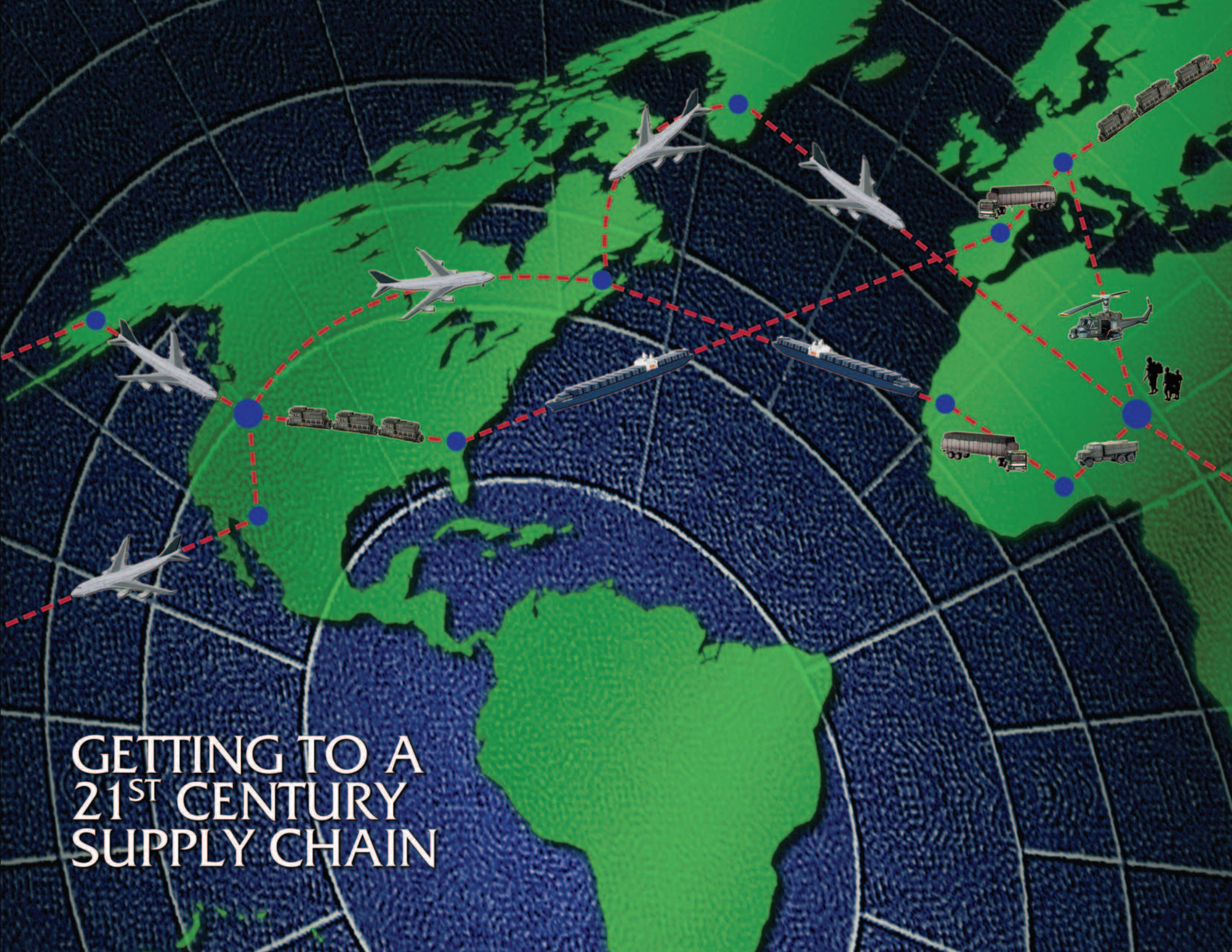

GETTING TO A
21ST CENTURY
SUPPLY CHAIN

EXECUTIVE SUMMARY

The Department of Defense (DoD) directs the largest and most complex supply chain in the world. DoD spends at least $150 billion a year on goods and services and their delivery to end users. The Defense Logistic Agency, for example, manages an inventory of tens of thousands of items valued at approximately $80 billion. The DoD supply chain also includes hundreds of original equipment manufacturers, many of which not only produce new items but help support systems and platforms in the field.

