Prime Vendor Contracting: Lessons Learned

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Executive Summary

This Report offers a thorough examination of prime vendor contracting and presents a series of case studies from which we generate concrete recommendations for more widespread use of this contracting method for the Department of Defense (DoD). It also provides an in-depth look at the benefits of prime vendor contracting, as well as the challenges that lie ahead for this contracting vehicle.

The Report is divided into nine sections. Part I contains an introduction to the topic of prime vendor contracting at the Department of Defense (DoD). It discusses why change in contracting methodologies is needed at DoD and reviews the financial pressures that are shaping the need for more efficient and effective contracting vehicles to maximize Defense dollars in the decades ahead.

Part II addresses some of the current problems with DoD's logistics acquisition process, and identifies key impacts of these problems, including long order-to-receipt times, low system readiness, and excessive inventories.

Part III provides an extensive explanation of prime vendor (PV) contracting within the DoD. The section explains the conceptual basis and structure of PV contracting, and offers several examples of the practice at work.

Part IV offers a series of in-depth case studies examining prime vendor contracts for an array of commodities: the Landing Gear Prime Vendor Contract (LGPVC), the Fleet Automotive Support Initiative-Global (FASI-G), as well as prime vendor arrangements for medical supplies at the Department of Veterans Affairs and the DoD, in comparative perspective.

Part V discusses prime-vendor-like outsourcing practices in the commercial sector. This section focuses on commercial aviation maintenance, repair and overhaul (MRO), describing different types of service offerings and contracting vehicles. The section includes descriptions of the MRO services provided by two major players in this market, Lufthansa and Delta TechOps.

Part VI of the report outlines the key benefits of prime vendor contracting, generated from the aforementioned case studies and DoD's broader experiences. These benefits include:

- faster service/order response times
- reduced overall inventory levels and expenditures
- increased product offerings
- enhanced ordering flexibility
- better visibility, and
- improved customer satisfaction.

Part VII explains some of the current challenges for proper implementation of prime vendor arrangements on a broader scale. In order for DoD to maximize cost savings, and realize the improvements in efficiency and effectiveness available under prime vendor contracting, these challenges – improper metrics, appropriate commodities, a capable workforce, pricing reviews, concerns over private contractors, and leadership – must be addressed.

Part VIII offers recommendations as to how DoD should proceed with improving and expanding prime vendor contracting to maximize the benefits available through this contracting vehicle. The section suggests specific areas that would benefits from improvement, including metrics, type of commodities handled under PV contracting, and contracting personnel training requirements.

Part VIX presents the conclusions drawn from the study, and briefly discusses avenues for future research.

And finally, the Appendix portion of the paper includes an interview with Gen. William G. T. Tuttle, Jr. (ret.) as to his experiences with and observations about PV contracting practices within DoD.

Part I: Introduction

With the United States facing continued threats from terrorist and insurgent groups in various parts of the world, it is critical that the U.S. Department of Defense (DoD) maintain a defense supply chain that is highly adaptive, mobile, and geared toward rapid response. However, DoD will have to meet that mandate while working within increasingly demanding fiscal constraints.

The enacted defense budget for FY2010 ($660.4 billion, with an additional $33 billion supplemental appropriation) and the substantial budget allocated for FY2011 ($708.3 billion for the budget alone) signal the importance of defense spending for the federal government, even in these tough economic times.[1] But with the Congressional Budget Office (CBO) projecting an annual deficit of $1.3 trillion for 2010,[2] management of federal spending almost certainly will remain focused on cutting costs and on streamlining acquisitions for the foreseeable future.

In recent years, the federal government's debt has escalated almost geometrically. At the end of fiscal year 2008, debt held by the public amounted to $5.8 trillion--equal to 40 percent of the nation's annual economic output (gross domestic product, or GDP), a little above the 40-year average of 35 percent.[3] Since then, debt held by the public has shot upward, surpassing $9 trillion by the end of fiscal year 2010--equal to 62 percent of GDP, the highest percentage since shortly after World War II.[4]

The Congressional Budget Office (CBO) projects that, under current law, debt held by the public will exceed $16 trillion by 2020, reaching nearly 70 percent of GDP.[5] In this environment, then, DoD must be mindful of the current budget environment, examining ways to reduce costs while it improves readiness in the defense supply chain and flexibility across all of the services.

Achieving that mandate will be challenging indeed. Although DoD has made significant strides in several areas of procurement and logistics management, in general its supply chain management approach remains inefficient and costly. The department's current supply chain is fragmented and disjointed, with numerous levels separating the customer and the supplier. Each level features different requirements, regulations, and procedures; while multiple layers of responsibility and their associated personnel magnify these inefficiencies. As a result, the ordering process is long and complicated, and the response to orders is slow. This leads to long lag times in obtaining supplies as well as excessively large inventories, and it hinders the management of logistics processes. Meaningful improvement will depend in large part on the elimination of redundant processes and duplication of effort in the management and administration of DoD's supply chain.

[1] OMB. *Department of Defense: The Federal Budget Fiscal Year 2011*.
[2] CBO. *The Budget and Economic Outlook: An Update* (August 2010).
[3] CBO. *Federal Debt and Interest Costs* (December 2010).
[4] Ibid.
[5] Ibid.

These and other supply chain shortcomings lead to increased costs for taxpayers and a decrease in customer satisfaction and trust within the defense organizations that rely on DoD for supply chain support.

In this environment, it makes sense for DoD to move away from its more traditional role of performing many of the supply chain functions using government employees, and move to a role of the government to supervising the performance of competitively selected, high-quality private sector firms. In this new role, DoD would ensure that in appropriate supply chain operations, customers' (i.e., military services and operations) needs are met by third-party logistics suppliers and other contractors. Such a change will necessitate a transformation in the DoD's organization and culture; and it will require strong leadership for successful implementation.

Prime vendor (PV) contracting can be a cost-effective tool to help DoD achieve the objectives outlined above. Under the prime vendor concept, DoD relies on a private sector firm to manage the inventory and distribution of a line of products, and provide incidental services to customers in an assigned region or area of responsibility. The arrangement, which includes specified pricing terms, can also be applied to services as well as products. When applied to third-party logistics and supply chain management, prime vendor contracting offers an effective way for DoD to get the cost and efficiency benefits of private-sector practices.

In this report, we will explain what prime vendor contracting is, how it works, and how it can help to address some of the current problems with defense acquisition and supply chain practices. We will also offer examples of PV success stories and will examine some of the factors that may present challenges to proper implementation. Finally, we will conclude with some recommendations for overcoming barriers to proper implementation. Ultimately, we believe, prime vendor programs can help DoD assure better availability of weapons systems and materiel for repairs, thus enabling the warfighter to carry out missions more effectively.

Part II: Challenges with DoD's Current Logistics Processes

Although much has improved in recent years, the Department of Defense's logistics acquisition process remains rife with inefficiencies and duplication of effort. Moreover, long order-to-receipt times and excessive inventory are still the norm. The current process has also detracted from system readiness, and it has contributed to a low-level of trust, among end customers, that they will receive what they need, when they need it. Each of these problems could be alleviated by adopting private-sector best practices, and, in some cases, by turning over execution of relevant transactions to the private sector.

Long order-to-receipt times

DoD's average order-to-receipt time has improved dramatically over the last two decades. In 1991, during the first Gulf War, the average order-to-receipt time was 49 days. Over the next dozen years, this time was cut by more than half, to approximately 24 days in FY2004. By FY2006, order-to-receipt time was down to 15 days.

Although significantly improved, order-to-receipt times are still quite slow in comparison to those in the commercial sector. For example, while it takes the U.S. Army two days to process a request, the commercial sector takes one day or less to process an order. Receipt processing time,[6] another important measure of inventory performance, takes three days in the Army, while the commercial sector averages approximately four hours.[7] The speed of the commercial sector has already been utilized by DoD through performance-based logistics (PBL) contracts for public-private partnerships for Army depot maintenance in the last decade.[8] For example, by partnering with private firms at the Fleet Readiness Center-East (Cherry Point), DoD realized significant improvement in order-to-receipt times for APU units for several platforms, where the average delivery time went from 54 days to 35 days – accelerating order-to-receipt times also meant that back orders were reduced from 125 to 26 in the first two years alone.[9]

The DoD could greatly benefit from widespread implementation of private-sector supply chain practices in both order processing and delivery. If the department were to take full advantage of these innovations, it could cut days off of its order-to-receipt time.

Low system readiness

Ideally, DoD's contracts should be structured in a way that encourages contractors to maintain materiel readiness and availability of the weapons systems they maintain for the warfighter. Although the use of Performance-Based Logistics (PBL) concepts is the approved DoD policy for weapons systems sustainment, for many programs it is still not the practice. As a result, for the non-PBL programs, support contractors are incentivized to make repairs and sell replacement

[6] Receipt processing time is defined as the period from the time a repair part arrives at a facility until it is posted to the accountable record.
[7] Rentz, *Should the Army Implement Prime Vendor for Class IX Repair Parts*, 60.
[8] See Gansler, *The Current State of Performance Based Logistics and Public-Private Partnerships for Depot-Level Maintenance: Operating Models, Outcomes, and Issues.*
[9] Ibid, 35.

parts, instead of focusing on the overall result of those repairs – i.e., system readiness and availability. Thus, with this type of non-PBL contract structure, contractors do not focus on the system's overall readiness.

By contrast, PBL is an example of an incentive system that rewards overall system readiness and availability rather than subsets of those objectives. PBL, which shifts responsibility for performance from the buyer to the provider of services, has been described as buying results or outcomes rather than initiating and managing transactions. The provider is held accountable for meeting performance requirements, and incentives are designed to motivate the provider to meet those requirements, while optimizing logistics efficiency and reducing costs.

PBL in a military setting increases system availability and readiness. For example, traditional metrics provide incentives to complete each individual repair on an aircraft, but PBL strives to incentivize the contractor to ensure that an airplane is mission-ready. If proper metrics are implemented as part of a PBL contract arrangement, the availability of certain materiel can be greatly improved and the logistics response time can be shortened.

Excessive inventories

DoD's complex supply chain management system prevents the entire supply chain from functioning in a coordinated, synchronized manner. It also makes it difficult for suppliers to forecast the needs of the end customer accurately. This situation results in excessive inventories due to a phenomenon known as the "bullwhip effect," in which each level in the supply chain acquires, stores, and manages an increasingly large inventory in order to assure that it can supply a required product to the next level in the chain. This is the main reason why, in the early 1990s, DoD had a 10-year supply of 26 percent of the items held in inventory.[10]

Although the situation today is not as extreme as it was back then, DoD still holds significantly more inventory than is needed. The management and storage of surplus materiel, moreover, remains a financial burden that is not sustainable in today's economic environment.

