The Hybrid Supply Chain Model: Commercial Logistics Support and Performance-Based Logistics for the Department of Defense

This assessment examines DOD supply chain solutions and explores the five-year results of a targeted commercial logistics support/performance-based logistics contract to determine if disparate supply chains with dedicated supply chain managers can be integrated into DOD/contractor hybrids that can seamlessly provide warfighters the logistics transparency and timeliness needed to get the job done

BY ROBERT BESTERCY

In order to effectively direct logistics, combatant commanders (COCOMs) require real-time, end-to-end logistics information across all theater components. Currently, the Department of Defense (DOD) struggles to provide that capability, and is executing transformational solutions that combine organic logistics integration (including supply, transportation, and distribution) and combinations of commercial and DOD logistics support. Can DOD, utilizing public/private—or "hybrid"—logistics solutions that combine DOD and commercial systems, provide the ready, real-time, and end-to-end visibility and effective distribution that COCOMs can rely on when executing missions in peace and in war? What are the challenges associated with hybrid logistics solutions, and how can they be overcome in order to achieve improved life cycle support at a reduced overall cost?

The DOD Supply Chain

The DOD supply chain is a massive enterprise, with costs estimated at roughly $150 billion per year, exclusive of supporting information technology.[1] Focusing on the U.S. Navy supply chain (typical of military service supply chains), there are four interrelated supply chain cycles (as displayed in FIGURE 1 on page 100):

1. **Planning—**includes forecasting of demand for items and supply and distribution planning;
2. **Sourcing—**includes identifying sources of inventory to support acquisition, repair, and other services;
3. **Delivery—**involves ordering, storage, and transportation; and
4. **Maintenance—**includes repairing weapon systems and component parts.[2]

Alternately described as "effective" and "broken," the continually tested DOD supply chain presents many challenges for logisticians. Segregated by service procedures, disparate legacy systems and the "tyranny of distance," the DOD supply chain consists of some of the largest and most expensive infrastructure in any industry, requiring rapid delivery of supplies, services, and people

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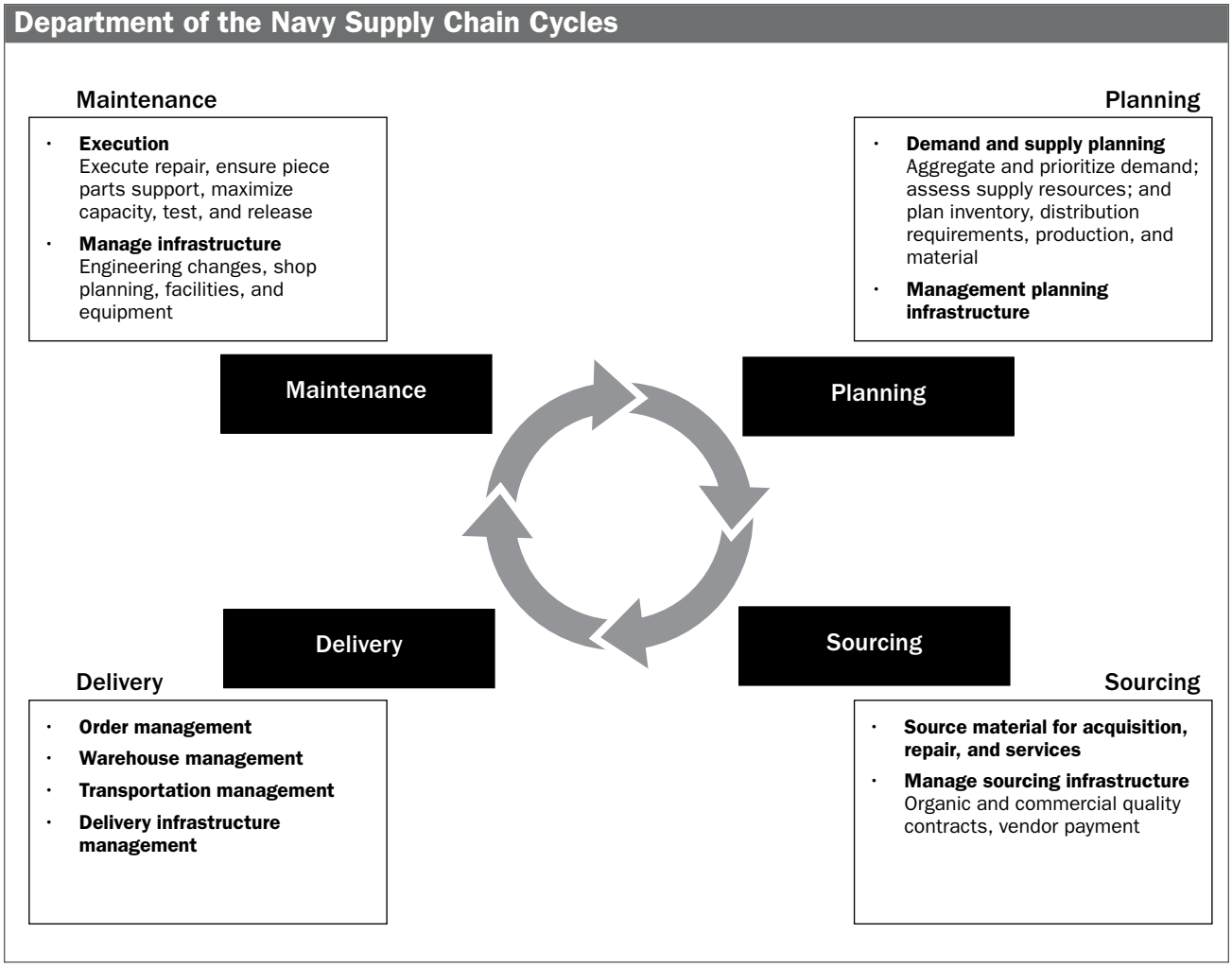

FIGURE 1.

to support the most critical of missions. The scope of the problem in the DOD supply chain is significant enough to be considered by the Government Accountability Office (GAO) to be a "High Risk Area" for DOD since 2005. GAO has recently stated that despite progress in achieving transformation initiatives, problems remain in three focus areas:

> In the **requirements area [1]**, the military services are experiencing difficulties estimating acquisition lead times to acquire spare parts for equipment and weapon systems, hindering their ability to efficiently and effectively maintain spare parts inventories for military equipment. Challenges in the **asset visibility area [2]** include lack of interoperability among information technology systems, problems with container management, and inconsistent application of radio frequency identification technology, which make it difficult to obtain timely and accurate information on assets in theater. In the **materiel distribution area [3]**, challenges remain in coordinating and consolidating distribution and supply support within a theater.[3]

Clearly, there are imperatives here for DOD to improve supply chain management in terms of cost magnitude, customer satisfaction, and in effectively integrating the supply chain into defense business transformation initiatives. Potential models exist today in some creative performance-based logistics (PBL) solutions that may help DOD accomplish goals to improve requirements, asset visibility, and distribution business practices.

