Tail-To-Tooth:

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Logistics Transformation: DoD?s Opportunity to Partner with the Private Sector

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October 1999

Summary
Transforming its ponderous and antiquated logistics infrastructure is the most difficult challenge remaining for the US Defense Department as it seeks to adjust to a much smaller post-Cold War force. However, with challenge comes the opportunity to bring private sector best practices into the solution. Procedures and techniques, pioneered by the private sector, have direct application to the Department of Defense. Supply Chain Management, Enterprise Resource Planning, and e-business are more than buzzwords in the commercial world. Companies like FedEx, Cisco Systems, Dell, and Caterpillar have revolutionized their integrated production, transportation and customer support operations?mostly through stunning advances in information technology. DoD can tap this talent and technology by partnering to accomplish its own logistics transformation. Today, DoD spends a third of its budget?more than $80 billion annually?to operate its logistics system. The Defense Science Board, BENS, and others believe that, by paring DoD?s massive support infrastructure and putting it on a commercial footing, savings of $20-30 billion are possible. These freed-up resources can return the ratio of tail-to-tooth spending to historical parity with more than enough available to pay for force readiness and modernization.

America?s military turns on a huge supply, maintenance and transportation base that is costly and inefficient.1 Its $80 billion annual price tag is nearly equal to the total military budgets of France and Germany combined. Containing, even reducing, such cost is a goal. However, overcoming inefficiency and obsolescence may be even more of a challenge. It is also more important because that is where the true savings are. Recognizing the need to keep pace with revolutionary changes in force structure, defense reformers are targeting logistics as the last redoubt preventing the Defense Department from moving to a world class service and support infrastructure.

Jacques S. Gansler, Under Secretary of Defense for Acquisition & Technology, is the Pentagon?s chief architect of infrastructure. He sums up the challenge neatly: "The huge sums we pay for readiness today are driven by a logistics infrastructure?designed to win the Cold War?and based on technologies of that era?not to meet the anticipated conflicts of the 21st Century with modern logistics processes." He can even put a price tag on the problem: "In reviewing the projected DoD five year fiscal plan, in order to maintain current readiness, we had to again add significantly to the operations and support budget. Over the next five-year period, this amounts to about $4 to $5 billion, or the loss of the equivalent of a wing of brand new fighter aircraft."2

From an industrial perspective, the size of DoD?s logistics enterprise is impressive. It includes 16 inventory control points, 19 distribution depots, and 21 maintenance depots. In its catalogs you can order from among five million active national stock numbered items. Meanwhile, DoD warehouses store an inventory valued at $64 billion. To track everything, the supply network is made up of over 450 different information systems which process over two billion transactions per year at a cost of around $1.5 billion.3

The DoD transportation grid, a combination of both military assets and commercial support, is similarly huge. The US Transportation Command, DoD?s single manager for airlift, sealift, and ground transportation, operates 1,725 aircraft and more than 100 ships around the globe.4 In 1998, USTRANSCOM?s internal operating costs were about $4.2 billion.5 Yet even with this massive in-house effort, 85 percent of DoD?s required support, in peace and war, comes from buying transportation on the commercial market.6

The impact of Infrastructure activities is reflected in DoD?s workforce: nearly half of all Pentagon jobs are in logistics (Figure 1). In fact, according to the Defense Science Board (DSB), logistics support personnel outnumber active combat forces two to one.7

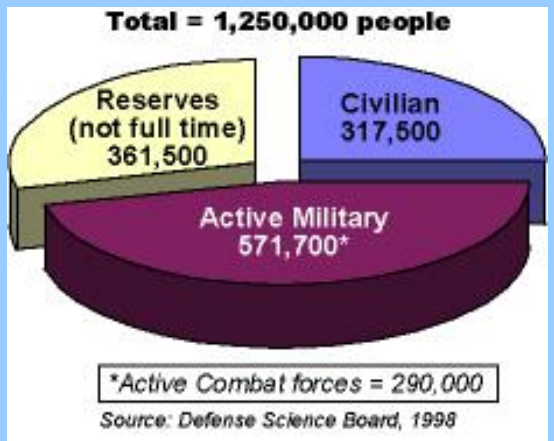

Figure 1. Logistics Personnel

Meeting the logistics transformation challenge will require revolutionary changes, but the potential gains are huge. The nearly $80 billion spent annually on DoD?s logistics infrastructure accounts for almost a third of its total budget.8 Thus, even small improvements in

performance can save billions each year.

Will DoD realize its opportunities to reform the logistics system? Where are the most likely choke points? This issue brief identifies DoD?s main logistics challenges and points to lessons learned from similar experiences in America?s commercial industrial, services and transportation sectors. We conclude with recommendations for modeling future logistics programs on private sector best practices.

DoD logistics reform

The Department of Defense created and perfected the practice of mass logistics in the 20th Century. Built to respond to the challenge of the times, the U.S. defense logistics base was designed to reinforce Western Europe to thwart a threatened Soviet invasion with ten (US Army) divisions in ten days. This feat could never have been achieved from a standing start. It required huge prepositioned stocks of material and ammunition, vast armadas of strategic ground, rail, air, and sealift to move troops from their U.S. bases, and maintenance of a robust public and private defense industrial base to sustain the force once in the field.

Today we recognize that the old model is no longer as useful. Yet, absent a new model it still functions, "pushing" initial deployment supplies to a military theater of operations with little control or re-planning capability from the receiving end of the pipeline. Combat forces lack confidence in the logistics system to supply their needs and therefore call forward "iron mountains" of material before commencing operations.