The private sector minimizes the bullwhip effect through the collection of timely and accurate consumption, or demand, data across the supply chain. This information, collected by sophisticated software systems, allows companies to effectively forecast demand—and therefore ordering and distribution needs—for particular items. Forecasts based upon such highly specific data can help protect against the stockpiling of supplies at multiple levels in the supply chain. Dell Computers, for instance, uses real-time customer order/demand data to update manufacturing requirements every two hours, yielding dynamic inventories matched to fluctuating demand. Wal-Mart, meanwhile, uses point-of-sale (POS) information to trigger the manufacture of needed replenishment products from its suppliers.[11]

[10] GAO, *Commercial Practices: Leading-Edge Practices can Help DOD Better Manage Clothing and Textile Stocks*, 76.
[11] Gibson, *Applying Lean Principles to Design Effective Supply Chains*, 5.

Lack of trust

Many military officials have expressed concern that DoD's current acquisition system is inefficient and unreliable. This lack of trust, felt by the official placing the order, as well as by the end customer, stems from the long lag time between order placement and shipment receipt, as well as the general lack of visibility of the status of the order. Because personnel who are in charge of ordering do not believe they can rely on DoD's supply chain to get them the inventory they need, when they need it, they have developed ways to navigate around the system. They order additional inventory to create "just in case" buffer stocks at points throughout the supply chain, for example. As noted above, this behavior exacerbates the bullwhip effect, resulting in excessive inventory build-up.

Results from prime vendor (PV) contracting programs indicate that PV arrangements deliver parts to customers more efficiently and at lower cost than do traditional practices. Because PV logistics contractors are charged with ensuring that the person placing the order is satisfied and that orders are filled efficiently and effectively, these arrangements are helping to rebuild trust in DoD's acquisition processes.

When applied to third-party logistics and supply chain management, prime vendor contracting offers an effective way for DoD to get the cost and efficiency benefits of private-sector practices (such as performance-based logistics) and data management systems (such as point-of-sale data analysis). The following section will explain the prime vendor concept in more detail and indicate how it applies in a logistics/supply chain management context.

Part III: What Is Prime Vendor Contracting?

Basic concept

Under the prime vendor concept, DoD relies on a private sector distributor of a line of products to provide that product line and incidental services to customers in an assigned region or area of responsibility. Products or services are delivered, usually through the vendors' commercial distribution network, within a specified period of time after an order has been placed. The prime vendor provides the product either at the cost paid to obtain it, or at a price agreed upon in advance with the contracting party -- e.g., the Defense Logistics Agency (DLA) or military service -- plus a handling fee. This type of arrangement can also be applied to services, such as logistics or supply chain management. The use of prime vendor contracts is governed by the Federal Acquisition Regulation (FAR) and the Defense Federal Acquisition Regulation Supplement.[12]

Because private firms are driven by profits, they are forced to compete by developing supply chain management practices that are innovative, efficient, responsive, and low-cost. Ultimately, prime vendor (PV) programs in supply chain management are designed to bring this kind of innovation and expertise to bear to support DoD's logistics supply chain requirements.

Current structure of prime vendor contracting

As previously noted, in a traditional military supply chain, the armed service branch is responsible for ordering parts from manufacturers, storing those parts, and shipping them to the delivery point. Several levels of managers individually sign off on each step in the supply process. This inefficiency and redundancy contributes to the slow response times and high costs.

Prime vendor contract arrangements eliminate unnecessary levels of the support process by transferring managerial responsibilities for fulfilling material needs to a private contractor. The contractor assumes the tasks of ordering, storing, and managing inventories, as well as shipping, tracking, and delivery of materials and parts. The military is no longer required to handle much of the inventory and supplies that are needed to maintain military programs and weapons systems. Instead, the DoD personnel assume the role of contractor oversight and management.

The prime vendor implements advanced technologies as needed to carry out its responsibilities. For example, the real-time sharing of information utilized by commercial companies allows them to track the exact status at any moment of thousands of shipments. This capability provides greater control over logistics processes and enables a quick response when problems arise.

[12] GAO, *Defense Management: DLA Has Made Progress in Improving Prime Vendor Program, but Has Not Yet Completed All Corrective Actions.*

Table 1: Sample DLA Commodity Acquisition Strategies

Commodities originally acquired through DLA prime vendor programs	Current acquisition strategy
1. Maintenance repair and overhaul (MRO) supplies[a] (items used in MRO activities)	Prime vendor program
2. MRO services (MRO services performed)	Prime vendor program
3. Special operations	Prime vendor program
4. Subsistence (garrison feeding)	Prime vendor program
5. Pharmaceutical	Prime vendor program
6. Medical/surgical	Prime vendor program
7. Metals	Prime vendor program

Source: GAO analysis of DLA and DSCP data
[a]This commodity has separate contracts for Central Command supplies and non-Central Command supplies.
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As an example, Table 1 provides a listing of some of the types of PV contracts utilized by the Defense Logistics Agency.[13] PV contracts also are utilized by all service branches.

This arrangement eliminates redundant responsibilities by consolidating all duties and transferring them to the prime vendor. The resulting shift of costs for providing supply chain services from DoD to the contractor creates a powerful incentive for the PV to increase efficiency in order to maximize its profit.

Case Studies and examples of prime vendor contracts

In the next section of this report, we look at a number of different case studies and examples of prime vendor contracting at work.

[13] GAO, *Defense Management: DLA Has Made Progress in Improving Prime Vendor Program, but Has Not Yet Completed All Corrective Actions*, 14.

Part IV: Prime Vendor Case Studies

Fleet Automotive Support Initiative-Global (FASI-G)

Background

The Fleet Automotive Support Initiative- Global (FASI-G) program delegates support responsibilities for land-based tactical and non-tactical vehicle fleets to a prime vendor. The contract was awarded to Lockheed Martin by the Defense Logistics Agency (DLA), and the program is administered by the Defense Supply Center Columbus.

The DoD created the FASI-G program to improve logistical support for vehicles used by the military throughout the world. The program is designed to bolster the sustainment support of these vehicles. It calls on private companies to use state-of-the-art innovation to make improvements, and utilizes performance-based logistics (PBL) terms to ensure vendor performance.

The FASI-G program supports the land-based vehicles for the Army, Navy, Air Force, and Marine Corps. The vehicles in the contract include the High Mobility Multipurpose Wheeled Vehicle (HMMVEE), the Bradley Fighting Vehicle, and the M939 Series of trucks.[14]

A contract awarded

On September 9, 2008, the DoD awarded Lockheed Martin the $5.6 billion unrestricted portion of the FASI-G contract. [15] In December 2008, the Small Business Set-Aside portion of the contract was awarded to SupplyCore. A "set-aside for small business" is the reserving of an acquisition exclusively for participation by small business concerns.[16] Set-asides aim to promote growth in the small business sector.

SupplyCore will be performing the same role as Lockheed Martin in the support and supply chain management aspects of the FASI-G program. The company, which could not handle the entire contract alone, instead serves to complement Lockheed Martin's operation.

The contract

Under the FASI-G contract, Lockheed is responsible for forecasting demand, acquiring parts, managing inventory, warehousing, parts distribution and customer service. The contract requires Lockheed to meet specific delivery times depending on the shipment priority. The company must guarantee direct 24-7 customer support. Finally, Lockheed is responsible for the kitting of the deliveries. The kits must be custom-made to fit the needs of the customer. [17]

The contract awarded to SupplyCore was the largest small business set-aside contract ever awarded, valued at $4.4 billion. (At the time of the award, SupplyCore met the federal

[14] Defense Supply Center-Columbus, *Fleet Automotive Support Initiative (FASI) Global Unrestricted.*
[15] Ibid.
[16] Federal Acquisition Regulation, *Subpart 19.5—Set-Asides for Small Business.*
[17] Ibid.

government definition of a small business.) To win this portion of the contract SupplyCore had to prove it could deliver process and delivery times comparable to the major defense contractors.[18] The Lockheed and SupplyCore contracts are for 10 years. Both include a four-year base period with three two-year options.[19]

Virtual prime vendor

The FASI-G program calls for the implementation of a virtual prime vendor (VPV). A virtual prime vendor represents a natural evolution of a prime vendor. Under a prime vendor agreement, DLA partners with a contractor to furnish a broad range of items in a particular commodity group over a given geographic area for direct vendor delivery to customers. Virtual prime vendor relies on and orchestrates multiple, integrated supply chains to address an even wider-spectrum of customer support needs. VPV crosses traditional commodity lines and handles multiple types of commodities as well as services.

VPV mirrors industry supply chain best practices and allows DLA to take advantage of state-of-the-art commercial business solutions and emerging technology to provide total logistics support for weapons systems. In short, the VPV's job is to anticipate customer needs and have supplies or services immediately available when and where customer need arises.[20]

A VPV uses an e-procurement system to manage stocks of inventories. The inventory is not limited to the VPV company's inventory. Rather, the VPV manages inventory of multiple vendors, including its own, to provide all necessary parts to the customer. A typical VPV manufactures some parts, stores parts from other manufacturers, and buys parts from other suppliers when needed.

The electronic ordering and inventory management system allows the VPV to manage inventory and send parts directly to the customer as needed. The usual benefits of a VPV system include cost reductions - because the vendor can save on inventory storage, inventory management, transportation, and personnel. The VPV reduces these costs and passes the savings on to the DoD.[21]

Lockheed Martin's business practices

In order to be profitable and help meet the contract requirements, Lockheed must ensure that it implements business innovations from the private sector. As a VPV, Lockheed must strive to know the needs of their military customers, and must maintain close relationships with the subcontractors from whom it receives parts.

Forecasting – Lockheed employs predictive analysis and indicators to support its demand forecasting. The use of predictive indicators allows Lockheed to minimize inventory while still rapidly filling orders and ensuring surge capacity. Lockheed shares forecasting information with

[18] AllBusiness, *SupplyCore Awarded Contract to Provide Logistics Support to US Military's Land-Based Vehicle Fleets.*
[19] Office of the Assistant Secretary of Defense, *Contracts: Defense Logistics Agency.*
[20] Defense Logistics Agency, *New Business Practices.*
[21] Gansler, *Implementing Alternative Sourcing Strategies: Four Case Studies.*

suppliers to help these companies maintain appropriate levels of inventory and ensure continuity and timeliness of supply.[22]

Global Sustainment Command Center – On March 25, 2009, Lockheed Martin opened the new Global Sustainment Command Center. The command center is designed to help control the supply chain for the FASI-G program. The command center is staffed around the clock to provide support to Lockheed's customers. Experienced supply chain managers manage parts forecasting and operations.[23]

Results of the FASI-G contract

Faster Delivery Time- The contract with Lockheed Martin guarantees specific delivery times for vehicle parts. Certain delivery times are shorter, based on the priority of the part. Parts with priority rankings between one and three are guaranteed to be delivered in two days; parts with priority rankings four through eight will be delivered in four days; all other parts will be delivered in at least six days.[24]

Direct Customer Support- Lockheed has placed a heavy emphasis on direct customer support. The Global Sustainment Command Center enables the integrator to respond to customer problems or questions 24 hours a day, seven days a week.

Reduction in Inventory- The reduction in time between an order being placed and the product being delivered means inventory can be reduced. Improved forecasting enables Lockheed to reduce the amount of inventory needed to meet sustainment needs at the required service levels.

