a choice of organic and commercial support providers for picking the right combination in achieving best value for the program (DeVries, 2005).

The 2001 *Quadrennial Defense Review (QDR)* identified logistics transformation as a key transformation pillar. Specifically, the *QDR* directed logistics enterprise integration, a reduction in logistics demand, and a reduction in the cost of logistics. The 2003 update to the 5000.02 is actually the directive that matters. That is the first time the Components were



actually put on the hook to do PBL. One tool the Department of Defense (DoD) identified for use in achieving these goals is performance-based logistics (PBL). This tool is an innovative acquisition approach that represents a cultural shift away from buying parts to buying performance. In practice, application of PBL can be at the system, subsystem, or major assembly level. Executed through long-term incentive based contracts, PBL is a means of system sustainment that integrates supplier support and warfighter requirements with the objective of improving operational readiness while reducing costs. In today's environment of constrained budgets and reduced manpower, PBL represents a potentially cost-effective and efficient method for system sustainment (Lewis, 2005; Mahon, 2007).

It has been said, "it simply makes good business sense to provide the proper contract motivations to encourage high-quality contractor performance." It is this notion of "good business sense" that we would like to examine further. Within the construct of performance-based logistics (PBL), contracts have been written to try and motivate contractors to meet the expectations of the government by constructing incentives that greater serve the needs of the contractor. This implies that if a contractor is performing well, then the proper incentives must be in place. Assuming that is the case, we want to ask the following: what were those incentives, what was the methodology (i.e., "best practices") for selecting those incentives, and would a consistent pattern between the types of incentives and levels of performance indicate the use (or lack) of "best practices," when developing these incentives had a hand in a firm's level of performance? (Gilbreth & Hubbard, 2008; Graham, 2003; Hildebrandt, 1998).

The incentives given to a contractor can be either monetary, non-monetary, or both. Several metrics exist that allow government contracting officers to objectively evaluate the performance of a contractor (Doerr, Lewis & Eaton, 2005). Monetary incentives could be based upon, but are not limited to, the following: material availability, material reliability, and life cycle cost, all at the system level. Delivery schedule incentives focus on getting a contractor to meet or exceed minimum delivery requirements. Under a performance-based construct, the parties involved have relative autonomy in negotiating the terms and conditions for meeting the target delivery dates. Performance standards are defined in a PBC and the incentives are typically given on the basis of whether the contractor met the performance criteria and to what extent they exceeded the standard (Tremaine, 2008). In other words, performance incentives are designed to relate profit to the contractor's achieved results.

Several types of performance incentives are fee structures, bonuses, and/or shared savings, and they can be applied in many different ways for many different reasons; some examples of these are as follows:

- First, an award fee can be given if the government feels that the contractor meets or exceeds specified outcomes.
- Second, an incentive can be given if the contractor appropriately controls costs in a cost plus-incentive-fee contract.
- Third, reliability-based profits allow for increased profits (as in FFP contracts), if the contractor can lower their operating costs by meeting higher product reliability standards. So, they can retain at least a substantial portion of the profits by making a better product.
- Fourth, shared savings is another unique type of bonus because both the contractor and the government share in the savings that result



from performance enhancements, design improvements, and other efficiency improvements (Kirk & DePalma, 2005, p. 40).

Since PBL is now the preferred procurement and system support program, it is important to know how to incentivize contractors to perform consistently at a high level. However, this is a unique problem considering that PBL is new and little is known about what best practices and incentives should be suggested. As a result, it is important to look at the different types of contracts the government can issue before discussing how incentives can be given under PBLs oversight.

Contract Types

Fixed-price and cost-plus contracts will elicit different contractor responses based upon the inherent nature of the two types. When a contractor is awarded a fixed-price contract, we feel that the contractor is motivated to reduce product support costs because the awarded amount is fixed; therefore, every dollar saved through cost reduction is an additional dollar of profit contribution. Knowing this, we argue that firms operating under fixed-price contracts should be inherently motivated to reduce costs because the cost of not doing so will reduce that firm's profit potential. And when firms that operating under an FP construct experience cost overruns, we have to consider whether the incentives being offered were consistent with performance goals.

Under a fixed-price construct, there are essentially two widely used incentive-type contracts: (1) fixed-price-incentive-fee (FPIF) and (2) fixed-price-award-fee (FPAF). FPIF contracts are based upon a formula that relates final negotiated cost to target cost—these targets could be either firm target or successive targets. The formula used is made up of variables that can be objectively determined (i.e., cost, schedule, performance). Sometimes, Award Fee elements are in fact things that can be objectively measured, but an Award Fee approach is chosen. Award Fees are easier to administer and allow more flexibility on the part of the government.