The Pentagon has tried for years to address these problems. Past reforms have typically focused on the most pressing shortcomings such as unsupportable information systems and inadequate airlift and sealift. Reform in the logistics system has been, until recently, a patchwork. Reengineering efforts were initiated independently in each of the military services and the Defense Logistics Agency (DLA) without regard to an integrated plan. Acquisition reforms?the use of commercial practices and parts in system design?have begun to show some effect on procurement decisions but not on the service and support end of the business. Similarly, the base closure process has had limited impact on reducing excess military maintenance depots and other logistic infrastructure facilities.

Despite this unpromising history, DoD has set far-reaching goals for logistics reform. For example, current programs seek to reduce repair cycle times by 25 percent in FY 2000 compared to the FY 1997 baseline (for example, a 25 percent reduction would mean from 88 days to 70 days for reparable items, or from six months to 4.5 months for major aircraft overhaul) and cut the value of its inventory from $64 billion to $56 billion.

While the specific details of final reforms are still being hammered out, the conclusions are very clear. To achieve its logistics reform goals, DoD must undergo revolutionary change in five key areas: inventory management, outsourcing of non-core functions, defense job transition, rationalizing excess industrial capacity, and mobility (or transportation). What follows is a snapshot of the challenges in each area.

Inventory management is a perennial problem. In 1992, the U.S. General Accounting Office (GAO) reported that DoD continued to waste billions of dollars on excess supplies because of an "inherent culture?that it was better to overbuy items than to manage with just the amount of stock needed." Since then, DoD has made little progress in upgrading the management techniques needed to solve its long-term inventory problems. Indeed, defense inventory is the longest running citation in GAO?s "high risk" assessment of government operations prone to waste, fraud, abuse and mismanagement.

DoD secondary inventory includes spare and repair parts, clothing, medical supplies and other items?all necessary to the support of military operations. However, according to the GAO, about half of the inventory is beyond what is needed to support war reserve and current operating requirements.

In 1995, the inventory not needed to sustain war reserve or current operating requirements occupied about 130.4 million cubic feet of storage space and consisted of 2.2 million different items. DLA estimates that this inventory occupies about 205 complete warehouses (each the size of over two football fields) and has an annual holding cost of $94 million. About 84,000 of these items, occupying 41.7 million cubic feet, had more than a 20-year supply. Most likely much of this inventory will never be used.

Outsourcing of non-core functions — put forth as DoD?s main reform-minded initiative?still lacks a department-wide implementation policy. The task of specifying core requirements and designating inherently governmental activities and positions continues to be approached almost reluctantly — if at all.[9]

Competitive or Strategic Sourcing, as it is called in the Pentagon, is the euphemism for a process of competition between public and private sector bidders using guidelines set forth by the Office of Management and Budget (OMB Circular A-76). Such competitions are criticized in and out of government for taking too long, costing too much and, ultimately, being advantageous to the incumbent public sector entity.

DoD now plans to compete more than 229,000 jobs by 2005. This is a very ambitious goal, given that a typical competition takes 2-4 years. Moreover, current procedures are quite costly.

According to some estimates, simply completing the government?s half of the A-76 process could cost as much as $320 million.10

Solving the outsourcing challenge turns on crafting successful **job transition** strategies. In general, the military services have tended to proceed with reorganizations and process improvements that have job insulating qualities rather than embarking on more comprehensive solutions. These would include, ultimately, partnering or privatizing entire logistics functions and, concurrently, enabling the transition to the private sector or elimination of defense civilian jobs. Although private-sector-led job preserving strategies and federal assistance programs exist, they have yet to be incorporated into an effective DoD program. 11

Excess base capacity especially in DoD?s industrial activities continues to drain operation and maintenance funds. Despite four rounds of military base closures, the Pentagon has largely failed in its efforts to reduce excess facilities, such as depots, test and evaluation centers, and medical facilities, involved in the logistics process. Overall, infrastructure overcapacity continues to divert resources unnecessarily.

Depots have been a lightning rod for Congress ever since the privatization-in-place decisions at the Air Force depots in San Antonio, Texas and Sacramento, California, were announced in July 1995. Since then, the Air Force has been able to conduct public-private competitions and convey facilities at the closing bases to private industry which promise growth and new jobs. No matter: the bad taste left over depots has prevented base closure legislation from moving through Congress for four years. Thus the overcapacity issue remains hostage to politics.

Finally, the need for global **mobility** presents a major challenge for logistics reformers. Currently, it takes an average of 36 days for a peacetime order to reach an overseas destination. Even at the height of Desert Storm in 1991 when all of DoD?s logistics system was focused on the Middle East, the military was moving about 35,000 packages a day with a three-day wait per delivery.

Jumpstarting the Outsourcing Process

The Army Wholesale Logistics Modernization Program, commonly called LOGMOD, seeks to privatize the information management system for wholesale logistics and restructure business practices at the wholesale and installation level to commercial standards. In April 1999 the Army authorized the first Departmental waiver to the public-private competition process. It allows LOGMOD to go straight to a private sector competition. The Army proposal pioneers a "soft-landing" for all displaced government workers. Such provisions are workable; the private sector uses them repeatedly during mergers and acquisitions. DoD needs to get a few successes under its belt, like LOGMOD, to draw serious interest from the private sector in further partnering opportunities.

When DoD is benchmarked against comparable private sector operations, the limitations of its current system become quite clear. Domestic distribution of

goods from defense depots takes an average of 24 days; comparable private sector operations do it in 1-3 days. Repair cycle time for component systems is 18-25 days for DoD and 3-14 days in the private sector.