DoD is in the process of transforming its supply chain. The goal is to create an integrated supply chain that is flexible, agile, responsive to the warfighter and, where possible, less costly than the present system. In many ways, this effort is an attempt to apply the practices and experiences of the private sector in its efforts to improve efficiency and effectiveness in the delivery of goods and services.

Much progress has been made. No longer does DoD deploy so-called iron mountains of supplies that are expensive to maintain and move. Instead, it is moving towards a system that emphasizes, like its commercial counterparts, delivery of the right items, in the right quantity, to the right consumer at the appropriate time. This system will also include the efficient retrograde movement of personnel and materiel back to depots, bases and storage facilities. DoD and the services have undertaken a number of important initiatives intended to further the transformation of the military supply system. Many of these initiatives are designed to reduce the degree of fragmentation in DoD supply chain management. For example, U.S. Transportation Command (TRANSCOM) has been designated the Distribution Process Owner (DPO). The DPO is meant to serve as the single entity to execute the strategic distribution system. The Defense Logistics Agency has instituted new policies and plans, including strategic distribution and a national inventory management strategy, designed to improve management of stockpiles and distribution. It is now responsible for the management and distribution of all depot-level repairables. Army Materiel Command is assuming management responsibility for the Director of Logistics facilities in an effort to provide greater control over all Army maintenance and repair activities.

One important aspect of supply chain transformation is better integration of the private and organic industrial bases. This is being achieved through the use of both traditional contracts and innovative arrangements such as performance-based agreements, public-private partnerships and indefinite duration/indefinite quantity contracts. TRANSCOM will soon award a contract for a private supply chain management company to manage all its U.S. shipments. Army Materiel Command is recompeting its very successful LOGCAP contract to provide contingency private sector support for deployed forces.

In case after case, the private sector has demonstrated that its approach to supply chain management can improve its efficiency and effectiveness. As the size of the U.S. military shrinks, forces return from overseas and budgets tighten, reliance on the private sector to manage and maintain supply chains will only grow. DoD needs to make better use of private sector companies in the management of its supply chains.

The initial draft of this paper was written by Daniel Goure of the Lexington Institute staff. Members of the working group had an opportunity to review and modify the final report.

GETTING TO A 21ST CENTURY SUPPLY CHAIN

INTRODUCTION

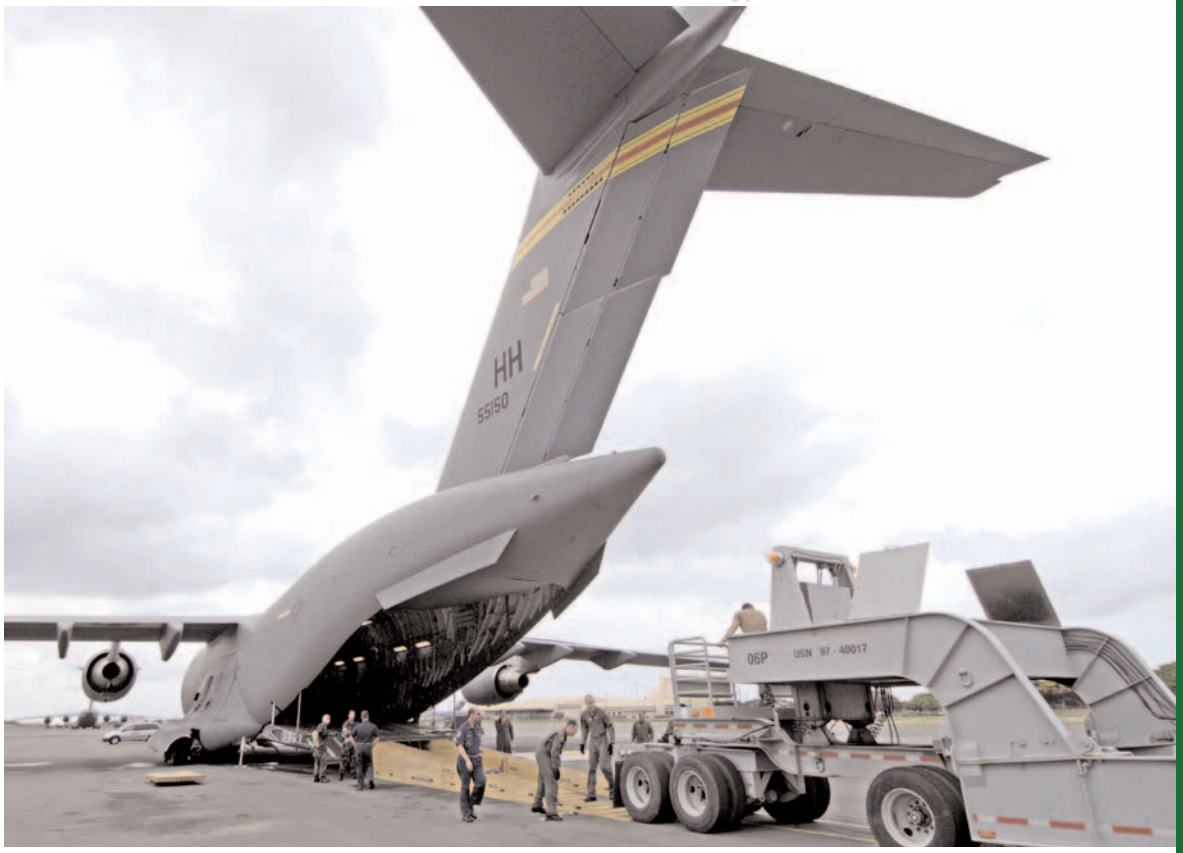
The Department of Defense (DoD) supply system is undergoing a major evolution, perhaps even a transformation. Spurred on by the experiences of Desert Storm, the Balkans, Operation Enduring Freedom and Operation Iraqi Freedom and by the successes of the private sector, the DoD is striving to change the way it does logistics. Many of the innovations being pursued are based on best practices taken from the commercial world.