Easier Ordering Process- Lockheed Martin VPV e-procurement solution provides a centralized order catalog and processing center. The customer need only go to one place for all products - pricing information and ordering. Orders placed by a customer are sent, electronically, straight to Lockheed. This eliminates the need to interact with numerous vendors across the spectrum of sustainment parts supply, thereby reducing administrative burden and shortening lead times.

The future

The FASI-G contract is still in place, and both Lockheed Martin and SupplyCore are filling their orders at increasingly higher rates. Lockheed has delivered over 85,000 orders since the contract began and SupplyCore has delivered over 29,000. Lockheed delivered over 9,000 orders in both February 2010 and March 2010 alone.[25]

Going forward, Lockheed must ensure that it continues to innovate in order to meet the contract's performance-based requirements. The DoD is responsible for ensuring that Lockheed is providing competitive prices and services that will be beneficial to their relationship. It is also important that Lockheed maintains a high level of control over the subcontractors involved in the

[22] Defense Supply Center-Columbus, *Fleet Automotive Support Initiative (FASI) Global Unrestricted.*
[23] Lockheed Martin, *Lockheed Martin Opens Command Center for Supply Chain Management of All U.S. Military Automotive Parts.*
[24] Defense Supply Center-Columbus, *Fleet Automotive Support Initiative (FASI) Global Unrestricted.*
[25] Department of Defense, *Enterprise Linked Logistics Information Source.*

supply chain. In order for Lockheed to maintain a high level of responsiveness, they must ensure that their subcontractors are well prepared.

Without high levels of innovation and accountability, costs will increase, delivery time will slow, and the relationship between Lockheed and the DoD will begin to suffer. Both sides must ensure that they look to the future and are readying themselves for the next challenge that they may face.

Landing Gear Prime Vendor Contract (LGPVC)

Background

The DoD's Landing Gear Prime Vendor Contract (LGPVC) was designed out of necessity. The increased use of military aircraft in both Iraq and Afghanistan has caused aircraft parts – including landing gear components - to wear out at an accelerated rate. The DoD needed to speed up the process for obtaining these critical parts to help ensure high aircraft readiness.[26]

To deal with the additional need for landing gear parts, the Air Force and Defense Logistics Agency (DLA) came up with an innovative new PV contract and awarded the LGPVC to four different small-business vendors: Helicopter Tech., Logistics Specialties Inc., ES3 Prime Logistics Group Inc., and Eagle Tool and Machine Company, Inc. The four PVs compete for the right to handle the entire supply chain for each order of landing gear parts. Using four PVs allows for continuous competition to encourage lower prices while still gaining the benefits of simplifying the process using a prime vendor.[27]

A contract awarded

The LGPVC began taking shape in June 2005, but it took three years to work out all the details for this innovative approach. It was not until May 6, 2008 that the Air Force awarded the four companies an indefinite delivery/indefinite quantity contract for a ceiling of $1.5 billion. Under the contract terms, the PVs supply landing gear parts for the F-15, F-16, A-10, C-130, C-5, B-52 and T-38 aircraft. The PVs handle 1,076 total items: 704 parts for the Air Force and 372 for the Defense Logistics Agency.[28]

The contract

The Air Force implemented this program to help speed up the process of obtaining spare parts, ensure that the supply chain was flexible, improve aircraft readiness, and save money in the process. The LGPVC was like no other contract before, requiring the creation of 15 new contracting clauses.

Hill Air Force Base is the main Air Force Logistics Command Depot for the maintenance of aircraft landing gear. Prior to instituting the LGPVC, the Air Force had to execute a separate purchasing award for every landing gear parts order; a labor-intensive, time consuming and non-

[26] Baker, *Innovative Landing Gear Contract Keeps Warfighters Flying, Saves Taxpayers Millions.*
[27] Hill Air Force Base, *Award of Landing Gear Prime Vendor Contract.*
[28] Ibid.

value-adding process. Before implementing the LGPVC, the Air Force was managing some 1600 separate landing gear contracts. Reducing this number to four was a tremendous administrative breakthrough.

The LGPVC streamlines the procurement process, while at the same time ensuring competition among the four contractors for every order.[29] Under the contract, the PVs have only two weeks to submit a bid after each competition is announced. The contract also places price ceilings on all parts included in the contract, and includes a clause that covers economic adjustments to the pricing. The government is required to purchase at least $2 million in orders from each PV, and the total orders from the PVs may not exceed the contract maximum of $1.5 billion.[30]

Innovative structure

The LGPVC is innovative because it institutes a miniature bidder competition for every new landing gear order. Prior to the LGPVC, every parts bid was opened up to a far larger pool of vendors, again slowing down the process. This contract streamlines the competition process to speed up the delivery schedule without losing the benefits of competition.

The contract calls for a continuous, focused competition amongst the four PVs for its 10-year duration. Under the LGPVC, landing gear parts remain competitively priced throughout the length of the contract.

Results of the LGPVC

The LGPVC has generated a number of positive results for the Air Force.

Reduced Administrative Lead Time (ALT) - The LGPVC puts a structure in place to handle the competition for the parts included in the contract and sets a specific time table for when quotes have to be given and awards granted. This structure and timetable requirement sped up the procurement process significantly – significantly reducing ALT (defined as the interval between initiation of procurement action and letting of the contract or placing of the order. Under the old system, it typically took DLA Ogden 148 days ALT to process vendor award orders to vendors. With the LGPVC, that time was slashed to 65 days by August 2009. The goal of the LGPVC is to reduce average ALT time to 30 days.[31]

Improved Readiness- By accelerating ALT from 148 to the goal of 30 days, the LGPVC means orders are processed faster, so parts are delivered sooner. This means military aircraft can be repaired and mission-ready much faster, enabling the Air Force to more effectively meet the greater demand for landing gear parts caused by the overall increase in flight hours.

Increased Savings- Projected savings resulting from the LGPVC are expected to exceed $37 million. The program saved over $3 million in 2008, its initial year. In addition to reducing administrative costs for DoD, the PVs reduce overall total delivered cost by utilizing best

[29] Baker, *Innovative Landing Gear Contract Keeps Warfighters Flying, Saves Taxpayers Millions.*
[30] Hill Air Force Base, *Landing Gear Prime Vendor Contract.*
[31] Air Force Global Logistics Support Center and 448th Supply Chain Management Wing, *Landing Gear Prime Vendor Contract.*

practice private sector supply chain techniques and processes in the areas of transportation, inventory, supply chain visibility, and elsewhere. Other savings accrue from the imbedded continuous competition built into the contract. The repeated competitions create an environment in which the PVs are continuously innovating to ensure that their company is most competitive for the next order. [32]

The future

Because of its success to date, the LGPVC could become a template for future PV contracts across DoD. The competitions ensure that PVs never become complacent, and are held accountable, and do not take advantage of the DoD. Thanks to its repeated cycle of small awards, this contract fosters ongoing PV responsiveness and competition throughout the entire length of the arrangement.

The LGPVC thus far is proving to be a win-win for the DoD and the four companies involved in the contract.

SAIC Prime Vendor Contract

As an integrated prime vendor (IPV), Science Applications International Corporation (SAIC) has been providing consumable parts management services to the DLA since 1998. The company supplies parts ranging from pre-expended bin (PEB) items to aircraft subassemblies and engine and landing gear components to major U.S. military maintenance depots and aircraft mechanics.

SAIC uses its SCOPTIMA supply chain management system to track material levels across more than 100,000 bins and to forecast when items should be reordered based on actual consumption. The system also makes decisions about replenishment schedule, quantity, manufacturing source, and transportation. SCOPTIMA and just-in-time inventory support have helped to cut delivery times from 21 days down to an average of five days.[33]

In 2004, SAIC was selected as the Generation II (GEN II) Integrated Prime Vendor for supply chain management of pre-expended bins at naval air depots. Under this contract, SAIC serves as the supply chain manager for parts that are used in the depot maintenance of Navy and Marine Corps aircraft.

In addition, SAIC provides PEB support for depot overhaul and maintenance of aircraft subassemblies, engines, ground support equipment, avionics equipment, and other major items. Administered by Defense Supply Center Philadelphia (DSCP), the 10-year, fixed-price contract includes a base term of three years valued at $150 million, and three additional option periods estimated at a total of $450 million. According to SAIC, the arrangement increases supply chain visibility to allow for faster response time to requirements while lowering procurement and inventory costs.[34]

[32] Baker, *Innovative Landing Gear Contract Keeps Warfighters Flying, Saves Taxpayers Millions.*
[33] SAIC, *Services: National Security, Logistics.*
[34] SAIC, *SAIC Awarded Defense Logistics Agency Integrated Prime Vendor GEN II Contract.*

SAIC holds six prime vendor maintenance repair and operations (PV MRO) contracts under which it provides maintenance supplies to federal facilities in the continental United States (CONUS) and Hawaii/Guam via PurchasePlace, a proprietary Internet electronic order entry and e-catalog system. SAIC supplies commercial-off-the-shelf products, such as plumbing, electrical, heating, ventilation, and air conditioning (HVAC), lumber, hardware, and assorted industrial materials.[35]

Defense Supply Center Columbus (DSCC) has awarded a series of prime vendor programs to SAIC to source, purchase, and deliver commercial, industrial and tactical ground vehicle parts. In 1998, DSCC awarded the Automotive Prime Vendor Overseas (APVO) contract to manage the acquisition and delivery of vehicle parts to more than 220 U.S. military locations overseas. As Automotive Prime Vendor Worldwide (APVW), SAIC provides expedited delivery of material requisitions in a price-list format via Electronic Data Interchange to other military customers both within and outside the continental United States. The 10-year contract, awarded in 2003, also includes spot buys and fulfillment of low-volume, hard-to-find items. Delivery performance includes inspection, packaging, and marking of all product and shipping containers, with the option of shipment to specified consolidated containerization points, or directly to specific bases or overseas locations in the event that a customer requires support tailored to satisfy its requirements.[36]

Prime Vendor Contracting for Medical Supplies: The Department of Veterans Affairs and the Department of Defense[37]

Introduction

The Pharmaceutical Prime Vendor Program (PPV) program is the contracting arrangement through which the Department of Veterans Affairs (VA) purchases prescription drugs and medical supplies for outpatients. The current prime vendor (PV) arrangement has only a single vendor, which has raised concerns among policymakers that the VA may not benefit from competitive pricing. To address this concern, the Congressional Budget Office (CBO) was asked to assess whether using more than one vendor would result in significant cost savings or efficiencies, which they did through an examination of past PPV contracts and interviews with current VA contract administrators. As part of this assessment, CBO also compared the VA's PPV contract with similar DoD contracts – those used to purchase pharmaceuticals dispensed at military treatment facilities (TRICARE). [38]

In comparing the VA contract with the TRICARE arrangement, the study concluded that the main difference was that VA had one vendor for the national program, while DoD had three separate vendors, each serving a different part of the county. The use of only one vendor by the VA led some to believe that it was operated under sole-source, noncompetitive procurement, but

[35] SAIC, *Services: National Security, Logistics.*
[36] Defense Industry Daily, *US Military: The DLA's Prime Vendor MRO Contracts.*
[37] CBO, *The Department of Veterans Affairs Pharmaceutical Prime Vendor Program.*
[38] NOTE: TRICARE is the Mail Order Pharmacy program that is part of DoD's health care program for active-duty service members, Selected Reserve Members, military retirees, their families, and other identified beneficiaries.

the single vendor selected by VA was, in fact, chosen through competitive bidding. What had happened was that a single vendor was competitively selected – and awarding the entire contract to one vendor was allowed, but not a predetermined outcome. When questioned, VA did not indicate whether the single vendor they had chosen offered the best rates across VA's 14 distribution regions, but that they had concluded that the vendor's nationwide coverage offered the best value overall.