Now that combat forces are primarily US-based, power projection is tied to availability of rapid, efficient air and sealift. As an example, for the new Air Force expeditionary force concept (designed to deploy about 30 fighters and US-based bombers to Southwest Asia within 48 hours) to work, it takes 110 Air Mobility Command (AMC) aircraft, 135 aircrews, and seven mission support teams to accomplish the mission. The airlift scenario is in flux. The aging C-141 fleet is being retired; the C-5 requires costly avionics and engine upgrades; and the new fleet of 120 C-17?s which are in the middle of production leave AMC 15-30 planes short of the requirement in its 1998 master plan.12

Private sector partnering opportunities

Like DoD?but a decade earlier?America?s services and transportation industries faced challenging threats to their *status quo*. Globalization, digital communications, Japanese producer-supplier alliances (or keiretsu) and just-in-time inventory techniques were just a few of the innovations that combined to send American industry and its logistics infrastructure into a competition tailspin.

Industry?s initial reaction was to consolidate and reorganize operations to gain greater efficiencies?and to downsize the workforce. As the shakeout continued, the entire private sector logistics system was transformed. New buzzwords and reengineered processes came into being such as supply chain management and enterprise resource planning. Successful companies expanded their outsourcing efforts and began to form strategic partnerships with an expanded supplier base. These techniques relied heavily on advances in transportation effectiveness and information technology. The "best of the best" are discussed below in relation to their potential to help DoD complete its own logistics transformation.

Supply chain management, or SCM, describes a wide scope of activities, ranging from how customer orders are processed to how used products are disposed or recycled.13 These myriad activities are largely focused on three primary objectives:

- Getting the right product to the right place at the lowest cost
- Keeping inventory low as possible while still offering superior customer service
- Reducing cycle times

SCM is not just the latest management fad. According to the

Department of Commerce, supplier chain techniques have allowed U.S. companies to cut inventories dramatically.14 Starting in the 1980s America?s private sector while actually growing at a rate of about two percent, pared its total inventory by nine percent. To stay competitive, industry reengineered processes and radically changed inventory management culture. Typical carrying costs for inventory fell an average of 10-20 percent. As a result more than $82 billion in capital was freed for other uses.

Companies employing best-in-class supply chain management practices are outperforming their competitors. The advantages include 10 to 30 percent improvement in on-time delivery performance, 50 to 80 percent less standing inventory, and contribution to the corporate bottom line of an additional three to six percent of revenue.15 Should the Defense Department try to emulate the best the private sector has to offer in inventory management practices? If DoD, now spending $15 billion a year to replenish inventory, employed best-in-class, private sector-developed inventory management techniques to cut costs by even seven percent, it would save over $1 billion.

Leading companies have been able to achieve astonishing economies in supplier chain operations by employing an integrated approach known as **enterprise management**. The technique, made possible by advances in computer workstation technology, has enabled powerful software to be combined into complete process management applications.

In today?s business environment, an organization?s desire to manage all facets of the operation runs counter to its desire to be fast and flexible. In the enterprise-wide model, collaborative partnering replaces the old hierarchy of a senior management controlling all aspects of a diversified organization. Information flows throughout the organization, as opposed to the old system of top-down, where information flows between headquarters and the field.17 New software technologies permit the seamless flow of information and materials between different units of a larger business.

The Seven Principles of Supply Chain Management

1. Segment customers based on service needs. Companies have traditionally grouped customers by industry, product, or trade channel and then provided the same level of service to everyone within a segment. Effective supply chain management, by contrast, groups customers by distinct service needs—regardless of industry—and then tailors services to those particular segments.

2. Customize the logistics network. In designing their logistics network, companies need to focus intently on the service requirements and profitability of the customer segments identified. The conventional approach of creating a monolithic logistics network runs counter to successful supply-chain management.

3. Listen to the signals of market demand and plan accordingly. Sales and operations planning must span the entire chain to detect early warning signals of changing demand in ordering patterns, customer promotions and so forth. This demand-intensive approach leads to more consistent forecasts and optimal resource allocation.

4. Differentiate product closer to the customer. Companies today can no longer afford to stockpile inventory to compensate for possible forecasting errors. Instead they need to postpone product differentiation in the manufacturing process closer to the actual customer demand.

5. Strategically manage the sources of supply. By working closely with their key suppliers to

5. Strategically manage the sources of supply. By working closely with their key suppliers to reduce overall costs of owning materials and services, supply chain management leaders enhance margins for both themselves and their suppliers. Beating multiple suppliers over the head for lower price is out. "Gain-sharing" is in.
6. Develop a supply-chain-wide technology strategy. As one of the cornerstones of supply-chain management, information technology must support multiple levels of decision making. It also should afford a clear view of the flow of products, services and information.
7. Adopt channel-spanning performance measures. Excellent supply-chain measurement systems do more than just monitor internal functions. They adopt measures that apply to every link in the supply chain. Importantly, these measurement systems embrace both service and financial metrics, such as each account's true profitability.[16]

Enterprise management software generally falls into one of two categories? enterprise resource planning (ERP) applications from companies like **SAP, Baan, PeopleSoft** and **Oracle**; and planning-engine applications from software vendors like **Manugistics** and **i2 Technologies**, which integrate transaction-based processes such as shop-floor control, shipping, traffic, logistics, and inventory management. The purpose behind such software is to harness quality and manufacturing excellence?the competitive strategies of the early 1990s?to the concept of the extended enterprise which requires redefining, then integrating, the total supply chain. The acceptance of these techniques is becoming near universal in the second half of the 1990s with companies as diverse as **Lever Brothers, Amoco, Dayton-Hudson, Dow Chemical, Frito-Lay, Gillette, K-Mart, Nike, Procter & Gamble**, and **Safeway** investing heavily in enterprise management solutions.