Operations Enduring Freedom and Iraqi Freedom were the first major engagements of a semi-transformed supply chain that not only decreased the size of the footprint and "iron mountain" of supplies but also brought some degree of visibility to the system. Though the logistics system had some failures, it was a relatively successful operation given the austere conditions of the theaters. However, many of these successes were due to the heroic efforts of the soldiers on the ground, who were ready and prepared to improvise and overcome the challenges facing them.

In response to these experiences and the need to reduce costs, DoD is striving to change its approach to logistics. At many levels — from Acquisition, Technology and Logistics (AT&L) through the U.S. Transportation Command (TRANSCOM) and the Defense Logistics Agency (DLA), down to their components — efforts are underway to transform the way defense materiel of all kinds is acquired, managed, transported and tracked. These changes are intended to fundamentally alter the way DoD does logistics and create an efficient, effective and, hopefully, seamless supply chain from the factory/depot to the foxhole and back again.

Indeed, one challenge facing the department is the plethora of transformation plans, programs and capabilities being pursued by the different services, defense agencies and components. Further complicating this picture is the impact of the recent Base Realignment and Closure (BRAC) Commission which directed that the DLA be made responsible for procurement of all depot-level consumables and repair parts.

There are three general questions that need to be addressed. First, what progress has been made in implementing existing directives and plans for transforming the defense supply chain? Second, what impediments are slowing or otherwise complicating this process? Third, what other initiatives should DoD or its components consider that might accelerate change or improve the overall effectiveness of the supply chain?



THE REVOLUTION IN SUPPLY CHAIN MANAGEMENT

The supply chain is one of mankind's greatest inventions, enabling the rise of great civilizations and ensuring that most of the world's population is provided with the goods and services they need and desire. Yet, it is a concept that is not well understood. Too often the supply chain is thought of as merely the connections between the various stages of production and consumption, involving movement of materiel, goods and services between various stages or waypoints. According to this perspective the supply chain is largely about transportation between separate stovepipes. According to one academic study:

> A supply chain, logistics network, or supply network is a coordinated system of organizations, people, activities, information and resources involved in moving a product or service in physical or virtual manner from supplier to customer. The entities of a supply chain typically consist of manufacturers, service providers, distributors, sales channels (e.g. retail, ecommerce) and consumers (end customers).[1]

In fact, the supply chain is much more than a transportation system that moves goods and services from one point to another. It also includes all the processes and steps that are involved in the effective and efficient manufacturing, acquiring, distributing, supporting and monitoring of the status of finished products in their journey from the point of origin to the point of consumption (and often back again for items needing repair or requiring reclamation). An effective supply chain is one that delivers the right products in appropriate quantities to those who require them when and where they are needed. A best-value supply chain is one that is effective at the least cost necessary to attain that effectiveness. The complexities of every supply chain are reflected in the definition of supply chain management (SCM):