There are significant differences between total spending on pharmaceuticals by VA and DOD because of numerous factors, including: the list of drugs the plan will pay for, eligibility criteria (for benefits) and age, in addition to other demographics of the populations covered by the plans. But the pricing for identical drugs is similar because of the ceiling prices that VA negotiates with manufacturers that extend to all federal purchasers. Surprisingly, vendors play no role in negotiations between the federal government and manufacturers – they only influence the drug prices by charging fees for delivery and/or distribution. Even these fees are discounted based on a percentage of costs for ordered drugs for both VA and DoD. Through these contracting arrangements, vendors pay VA and DoD for the opportunity to deliver drugs to government facilities. The vendors earn profits by charging overhead fees to manufactures, or generating revenue by collecting interest during the time period when funds are received from retailers to paying manufacturers.

Understanding the pharmaceutical distribution industry[39]

In the United States, the pharmaceutical industry has a complex supply chain where manufacturers provide drugs to customers – such as hospitals and retail pharmacies – which in turn dispense medications to the consumer. In pharmaceuticals, the manufacturers do not always deliver drugs directly. Instead, roughly 60 percent of brand-name drugs are distributed through vendors (distributors and other third parties) who deliver those drugs to hospitals and retail outlets. These vendors manage the logistics of moving supplies *and* offer customer service, inventory management, and patient education. Despite the hundreds of billions of dollars in revenue that the pharmaceutical industry generates, vendors' net profit margins are small – between 1.5 and 4 percent – relative to manufacturers' profit margins (20 percent).[40]

These low profit margins for vendors resulted in significant consolidation of the industry in the last 25 years – just three companies control 80 percent of the market. These few companies each have many federal contracts and operate dozens of distribution centers throughout the country – minimizing the risk of supply chain interruption due to natural disasters or other disruptions. Uncertainties are also mitigated through contracting through a primary vendor and maintaining a second one as a backup.

For these prime vendors, profits accrue through a **fee-for-service model**, whereby the prime vendor charges delivery fees to both manufacturers and retailers – fees that are calculated as a percentage of total sales. An additional mechanism – **'floating'** funds – brings vendors revenue by investing funds collected from retailers and generating interest during the time (weeks) between receiving those funds and paying the manufacturers.

[39] CBO, *The Department of Veterans Affairs' Pharmaceutical Prime Vendor Program.*
[40] This is in part because the manufacturers hold patents on brand-name drugs.

VA negotiates ceiling prices for pharmaceuticals on behalf of all federal purchasers that use the Federal Supply Schedule[41]- where the prices are based on rates available to the most-favored commercial customers, or on formulas derived from the Veterans Health Care Act of 1992. While they have the ability, these vendors do not add delivery fees on top of negotiated price ceilings for VA and DoD. In fact, on the contrary, they offer them additional discounts.

Table 1[42]

Percentage Discounts Given to VA and DoD by Current Pharmaceutical Prime Vendors

Vendor	Year Contract Began	Regions Covered	Year of contract									
			1	2	3	4	5	6	7	8	9	10
			Department of Veteran Affairs									
McKesson Corp.	2004	All[a]	5.00	5.04	5.05	5.11	5.15	5.15	5.15	5.15		
			Department of Defense									
McKesson	2002	TMOP	4.75	4.75	4.75	4.75	4.75	4.75	4.74	4.75	4.75	4.75
AmerisourceBergen	2005	North and South	5.02	5.02	5.08[b]	5.13	5.13	5.28	5.28	5.31	5.33	5.33
Cardinal Health	2005	West	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50

Source: Congressional Budget Office based on data from the Department of Veterans Affairs and the Department of Defense.
Notes: Shading indicates future years of the contract

VA = Department of Veterans Affairs; DoD = Department of Defense; TMOP = TRICARE Mail Order Pharmacy

a. Includes the entire United States and the Consolidated Mail Outpatient Pharmacy
b. Data are weighted averages because some contract renewals take place midyear

VA's pharmaceutical prime vendor program

The Department of Veterans Affairs (VA) provides prescription drugs as part of its medical benefits package for all enrolled veterans, where prescription drugs are written by VA physicians and are filled by VA pharmacies.[43] But starting in 1994, VA put its Pharmaceutical Prime Vendor (PPV) program in place across the nation to avoid the costs associated with operating its warehouse system, used to store and distribute drugs and other supplies. In Chicago, the National Acquisition Center solicits, awards, and administrates all of the VA contracts, including the PPV contract, administering the Federal Supply Schedule for the VA through its National Contract Service.

Under the PPV contract, inpatient drugs, outpatient prescriptions, outpatient medical and surgical supplies, as well as prescriptions for patients discharged from VA medical centers are covered. In this arrangement, the PPV agrees to provide next-day delivery of drugs along with additional services – including customer service evaluation, paperless invoicing, bar-coding, and

[41] The Federal Supply Schedule lists brand-name and generic pharmaceutical products and their prices available to federal institutions.
[42] CBO, *The Department of Veterans Affairs' Pharmaceutical Prime Vendor Program*, 3.
[43] These pharmacies are usually at VA medical centers or prescriptions are filled by the Consolidated Mail Outpatient Pharmacy (CMOP) program.

installation and maintenance of equipment and software for automated ordering. All VA facilities are required to place orders through the PPV, which delivers pharmaceuticals to the facilities and receives payment directly.

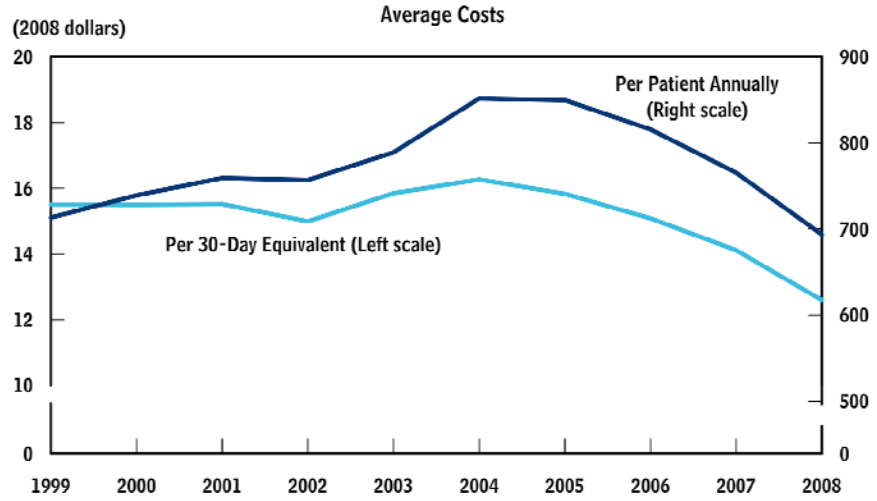
PPVs receive profits from several sources:[44]

- Many retailers pay vendors a delivery fee in addition to the price of the drug, where a negative delivery fee results in a further discount of drug prices. The presence of those discounts implies that the vendor must earn income on the VA contract from some other mechanism, such as interest from "floating" funds between the time the vendor receives payment from its customer and reimburses the drug manufacturer.

- PPVs also look to manufacturers for profits. Manufacturers not only pay vendors administrative fees ranging from 1 percent to 3 percent of total sales but may also accept from vendors whatever price VA pays the PPV (including any discounts). For example, suppose that VA and the manufacturer have negotiated a price of $100 for a certain drug. If the vendor offers VA a discount of 5 percent (a typical discount), then VA pays the vendor $95. After deducting a 2 percent administrative fee, the PPV might reimburse the manufacturer $93, earning $2 in profit.

Figure 1[45]

Average Costs and Total Annual Spending for VA's Pharmaceutical Prime Vendor Program, Fiscal Years 1999 to 2008



As Figure 1 indicates, the VA's PPV program has reduced both per-patient annual costs as well as the per-30-day equivalent cost. The latter typically is a measure of the average cost of a 30-day supply of medication for a patient.

[44] CBO, *The Department of Veterans Affairs' Pharmaceutical Prime Vendor Program*, 5.
[45] Ibid, 8.

Figure 2[46]

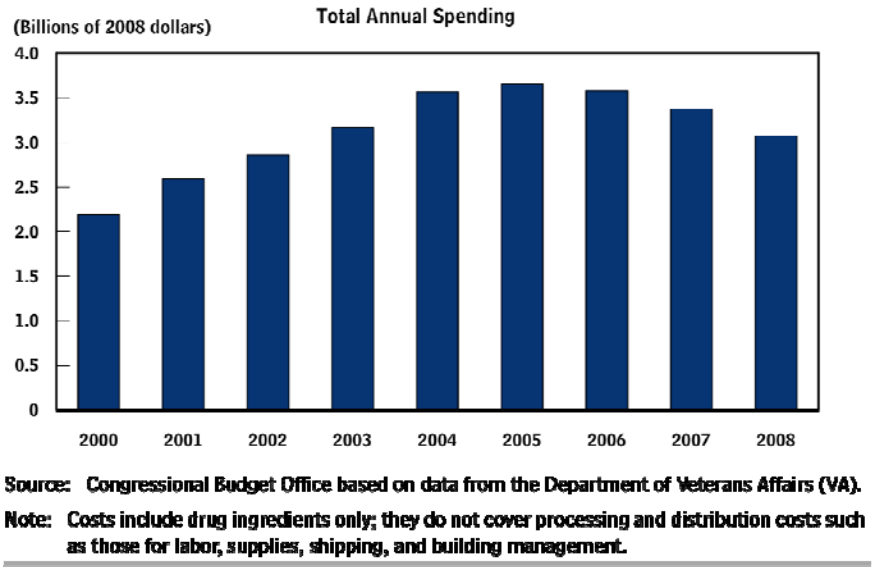


Figure 2 shows the decline in total annual VA spending on drugs since its high in 2005.