Performance-Based Logistics and Contractor Logistics Support

In the past 10 years, DOD has been transforming traditional logistics support to PBLs as a principle method for reducing total life cycle costs of equipment procurement, reducing risk in life cycle support, and achieving improved performance and reliability by leveraging the commercial sector's expertise and infrastructure. Current DOD acquisition policies provide clear direction and guidance to all program managers that in addition to designing and building/rebuilding reliable systems and equipment, they must also consider and/or integrate a product life cycle support strategy upfront in the acquisition phase.

The objective of PBL is to transition specified elements of logistics support and operational performance into a product support strategy, with the ultimate goal being to improve system equipment readiness and reduce total ownership costs. However, PBL is not a one-size-fits-all approach to product support. As with any logistics support, PBLs must be tailored to fit the individual system/equipment in its operational environment.

In 2002, a working group chartered by the Defense Contracts Management Agency predicted that "increased management of the supply chain by commercial suppliers [is expected]. The number of commercially-run depot contracts doubled over the past four years."[4] In fact, that prediction, made only six years ago, has proven to be very conservative, as the services now spend up to 25 percent of logistics working capital funding in PBL or PBL-like contracts for outsourced logistics support functions. Explicit direction from the Office of the Secretary of Defense has identified PBL contracting as the provider of choice for DOD logistics, in order to reduce total ownership costs in program managers' equipment procurement strategies:

> [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.[5]

Commercial Performance-Based Logistics Support

Many definitions have evolved for PBL, but the most comprehensive I have found is used by the Defense Acquisition University in its Logistics 235 Course:

> Performance-Based Logistics (PBL) is a sustainment strategy that features integrated supply chains and increased industry/government partnering to meet warfighter performance requirements for weapon system life cycle support. The emphasis is on "outcomes": vice segmented processes and contract compliance. This strategy provides increased levels of system readiness and reduced total ownership costs through efficient management and direct accountability.

The PBL strategy is increasingly incorporating elements of commercial logistics support (CLS). A PBL that is termed as a "CLS PBL" indicates that the total of logistics support elements is provided by a contractor; no traditional support functions are retained by the government. Logistics support elements include:

- Provisioning and procuring spare parts,
- Providing technical support,
- Engineering services,
- Repair capability and modification,
- Training,
- Development of technical manuals,
- Maintenance,
- Computer services, and
- Managing the life cycle supply chain.

Very few PBL efforts have attempted to include all logistics support elements in a contracted agreement, due in part to Title 10 of United States Code (USC) (10 U.S.C. 2464), which limits shared logistics support to a no greater than 50 percent private-sector share of support in order to maintain organic capabilities for mission critical, or "core" weapon systems. Many DOD weapon systems, however, are not designated as core, and are therefore candidates for CLS arrangements. In any case, a CLS contract for support could be considered a full-blown PBL; that is, a PBL that delegates all logistics support to a contractor or team of contractors.

PBL or DOD Supply Chain?

Sources of support do not automatically favor organic (DOD) or commercial providers. Government "make or buy" support decisions are based on best value assessments of providers' capabilities to meet set performance objectives. These assessments are normally coupled with a cost comparison (a business case analysis) to determine which provider—government or contractor(s)—can accomplish the required tasks at the lowest cost. Each PBL contract is unique in scope, performance parameters, and contract structure, and may include all associated logistics support functions or only a few.