> . . . a set of approaches used to efficiently integrate suppliers, manufacturers, warehouses, and stores so that merchandise is produced and distributed at the right quantities to the right locations, and at the right time in order to minimize systemwide costs while satisfying service-level requirements.[2]

In a modern economy, it is relatively easy to create a supply chain from the vast array of producers, distributors, logistics providers and retail outlets. What is immensely more challenging, particularly in a globalized economic environment, is the creation and maintenance of an effective and efficient supply chain. Often termed supply chain optimization, this is the application of processes and tools to the management of all aspects of the supply chain so as to ensure the optimal operation of a manufacturing and distribution supply chain and satisfaction of the customer. Supply chain optimization includes the optimal placement of inventory within the supply chain, minimizing operating costs (including manufacturing costs, transportation costs, and distribution costs) while maximizing responsiveness to customer demands.

The challenges of supply chain management in the private sector are, in many ways, no less than those that face the military, save for the most obvious exception — the rarity of incoming fire. Private sector supply chains too must be designed with recognition of the array of uncertainties that confront both the business and military environments. Many things can perturb a supply chain from changes in the weather, materiel shortfalls at the producer end, changes in demand on the consumer side, competition among participants in the process, changes in tax laws and financing, to government regulation or even hostile action. Many international logistics providers conduct operations in war zones. After 9/11 and the decision to ground all commercial aviation in the United States, UPS was required to completely

reconfigure its transportation network, drawing on its own internal resources and from across the transportation sector.

The private sector, until recently, has been light years ahead of the military in its understanding of and efforts to optimize its supply chains. This is not because SCM in the civilian world is easier than it is for the military, or that the former are more serious about the subject than the latter. It is because at the highest levels of the business world, it is accepted that corporations will live or die based on the way they manage their supply chains and that they have spent the requisite time and resources to get it right. In particular, companies that have excelled in SCM have done so by focusing on the continuous collection and analysis of data related to their operations. They have also developed the modeling tools, analytic processes and, perhaps most important, metrics by which to understand their environments and respond to changes in circumstances.

The private sector has created an array of so called third-party logistics providers (3PLs). These are companies that specialize in the movement of goods and services, with the addition at times of some limited support services such as warehousing or information management. Some companies have advanced to the level of what has been termed fourth-party logistics providers (4PLs), managing series of networks, creating integrated information systems to support them and even dealing with customer servicing for their clients.[3] Companies contract with so-called 4PLs because they can integrate the services of 3PLs and have unique information systems and models that allow for optimization of supply chains on a massive scale.

The present successes in SCM exemplified by companies such as UPS, Maersk, C.H. Robinson, Caterpillar, WalMart and others, are due in large part to their attention to detail and their ability to conceive of and manage their businesses as a single, albeit complex, system. This has enabled them to reconceptualize their businesses. UPS reinvented the package delivery business, challenging the U.S. Postal Service when it came to efficiency and effectiveness in the process. In order to support its role as a reliable, worldwide provider of construction and related equipment, Caterpillar became a world-class supply chain manager, pioneering automated systems for tracking the movement of its goods and services around the globe. Maersk is not merely a company engaged in sea transport, but is a global supply chain management corporation that can provide end-to-end connectivity across a continually changing array of supply chains. C.H. Robinson has raised the practice of transportation management to an art form, engaging in serious strategic planning concerning sourcing, distribution, demand forecasting and SCM contingency planning.

Much as the 1990s were pivotal years in the transformation of the U.S. Armed Forces, it was also revolutionary for companies who came across new manufacturing technologies and strategies to decrease their costs and be more competitive. It is in this era that the strategies of just-in-time manufacturing, lean manufacturing, total quality management, and others became very popular, and vast quantities of resources were invested. With these strategies implemented, companies have reduced manufacturing costs to the lowest level practically possible. Thus, the companies began turning to SCM as the next layer to better efficiency, higher profits and increased market share.