DoD's pharmaceutical and medical/surgical prime vendor programs

Like the VA, the Department of Defense (DoD) administers a PPV program for inpatient drugs and outpatient drugs and supplies. DoD's program shares many similarities with the VA's, including competitive bidding, set-asides for small businesses, federal pricing schedules, and discounts from vendors. This program, TRICARE, is for active-duty service members, selected reserve members, retired military personnel, and eligible family members and survivors. The TRICARE Management Activity oversees the pharmacy benefit and manages the Uniform Formulary—DoD's equivalent of VA's National Formulary—which specifies the prescription medications available through DoD.[47] These beneficiaries can fill prescriptions at four different points of service, a notably more complex arrangement than the VA's: military treatment facilities (MTFs), the TRICARE Mail Order Pharmacy (TMOP), in-network retail pharmacies, and out-of-network retail pharmacies.

Awarding the contract for DoD

Like VA, the Department of Defense (DoD) uses a competitive bidding process to select vendors for the PPV program to support their military treatment facilities. The Defense Supply Center in Philadelphia manages the prime vendor programs for DoD and other eligible federal, state, and local customers without direct appropriations, instead covering operating costs with user fees. To

[46] Ibid, 8.
[47] CBO, *The Department of Veterans Affairs' Pharmaceutical Prime Vendor Program*, 9.

determine the winner of the PPV contract, an internal panel at the Defense Supply Center evaluates and scores bids on the basis of the proposal. DoD requires that the PPV deliver all drugs within DoD's Basic Core Formulary[48] directly to DoD's facilities and customers. Among the bidders who meet these requirements, the discount receives the highest consideration, but if no bids are acceptable, firms are allowed to rebid based on post-evaluation negotiations.

In contracting for PPV services, DoD divides the United States into three regions – North, South, and West – and in total, five companies responded to the solicitations for the contract. The West region contract was awarded to Cardinal Health and the North and South regions were awarded to AmerisourceBergen. The award also included a small business set-aside for North Dakota, South Dakota and Minnesota's contract with the Dakota Drug Company.

In contrast to VA's award to one vendor, which resulted in a single nationwide set of discounts for VA facilities, DoD's PPV discounts differ by vendor, region, and contract period.

- The PPV contract covers 10 years: one 30-month initial period and three optional 30-month renewals.

- The TRICARE Mail Order Pharmacy program involves two separate contracts: one for the Pharmaceutical National Prime Vendor and one for the pharmacy benefits management services.

- McKesson Corporation serves as the Pharmaceutical National Prime Vendor on a 10-year contract that started in 2002.

- Express Scripts was awarded, for the second time in a row, the five-year PBM contract in 2008. The arrangement between the two is similar to DoD's PPV program: The PBM replenishes mail orders using the Pharmaceutical National Prime Vendor, and the vendor receives payment from DoD, minus a discount of 4.75 percent.[49]

DoD also uses prime vendor contracts for Medical/Surgical supplies in a program called the Medical/Surgical Prime Vendor Program (MSPVP). In MSPVP, there are two primary and two back-up prime vendor contracts per global region:

- Cardinal Health, Owens & Minor (O&M) – primary prime vendors

- American Medical Depot (AMD), Midwest Medical Supply (MMS), and Cardinal (O&M) – back-up prime vendors

Two types of pricing Agreements support the MSPVP: DAPAs (Distribution and Pricing Agreements) which incorporates manufacturer/supplier national or regional government pricing (covers majority of MSPV sales); and RIAs (Regional Incentive Agreements) - discounted pricing based on committed volume resulting from tri-care regional standardization process. The end customer price is a roll-up of DAPA or RIA Price plus a PV Distribution Fee plus the DLA Cost Recovery Rate.

[48] The Basic Core Formulary is a subset of drugs in the Uniform Formulary that all MTFs must carry.
[49] CBO, *The Department of Veterans Affairs' Pharmaceutical Prime Vendor Program*, 13.

Results

Since PV was implemented, the speed and efficiency of the medical and subsistence supply chains have improved. For example, order-to-receipt time in both programs has been slashed, resulting in millions of dollars in cost savings. The MSPV program reduced delivery time for 95 percent of medications to less than 24 hours; this change alone saved DoD $173 million. The prime vendor in the subsistence program guarantees that food will be delivered within 48 hours. In addition to improvements in customer satisfaction, and a decrease in PV prices (below the average wholesale price) for 65% of all pharmaceuticals, and through inventory reductions DoD realized a 62 percent reduction in depot storage space and depot storage costs – savings valued at $24.7 million per year.[50]

[50] Rentz, *Should the Army Implement Prime Vendor for Class IX Repair Parts*, 60.

Part V: Prime Vendor-like Practices in the Commercial Sector

In certain commercial sector industries, companies utilize practices that closely resemble defense sector prime vendor contracting. These arrangements, for example, are common in the maintenance, repair and overhaul arena (MRO).

Frequently, these outsourcing contracts go well beyond simply providing procurement and related inventory management and delivery. They often include the delivery of comprehensive sets of services and support designed to deliver agreed-upon levels of asset performance

One of the biggest users of MRO outsourcing services is the commercial aviation sector for aircraft maintenance. We describe some of these services and contract arrangements in this section of the report.

Outsourcing aircraft MRO in the commercial sector

In the commercial aviation sector, more and more airlines are electing to use prime vendor-like contracts for their maintenance, repair and overhaul (MRO) services in order to concentrate on their primary business of serving customers. These contracting arrangements essentially are the private sector's version of prime vendor contracting, expanded to include the provision of maintenance services.

There are a number of providers of these MRO services. Many – like Lufthansa Technik AG and Del TechOps – evolved out of their large global airline heritage. Lufthansa Technik AG, headquartered in Frankfurt, Germany, is the world's largest provider of technical support services for civil aircraft. Created in the early 1960s, Lufthansa Technik originally operated as a subsidiary of Lufthansa. In 1994, however, it was spun off as an independent corporation which, as of 2009, generated nearly 4 million Euros in revenue.[51] It serves more than 650 customers worldwide and employs more than 12,500 people.

Lufthansa Technik offers a broad range of aircraft support-related services that include full-line maintenance, repair and overhaul (MRO), logistical services beyond maintenance and repair.[52] The company also provides development and production services and is aviation-authority approved. [53]

> "More than 500 engineers work in the various business units in Hamburg, a team of over 120 people is responsible solely for the development of new technologies, equipment and systems. Lufthansa Technik's technical expertise in the conversion of aircraft for private customers is particularly striking. The problems that the team is regularly asked to solve call for an unusually wide range of development competencies, as customers' requirements vary widely, for example, from the design of a water supply system with extra large tank volume to a very large-format plasma screen for the on-board audio and video system or custom-built furniture for the cabin."

[51] Lufthansa Technik, *Annual Report 2009.*
[52] Lufthansa Technik, *Technical development competence in Hamburg.*
[53] Ibid.

The establishment of logistics centers outside Europe enables Lufthansa Technik to deliver an urgently needed part within hours, to wherever it is needed.

Lufthansa Technik has significantly strengthened its involvement in North America with, for instance, the founding of Lufthansa Technik Component Services and its acquisition of BizJet International, a leading MRO provider for business jets. These, plus its Florida-based affiliate Heico Aerospace, a designer and producer of FAA-certified engine parts, form the basis of its ability to play a significant role in the steady growth of the North American MRO market.

Lufthansa Technik constantly refines and improves its engineering maintenance processes and practices. These improved procedures results in higher quality and longer service life for parts. The service life of an engine overhauled by Lufthansa Technik is up to 50 percent above the industry average, according to the company. One example of such an innovative repair method is the Advanced Recontouring Process (ARP), used to give worn compressor blades a new profile contour in a robot-controlled grinding process. Compared with blades that have been manually reground, blades reconditioned using ARP have a much more precise aerodynamic profile, resulting in lower fuel consumption. They can also be reconditioned four times instead of three, raising service life and thus reducing material costs. [54]

Lufthansa Technik maintains over 2,000 aircraft worldwide, in many cases over the entire life cycle. In the course of this work Lufthansa Technik's technicians get to know the potential weak points better than the aircraft manufacturers themselves and accordingly are able to develop solutions and refine them further over time. The number of repair procedures developed by Lufthansa Technik that have been incorporated into the manufacturers' manuals underlines the quality of these innovations. [55]

Types of MRO service offered by Lufthansa Technik

Total Technical Support (TTS). TTS is a flexible MRO service package that is configured to fit the specific requirements of customers. TTS provides line maintenance, customized maintenance planning, troubleshooting, engineering services, repair and overhaul of aircraft, engines and components, spare-parts pooling, spare engine leasing, painting, cabin modifications, airline support teams, logistics and training.

Technical Operations Management (TOM). TOM provides full service management of aircraft maintenance. Each TOM customer is assigned an on-site fleet manager who oversees all aspects of integrated MRO and engineering support. Lufthansa Technik provides all local line maintenance services on a long-term basis, working closely with the operator to optimize the integration of maintenance and engineering services into the airline's flight operations and to ensure the integration of all other MRO services. The dedicated fleet manager provides a "single interface" for technical operations and ensures an optimized flow of information.

The fleet manager solves all technical matters, backed by solutions from the global Lufthansa Technik network. Service guarantees and transparent performance measurements enable the

[54] Lufthansa Technik, *Technical development competence in Hamburg.*
[55] Ibid.

operator to retain control and monitor operations at all times. Maintenance activities and performance are visible via integration with Lufthansa Technik's websuite "manage/m".

Total Material Operations (TMO) is Lufthansa Technik's material supply and logistics management service offering. Via TMO, Lufthansa Technik manages customers' consumables, expendables and buyer furnished equipment. Customers can take advantage of pooled MRO inventories and integrated material management for greater economies of scale and faster response time.

Lufthansa Technik also provides complete engine and landing gear support. In the case of the latter service, Lufthansa Technik assumes complete lifecycle control over landing gear assembly from the time it is installed on the aircraft. Operational times are monitored, life-limited parts are tracked, AOG events and Line Replaceable Units (LRUs) support are planned and scheduled and overhauls, including exchange units, are processed. The service portfolio even includes the provision of leasing and loan plans up to the final resale.

Landing gear overhauls are almost entirely done on an exchange basis. Lufthansa Technik customers receive an overhauled landing gear assembly at the agreed time and the unserviceable unit is sent back for overhaul. The overhauled gear is then ready for the next customer airplane. Landing gear spares are available for use of multiple operators, eliminating the need to own spare gear sets, thereby keeping costs down.

Delta TechOps' MRO service

Delta TechOps, a division of Delta Air Lines, is the largest airline maintenance, repair and overhaul provider in North America, generating more than $500 million in revenue in 2009. The organization maintains Delta's fleet of more than 750 aircraft in addition to providing full-service MRO for more than 150 other operators. Services include technical training, engineering support, line maintenance services, inventory management, component support, engine overhaul, engine condition monitoring, and quick-response disabled aircraft recovery.

Delta TechOps operates a network of maintenance facilities in multiple locations, all of which offer light maintenance for both narrow body and wide body aircraft. The division's Atlanta Technical Operations Center (TOC) offers a far broader array of capabilities. That facility covers nearly 2.7 million square feet (about 250,830 square meters) and was specifically designed to provide a smooth flow of work and material. Aircraft work is done in one area, engine work in another, components in yet another—all tied together by an efficient, reliable multi-vehicle transportation system capable of delivering material and parts quickly.