Cost reimbursement (or cost-plus) contracts are appropriate and largely used in the developmental stages of the product/project life cycle, where costs are essentially unpredictable. When a contractor is awarded a cost-plus contract, there is typically too much ambiguity in the project to assign a fixed price to the end product; therefore, the cost risk for the government is usually greater when cost-plus contracts are used rather than fixed-price. This ambiguity is the result of many things, including technological maturity, political uncertainty, etc. Contractors typically enjoy the freedoms associated with cost-plus contracts because the cost risk associated with a particular project or program is shifted to the government. It is noteworthy that development costs often exceed production costs associated with a product ready for use, even if the product is produced well beyond maturity, when per unit product costs drastically decline.

Taking these thoughts into consideration, we argue that because contractors run a greater risk of financial loss (due largely to the uncertainty associated with cost-plus contracts), the choosing of incentives should be seen as a much more sensitive and delicate process in the eyes of the contractor. If this proves to be true, then the types of incentives used by the government for a particular product could have a significant impact on how motivated a contractor is to meet or exceed the predetermined performance targets.



Incentives for the Government

The Firm Fixed-Price (FFP) contract is the desired contract for the government, as it firmly fixes pricing parameters, shifting the risk of cost overruns to the contractor. When the product life cycle inevitably requires conceptual development and prototyping, the government seeks to accelerate the product to maturity so that FFP contracts become appropriate. The government is subject to congressional funding and the government must show performance to justify funding, which also creates an added incentive to perform responsibly.

Cost-plus contracts are appropriate and largely used in the early developmental stages of the product or project life cycle when the costs are unpredictable. This is not the desired contract type for the government, but it is necessary to reimburse the contractor for unpredictable and volatile costs. The cost-plus contracts shift the risk to the government as they are obliged to cover unpredictable developmental costs within contractual guidelines. It is noteworthy that the developmental costs often exceed the production costs associated with a product ready for use, even if the product is produced well beyond maturity, when per unit product costs drastically decline.

This brings to mind the “S-curve,” prominently known in marketing, where the product begins as a concept and is then brought to the market seeking adoption; then, the product or service is improved and adopted by a large portion of the market; finally, it reaches maturity, pending obsolescence. As shown in Figure 1, the maturity stage essentially predicts obsolescence and prompts replacement with a new product (Visitask, 2010).

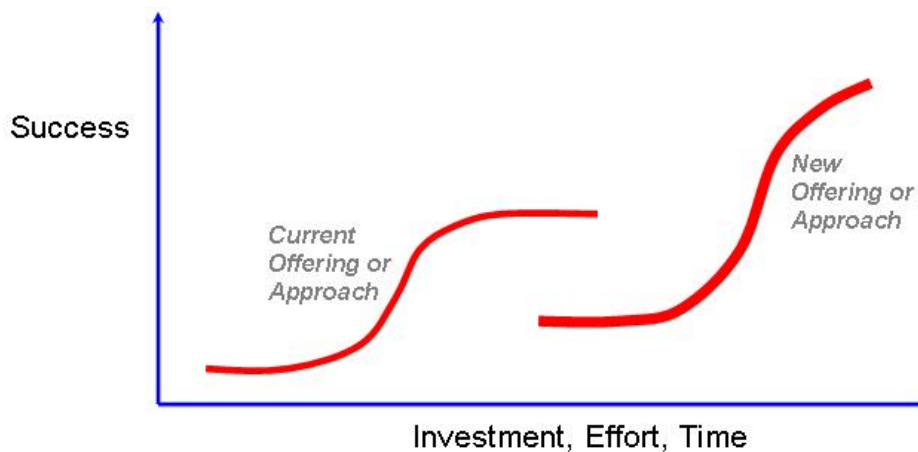


Figure 1.

The government still reserves the right to “terminate for convenience,” which absolves the government from future obligation to the contract (GSA, DoD & NASA, 2010). It should also be noted that it is paramount to the government to specify parameters of contract performance, which shifts the risk to the contractor, because a nebulous contract would give too much discretion to the contractor. This situation creates somewhat of a dilemma considering that one of the basic tenants of PBL is that the government is to basically specify what it wants, while allowing the contractor to determine the means of fulfillment (Defense, 2010).