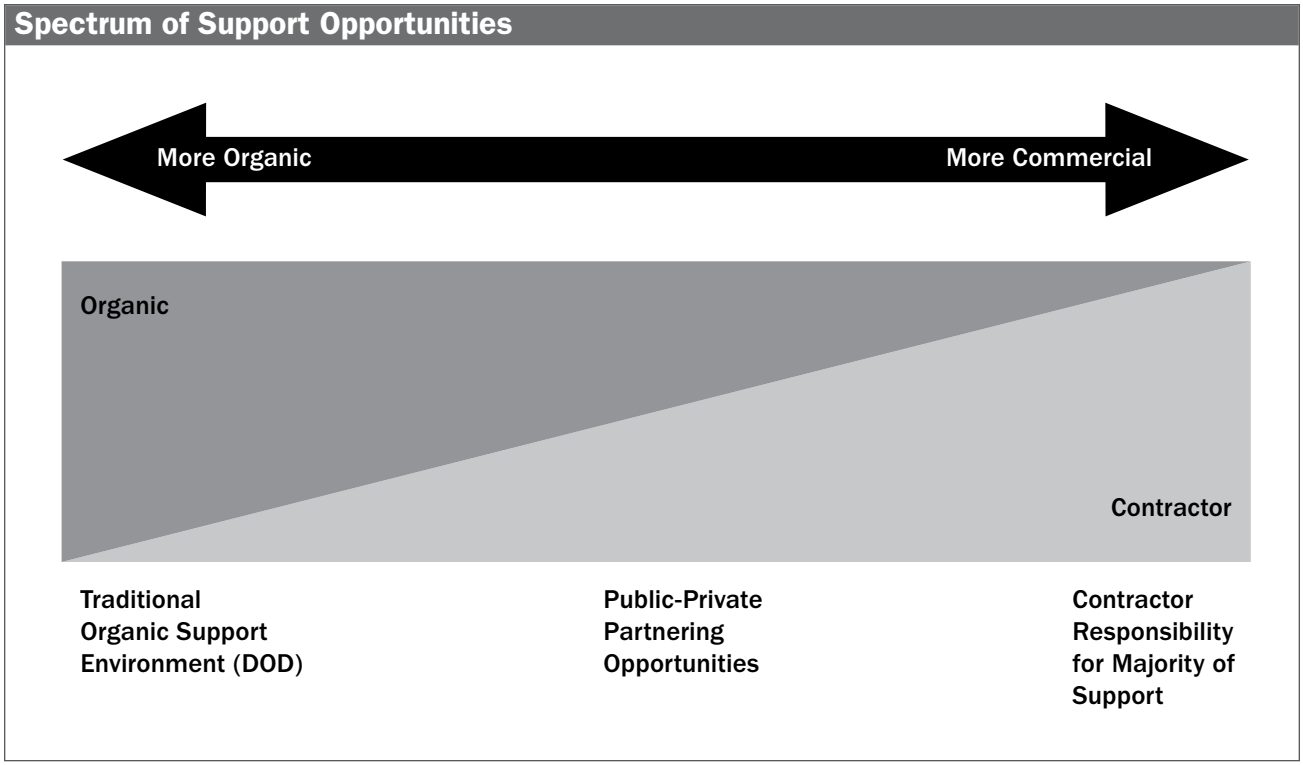

FIGURE 2.

This presents the program manager with a range of logistics support possibilities. (See FIGURE 2.)[6]

The spectrum of options available to program managers ranges from traditional, organic performance of all logistics (DOD only) to the total logistics support of a system by a contractor or team of contractors (CLS), or even a public-private partnership (PPP) between DOD and a contractor. As a program manager's selected support solution moves to the right of this spectrum, there is not only a transfer of function from organic to contractor, but also a perceived shift in logistics support risk to the contractor, since risk is reduced for the government when it delegates logistics support responsibility to a contractor.

However, in terms of risk assumption, we should consider that by most estimates, some 60 percent of total life cycle cost (for contractors, revenue) resides in system sustainment (maturity), as shown in FIGURE 3. Indeed, the "break-even" point for a manufacturer's return on investment associated with product development does not occur until well after initial system introduction. Although revenues accrue through system production and sales, the majority of revenues for most systems accrue long into a system's lifetime in the form of upgrades, maintenance, and sustainment. In many cases, assumption of life cycle support is not viewed by contractors as risk, but as a means to derive ongoing benefit (revenue) from an initial investment. Many corporations employ market strategies that utilize life cycle revenues to finance future development investments. FIGURE 3 demonstrates how revenue from Product A is used to fund development investments in Product B. The potential payoff of life cycle support, with its associated revenue stream, makes assumption of life cycle logistics risk a profitable proposition, especially for original equipment manufacturers (OEMs). It follows that contractors would welcome long-term sustainment contracts (or CLS-type PBLs) awarded at the time of initial product introduction as key to their future systems development strategies.

The Hybrid Solution

Any and all solutions in the spectrum of logistics support possibilities inevitably involve some degree of interaction with the DOD supply chain; potentially in planning, sourcing, or maintenance, but certainly in delivery since, as at a minimum, DOD must retain accountability for "last mile" final delivery of logistics to deployed units. So, regardless of the number of

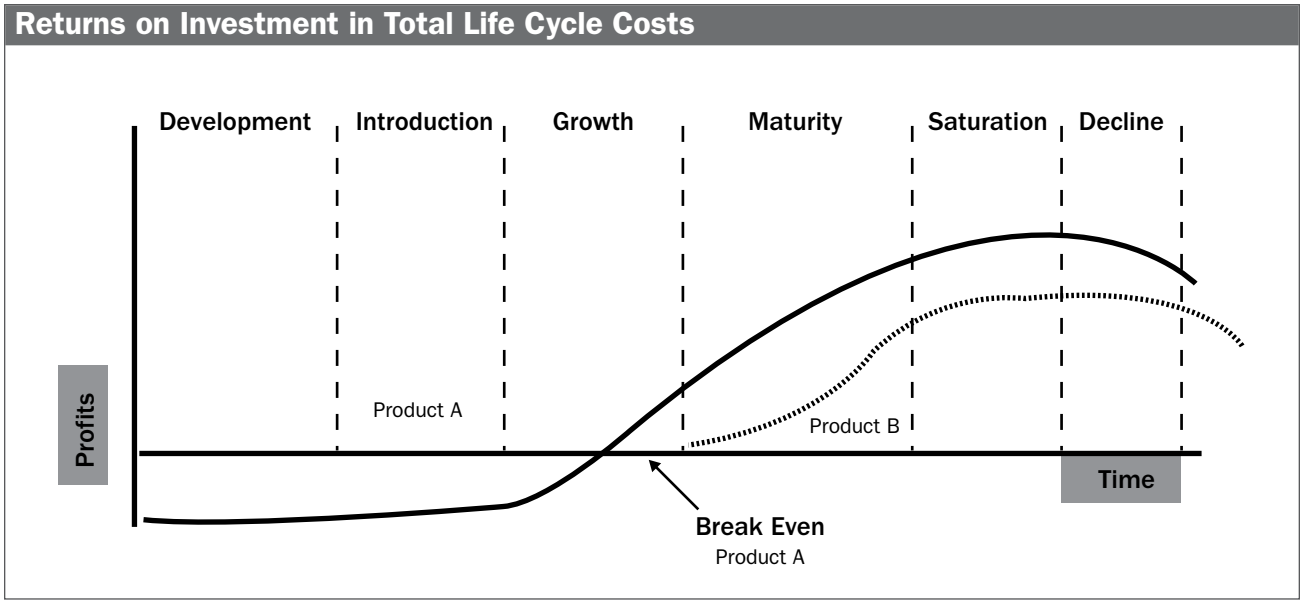

FIGURE 3.

logistics support elements outsourced to commercial partners, the integrated supply chain will always require some degree of interaction with DOD delivery systems—a combination, or hybrid, supply chain solution with a seamless integration. Often in awarded PBL arrangements, contractors may partner with other contractors, or with DOD, when it makes business sense to capitalize on someone else's strengths. In these arrangements, the lead contractor becomes a prime support integrator (PSI) and coordinates delivery of support products to the government.