Delta TechOps services include:

- Engine/APU maintenance
- Engine condition monitoring
- Engine/APU on-wing services
- Component maintenance
- Landing gear maintenance
- Aircraft hangar maintenance
- Line maintenance

- Disabled aircraft response team
- Inventory management
- 24/7/365 maintenance control center services

The Delta TechOps logistics center in Atlanta manages the inventory necessary to support the fleets of the parent company and outside customers. It also provides supply chain management services that include:

- Warehousing
- Distribution
- Transportation
- Worldwide procurement
- Initial provisioning and customized support
- Access to Delta's own inventory parts system
- 24/7/365 service

In addition to commercial fleets, Delta TechOps supports several military projects covering domestic and foreign customers. Delta TechOps provides engine/APU, inventory and component repair support for fleets of aircraft common to the Delta fleet including 737NG, 757, and 767, under performance-based logistics (PBL) programs. [56]

Types of contracts offered by Delta TechOps

Delta TechOps offers a variety of contract types, covering everything from repairing individual components to maintaining an entire fleet. [57] These contract types include:

Time and material contracts. These are agreements where the customer is charged for a specific maintenance visit, based on actual labor and material. This type of arrangement provides:

- A high level of customer interaction in determining work scope
- The ability to use customer-furnished parts
- The most detailed billing available to gain visibility into costs and potential reliability issues

Power by the hour contracts. Customers who choose this contract type are invoiced by a predetermined rate per flight hour. The benefits for this type of arrangement include:

- Fixed price to provide a predictable maintenance costs
- Reduction in financial risk

Fixed pricing contracts. Under this type of contract, all aspects of an overhaul are covered under one fixed price.

[56] Delta TechOps, *Military Aircraft Services*.
[57] Delta TechOps, *Contract Types*.

MRO services provided by avionics manufacturers and OEMs

Not to be left out of the MRO business, avionics manufacturers Rockwell Collins and Honeywell have seen their asset management businesses grow, especially for new aircraft. This is true in Singapore, where Rockwell Collins and Honeywell have a significant presence in the MRO market.[58]

"Since the last Singapore Airshow (held in 2008), airlines have shown more interest in anything that adds value in terms of fuel efficiency and saving money on operations. There is a growing trend toward depending on the OEMs to provide a package of programs to support their equipment," according to Pak Chin, Honeywell Aerospace vice president for Asia-Pacific airlines.[59]

"They are looking for anything that provides predictable service levels and costs, including power by-the-hour. Our asset management program includes the inventory. Airlines don't even own the inventory and spares anymore," Chin said.[60]

"Two key issues faced by the airline industry are the need for lower maintenance costs and reduced risk in the aviation supply chain," said Frost & Sullivan analyst Nathan K. Smith. "Industry observers state that original equipment manufacturers are better suited to reduce supply chain risk while third-party MROs can provide lower maintenance costs."[61]

"A lot of traditional airlines have always done their own repairs," Chin explained. "They've created their own capabilities around repairing their own avionics. We are seeing airlines reconsider in-sourcing versus out-sourcing. They see advantages to outsourcing, especially to an OEM. Ten years ago, that was unheard of, but we are seeing it more and more. We are now negotiating with third parties to become part of their overall aircraft support offering. We expect that to continue and we see that evolving to where we are an integral part of that third-party activity."[62]

Rockwell Collins' Ken Estelle, vice president and general manager of Technical Service Solutions, commented: "There is more reliance on the OEMs, especially for new platforms entering service, such as the A380. We are moving from the old break/fix business model. Customers want us to manage our overall product for their fleet and we are now buying back spares and managing spares availability for them."[63]

[58] Creedy, *Asia's MRO Hub*.
[59] Ibid.
[60] Ibid.
[61] Ibid.
[62] Creedy, *Asia's MRO Hub*.
[63] Ibid.

Part VI: Benefits of Prime Vendor Contracting

The following discussion highlights the major benefits of prime vendor programs.

Quicker response time

Because prime vendors use private sector supply chain management best practices to reduce ordering and shipping time, they can respond to and deliver orders more quickly than the traditional, multilayered military system is able to do. The experience of Walter Reed Army Medical Center in the early 1990s provides an example of this improvement.

In 1993, Walter Reed Army Medical Center began using a prime vendor as part of the Defense Logistics Agency's Prime Vendor Demonstration Project. Prior to Walter Reed's enrollment in the program, all medical supplies were handled by the Defense Logistics Agency (DLA), and the time between order placement and delivery was extremely long. Pharmaceutical supplies, for instance, regularly took a month from order to delivery. Under the PV contract, by contrast, delivery of supplies was guaranteed within 24 hours. [64] One reason for the dramatic reduction in delivery time was that the person placing an order could now order directly from the PV instead of working through a multilayered supply chain.

The shorter response time also saved the medical center money. When orders moved through the old supply chain, Walter Reed had been penalized $20,000 in one month for late payments. Following implementation of the more efficient PV supply chain, Walter Reed only paid $60 in penalties. These results encouraged the medical center to expand its use of PV programs to gain additional savings and benefits.[65]

Smaller, less costly inventories

Prime vendors keep a close eye on the level of inventory that a supplier might need in order to best serve the PV's customers. Because they respond quickly to customer orders, they can also eliminate excessive stockpiles and reduce the size of inventory on hand. Managing the smaller inventory is much less expensive because there is significantly less overhead: less inventory requires a smaller facility, fewer managers, less capital equipment, etc. Reducing inventory also decreases paperwork for DoD and saves money on depot maintenance.

One example of a prime vendor's success in shrinking inventories is the case of Hamilton Sundstrand, the Windsor Locks, Connecticut-based supplier of aerospace and industrial products. In 2002, DoD renewed the original PV contract it had awarded to Hamilton Sundstrand to manage parts supply for C-130 aircraft propeller assemblies. That contract guaranteed electronic tracking from order to receipt. During the course of the initial contract, the PV proved that it could efficiently and quickly provide the required parts when and where they were needed. [66]

This performance earned the trust of DoD officials, and Hamilton Sundstrand was authorized to take over inventory management for the propeller assembly. The company reduced the inventory

[64] Peters, *Cashing in on Contractors*.
[65] Ibid.
[66] Gansler, *Transforming Government Supply Chain Management*.

levels previously maintained by DoD by 98 percent—from $12 million down to $222,000.[67] Even with such a significant inventory reduction, Hamilton Sundstrand maintained a high level of performance, easily exceeding the PV contract's requirements regarding Contractor Performance Time (CPT) and Time on Backorder (TOB).

Increased product offering and ordering flexibility

By implementing a prime vendor program, DoD capitalizes on a key benefit of commercial enterprise: increased product offering and greater ordering flexibility. Under a PV arrangement, vendors keep their customers informed through a weekly update of their supply list. This allows the ordering officer to know exactly what is available and for what price.

The U.S. Navy has taken advantage of the flexibility afforded by a PV arrangement for its afloat food service, which is responsible for all food served on its vessels. Under this contract arrangement, the Navy receives updates on the price and availability of goods, allowing the ordering officer to know the full range of options. Furthermore, turning over management of the food service to the prime vendor has resulted in a doubling of food choices for naval vessels. Service members liked the fresher food and greater variety, which led to increased customer satisfaction and also provided a morale boost.[68]

Increased visibility

The technological advances developed and implemented by leading private sector companies have set new standards for supply chain visibility – for tracking information relating to orders, deliveries, and assets across the supply chain. Regarding assets, the commercial sector has developed real-time visibility tools – often called Total Asset Visibility (TAV) solutions – which gather information about the quantity, location, movement, and status of any asset. TAVs create two immediate benefits: (1) all assets can be tracked so the exact status and whereabouts of shipments is known, and (2) shipments can be rerouted to suit a service's changing needs.

When TAV systems are not used, and supply chain/logistics managers lack visibility into asset status and movement, they frequently compensate by building in inventory buffers to protect against stockouts, customer service failures and the like. Within the context of the DoD, for example, maintenance personnel frequently reorder parts because they cannot determine the status of those parts. Prime vendors use TAVs to provide asset visibility in real- or near-real time. This visibility reduces or eliminates protective inventory buffering behaviors. Overall inventories are leaner; duplicative or unnecessary ordering is curtailed; and service levels are maintained at high levels.[69]

[67] Ibid.
[68] Mosher, *The Impact of Subsistence Prime Vendor on Navy Afloat Food Service Operations*, 120.
[69] Gansler, *Logistics Modernization in the Twenty-First Century*.

Total Asset Visibility (T) at Wal-Mart

One dramatic example of TAV's efficacy comes from Wal-Mart—the world's largest retailer and worldwide leader in supply chain management. Wal-Mart strives to ensure that its entire supply chain has Total Asset Visibility.

Walmart is the world's largest retailer, serving customers more than 200 million times per week, with $405 billion in sales for the fiscal year ending Jan. 31, 2010. Wal-Mart Stores Inc. operates more than 4,300 facilities in the United States, and more than 4,000 additional stores in 15 markets worldwide. [70,71]

Using TAV technology, Wal-Mart is able to process all of these orders and still maintain real-time information about all assets in its supply chain. For example, using TAV, the retailer can keep 60,000 suppliers continuously informed about variations in orders. This continuous tracking allows its suppliers to be responsive to needs that may arise in tight timeframes.[72]

Total-asset visibility is a priority for DoD although somewhat slow to take hold. The Institute for Defense & Government Advancement (IDGA) hosts an annual conference – Total Asset Visibility for Defense[73] – to try to capitalize on commercial sector knowledge for public sector practice. This includes updates on passive and active RFID implementation; initiatives from the depot level for the overhaul, maintenance and sustainment of critical platforms; and means to effectively move supplies and equipment with increased efficiency across a variety of theaters. [74]

Increased satisfaction and trust

Greater efficiency and lower costs are obvious benefits of improved supply chain management, but these improvements also build trust between the supplier and the customer. If weapons are repaired faster, food is better, and supplies cost less, then satisfaction increases. The trust that supplies will arrive when and where needed at a reasonable cost, described in the case examples in preceding sections of the paper, is a direct result of the high service levels and supply chain reliability provided by the private sector prime vendors.

[70] Walmart, *Corporate Facts: Walmart by the Numbers*.
[71] Walmart, *Walmart Corporate: Investors*.
[72] Gansler, *Logistics Modernization in the Twenty-First Century*.
[73] Total Asset Visibility, *Logistics Tracking Solutions for DoD Mission Success*.
[74] Total Asset Visibility, *7th Annual Total Asset Visibility for Defense Conference*.

Part VII: Challenges to Proper Implementation

DoD's use of PV has been increasing but it still remains a small portion of the agency's overall spending. As of 2006, DLA's PV contracts totaled $7.25 billion, but this constituted only 20 percent of the agency's total procurements.[75]

PV contracting is not appropriate for all types of DoD procurement activities, working best in cases of highly repetitive types of acquisition areas such as medical supplies, and maintenance/repair and overhaul (MRO) for weapons systems sustainment. To encourage continuing, more widespread implementation of PV contract arrangements in such appropriate areas, however, DoD must address existing issues and challenges associated with this contracting mechanism.