Incentives for Contractors

Under the PBL strategy, the contractor assumes a greater amount of risk; this, however, gives the contractor more latitude in determining and applying its methods (KMC/OPI, 2010). The general consensus, identified through research and personal interviews, is that the continuation of a contract is the main incentive. Continuation simply allows more time for the contractor to recoup capital investment expenses and provides added stability and continuity of staff, expertise, and equipment (P. Cushman, personal communication, October 2009). The general idea derived from the interviews was that a contract term should last at least five years to allow time for the contractor to recoup its capital investment (D. Wilson, personal communication, October 2009). Incentives can be tied to the performance of metrics as they relate to cost, quality, or delivery. For instance, under an FFP contract, a contractor may keep at least a portion of dollars saved when below budget, and it may receive bonuses for reaching certain metrics stated in the contract.

This is apparent in cost-plus contracts because the contractor is incentivized to keep costs and timeframe to a minimum so that it may win continuation of the contract. Even if the contractor is reimbursed for cost overruns, it runs the risk of congressional scrutiny and termination either by convenience or in favor of another contractor, so corporate reputation is at stake on every contract (GSA et al, 2010, p. 1). The reputation of a company may be the most important factor in contract rewards, and it's dependent on how they perform in every contract (Defense, 2010, p. 1). For example, Boeing's poor performance during the competition for the Joint Strike Fighter, contrasted by a relatively better performance by, undoubtedly influenced other contract awards, as evidenced by the recent proliferation of Lockheed contracts (*High Stakes*, 2010, p. 1).

Types of PBL Incentives

In order for a PBL contract to be successful, the contractor has to meet standards established in the contract. To ensure the standards are met, the cost to provide the required level of service is estimated to the best of the government's and the contractor's abilities. However, complications can arise and levels of achievement can be met that warrant additional compensation like bonuses, shared savings, or other forms. Examples of complications are project risks, adjusted product usage, and increases in the price of used resources or components. Aside from that, superior performance levels can be outlined in the contract that also warrant an incentive when met. It is important to have incentives and bonuses as a part of PBL contracts because they can increase the probability that the contract is fulfilled and the warfighter receives the necessary support on time (*High Stakes*, 2010, p. 40). While the topic of contractor incentives is mentioned in various research studies (Beggs, Ertel & Jones, 2005), it is not explored to the extent of developing a framework for determining such incentives in specific situations.

Proposed Framework

Before moving on, it is important to understand that incentives can be given in many different forms, but they fall into three categories: cost-based incentives, time-based incentives, and scope-base incentives. **Cost-based incentives** focus on contractor profits, so monetary awards are a good example of this type of incentives. **Time-based incentives** are changes in the length of the contract, so the life of the contract is extended for the contractor. **Scope-based incentives** are changes in the contract that give the contractor more responsibility and, as a result, larger incentives. For identifying which incentives have



the most impact on contractor performance, it is important to separate these incentives because different types of incentives work better with different types of contracts.

Cost-based Incentives

Of all of the incentives that are considered, the most important type of incentive considered is the contract type. This is because contract types vary in their treatment and allocation of cost, schedule, and performance risk. *FAR* Part 16 defines contracts as being one of two types: (1) fixed-price or (2) cost-reimbursement. When deciding how to match incentives with the contractual mechanism being used, the contracting officer needs to look at where most of the responsibilities and risk lie. Under a fixed-price (FP) construct, the contractor assumes all responsibility and risk of fulfilling the contract and providing a product, whereas under a cost-reimbursement construct (i.e., cost-plus contracts), the government reimburses certain allowable and allocable costs, and pays the contractor a fee that is in line with the contractual agreement. The inherent downside in using cost-reimbursement contracts is the lack of motivation on the part of the contractor to reduce costs. As one might suspect, the type of contract that is appropriate for a particular task depends upon several variables, but for the purpose of our research, we want to evaluate the types of incentives being used and determine their overall ability to influence the behavior of the contractor.

Because PBL is focused on system availability and performance metrics, it is important for the contractor to understand what is expected of them. An example of metrics being linked to profits is how “the TOW-ITAS contract directly links profitability to availability—the higher the availability the greater the profit the supplier can earn” (DAU, 2005, pp. 3-23). In this example, in order to link availability to profitability, the acceptable level is determined by the program office and is included in the performance-based agreement (PBA). The first step in meeting the objectives stated in a PBL contract is deciding on a cost that will cover the desired support. Once the PM decides on a cost, it needs to be accepted by stakeholders before the PM can enter into a formal agreement with the contractor. Finally, the level of support provided needs to be appropriately covered by compensation in order for the contract to be appealing to competent companies.