An example of a PSI managing a PPP between a commercial provider and DOD is the U.S. Air Force's Joint Surveillance Target Attack Radar System (JSTARS) PBL. This contract, awarded to Northrop Grumman, designated Northrop Grumman as the PSI under a "Total System Support Responsibility" (TSSR) arrangement to provide all sustainment support, excluding core functions (JSTARS qualifies as a Title 10 core weapon system, requiring DOD to maintain at least 50 percent of sustainment support capability). This long-term contract was awarded for six base years with an option for 22 additional years and was considered as a best practice as it creates an atmosphere of cooperation and investment between Northrop Grumman and the Air Force. Performance of logistics support functions is shared, but coordinated by the Northrop Grumman PSI, which ultimately delivers improved support at a lower cost.

In another groundbreaking PBL contract, the air force supported the F-117 through the Lockheed Martin "Total System Performance Responsibility" (TSPR) contract. In this arrangement, the air force transitioned a "black," or secret, program's life cycle logistics completely to Lockheed Martin. Touted as a complete success, the contract provided superior weapon system support:

> [T]he F-117 TSPR met its stated goals of reducing life cycle cost, reducing logistics footprint, and producing high aircraft availability. Additionally, the F-117 TSPR produced results when needed most, during wartime. On the shoulders of Lockheed Martin and the TSPR relationship, the F-117 delivered exceptional capability to the warfighter during Operation Allied Force and Operation Iraqi Freedom.[7]

Of significant note in the F-117 TSPR contract is the stabilization of life cycle logistics costs in comparison with cost growth in traditional logistics support arrangements. Although PBL contracts are often criticized for the nondiscretionary nature of the bills associated with long-term contracts, these same features provide cost predictability that is desirable to warfighters and program managers, and fund stability that makes these arrangements attractive to the defense industry.

PSIs and Supply-Chain Managers

Commercial PSIs can and do effectively manage supply chains for DOD, and the Department has recognized that this approach is a key element in effectively delivering

products and services. In 2005, the Defense Logistics Agency (DLA) was designated as executive agent for several critical supply chains, including bulk petroleum, medical materiel, and subsistence.[8] Recognizing that designating accountability can ultimately improve performance, DLA in turn designated supply-chain managers (SCMs) for these commodities—Defense Energy Support Center for bulk petroleum and Defense Supply Center Philadelphia for medical materiel and subsistence—responsible for identifying customer requirements and managing the industrial base to ensure product availability, inventory management, storage, distribution, and delivery (much in the same way PSIs are held accountable for similar metrics). DOD SCMs can learn from the lessons that PSIs have developed through their PBL experience, and perhaps capitalize on those lessons to effectively manage their respective weapon system supply chains. A single focal point that is accountable for supply-chain and logistics performance is a proven method for achieving improved support. In short, the PSI SCMs provide DOD the ability to keep score, and people seem to care more when we are keeping score.

Five-Year Test Case in PBL—A Hybrid Supply Chain

In 2003, the U.S. Navy Inventory Control Point (NAVICP) and the Naval Sea Systems Command (NAVSEA) embarked on a prototype CLS-type PBL to completely support the shipboard refrigeration system on Arleigh Burke-class guided missile destroyers (DDGs). The CLS PBL was a jointly funded experiment designed to obtain actual contractor supply chain management performance data from a relatively low-risk, isolated system. The DDG refrigeration system was selected for the real-world test to determine if a military system could be completely logistically supported by a contractor, and to what benefit. After an extensive program review involving fleet users, engineering and maintenance activities, and life cycle managers, a five-year contract (specifically a one base year, four option year firm-fixed-price contract) was awarded to a partnership of Bath Iron Works (BIW) and York Marine Systems (YMS), to:

> ...provide Full Contractor Logistics Support and Management Services in support of the Non-CFC Refrigeration System installed on DDG-79 & Follow hulls. The primary intent of the CLS concept is to encourage the CLS contractor to improve two key logistics metrics, system Availability and Reliability. The CLS contract is performance-based, which challenges the Contractor to continually evaluate and improve the design, logistics, and supportability solutions to achieve the system readiness and cost reduction goals.[9]

The key intent of this contract award was to determine if the commercial-sector OEM could provide improved support at a lower cost; presumably by capitalizing on inherent expertise, familiarity, and existing inventory and logistics infrastructure for the commercial segment of their business base.

DDG Refrigeration CLS PBL

The award of the DDG refrigeration CLS PBL to the BIW/YMS partnership enabled the navy to evaluate both an engineering services activity (BIW) and an OEM (YMS) and the hoped-for leveraging of their existing worldwide inventory and infrastructure. Under this type of CLS PBL, the contract team assumes responsibility for system support at the end of the ships' extended warranty period. Prior to accepting the refrigeration system under CLS, the contractor performs a preturnover inspection/groom to ensure the entire refrigeration system has been properly maintained and that the system configuration meets original manufacturer specifications. Design improvements, engineering changes, and logistics solutions are coordinated and managed through navy activities, and established onboard repair parts are retained. The replacement of those inventories and all related supply support functions are the responsibility of the CLS contractor who is responsible for requisitioning parts and/or materials, ensuring that inventory levels are maintained, and tracking all material demand and usage. The contractor's factory-trained technicians are responsible for performing all shipboard maintenance and repair. The contractor conducts semiannual maintenance visits for each CLS ship to perform essential planned maintenance tasks, and to conduct periodic training for maintainers and operators (as the ship's force continues to be responsible for system operations and performs minimal planned maintenance, limited to specific system checks and inspections). CLS contractor technicians and support services are available in over 40 major service locations around the world, and provide immediate technical assistance when required by the fleet. **FIGURE 4** illustrates the mechanics of the total commercial maintenance support of this system, whether in homeport or deployed overseas. The inventory supply chain shown in **FIGURE 5** on page 106 is slightly different, but with similar government/contractor interfaces.