In its 2007 evaluations of PV contract arrangements at DoD, the GAO identified several problems in this regard, including: incorrect management metrics; lack of suitability for all commodities; lack of a suitable workforce; insufficient pricing reviews; and lack of oversight.[76] Additional barriers to effective PV implementation include regulatory constraints over how much work can be done by private contractors; lack of strong leadership and a deficiency of public trust in the use of private contractors. What follows is a brief discussion of the central concerns regarding PV contracting. In this section of the paper, we offer some general recommendations for overcoming these barriers.

Improper metrics

The success of a contract arrangement is often determined by a number of performance metrics outlined for that program. Using appropriate metrics guides service providers and customers in their respective roles, while using improper metrics can lead to waste and inefficiencies when responsibilities and objectives are unclear. DoD is still using traditional metrics, such as the number of parts delivered, or the number of systems repaired. These were frequently accompanied by evaluating "best value" on widely ranging criteria, and lacking performance metrics in many programs; as frequently cited by the GAO. In contrast, private contractors have begun to implement metrics such fleet availability, logistics response time, on-time delivery, inventory savings, and other metrics that provide incentives that promote efficiency.

Inadequate or inconsistent metrics, such as those sometimes used by DoD, result in incentives for contractors to complete a large number of repairs and replacements rather than rewarding efficiency and availability. In addition, this scheme results in excessive costs for replacements and repairs.

Not suitable for all commodities

Prime vendor contracts are best suited for commercial, off-the-shelf items used by the military. Retired General William G. T. Tuttle, Jr. notes:

[75] GAO, *Defense Management: DLA Has Made Progress in Improving Prime Vendor Program, but Has Not Yet Completed All Corrective Actions*.
[76] Ibid.

> PV is a better opportunity for the customer and a better opportunity for DLA…The [best use of PV arrangements is for] the commodity-type parts, like tires and batteries, which have been coming on to PV. In these cases, vendors need to have a commercial record. When you get into components, they tend to be designed by the company for the military, and that makes it much more difficult to put them under PV arrangements.
>
> Prime vendor needs to stay where there is a commercial market large enough that the companies would participate. What you are really looking at is that you are a value-added reseller, in many respects, overseeing the ordering process, managing inventory and delivering orders. [77]

In addition, in 2006 the Defense Supply Center Philadelphia (DSCP) performed an analysis of PV programs in use. The results indicated that PV is often more efficient than traditional contracts, but reiterated long-term, indefinite-delivery contracts are better suited for certain items.[78]

Lack of capable workforce

Labor issues, including a shortage of properly trained workers, have hindered management and oversight of PV programs. For example, the GAO's review found that DSCP's Compliance Division was unable to complete all of the necessary assessments due to staffing inadequacies and the resulting excessive workloads.

The assessment found, for example, that managers at DSCP realized that no items valued between $2,500 and $24,999 had undergone pricing reviews. The backlog in 2006 totaled 11,260 items, worth a total of $96 million.[79] DLA investigated the cause of the backlog and subsequently authorized an increase in the workforce to help remedy the situation.

Of particular concern is that DSCP finds it difficult to fill many contract-oversight positions. DSCP needs qualified personnel who have been trained in contract oversight, but people with this training are hard to find. Until DSCP adequately recruits and retains staffers, the supply center will continue to have a difficult time with oversight of contracts.[80] While this example highlights a single DLA facility, the workforce challenges appears to be widespread throughout DoD.[81]

Poor pricing reviews

One of the challenges inherent in DoD prime vendor contracting is the fact that vendors frequently are responsible for managing large catalogs of products, many of which have unique specifications and requirements. Pricing, as a result, is a challenge, particularly when there are no commercial market-set prices for these items. Additionally, certain products are required to

[77] See Appendix A for an abridged transcript of the authors' interview with Tuttle.
[78] GAO, *Defense Management: DLA Has Made Progress in Improving Prime Vendor Program, but Has Not Yet Completed All Corrective Actions*.
[79] GAO, *Defense Management: DLA Has Made Progress in Improving Prime Vendor Program, but Has Not Yet Completed All Corrective Actions*.
[80] Ibid.
[81] Ibid.

comply with procurement regulations such as the Buy American Act[82]. These and other unique characteristics of DoD procurement result in anomalous and, in some instances, significantly higher prices. Thus, DoD and its prime vendor contractors have been criticized for poor/inadequate pricing review processes and a lack of oversight. Products were sold to DoD at prices that were higher than actual market value.

The impact of poor pricing reviews was evident at the Naval Aviation Depot in Cherry Point, NC, where a prime vendor was used to obtain bench-stock materials. The PV arrangement lacked adequate contract oversight, which resulted in the PV overcharging Cherry Point by $666,883. The PV eventually refunded the money, but with better oversight the excessive charges could have been avoided in the first place. Moreover, because it takes time and money to obtain and administer refunds, the depot still failed to realize the true savings, even though the overcharges were refunded.[83]

In another instance, the Office of Inspector General (IG), DoD conducted an audit of the procurement of propeller blade heaters for the C-130 and P-3 aircraft in 2000. The procurements were handled under a virtual prime vendor contract issued to United Technologies Corp., Hamilton Standard Division, managed by the Defense Supply Center Richmond. In its audit report, the IG found that the Defense Logistics Agency paid from 123.6 to 147.7 percent more than fair and reasonable prices for the heaters under the VPV contract.[84]

Public concerns about private contractors

Another obstacle for effective implementation of PV contract arrangements is the widespread concern that private contractors cannot meet the military's needs. One common concern among the public and some legislators is that contractors cannot respond to emergency requests for supplies with sufficient speed.

Many government workers also fear the potential loss of their jobs when a private contractor takes over certain responsibilities.[85] This has been apparent in recent trends toward in-sourcing a greater proportion of DoD current needs.[86]

Lack of strong leadership

Government leaders have yet to give supply chain management reform their full attention, in part because they are extremely limited in the number of changes they can implement. But without high-level leadership, at the secretary or agency-leader level, transformational changes will not

[82] The Buy American Act (BAA - 41 U.S.C.§10a–10d) passed in 1933 by Congress and signed by President Roosevelt, required the United States government to prefer U.S.-made products in its purchases. Other pieces of Federal legislation extend similar requirements to third-party purchases that utilize Federal funds, such as highway and transit programs.
[83] Office of the Inspector General,(DoD), *Industrial Prime Vendor Program at the Naval Aviation Depot - Cherry Point*, 32.
[84] Office of the Inspector General,(DoD), *Audit Report: Procurement of the Propellor Blade Heaters for the C-130 and P-3 Aircraft*, i.
[85] Gansler, *Transforming Government Supply Chain Management.*
[86] See Gansler, *The Current State of Performance Based Logistics and Public-Private Partnerships for Depot-Level Maintenance: Operating Models, Outcomes, and Issues.*

happen.[87] Without effective leadership, DoD will not gain the many benefits associated with PV and will run the risk of perpetuating current problems.

Although prime vendor programs have saved the federal government millions of dollars, the number of PV programs has remained relatively small. As noted earlier, as of 2007, PV programs handled only 20 percent the DLA budget.[88] This suggests that although PV contracts represent a relatively small slice of the DLA pie, the cost savings achieved by implementing this contracting arrangement are significant. With more widespread implementation of prime vendor contracting, the potential savings could be far greater.

[87] Gansler, *Transforming Government Supply Chain Management*.
[88] GAO, *Defense Management: DLA Has Made Progress in Improving Prime Vendor Program, but Has Not Yet Completed All Corrective Actions*.

Part VIII: Recommendations

With the right leadership and oversight, prime vendor programs can be an effective tool for improving the Department of Defense's supply chain management practices and results. Readiness is of the utmost concern for DoD, and PV, when properly implemented, maintains operations at their highest level but at a lower cost than the military could achieve under its traditional acquisition and supply chain system. DoD therefore should increase its utilization of PV with the objective of improving the readiness of weapons systems, while simultaneously cutting costs.

When applied to third-party logistics and supply chain management, moreover, PV contracting offers an effective way for DoD to obtain the cost and efficiency benefits of private-sector practices (such as performance-based logistics) and data management systems (such as point-of-sale data analysis). But, as we have seen, the department must address several key issues to achieve proper implementation if it is to achieve PV's full benefits:

Metrics

The government needs to move away from metrics that incentivize high numbers of parts replacements, which lead to excessive stockpiling of parts and an increase in complex and costly repairs. Instead, DoD should use metrics (such as those in Performance-Based Logistics programs) that reward suppliers for system readiness and availability, including integrating efforts to increase efficiency in third-party supply chain management.[89] These metrics should include indicators surrounding availability, reliability, cost, and the logistics footprint; in addition to customer satisfaction.

Appropriate commodities

Repetitively purchased items, such as medical supplies, and replacement parts like tires, are ideal candidates for PV contract arrangements, a need affirmed in General Tuttle's interview in Appendix A of this report. PV arrangements result in a greater variety of available products and more timely delivery, at significantly reduced costs to DoD. There will need to be some investment in determining which products are best-fit for PV, but these short-term investments will allow for long-term savings throughout DoD by transitioning this role to the private sector.

Trained personnel

Lack of properly trained staff to manage contracts and in some cases, insufficient staffing, have made it difficult for some of DLA's supply centers, as well as the service branches, to manage PV contracts in an efficient and timely manner. To remedy this problem, DLA and the service branches should put significant effort into recruiting and retaining knowledgeable, trained personnel to ensure proper management and oversight of contracts.

Issues around pricing will continue to require monitoring, and necessitate an adequate understanding of the often unique nature of some of the products carried in catalogs under prime

[89] Gansler, *Transforming Government Supply Chain Management.*

vendor contract management. While monitoring and setting market prices helps, personnel also must be trained to understand how requirements such as the Buy American Act affect pricing. They also must understand pricing in situations where market pricing is not possible due to the unique nature of the product.

Pricing

Devote sufficient attention and resources to analyze pricing. Pricing is difficult even under the best of conditions. Setting prices based on market conditions helps, but for pure military applications markets do not always exist, and may not function properly.

Trust of contractors

For PV arrangements to be a sustainable option, contractors must prove themselves to be both capable and necessary. The public must be shown that private companies frequently handle emergency situations and the needs of customers and consumers, and that they can do so effectively and cost-efficiently. In order for the DoD to develop confidence in this approach to supply chain management, the system must guarantee that customers are more satisfied following changes to the acquisition process, because if they are not, the acquisition workforce will continue to circumvent the system, rendering reform efforts irrelevant. This means that the bullwhip effect – and the inventory stockpiling it engenders across the supply chain – will continue to be a problem. By building in levels of performance that meet customer needs, contractors deliver higher levels of customer satisfaction that results in significant cost savings, and more reasonable pricing. Contractors, therefore, by making this data available can earn the trust of their public sector customers.