The 1990s also saw companies beginning to analyze and retool the supply chain through the use of Enterprise Resource Planning (ERP). This approach recognized the basic fact that an action anywhere in the supply chain had consequences for other parts of that system. ERP was based on the idea that by understanding the relationships between elements in a supply chain and providing transparency throughout the system, the flow of goods and services could be increased while costs could be more closely managed. Success in implementing an ERP-based strategy involved not only removing legacy systems and flattening organizational structures, but also implementing process change in conjunction with technology insertions.[4]

Modern supply chain management is not merely the movement of products or items, including military supplies, from one location to the other. Properly understood it involves the entire process by which products are manufactured, deployed (moved), supported, maintained and recovered. It also involves continuous feedback at each stage of the process and ongoing product and process improvements. Thus, effective supply chain management readily involves the original equipment manufacturers as well as providers of consumables, components and repair items. One recent study by the Industrial College of the Armed Forces concluded that the ability of some companies to thrive despite a turbulent world and a highly competitive global economy is due in large measure to their success in applying and integrating the principles of SCM throughout their enterprise.[5]

It should be noted that private corporations provide a wide variety of supply chain services to the Department of Defense. Much of DoD's peacetime transportation needs are met through contracting with the private sector. For decades, Maersk has been under contract with DoD to move virtually every type of equipment and commodity to and from hostile zones around the globe. DoD contracts with a set of approved commercial air carriers to move its people around the world. Experts believe that DoD outsourcing of logistics activities will increase by 50 percent over the next five to ten years.[6]

In time of crisis, the U.S. military relies on the private sector to provide needed air and sealift augmentation. Almost everyone is familiar with the Civil Reserve Air Fleet (CRAF), the voluntary partnership between DoD and commercial air carriers that allows the department to acquire commercial augmentation of military airlift in a time of crisis. The Voluntary Intermodal Sealift Agreement (VISA) provides for assured access to commercial, U.S.-flagged cargo ships through a set of contingency contracts. CRAF and VISA allow the private sector and DoD to collaborate on both the planning and execution of major deployments at a fraction of the cost of maintaining an equivalent organic capability.

DEFENSE AND THE SUPPLY CHAIN

The Department of Defense runs what is probably the largest global supply chain in the world.

> If the DoD supply chain were a for-profit company, it would be number 9 on the Fortune 500, accounting for $151 billion in spending for Fiscal Year 2005. The 1 million uniformed, civilian and contract employees who support all aspects of the Department's supply chain

manage $79.5 billion in inventory and keep 15,000 aircraft, 300 ships and 30,000 combat vehicles capable of fulfilling their mission. The Defense Logistics Agency (DLA) alone would be in the Fortune 500 as a $35 billion business, ranking with such well known companies as Lockheed Martin, Caterpillar and Intel.[7]

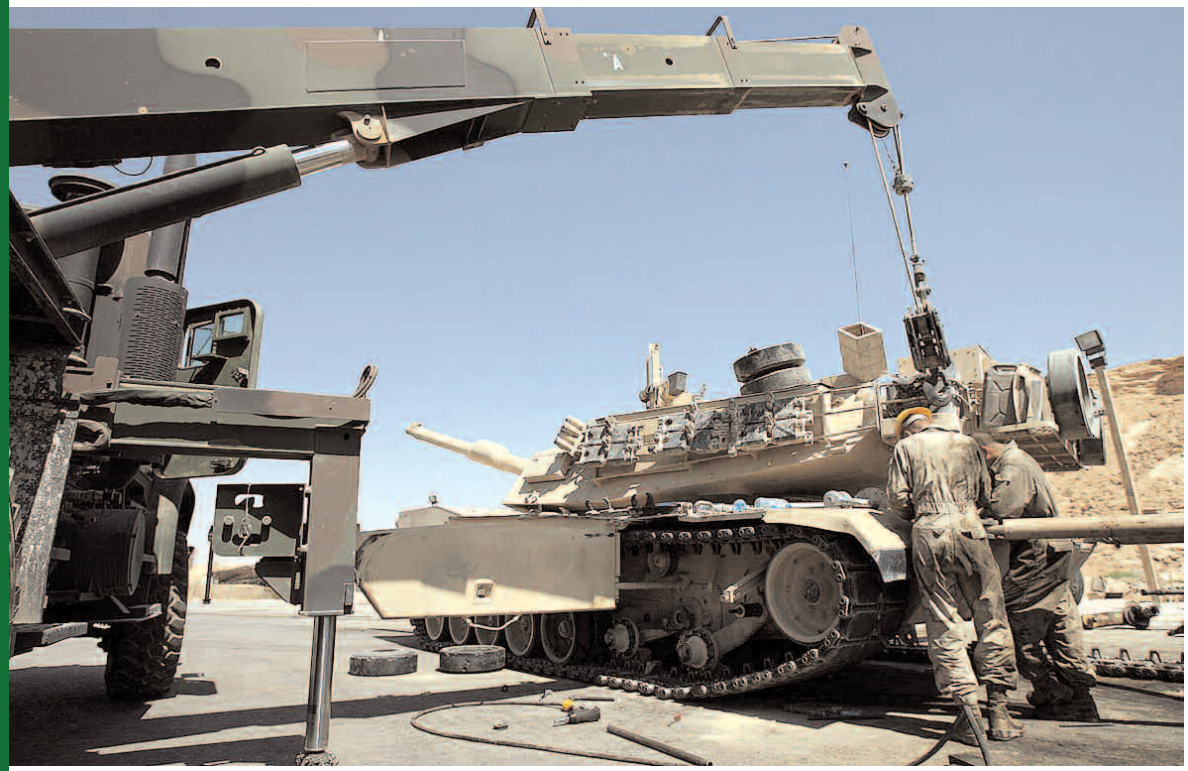
Under the overall heading of military logistics, DoD's concept of SCM parallels, in general, their commercial counterparts. Under the general heading of logistics, it includes all aspects of providing the Armed Forces with the wherewithal to successfully perform their missions anywhere in the world. Notably, it includes acquisition, repair and demilitarization as well as supply.