FIGURE 4 shows that even with total support responsibility, this PBL still constitutes a hybrid supply chain, but with just two critical integration points with the government (NAVICP and the port engineer—in green), whether through planning/ordering, delivery, or financial transactions in logistics support. To meet specified contract metrics, the BIW/YMS team had to closely coordinate and develop interfaces with navy

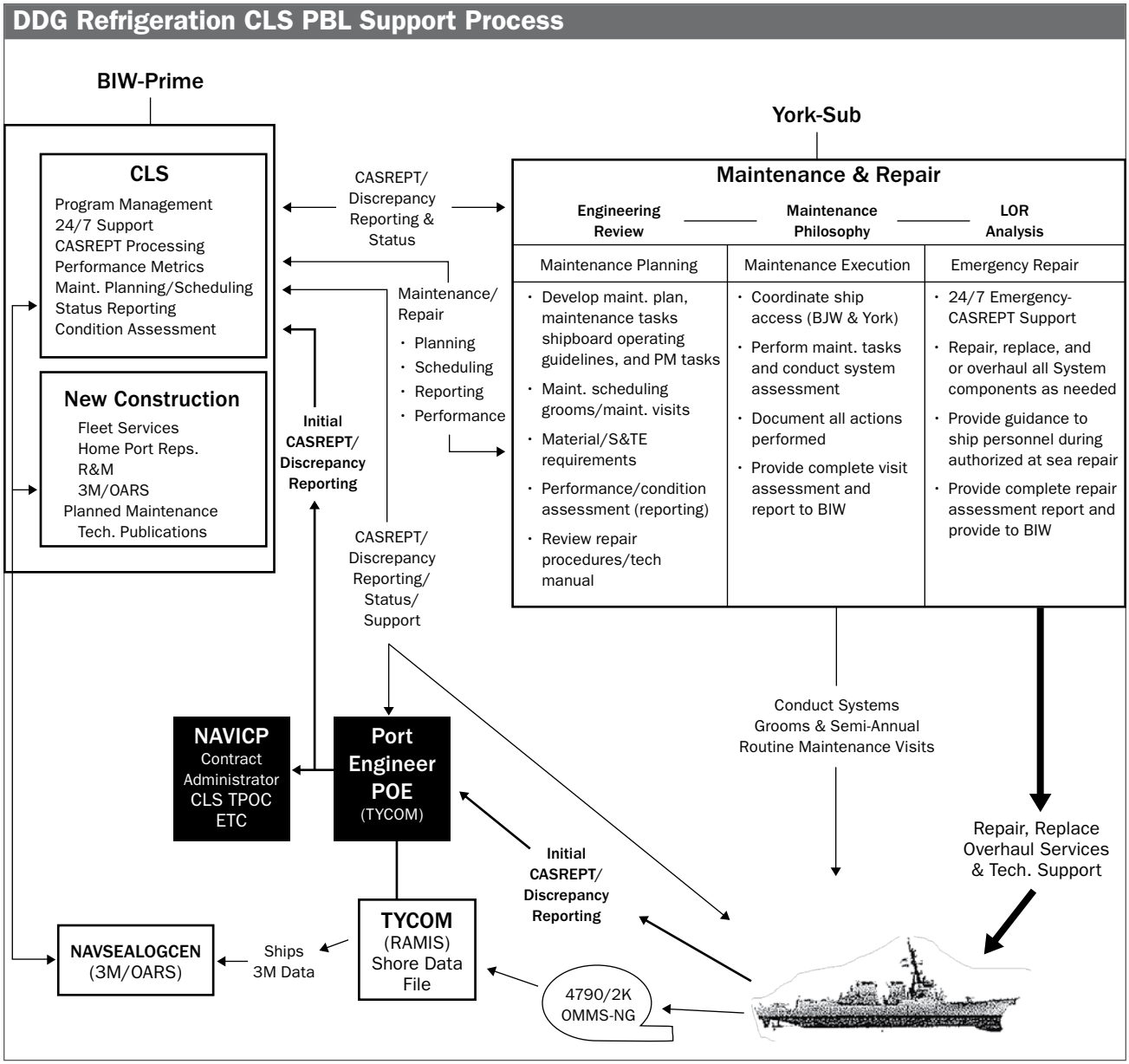

FIGURE 4.

activities and with the defense transportation system to complete final delivery to deployed customers. Of note is the BIW/YMS team's usage of the navy "Smart Transportation Solution" (STS) optimization tool—developed to facilitate the contractor interface with the DOD transportation system. This Web-based tool employs an "FOB Origin"[10] method to provide the contractor the ability to arrange pickup at the CLS loading dock for shipments made inside and outside the continental United States. All government transportation forms and billing was completed automatically at the distribution site, and the most efficient means of delivery was selected.

DOD should closely consider how this hybrid supply chain is integrated and functions, and how the BIW/YMS/Navy team was able to exceed customer expectations at a much lower cost without huge capital investment. The illustration of the inventory and transportation flow in **FIGURE 5** shows the key integration points for the BIW/YMS provider and the government team, again with NAVICP and the port engineer.