The ubiquity of the Internet has also accelerated the spread of enterprise management techniques. **Cisco Systems**, the preeminent supplier of electronic switches that route Internet traffic, is itself captivated by managing its supplier chain. It has taken the next step, developing so-called knowledge-based tools that attempt to automatically analyze the information flowing through ERP systems. Customers depend on Cisco?s ability to respond to emergency requests for routers and other products to avoid the tremendous costs of network downtime. Cisco has partnered with **UPS Worldwide Logistics** to develop a system for scheduling quick delivery of products by being able to track and automatically reroute an order at any time. The ability to link product location with international air or surface transportation schedules has the ability to reduce delivery times dramatically. Interesting, but not surprising, Cisco builds none of its own components. Manufacturing, too, is outsourced.[19]

Another commercial best practice is taking on new possibilities with the advent of SCM and ERP. **Outsourcing** non-core operations in order to tap providers who are world class in their own fields has been gaining ground with service providers.

First, Know Yourself
Caterpillar, Inc., was one of the first original equipment manufacturers (OEMs) to recognize back in the 1980s that to compete globally in the heavy equipment industry they needed to know, and in some cases anticipate, supply and spare parts needs in order to minimize their customer's equipment downtime. Caterpillar's enterprise-wide logistics solution was to develop simulation models that could improve service and reduce downtime, as

develop simulation models that could improve service and reduce downtime, as well as identify potential on-hand inventory reductions that would lead to lower carrying costs. The system has been introduced company-wide and, today, spare and replacement parts are moving within minutes of an order being placed from anywhere in the world. Ninety-nine percent of Caterpillar's replacement parts are delivered within 24 hours.[15]

In the service and support industry, outsourcing followed the general private sector pattern. The efficiencies and savings brought on by implementing supply chain management techniques had the concomitant effect of creating a subtier of reliable, stable suppliers that eventually became outsourcing partners. Those successes enabled corporate chiefs to further focus on core business lines and look outside their companies for help in replacing traditional line operating functions.

Building supply chain confidence on the Internet

Dell Computer's factory in Limerick, Ireland supplies custom-built computers to most destinations in Europe. Orders coming in to its Internet website and phone centers are instantaneously relayed to Dell's suppliers as well. Because they have real-time access to information via Dell's corporate extranet they can schedule production and delivery to ensure there is always just enough of the right parts to keep the production line running smoothly. Customers also have access to Dell's production website. There they can track the progress of their order from factory to doorstep, thus saving on telephone or fax inquiries. The Internet gives customers unprecedented power to seek out lowest prices, however, argues Michael Dell, founder and CEO, it can also be used to deepen relationships and ultimately build far greater customer loyalty than before.[20]

Outsourcing is particularly broad-gauged in the airline industry. Today, it is estimated that $25 billion is tied up worldwide in reparable and spare parts for commercial planes. Of this total, only $6 billion of inventory is used each year. Cutting this idle inventory can reap huge savings. Aviation consultants estimate that a 25 percent cut in inventory would trim airline expenses by nearly $2 billion?a boon to an industry that only earned $1.5 billion as recently as 1997. To cut overhead costs, many airlines are moving to owning only the "name on the tail." The trend is certainly in that direction: of all the planes flying in the world today, 65 percent are leased. As airlines outsource to save capital, the vendor market is expanding. Nothing is being discounted; some air cargo airlines are considering building their own air-to-air refueling capability to enable them to leapfrog time-consuming and costly en route refueling stops, especially in the Pacific. Were this to happen, why wouldn?t DoD consider outsourcing as an alternative to the high cost of maintaining and operating a portion of its existing tanker fleet?especially for routine ferrying or training deployments in the U.S.? **Omega Air** of Washington, DC, using a refueling-modified **Boeing 707**, already has such a proposal on the table for the U.S. Navy.

In addition to subtier logistics, service and supply companies are adding strategic outsourcing partners in the following fields:

- business services
- information technology
- human resources

- health care

Microsoft Corp., for example, has run the gamut, becoming the prototype of the virtual corporation. Manufacturing and operations have been outsourced, as well as order fulfillment and customer telephone support. Internally, computer installation and networking is subcontracted to computer reseller, Vanstar. Most of Microsoft?s financial network is run by outside providers, including parts solicitation, benefits administration, and pension planning.[22]

Outsourcing Information Technology Moves Closer to Home

The **National Security Agency** is turning to outsourcing key parts of its administrative and support infrastructure so that it can concentrate resources on its core intelligence gathering functions. It has taken steps to outsource data centers, desktop computer purchasing and management, telecommunications, and may eventually consider outsourcing functions like payroll and human resources. Known as "Groundbreaker", the program is the first in federal government to approach outsourcing on this scale. It has attracted some of the biggest private sector IT companies, like **AT&T**, **Andersen Consulting**, **Computer Sciences Corporation**, **Electronic Data Systems**, **GTE**, **IBM**, **Keane Federal**, **Lockheed Martin**, and **OAO**. NSA's proposal is proactive: companies have been pre-qualified and will be invited to participate in developing the requests for proposal. NSA is looking for commercial best practices: for example, they want contracts with "level-of-service" provisions rather than contracts based on paying for time and materials. The Agency also wants to structure the contracts so that NSA's information technology workers will want to leave the government and join the private sector. NSA envisions a "softlanding" for employees who leave.[21]

Transportation has become a major area of economic growth and an important factor in the enterprise-reengineering boom. Ensuring rapid, error-free delivery has given tremendous competitive advantage to firms who have already seen the massive reductions in order and ship times become commonplace in their industries. Turning to a new kind of company?the third party logistics (3PL) provider?manufacturing and commodity firms are tapping an outside reservoir of help in improving delivery performance.