The written agreement between the contractor and the government becomes a part of the PBL support strategy, and the expectations of the contractor are outlined in the user agreement section of the PBA. The user agreement part of the PBA contains the ranges and objectives that the contractor has to meet. “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” (DAU, 2005, pp. 3-17). Since the contract is based on ranges and objectives, resources will be allocated to the contractor on the basis of what is expected from the weapon system or component in a particular year. It is important to note that unique conditions may require performance above normal operations, and the policy will adapt to meet these conditions. For instance, “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” (DAU, 2005, pp. 3-18). An example of this is the Shadow Unmanned Aerial Vehicle contract, which “procures performance using measurable metrics instead of buying spares and repairs in the traditional manner. 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” (DAU, 2005, pp. 3-24). As a result, user agreements are important because they outline the



requirements and ranges that need to be met in the contract and how to deal with wear and tear changes, like the Shadow UAV contract.

When getting involved in a contract with the government, it is important for the contractor to understand the level of risk they are being asked to assume. One of the main components of PBLs is that it moves risk away from the government and to the contractor. “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” (DAU, 2005, pp. 3-20). Risk is an important part of performance-based agreements because it affects how the PM defines an acceptable level of performance, cost, and incentives. This means that the government will design its PBL contracts in a way that makes assuming risks appealing to the contractor. Properly compensating parties for taking risks is an important part of successful PBL contracts, and if it is done correctly, then risk to the government will be significantly reduced.

Time-based Incentives

PBL incentives are generally tied to the contract type and overall performance, so additional compensation is typically given for exceeding the standards as stipulated by the contract. For example, “in most cases, providing incentives for PBL contracts is difficult considering the many different types of contracts that may be used” (DAU, 2005, pp. 3-19). Giving incentives in respect to PBAs means that incentives are given based on meeting the metrics set in the contract, but, in general, the PBL wants to tie incentives to overall performance (D. Ioasco, personal communication, October 2009). “The preferred PBL contracting approach is the use of long-term contracts with the incentives tied to performance” (DAU, 2005, p. 3-19). This will help the contractor make technological investments to improve the system performance, with the hope of making relatively more profit in the long-term. Klevan (2008) reports that most Navy PBL contracts are long-term agreements and address availability, obsolescence, reliability, and cost. He further reports that the use of such time-based incentives creates a win-win strategy, incorporates surge capability, mitigates risks and ensures an exit strategy. Such long-term agreements create government-contractor partnerships that result in significant improvements in the key performance parameters specified in the PBL agreements (Klevan 2008). It enables the government to procure the “end-state” and not the “how-to.” Thus, using overall performance as a basis for rewarding long-term contracts incentivizes the best companies in the industry to apply for contracts in hopes that they will receive future business (S. Kowderduck, personal communication, October 2009).

Scope-based Incentives

While cost-based and time-based incentives are in use, scope-based incentives are not much in use, but may provide motivation to the contractor to significantly improve its performance under the PBL. This incentive is based on the assumption that a contractor wishes to expand its business with the government. If the contractor’s performance under a PBL contractor exceeds the government’s expectation, then the contractor can be given work beyond the scope of the original contract. For example, if the original PBL contract required a contractor to maintain an aircraft engine, then based on a superior performance over time, this contractor can be given the additional task of maintaining tires. Ultimately, this contractor may become the system integrator, as it will become responsible for the entire aircraft. Using overall performance to create scope-based incentives is the best way to



provide incentives because the metrics are difficult to define effectively. However, because of current legal restrictions and the need for competitive procurement in government, implementation of scope-based incentives is quite difficult, if not impossible.

Private Sector

The PBL strategy is formulated with the intent to improve upon older contracting methods and provide incentives similar to the private sector. As a result, “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” (DAU, 2005, pp. 3-21). Using incentives to encourage better contractor performance is a useful tool, but finding the right incentives and metrics is difficult. For example, a commercial company is going to require different incentives than a depot. One is a for profit and one is trying to breakeven; so, a depot may want the incentives to, among other things, reduce operating costs and encourage savings, while a commercial company wants profits to please their stockholders and board members. Applying commercial style incentives to government contracting or partnerships with the depots is a way to encourage the best level of performance, but the optimal incentives are needed in order for it to be successful.