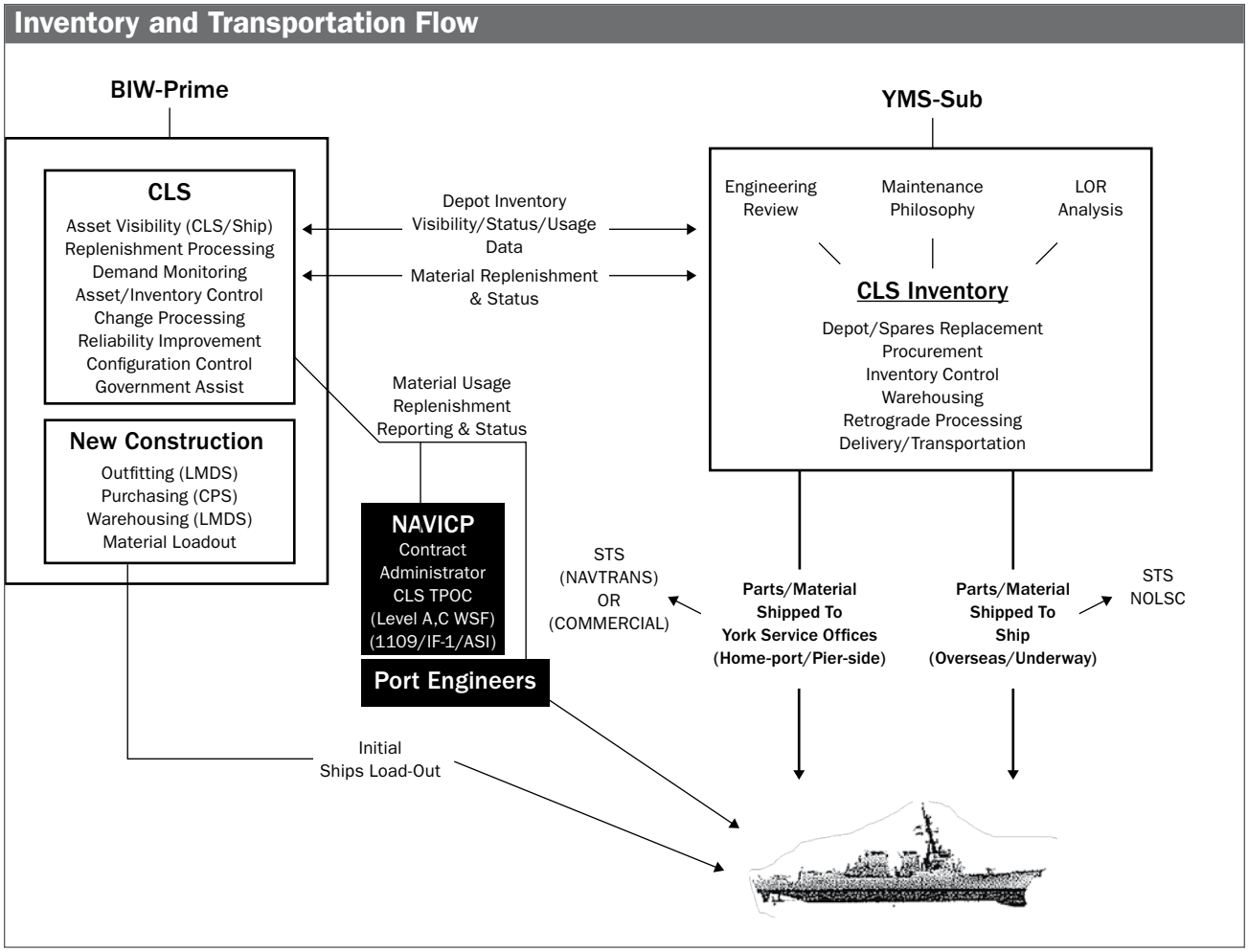

FIGURE 5.

Arrows represent material, services, and data flow. It should be noted that standard DOD requisitioning and maintenance systems are used to trigger system response to ship requests. In this manner, data can continue to be collected by the government for the purposes of validating against the contractor-provided data at PBL program reviews.

What is significant in these two illustrations is the reduction of over 10 "touch points" for maintenance, training, parts, technical assistance, emergent repairs, engineering services, drawings, planning yard data, and more, to just two entry points for the ship and the contractor: the port engineer and the NAVICP weapon system program manager. Not only does this simplify the integration pathways for logistics for the user and the provider, but it also centralizes accountability for cost and performance for the NAVICP program manager for all life cycle support—representing a huge paradigm shift. Results from this experiment indicate that this focused accountability and seamless, simple integration point have been key to sustained, superior performance on this single weapon system, much in the way that a PSI or SCM designation has been shown to improve logistics performance.

Evaluating the Five-Year Performance of the DDG Refrigeration PBL

BIW/YMS exceeded every performance metric stipulated in the contract, and within negotiated costs. Given the nature of the equipment and lack of redundancy to avoid food spoilage, the negotiated metrics were purposely vague. The navy told the contractor what it wanted, not how to do it, within just three stipulated goals:

1. 100 percent refrigeration system availability (24/7/365 up time)—achieved.

2. Casualty report/relevant failure response time less than 48 hours—achieved (five hours' response time).

3. Mean logistics delay time less than eight business days—achieved (delay time less than 30 hours).

Notably, the failure response time metric award fee was based on 48 hours' response and BIW/YMS routinely responded within an hour or two throughout the span of the contract, and from over 40 worldwide locations.

Although there were only three top-level metrics, the following additional benefits were achieved as a necessary pathway to exceeding the negotiated metrics:

- Complete rebaselining of poorly installed/maintained "new" systems;
- Quality accountability in the new construction delivery process;
- Failure trend capture that resulted in reliability improvements;
- Around the clock, worldwide support, even in combat zones;
- Timely and accurate reporting;
- Continuity (scheduled maintenance);
- Maintenance/repairs performed by knowledgeable service technicians;
- 100 percent material availability;
- Access to accurate technical data (support);
- Hands-on crew training with the system OEM;
- Work performed right the first time, achieving less equipment downtime;
- Accurate and effective configuration control;
- Improved ship crew quality of life (less burden on the crew); and
- Single point accountability for entire system.

Several significant failure trends were discovered as a result of the single point accountability, and corrective actions to improve reliability were developed (an additional unforeseen benefit of CLS.) A consequence of fixed pricing is that the contractor is motivated by increased profit to improve system reliability. After the year-two option was completed, the NAVICP program manager coordinated transfer of funding responsibility to the navy fleet comptroller, ending the two-year prototype funding from NAVSEA and NAVICP. This was an easy sell to the customer, who had firsthand knowledge of the improved support the CLS PBL provided; the fleet considered this contract a "bargain."

Costs and Comparisons

Defining and/or estimating specific navy costs for a single shipboard system can be a very difficult task, as there are numerous U.S. Navy/DOD agencies involved with each aspect of maintaining and managing shipboard systems. These agencies perform various logistics functions and responsibilities, and funding is identified at the ship class and/or program level. Many costs associated with specific system support simply cannot be derived from existing DOD costing systems. However, for this system, the program manager was able to determine many "hard" costs associated with spare parts and maintenance support.