Ryder Integrated Logistics (RIL) is the market leader in the field. As a "general contractor" for supply chain solutions, RIL develops and provides services which improve product availability and timely deliveries, help reduce inventories and speed products to market. As a partner with **Florida Power and Light**, for example, RIL manages and operates a next-day distribution system for the utility, delivering electrical components from the central distribution center in Riviera Beach to local distribution storerooms through-out Florida. Disaster struck in 1992 when Hurricane Andrew left hundreds of thousands of south Florida customers without power and destroyed several downstate storerooms. Ryder immediately called in extra trucks from unaffected areas and within hours was able to redesign the distribution system, establish new routes and schedules and add additional drivers and equipment, enabling Florida Power and Light to get two deliveries a day, seven days a week during the hurricane?s aftermath. The utility credits its strategic partnership with RIL as providing emergency expansion capability that would have been impossible to muster if the utility was working with its own resources. In addition, the

partnership has enabled Florida Power and Light to reduce its inventory by $30 million contributing significantly to the bottom line.[23]

Going Global

Another business example of software solutions applied to "stream inventory management" is **Eastman Chemical**, a commodity plastics and fine chemicals manufacturing company in eastern Tennessee. Stream inventory management for the company's 1,500 different raw materials from 850 different suppliers requires gigabits of information. To handle the load, Eastman Chemical developed the Global Business Integrated Information System, or Globiis. Using software from Germany's SAP as a platform, Globiis is able to track inventories, worldwide, in real time. Once the on hand levels are set, one person tracks the entire inventory stream from raw material to finished product.[25]

Without a doubt, the most significant enabler of the transformation in the services and support sector of the US economy is the advent of sophisticated **information technology** (IT) solutions. **Federal Express** is an acknowledged industry leader? but not as one might assume only in the transportation business. FedEx chief, Frederick Smith, views his company as a leader in the information technology business. Why so? Because the time material spends waiting in transit can be managed with an infusion of IT resources. At FedEx internal studies reveal that, from the time delivery orders are placed, material is actually moving through their system less than 25 percent of the time.[24] Packages may be sitting on desks, waiting for pick-up, on a warehouse dock, in customs or stuck in traffic. Matching real-time information about orders, integrating surface and air transport modes, and matching arrival and departure time can reduce non-value added wait time at the nodes. FedEx has derived significant profits from even small reductions in non-value added wait time?and added new customers.

Doing Business on the Internet

The Boeing Co., like other major original equipment manufacturers (OEM's), have developed customer-focused support operations and are finding major revenue sources using the Internet. Boeing's "Part" website (http://www.boeing.com/assocproducts/bpart/partpage/) processes more than half of all transactions received by the company's spare parts organization. Major airline customer's order parts 24-hours a day, as well as specify shipping instructions and track parts' movement. In 1998, the Part site handled 1.6 million transactions—twice the number from the previous year.[26]

DLA, in concert with a growing number of American companies, has turned to FedEx to apply IT solutions to its supply support needs. DLA on an experimental basis is stocking more than 5,000 Defense Department supply items at the FedEx warehouse in Memphis, Tennessee. Delivery goals of 24 hours domestic and 48 hours for overseas airport delivery have been demonstrated. As important, however, are the assurances provided by FedEx?s investment in IT resources: 99.9 percent order accuracy and 98 percent asset visibility as the parts move through the system.

IT is also a prime outsourcing candidate. Businesses need guaranteed access to information; they don?t need the expense of owning and maintaining the delivery system. In fact they don?

t need to be hardware and services experts at all. To ensure that companies who need access to the latest technology but cannot afford?or choose not to maintain?their own IT department, industry leader **UNISYS** has developed SelectIT, an outsourced service in which **UNISYS** runs the competitions and selects the equipment and services that will provide its outsourcing partner with the IT solution it needs.

Commercial logistics and DoD?s future

Each of the companies mentioned thus far is important to DoD?s logistics transformation challenge because each provides an example of excellence in managing logistics infrastructure transition. Experts acknowledge that American companies planning to stay in business in the next century will have had to adopt the management processes and techniques these pacesetters have pioneered.

Some private sector companies have already attempted to jumpstart the DoD effort. **Caterpillar**, in conjunction with **Andersen Consulting**, has proposed an enterprise logistics solution that would enable DoD to bring on board best commercial practices using the same world class system used by Caterpillar?s customers. Key to such a system is integration of core logistics business processes: requisition processing, materiel management and warehouse management. Caterpillar?s system could give the Pentagon:

- on-line, real time customer-driven requisition processing
- management of inventory, not people
- warehouse operations optimized to meet customer requirements and improve materiel velocity
- repair process driven by customer demand and the system, not negotiation
- improved availability and readiness of end item achieved through predictive maintenance capabilities

In the next decade the foregoing tools will become essential investments for any serious competitor in the services/support sector. By then, the industry leaders will be racing to implement the next stage: Network Resource Planning, which is the integration of multiple system solutions to enable networks of customers, intermediaries, and suppliers to operate effectively as one entity. Some say that even that model is passe: the Internet has made possible new solutions in which the business applications sit on web servers to which anyone with intranet has access.

Unless DoD follows the lead of the commercial sector it will continually to fall behind. The reasoning is laid out by Lou Gerstner, IBM?s chief: When a really large company moves some or all of its operations to the web, its business partners come under pressure to do the same. This new e-business

model tends to "freeze-out" customers and suppliers who do business the old fashioned way. A lot of companies are moving in the e-business direction. DoD logistics is big business too, but ultimately it relies on industry for its basic commodities and finished products. The message is clear: adapt or risk losing access to the industries? leaders.[27]

Unfortunately, DoD intransigence and slowness to react to private sector opportunities like these may cause companies to turn to more responsive customers and markets. The Defense Department has a fleeting opportunity to join with the private sector in creating a revolution in business affairs. The window will not remain open indefinitely.