The private sector provides incentives based on performance, and this may improve the quality of the product and service provided. In order for the government to get a better product, the government needs to develop a commercial mentality to incentivizing. The *Federal Acquisition Regulation (FAR)* Part 12 is designed to encourage the government to move toward using commercial processes and practices. Incorporating commerciality into government procurement under *FAR* Part 12 can be done at multiple levels in the government contractor relationship. For example, “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” (DAU, 2005, pp. 3-24). So, incentives should be provided at more than just the item level. Under this regulation, the government can incentivize by methods known as the “Power by the Hour (PBH)” concept, a company’s exceptional repair capabilities, or a product support system.

PBL is an important step in the right direction because it allows the government to incentivize like a private company by using a pricing arrangement to encourage the contractor to reduce costs and increase reliability to make a profit. One way the government can incentivize contractors this way is by PBH. For instance,

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. (DAU, 2005, pp. 3-24)

This basically encourages the contractor to touch the product as little as possible because the less they touch it, the more money they make. This means that they need to have more support structures to reduce their defective product percents. So, the contractor will develop support processes like:

- repair/replace/overhaul,
- material management,



- engineering and logistics support,
- packaging and shipping, and
- configuration management. (DAU, 2005, pp. 3-26)

All of these activities are designed to improve the production and the product's life cycle support. The private sector incentives its contractors by encouraging them to develop processes that will help them meet the goal and metrics in their contracts. PBH is just one example of how the government can use private-company-style incentives to prompt the contractor to meet the metrics in the contracts. In conclusion, *FAR* Part 12 is the government's guide to applying commercial incentives to its procurement so that the DoD's primary objective can be achieved.

Contractors Creating Their Own Incentives

The possibility of contractors creating their own incentives should be taken seriously, but it is likely to require fundamental reform of existing contractual vehicles to make it a reality. The contractor may propose that if its performance is exemplary that it should be considered for future business. The reputation of an exemplary performer often positively influences prospects for follow-on business, but the award process on a government contract must adhere to the *FAR* guidelines for competitive bidding. The creation of incentives is more likely to occur in subcontracting, where the dollar thresholds are lower and subject to less government scrutiny. However, for optimal performance to occur, contractors should be more proactive in proposing creative incentives because this is likely to leverage organizational competencies to achieve higher performance.

It should also be noted that a contractor may benefit greatly from using the technology gained from the development of one product to produce other related products. This is evident in thousands of examples of "spin-off" products. A program called TOCNET (Tactical Operation Centre Intercommunication System), which is a wireless encrypted LAN, was initially used by the Marines for base communications. Substantial numbers of additional, related products were spun-off from this technology, including a commercially viable product called the Coal Miner's Phone, which allows miners to communicate wirelessly (Jane's, 2010).

Within legal guidelines, a firm is permitted to determine its own cost (managerial) accounting methods. This is an evolving area in which improved metrics and evaluation are being developed as a result of pressure from the government and the marketplace. For instance, a firm may find some means to show fewer inventories than actually in the system. While such a practice is a direct misrepresentation to the investor, taxpayer, and the government, it may be advantageous to the contractor. Additionally, it may lead to lost stock, delayed payments, distortion of stock levels, and the added administrative expense associated with reordering. This is an example of a metric that can be reformed. A company's discretionary ability to determine its cost accounting methods is endangered to some degree, especially given the corporate scandals involving "cooking the books." Recently, a department within a major government contractor came in \$35,000 under budget for the approaching end of fiscal year. To discourage the possibility of the government (Congress) interpreting the under-budget situation as an over allocation, the contractor spent the money on office supplies. This is an example of a situation that requires reform on the part of government.



Conclusions

PBL is the latest procurement and sustainment method, and it should be noted that it is a result of an evolutionary process. It has, at the very least, articulated a basic strategy for contract performance and has brought about increased analysis and scrutiny of contractual performance. The improvement of metrics resulting from advances in technology is perhaps the greatest operational mechanism for the contractor to achieve the goals laid out by PBL. The contract itself still dictates the performance and it must adhere to the *FAR*, *DFARS*, and *TINA*. Creative methods beyond the scope of the *FAR* are a highly risky proposition for the contractor and would require reform of contractual vehicles and regulations. Applying the appropriate contractual type to the given program is essential under the current conditions, and it should reflect the applicable point in the product life cycle (Kratz & Buckingham, 2010).