FIGURE 6 on page 108 provides a cost breakdown of DDGs 79 through 82, prior to their transition to BIW/YMS support. Clearly, costs per hull varied greatly. Costs that were captured with this support included planned maintenance, maintenance material management, emergent work, and extended warranty costs during the post-new construction period. It should be noted that all navy ships are delivered with a 13-month warranty period associated with new construction contracts, and that these supported ships were brought in under the CLS contract as they completed the warranty period. Therefore, the average cost per ship of over $60,000 captured for this 13-month period to keep the refrigeration systems operational was for brand new ships! We should also consider that as systems age, we can generally expect that these costs will continue to grow. Managing such wide cost fluctuations and longer-term cost growth can be challenging for budget constrained maintainers of these systems. However, under a PBL, as in the F-117 TSPR program, once picked up by the BIW/YMS contractor, DDG refrigeration plant sustainment costs remain remarkably consistent ($65,000 per ship, per year) under a firm-fixed-price contract.

We must consider as well the costs that were not captured due to nonavailability of discrete data from DOD financial systems, including costs associated with the program executive office (system/program management, technical data, training, configuration/change management, etc.); in-service engineering agents (engineering, configuration, obsolescence, technical support, etc.); NAVICP/ DLA/U.S. Navy Supply Systems Command (procurement, inventory, parts and materials, transportation, etc.); fleet type commanders (regional maintenance centers, port engineers, and intermediate maintenance activities such as contracting, scheduling, materials, procurement, liaison, etc.); and ships' costs (administrative engineering/supply functions). These costs were excluded from this analysis because they could not be

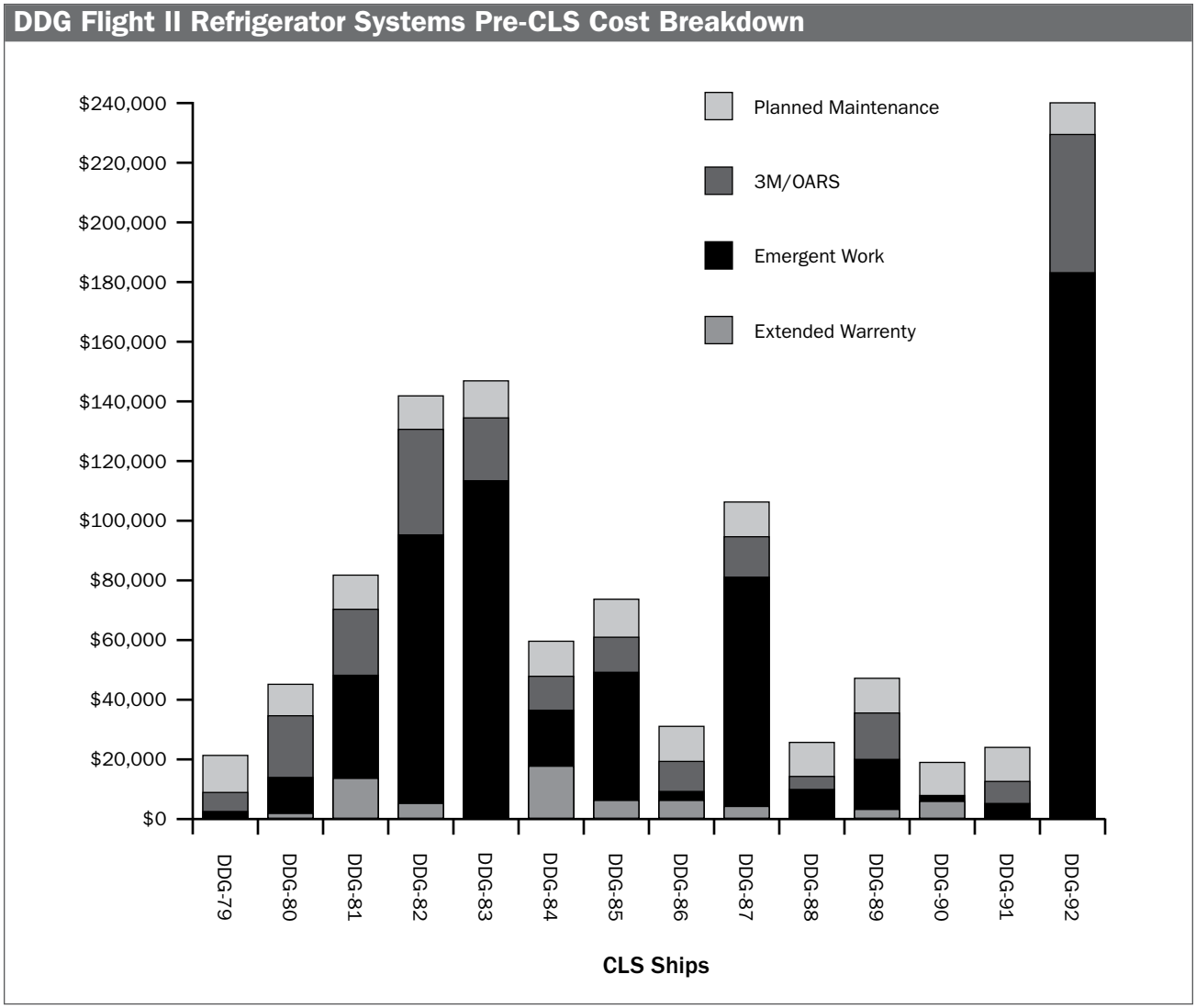

FIGURE 6.

accurately broken out. And although the work has migrated to the contractor, no efforts have been made to reduce the labor footprint or funding levels of these activities.

To summarize, the financial effect of this contract vehicle was to "single up" many disparate costs into a single cost for the customer, providing essential visibility and economic accountability to an impossibly confusing funding matrix for logistics support. Consider that prior to this contract award, people supporting this system were reimbursed for services from seven separate accounting sources. Today, the fleet pays just one bill, and knows exactly what they are getting for their money. The contractor is reimbursed not from various fluctuating annual appropriations, but from a single "no-year" fund cite from the U.S. Navy Working Capital Fund, which is in turn reimbursed annually from fleet operations and maintenance appropriations.