Vision for 21st Century DoD Logistics

The Pentagon knows what it needs and wants to do to reform its logistics system. The transformation begins with **Focused Logistics**, the Defense Department?s strategic plan for providing support to its combat forces.[28] The plan outlines a set of goals to bring current processes in line with the best practices in government and industry.

Implementing the Logistics Strategic Plan

The Army Materiel Command is committed to a program to make the logistics structure smaller, lighter and more responsive. AMC is developing procedures similar to the overnight delivery companies. In addition to electronic ordering and tracking, it is moving toward direct delivery from vendor to the user, maybe not all the way to the foxhole, but at least as far as the Division rear area support.[29] Other process improvements, like reducing cycle time of programs begun after 1999 by 50% over historical averages that ran 11-13 years (and sometimes closer to 18-22 years are discussed in detail in the DoD "Logistics Strategic Plan."[30]

To achieve its goals DoD is trying to make its logistics structure smaller, lighter and more responsive. One track is to develop procedures similar to the overnight delivery companies. In addition to electronic ordering and tracking, DoD is moving toward direct delivery from vendor to the user. Other process improvements, like fully implementing streamlined acquisition procedures, reducing total cost of ownership by 20 percent from the 1997 baseline, expanding the single process initiative (which converts blocks of current contracts from military to commercial specifications) and increasing the use of price-based acquisition are underway.

The key metrics and expected reductions of the transformed logistics system are shown in Figure 2.

Figure 2: Logistics Transformation Goals

Key Objectives	Key Metrics	FY 1997	2000	2005

Improve Service	Cut Acquisition Time	11.5 years		5 years
	Order-Receipt Time	36 days	18 days	5 days
	Customer Confidence	20%	60%	100%
	Total Asset Visibility	60%	90%	100%
	Depot Turnaround (*Aircraft*)	6 months	4.5 months	2 months
Reduce Costs	Reduce Inventory Control Points	16	14	5
		21	14	9
	Reduce Maintenance Depots	23	19	9
	Reduce Distribution Depots	$80B	$72B	$64B
	Total Logistics Costs	742,000	680,000	500,000
	Total Maintenance Personnel	$64B	$56B	$48B
	Secondary Item Inventory			

Source: DoD

The Defense Science Board thinks these goals are achievable. They reason that the transformation of the military logistics? business and information systems are not "held up by knowledge of what to do, not primarily a structural issue, nor? limited by lack of people, technology or resources." According to the DSB, the single missing factor is the absence of a powerful executive with the authority to define and enforce an integrated system.[31] The FY 2000 National Defense Authorization Act, currently pending in Congress, contains one solution: redesignating Jacques Gansler?s job as the *Under Secretary for Acquisition, Readiness, and Logistics*, and creating a new Deputy Under Secretary for Logistics and Materiel Readiness with sole responsibility for implementing the Pentagon?s logistics strategic plan.

Leveraging the Commercial Services Sector

The Logistics Civil Augmentation Program (LOGCAP) integrates commercial services and support into tactical military operations. LOGCAP is the ARMY program, the other services have equivalent efforts. Such civil augmentation has proved indispensable in recent contingencies from Rwanda (Operation Support Hope) to Bosnia (Operation Joint Endeavor). It is an essential part of military operations today, yet many critics feel that such combat service support functions are inherently governmental and pose a threat to maintaining adequate military force capabilities. However, civil augmentation provides the military access to commercial capabilities and technology it cannot itself field in a timely manner. Outsourcing as many military deployment and employment functions as possible, perhaps leaving only "two degrees of separation" between the military theater of operations and America's powerful and efficient commercial sector, should not be overlooked as a force extender for American forces stretched thin by multiple deployments and operations tempo.[34]

In surveying the logistics reform challenge, the 1998 Defense Science Board Summer Study Task Force, *Logistics Transformation: Key to Full Spectrum Engagement*, concluded that true logistics transformation must enable the theater commander?s to "pull" required support from the logistics system rather than having it "pushed" from stockpiles and depots before actually needed. In order to achieve the requisite flexibility and efficiency it will be necessary for the military to change how it deploys and is sustained once in the field. Reducing demand on the transportation system by being able to track and redirect material while en route is key. The other imperative is that DoD builds reliance on commercial partners

into the supply chain.[32]

As experts point out, however, it is not fully appreciated that, as the supply chain becomes more efficient, a reliance on transportation develops "with a level of efficiency we have never seen."[33] The relationship is straightforward. Raising the level of asset visibility can eliminate the wasted time materials sit on loading docks or in warehouses only if the transportation system is flexible or speedy enough to meet exacting delivery standards. The application of information technology makes meeting these standards possible. This relationship explains FedEx CEO Fred Smith?s observation that his company is not only transportation per se but also an information technology company predominantly. IT will be the enabler of the logistics transformation.

BENS Recommendations

During World War II, Admiral Ernest J. King is said to have remarked to an aide: "I don?t know what the hell this ?logistics? is that Marshall is always talking about, but I want some of it." The remark proves the old adage that in peacetime all generals are strategists but in war successful generals are logisticians. Tail and tooth are not easily separable.

The difference between the tooth and the tail, when it exists, lies in the rules to which each responds. For example, the "pointy end" of the 1st Tactical Fighter Wing at Langley AFB, Virginia?three squadrons of F-15C/D fighters?is clearly not a business, it is a military capability employed using military tactics and principles. However, much of the Wing?s supporting infrastructure operates according to business principles. True as well of the rest of the military. As you move back from frontline units, more and more of DoD?s infrastructure operates identically to commercial business lines.

Running defense logistics like a business makes sense for much of the Pentagon?s supply chain?stockage, transportation, issue, turn-in, repair, and disposal. For all these reasons it is important that DoD keeps focused on real cultural change in its logistics system. This can only occur if, in addition to internal reengineering and importing best business practices, DoD is willing to leverage the commercial service and support sector of the US economy to become partners in its focused logistics effort.