Ability to handle surge

The ability to handle surge requirements is a critical requirement that key prime vendor contractors must be equipped to meet. Prime vendor contracting oversight, therefore, must be able to gauge, during the selection process, a PV's ability to meet surge needs effectively in ultimate support of the warfighter. Additionally, contract managers should build in mechanisms to track the PV's performance in meeting surge needs.

Leadership

In order to implement PV in more of DoD logistics and supply chain programs, significant and motivated leaders must make this a priority. With the right leadership, momentum can be built toward widespread use of PV contracts, to maximize cost savings in this time of budgetary constraints. In addition, stronger leadership could improve contract oversight, eliminate many administrative problems that continue to occur, and help to ensure that all parties are implementing best practices.[90]

[90] GAO,*Defense Management: DLA Has Made Progress in Improving Prime Vendor Program, but Has Not Yet Completed All Corrective Actions*.

Part VIX: Conclusion

Prime vendor contracting is a proven method of streamlining and reducing the cost burden of DoD procurements. As the case examples and discussion in this paper indicate, this method of contracting, executed in best practice form, delivers measurable savings and service improvements. It is highly appropriate for products and commodities that are standardized and purchased in repetitive, relatively high volume. Many DoD-procured commodities fall into this category.

In conclusion, PV contracting is a way for DoD to meet its repetitive sustainment supply needs at lower cost – in effect, to make ever-tightening defense budgets go farther.

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Appendix A: Prime Vendor Contracting – An Insider's Look at the Past and Thoughts for the Future

Gen. William G. T. Tuttle, Jr. (ret.) can claim a long history of accomplishments. The 1958 graduate of the United States Military Academy at West Point (B.S. Engineering) progressed through increasingly responsible positions in military transportation, logistics, and acquisitions in the United States, Korea, Vietnam, and Europe. His military career culminated in his 1989–1992 assignment as Commander, U.S. Army Materiel Command. He retired from the Army in 1992.

But that's just one aspect of his varied career. Gen. Tuttle holds an MBA from Harvard University's School of Business Administration. He has also been a diplomat in Europe; led supply efforts on the battlefield; and taught at a host of military and public institutions, including his alma mater.

"Retirement" is a relative term in his case; Gen. Tuttle was president and CEO of not-for-profit Logistics Management Institute Government Consulting from 1993 through 2001 and was chairman of the all-volunteer Procurement Roundtable, which advises government on making improvements in federal acquisition practices, from 2003 to 2010. He also continues to be involved in the Defense Acquisition University, military associations, and consulting task forces. In 2005, the Naval Institute Press published his book, *Defense Logistics for the 21st Century*.

We spoke with Gen. Tuttle about his experiences with and ideas about prime vendor (PV) contracting. The following is a condensed and edited transcript of his remarks.

When did you first starting working with prime vendor contracting arrangements?

My association with prime vendor contracting goes back to 1993–1994, because I was at LMI (LMI Government Consulting) as CEO. I also did some work with the Defense Logistics Agency (DLA) then, because they were interested in getting this movement going, particularly with pharmaceuticals and mid-surge supplies.

DLA was impressed with the fact that under PV arrangements they were stocking hospitals, keeping them up to date, and that it was almost a seamless process. When DLA embarked on that, we helped them out, trying to look at contracts and how to figure it out and make it work better.

I went from that work to food—another big challenge for DLA. I was over in Europe a couple of times in 1996 and 1997, and I was really impressed with how well they were doing. Sergeants always used to be going to subsistence facilities, where there were stock-outs and substitutes. And having run one of those ration-distribution operations 20 years before, I was really impressed with how things were there.

How did DLA decide to explore PV contracting?

The Industrial Supply Center merged to form the DSC Philadelphia and it brought in a lot of tools and lumber. So, that group was more open to doing PV than others at the (Defense Supply

Center-Philadelphia). There were two groups of managers: some who were looking for the best value, and those who were job protectors, but that is natural. It is a continued tussle, but they were able to overcome it because they got good backing from the Generals in charge. But when one of the most motivated Generals (who I worked with closely) retired, PV in that area lost momentum.

In 2000 or 2001, when the Special Forces folks starting working with DLA, they were upset about getting their gear from DLA's places because there were requisition back orders. So the Navy SEALs bought, with their own funds, in Norfolk at Little Creek from Atlantic Diving Supply (ADS). ADS started to provide them with their gear, and that just grew.

Finally at DSCP, they decided to do a PV competition for special gear, like for Rangers and explosive ordinance disposal. They do have somewhat unique gear, so there is a fairly small group of 250 to 300 companies that can service that market. ADS bid on the contract and won. Over the last eight to nine years, they have developed a good-sized catalogue and now there are more items available than there were before.

What other procurement challenges have been present? Can PV be used on other commodities?

One area of concern has been on the clothing and textile side, such as uniforms, etc. These are not items that are technologically challenging to manufacture, but they don't do well in satisfying customer orders—they're always backlogged. When units request them through the regular process, orders lag, sometimes for months on certain items. They have great difficulty. They clear up one problem and another comes up.

There has been a push by some "frequent deployers" to get a more responsive system, for textiles. This same little company, which has grown considerably, has agitated for widening its contracts, but it is still a subject of conversation whether to push the clothing and textiles group to a PV. If they did, it would take care of uniforms and all basic trainings needs, as well as replacement items for people in the field.

In the Air Force, for example, dog handlers at Lackland Air Force Base require a unique set of gear. So this was put on the Special Ops PV contract. And they treat it like L.L. Bean: a new person comes in and they get his sizes, and then they send it to ADS with the paperwork, so it can be returned and entered on the property record. There is nothing complicated about it. They either have the items in stock or they can get it from the vendor very quickly. They know that if they don't respond, there are others that will take their place. It's a matter of extending this to other commercial items, but there are institutional barriers to really getting this done.

What other products have successfully been put on prime vendor contracts? Are there other challenges?

In addition to those other examples in DLA, tires have gone on PV. There have been efforts to put commercial-type electronic parts on PV because they've had difficulty with counterfeit parts. There are a lot of fraud investigations going on. There are brokers in the U.S. who may work out of their kitchens, working with Chinese companies who have reconditioned parts they've bought or that have been turned in. There is an effort in China to salvage those parts, but sometimes they turn around and put a label back on them and send them back to the United States. *Business*

Week had a cover article on counterfeit parts. One of the ways to deal with that is to put it on a PV contract—making the vendor ensure the integrity of the items—and screen out those people who are not proven suppliers of these items. They will have the largest vested interested because they wouldn't want to lose the contract. There are lots of ways to write a contract, including penalties.

Has there been a lot of resistance?

A good friend, who was with DLA, tried hard with Philadelphia, but there is a lot of political resistance. The Pennsylvania delegation got into it; there were a lot of jobs at stake. It is yet to be seen if key stakeholders will be able to handle that.

PV is a better opportunity for the customer and a better opportunity for DLA. They can shed some positions and convert the ones they have for overseeing PV contracts. The loss of jobs is not necessarily the reality.

Do you see PV ever expanding to a larger sphere, for example, supporting components for weapons systems?

The most you can really extend it is into the commodity-type parts, like tires and batteries, which have also come on to PV. In these cases, vendors need to have a commercial record. When you get into components, they tend to be designed by the company for the military, and that makes it much more difficult to put under PV arrangements. The perfect profile for PV is a high-volume, commoditized, not customized, type product. .

What do you think is the most common obstacle for PV contracts operating best? What about quality control?

It is a matter of folks understanding PV and getting the contract right. You need to be writing a contract with appropriate metrics. Before you can establish the proper metrics, though, you need to set clear objectives and align your whole team around them. Once you have the right objectives, you then can devise the right metrics and contracting strategies.

Prime vendor needs to stay where there is a commercial market large enough that the companies would participate. What you are really looking at is that you are a value-added reseller, in many respects, overseeing the ordering process, managing inventory and delivering orders.

Higher-value commodities or components that require quality or acceptance testing may not be a good fit for PV because, for a vendor, the cost could be prohibitive. For those high-value items, as a result, much of the acceptance testing is done by the producer/manufacturer.

Here is an example: If you buy components, like engines, quality assurance testing is done by the DCMA (Defense Contract Management Agency) or if they are going through a performance-based logistics (PBL) integrator like Boeing or Lockheed, performed by them as well. The scheme of inspection is fairly rigid and extensive for major components.

Commodity-type items that are handled through a PV undergo less rigorous evaluation since they are basically commercial products; you rely on the fact that these products already meet

commercial quality standards and generally don't require additional inspection. There are spot checks, but DCMA doesn't do any inspection in the facilities.

On the other hand, ADS will go visit the production facility, because they are sensitive to customer complaints. If there are problems with diving or other equipment, you get complaints from customers, just like in the commercial sector. ADS has a technical sales force and they know the equipment. They teach the units how to use the equipment, but they also keep quality in mind.

Are there traditional metrics that should be built in? What should they be?

The most important metric should be timely delivery of the requirement. DLA looks closely at that. The agency also looks at the cost and customer reaction to the product. Products get graded by the users.

Do you think PV contracting faces the pressure that PBL is under with the in-sourcing trend?

PV is different enough that it should not come under that pressure. The benefits have been fairly clear to DLA. And, of course, DLA is the major user of PV. Most services don't do inventory management; that is also shifting to DLA. There is still an opportunity to do more, in order to garner the efficiencies that the Secretary of Defense is seeking. PV offers a way to manage supply more efficiently, without the problems, without the 19th century system we've been using since World War II.

In the late 1980s or early 1990s, there was a series of TV programs that faulted DLA for pharmaceuticals that were long past their expiration date and World War II-era hospital gowns that were in stock, still in inventory. It just was dead stock. There was no demand for it. It was just there. There was an effort to improve what they were stocking in warehouses, and that was a factor that drove some DLA administrators to think there might be a better way. At LMI, we convinced the Veterans Administration that they should get a contract with distributors to stock 100-some hospitals and clinics. It took them a while to get it right.

What do you see as the major downside of PV arrangements?

I have a hard time finding any cons because it seems such a dominantly positive solution for DoD and customers. Your customers want something and they want it yesterday, so our problem is that we just don't move quickly enough. There is no incentive to do that in the bureaucracy, but you do have such incentives in the commercial sector. But you need adequate oversight.

Continuous training and education about PV is definitely needed at DLA. They have to be engaged with the contracts and the contractors themselves. I admire a couple of folks in Special Ops who make regular visits to the warehouses. They go to the units, and see what the results are—getting the metrics, and then getting a personal feel for it. You need to see how the customers are being served by the contractors. It's about total product and service performance.

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The Center for Public Policy and Private Enterprise provides the strategic linkage between the public and private sector to develop and improve solutions to increasingly complex problems associated with the delivery of public services — a responsibility increasingly shared by both sectors. Operating at the nexus of public and private interests, the Center researches, develops, and promotes best practices; develops policy recommendations; and strives to influence senior decision-makers toward improved government and industry results. The Center for Public Policy and Private Enterprise is a research Center within the University of Maryland's School of Public Policy.