Summarizing the Analysis of the DDG CLS PBL

Does the CLS PBL "answer the bell" to meet GAO imperatives to improve DOD supply chain performance?

As quoted from the GAO report cited earlier, in the requirements area, the CLS PBL provides the navy customer complete

transparency in "acquisition lead times to acquire spare parts for equipment and weapon systems." As a matter of fact, this eliminates the need for anything but a small shipboard inventory that is jointly maintained by the contractor and shipboard personnel. The remainder of ashore inventories are contractor owned—the contractor fulfills requirements from worldwide commercial stocks. According to GAO, "Challenges in the asset visibility area include lack of interoperability among information technology systems...which make it difficult to obtain timely and accurate information on assets in theater." The CLS PBL closely interfaces with DOD maintenance and supply systems, and the navy's STS provides the contractor with an online interface with the global transportation network to seamlessly integrate the contractor shipments with DOD transportation. GAO also stated that, "In the materiel distribution area, challenges remain in coordinating and consolidating distribution and supply support within a theater." In the CLS PBL model, DOD retains responsibility for in-theater distribution, as it should. The prototype showed that it made more sense to input material shipment into standard transportation systems earlier in the distribution chain rather than later. Additionally, if DOD develops additional requirements for part marking, special handling, or radio frequency identification, these criteria can be easily added to the contract requirements upfront. The CLS PBL hybrid model has shown that the GAO imperatives to improve the DOD supply chain's performance can, in fact, be met.

Is the CLS PBL meeting customer expectations?

In February 2008, the navy fleet type commanders (TYCOMs) and NAVICP awarded a new five-year contract to the BIW/YMS team, this time to expand support to 34 DDG-class ships. The TYCOMs have been very pleased with the ease of use of the contract, the improved performance and system reliability, and the visibility that the model affords them on how their dollars are being spent and what it is getting them. The two-year NAVSEA/NAVICP-funded prototype provided the performance data TYCOMs needed to make a well informed decision on whether or not this was the route to take for this system's support. According to the TYCOM and fleet maintenance officers, this decision was easy.

The Way Ahead for DOD: Capitalizing on Hybrid Supply Chains and Paths to Successful Integration

In the past ten years, PBL and CLS contract awards have supported the assertion that program managers continue to utilize a broad variety of logistics support solutions, including numerous variations of hybrid arrangements.[11] Program managers have utilized a variety of partnership arrangements to effectively maintain critical competencies for complex Title 10 weapon systems. In some less complex systems, such as mechanical and electrical systems, DOD has successfully leveraged the private-sector infrastructure. Over time, targeted approaches to PBL can yield an optimum mix of organically- and commercially-supported systems—a pattern of acquisition that makes sense and that is certain to continue in the future. The DDG refrigeration CLS PBL has proven the concept that commercial industry infrastructure can be leveraged to provide exceptional and cost-effective customer support across the logistics spectrum. Clearly, this strategy also answers GAO's calls for improved strategies for supply chain management with a measureable result; accountability; and transparency of asset, financial, and service call data. With a customer-focused contract and limited contractor investment in connectivity to government systems and processes, reliable supply-chain performance can be achieved to such a degree that customers are willing to directly pay for the continuation of contractor support.

Key Points Summary

- **Integrating the supply chains—expanding the model:** DOD should consider the integrated PSI/SCM approach that the BIW/YMS team employed to be exportable to many other DOD systems.

- **Risk assumption:** DOD SCMs should challenge the traditional assumption that contractors are not excited about assuming the risk for the sustainment portion of equipment life cycles. On the contrary, the steady revenue stream that life cycle logistics guarantees is attractive to industry, and life cycle support solutions should be included with system acquisitions.

- **Mandatory spending versus controlling cost growth:** As the F-117 TSPR and the DDG CLS PBL both showed, long-term firm-fixed-price contracts provide controls over cost growth despite concerns about funding for nondiscretionary contract obligations. The contract type, with option years, and the service working capital funds are perfect vehicles for leveling cost variation and growth over time, allowing for more predictable and controllable budgets.

- **Capitalizing on commercial infrastructure:** The DDG CLS PBL is a great example of how DOD can leverage commercial infrastructure to support deployed systems. YMS' global technical support, inventory, and overseas response are all readily accessible within hours.

- **Making PSIs accountable:** Intangible but clearly critical, a single point of accountability for contract performance improves the user's ability to determine what they are getting for their expense. Complete transparency of financial and performance data enables customers to make well informed decisions about investing in system support.

- **Creating connections:** Interfaces in the hybrid supply chain must be well thought out and developed before entering into any public/private venture. The use of the navy's STS in the CLS PBL was a resounding success for both the navy and the contractor, with the biggest benefit to the customer.

- **Delighting the customer:** There are not too many instances where, if given a choice, the warfighter would choose to use and pay for the support provided by DOD. The CLS PBL proved its worth to the fleet customer and made contract renegotiation an easy layup.

Conclusion

Hybrid supply chain solutions can help bring about cheaper and better results. Prove yourself reliable to customers and exceed expectations. Designate project managers and PSIs as SCMs and hold them accountable. Exploit links to DOD hybrids (commercial or government PSIs). Leverage best practices, but don't reinvent the wheel. Finally, break the "must pay" barrier by providing a service the customer wants to pay for! ***JCM***

ENDNOTES

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4. Working Group Papers, Defense Contract Management Agency, *Performance-Based Logistics Support Guidebook*, 2002.
5. DOD Directive 5000A, *The Defense Acquisition System*, May 2003.
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7. Lorraine, Eric, "F-117 Total System Program Responsibility: A Case Study for Performance-Based Logistics," Industrial College of the Armed Forces, 2007.
8. Knott, Claudia, "Supply Chain Management—It's Not Just a Buzzword in the Department of Defense," from *The Supply Corps Newletter*, March-April 2005.
9. Request for Procurement, NAVICP Mechanicsburg Code 02, 2002.
10. "FOB" stands for "Free On Board." This is a shipping term that means that price for goods includes delivery at seller's expense to a specified location and no further.
11. Derived from "PBL Toolkit," Defense Acquisition University, *Acquisition Community Connection*. Accessed October 2007 at **http://acc.dau.mil**.