The deployment of PBL may put the government in the uncomfortable position of relinquishing control to the contractor, while still being ultimately responsible for the performance of the contract. Relinquished control on the part of the government leads to higher government-born risk:

Despite its apparent success, there is an inherent conflict that DoD implementers of PBL often face: the PBL goal of developing long-term partnerships that encourage investment from commercial partners is best achieved through lengthy, guaranteed contracts—but such contracts increase the DoD's risk in an environment that is intended to transfer more risk to the contractor. (Gardner, 2008)

As a result, in order for PBL to be successful, the government needs to appropriately balance risk with the right level of compensation and incentives.

While we have provided a progress report of the work done thus far on this project, a lot more work needs to be done to complete this framework of contractor incentives in PBL environment. For example, the proposed framework needs to be verified through empirical means. This requires field work to include interviews with DoD and contractor personnel, using PBL and focused group discussions to assess the viability and desirability of various types of incentives. Such field work is also essential to identify the behavioral factors that result in the success or failure of various contractor incentives in the PBL environment. This information can then be used to develop strategies and tactics to implement appropriate incentive schemes. Subsequently, models need to be developed to identify exact mechanisms and algorithms to use in determining the specific levels of contractor incentives to use in PBL. Thus, the topic of performance-based (or outcomes-based) logistics and life cycle management and the need to find and use appropriate incentives to maximize performance is a fruitful area of future research, both from an academic and practical viewpoint.

Acknowledgements

This research is partially supported by Grant No. N00244-09-1-0083 from the Fleet Industrial and Supply Center of the US Department of Navy through the Naval Postgraduate School. Constructive comments on an earlier draft of this paper by Steve Geary of Supply Chain Visions significantly improved the quality of this paper.



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- Managing the Services Supply Chain
- MOSA Contracting Implications
- Portfolio Optimization via KVA + RO
- Private Military Sector
- Software Requirements for OA
- Spiral Development
- Strategy for Defense Acquisition Research
- The Software, Hardware Asset Reuse Enterprise (SHARE) repository

Contract Management

- Commodity Sourcing Strategies
- Contracting Government Procurement Functions
- Contractors in 21st-century Combat Zone
- Joint Contingency Contracting
- Model for Optimizing Contingency Contracting, Planning and Execution
- Navy Contract Writing Guide
- Past Performance in Source Selection
- Strategic Contingency Contracting
- Transforming DoD Contract Closeout
- USAF Energy Savings Performance Contracts
- USAF IT Commodity Council
- USMC Contingency Contracting

Financial Management

- Acquisitions via Leasing: MPS case
- Budget Scoring
- Budgeting for Capabilities-based Planning



- Capital Budgeting for the DoD
- Energy Saving Contracts/DoD Mobile Assets
- Financing DoD Budget via PPPs
- Lessons from Private Sector Capital Budgeting for DoD Acquisition Budgeting Reform
- PPPs and Government Financing
- ROI of Information Warfare Systems
- Special Termination Liability in MDAPs
- Strategic Sourcing
- Transaction Cost Economics (TCE) to Improve Cost Estimates

Human Resources

- Indefinite Reenlistment
- Individual Augmentation
- Learning Management Systems
- Moral Conduct Waivers and First-tem Attrition
- Retention
- The Navy's Selective Reenlistment Bonus (SRB) Management System
- Tuition Assistance

Logistics Management

- Analysis of LAV Depot Maintenance
- Army LOG MOD
- ASDS Product Support Analysis
- Cold-chain Logistics
- Contractors Supporting Military Operations
- Diffusion/Variability on Vendor Performance Evaluation
- Evolutionary Acquisition
- Lean Six Sigma to Reduce Costs and Improve Readiness
- Naval Aviation Maintenance and Process Improvement (2)
- Optimizing CIWS Lifecycle Support (LCS)
- Outsourcing the Pearl Harbor MK-48 Intermediate Maintenance Activity
- Pallet Management System
- PBL (4)
- Privatization-NOSL/NAWCI
- RFID (6)



- Risk Analysis for Performance-based Logistics
- R-TOC AEGIS Microwave Power Tubes
- Sense-and-Respond Logistics Network
- Strategic Sourcing

Program Management

- Building Collaborative Capacity
- Business Process Reengineering (BPR) for LCS Mission Module Acquisition
- Collaborative IT Tools Leveraging Competence
- Contractor vs. Organic Support
- Knowledge, Responsibilities and Decision Rights in MDAPs
- KVA Applied to AEGIS and SSDS
- Managing the Service Supply Chain
- Measuring Uncertainty in Earned Value
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