A 21st Century DoD logistics system can leverage commercial advances to solve its logistics transformation challenge. To aid the transition, BENS has eight recommendations:

1. Focus on advances in whole enterprise management
Advances in enterprise management made possible by

information technology have been revolutionary. Integrated software is the tool that allows the entire supply chain to become visible and responsive to the inventory manager. The view of the "big picture" helps avoid choke points and enhances the entire logistics chain.

2. Plan for Life Cycle Costs
For new systems, consider long-term contractor support and outsourcing maintenance and repair as the first option. Planning for the system?s life cycle from the beginning promotes competition and lowers long-term support costs.

3. Centralize Inventory Management
Centralized inventory management is desirable. It leads to increased competition and buying clout. However, centralized management is not an excuse for maintaining large management headquarters. Information technology can pare the layers of administrative bureaucracy between the supplier, buyer and the user.

4. Buy Off the Shelf
Buying commercial makes sense because it reduces contract costs and overhead. It also helps reduce the need to maintain excess inventory. Commercial off-the-shelf (COTS) solutions expand the supplier base and make the entire global commercial distribution network available to Defense Department if needed. To exploit COTS, the contractor should be responsible for spare parts as well as upgrades. If companies like Caterpillar and Boeing can guarantee spare parts within 24 hours, the same commitment can be made by prime contractors and their suppliers of Contractor Logistics Support (CLS) services.

5. Revitalize the A-76 Process
As part of its current reform plans, the Defense Department expects to conduct public-private competitions affecting over 229,000 jobs by the end of 2005. Using the A-76 process to organize these competitions will generate delays and increased costs. DoD can act on its ability to use waivers to avoid the A-76 process when possible. Congress, for example, could specifically permit A-76 waivers in all cases where Employee Stock Ownership Plans (ESOPs) are created. When A-76 is unavoidable, DoD must increase the size of competitions to increase economies of scale and reduce costs. Congress should raise the A-76 competition threshold from current rules that require comparison studies for activities affecting 11 or more employees. Finally, DoD should require that all commercial activities begin moving to Most-Efficient Organization (MEO) status, whereby all aspects of internal re-engineering are completed before competition with the private sector begins.

6. Partner-in-Place with Industry
For major weapons systems, the military services should bring

the prime contractor into the depot to provide total system performance, systems engineering and configuration management. The prime should be responsible for integrating new modifications of subsystems although the subsystems themselves should be the result of competitive selection.

7. Leverage the Commercial Transportation Sector
Since 85 percent of DoD?s transportation requirements are already provided by commercial contracts it makes sense to put major emphasis and resources into managing that portion of the fleet, using commercial processes and talent to operate the majority of day-to-day transactions. The next stage should be to leverage DoD?s organic fleet by considering lease options and commercial maintenance, repair and overhaul (MRO). Leasing air refueling capacity is not beyond consideration as commercial refueling operations on, for example, long-haul Pacific routes, become a reality.

8. Reward Innovation
The Defense Department can capitalize on the progress made by the private sector, but it must take to heart the notion that its obsolete and costly "just in case" supply management culture must be radically changed. Once the Pentagon embarks on its new course, Congress will need to be patient. Although new techniques will demonstrate improvement once in place, the immensity of DoD?s logistics system precludes quick or easy changeover. Rewards must be tied to making long-term plans and then following through with them.

How will DoD pay for a transformed logistics system? The DSB estimates that a $1 billion investment will return a $10 billion savings. However, the total cost of deploying a new logistics system is likely to be many more billions. There is a bill payer: information technology. By enabling a revolution in business affairs to accompany the revolution in military affairs, IT can change the tail-to-tooth imbalance. The DSB, BENS and others estimate that paring DoD?s massive infrastructure and putting it on a commercial footing can save $20-30 billion.35 Such savings would erase the current shortfall in weapon?s modernization and force readiness spending, and return the tail-to-tooth ratio to its historical parity.

NOTES

[1]The DoD logistics system is organized into four distinct operating functions: materiel management, maintenance, distribution, and transportation. Over time, each has evolved its own management and organizational structure in the military services and the Defense Logistics Agency.

[2]Jacques S. Gansler, Under Secretary of Defense for Acquisition & Technology, "Defense Logistics Reform: Meeting Critical Modern Warfighters

Needs Affordably," speech to the Council of Logistics Management, Anaheim, California, October 14, 1998.

[3]Gansler, "Rapid Force Mobility: Meeting Critical Modern Warfighters Needs Affordably," speech to the 21st Century Symposium, Robins AFB, Georgia, January 30, 1999.

[4]US Transportation Command (USTRANSCOM) has three major component commands: the Military Traffic Management Command (MTMC) for land transportation and port operations, the Military Sealift Command (MSC) for sea transportation, and the Air Mobility Command (AMC) for air transport.

[5]US General Accounting Office, *Defense Transportation: Status of US Transportation Command Savings Initiatives*, GAO/NSIAD-98-99, May 1998.

[6]William Cohen, Secretary of Defense, remarks prepared for delivery to the National Defense Transportation Association, Houston, Texas, October 26, 1998.

[7]Defense Science Board Summer Study Task Force, *Logistics Transformation: Key to Full Spectrum Engagement* (briefing), December 9, 1998.

[8]The term **logistics infrastructure** challenges technical definition but its functional building blocks?the "tail" to the combat forces? "tooth"?have not changed much since about 200 BC when Hannibal crossed the Alps. Men and materiel have to be massed, marshaled, then moved. The army has to be sustained in the field and then, victorious or not, disbanded and returned home. Today, however, such basic infrastructure requirements are commonly described in terms of the life cycle of a weapons system. The cycle progresses from research & development, to procurement/production, warehousing and distribution (or, inventory management). The operational phase includes transportation, in-service use and eventual maintenance/ overhaul. Finally, at the end of its useful life, the obsolete weapon system is relegated to salvage and reclamation.

DoD divides infrastructure into eight categories for budget and funding purposes. Of these, Central Logistics, Acquisition infrastructure, Command, control and communications, and that portion of Installation support which pays for operations and maintenance on logistics facilities are generally considered to be the components of logistics and transportation system costs. The other infrastructure cost categories are: Central medical, Force management, Central training, Central personnel, and the remainder of Installation support. See US General Accounting Office, *Defense Budget: Observations on infrastructure Activities*, GAO/NSIAD-97-127BR, April 1997.

[9]Senior DoD officials define "core" as warfighting, policy, management and oversight. For example, while maintaining government oversight, the full range of non-unit logistics and transportation services could be considered non-core, as well as DoD?s finance and accounting operations; so can most of its information systems activities.

[10]US General Accounting Office, *DoD Competitive Sourcing: Questions about Goals, Pace, and Risks of Key Reform Initiative*, GAO/NSIAD-99-46, February 1999.

[11]See BENS Special Report: *Defense Department Jobs in Transition,* February 1999. Available at http://web.archive.org/web/20061207012728/http://bens.org/pubs_0299.html

[12]In October 1998, DoD authorized a new "Mobility Requirements Study 2005," which will account for demands on mobility resources caused by new threats such as impacts of weapons of mass destruction, asymmetric attacks, or deployment/redeployment from a posture of global engagement. Partially satisfying the demand with commercial resources cannot be overlooked. In fact, day-to-day, the Pentagon is already the world?s largest buyer of commercial air cargo services. The new study is likely to touch off service competition over roles and missions for sealift, airlift, prepositioned stocks, use of guard and reserve forces and participation of private sector for this multi-billion dollar piece of the logistics system.

[13]Deborah Asbrand, "Squeeze Out Excess Costs with Supply-Chain Solutions," Datamation, March 1, 1997.

[14]Eryn Brown, "The Push to Streamline Supply Chains," Fortune, March 3, 1997.

[15]Bill Fahrenwald, "Supply Chain: Managing Logistics for the 21st Century," Special Advertising Section, Business Week, December 28, 1998.

[16]Francis J. Quinn, "What?s the Buzz?," Logistics Management, February 1, 1997.

[17]Noel P. Greis and John G. Kasarda, *Enterprise Logistics in the Information Era, California Management Review*, Vol. 39, No. 3, Spring 1997. p. 70.

[18]"Enterprise Logistics Solution for the Department of Defense, " (briefing), Andersen Consulting/Caterpillar, May 14, 1998.

[19]Greis and Kasarda, op. cit., p 65.

[20]"Business and the Internet," *The Economist*, June 26, 1999.

[21]Nick Wakemen, "NSA Outsourcing: A Pot of Gold," *Washington Technology*, April 12, 1999.

[22]Gene Koprowski, "Lightening the Corporate Load," *Washington Technology Online*, November 9, 1997.

[23]Jerry Bowles, "Winning the Supply Chain Revolution," Special Advertising Section, *Fortune*, May 11, 1998.

[24]Greis and Kasarda.

[25]Eryn Brown, op. cit., pg. 108[H].

[26]Michael A. Dornheim, "Boeing Web Sales Surge," *Aviation Week & Space Technology*, February 8, 1999.

[27] The Economist, op. cit., June 26, 1999.

[28] Focused Logistics as a fusion of "information, logistics and transportation" technologies. It challenges the Services to tailor joint logistics processes to reduce response times, order and ship times, inventories, and to right-size the logistics footprint (including personnel, war reserves, and prepositioned materials). These tenets focus on support for the theater Commander-in-

Chief (CINC)?the system?s primary customer. See General John M. Shalikashvili, USA, Chairman of the Joint Chiefs of Staff, *Joint Vision 2010*, 1997.

[29] Scott R. Gourley, interview with General Johnnie Wilson, USA, Commander US Army Materiel Command, Jane?s Defence Weekly, February 10, 1999.

[30]Deputy Under Secretary of Defense (Logistics), *FY 1998 DoD Logistics Strategic Plan,* available at http://web.archive.org/web/20061207012728/http://www.acq.osd.mil/log/mdm/exinfo.htm

[31]Defense Science Board Summer Study Task Force, *Logistics Transformation: Key to Full Spectrum Engagement*, Executive Summary, January 18, 1999.

[32]The DSB Summer Study takes note of two external threats to the system: enemy action & environmental obstacles. Actions by a determined adversary could come either indirectly through attacks on the logistics information backbone or frontally by disruption of ports and transshipment points in the US or overseas. Environmental concerns are obstacles of longstanding: weather, natural disasters, port clogging, etc. The DSB determined that most external threats would have limited impact if planning anticipates and then offers alternatives. However, so-called information-war attacks or physical attacks with chemical or biological weapons present new, serious threats. These threats apply equally to military or commercial systems and, to date, relatively little assessment and protective action has been completed.

[33]General Duane H. Cassidy, USAF (Ret.), "Putting the Horse Before the Cart," Perspectives on Policy and Strategy, *Strategic Review*, Summer 1998.

[34]Major Michael F. Stollenwerk, USA, "Can Battlefield Outsourcing and Privatization Create tactical Synergy?", School of Advanced Military Studies, Ft. Leavenworth, Kansas, December 16, 1998.

[35]See, for example, the Report of the Defense Science Board Task Force on Outsourcing and Privatization, August 1996, and the Report of the Defense Science Board Summer Study, *Achieving an Innovative Support Structure for 21st Century Military Superiority*, November 1996.

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