> Military logistics is the art and science of planning and carrying out the movement and maintenance of military forces. In its most comprehensive sense, it is those aspects or military operations that deal with design, development, acquisition, storage, distribution, maintenance, evacuation, and disposition of material; movement, evacuation, and hospitalization of personnel; acquisition or construction, maintenance, operation, and disposition of facilities and acquisition or furnishing of services.[8]

The term supply chain is potentially confusing. There is no monolithic defense supply chain but rather a spaghetti bowl of myriad supply chains, each directed to

a specific purpose. Performance based logistics (PBL) supply chains in which the original equipment manufacturers support weapon systems or major components, Direct Vendor Delivery of commodities, and ad-hoc government credit card purchases are all part of the supply chain. There are three tiers to the supply chain. The first two have substantial parallels to the private sector: retail consumer packaged goods (i.e., WalMart, Home Depot) and sustainment of major end items (i.e., mainframe computers, aircraft engines). The third, deployment and sustainment of expeditionary forces, has substantially no commercial parallel.

Without question, DoD has made great strides in modernizing and managing its supply chains. It has moved away from the so-called iron mountains of supplies, towards a system that emphasizes, like its commercial counterparts, delivery of the right items, in the right quantity to the right consumer at the appropriate time. The Army and Air Force Materiel Commands are committed to supply chain transformation and have pressed all their subordinate organizations to introduce LEAN and Six Sigma processes.



The centerpiece of DoD's effort to transform the supply chain is its plan to create a single logistics enterprise. This vision calls for logistics support that allows Combatant Commanders to deploy their forces anywhere in the world within 96 hours. Responsive logistics is a key force multiplier. Supply chain readiness creates a competitive advantage for the warfighter. However, in order to achieve this, an ambitious logistics transformation would be needed. The new requisites would include knowledge based (network centric) logistics, with total asset visibility, high levels of systems availability, speed, flexibility and low customer wait times. The ultimate goal is a "sense and respond" logistics system that would anticipate demand and provide the right items, in the proper quantity when needed.

One of DoD's key transformation initiatives is the extensive implementation of PBL. The goal of PBL is to achieve high-yield improvements in logistics processes and best value sourcing for inventory, infrastructure, maintenance and service functions. The idea is to buy capability — not resources — by leveraging the knowledge, advanced logistics and technological capabilities of the private sector, while protecting and enhancing the skilled labor of the organic industrial base. This variation on traditional fixed-price contracting shifts greater responsibility and risk to the contractor, but creates larger, more predictable bottom-line returns for the military through total life-cycle management and performance-based incentives.

Supply chain management is a key to success in performance based agreements (PBA). Buying capabilities instead of parts or manhours means reducing costs,

decreasing cycle times, improving performance and accurately predicting demand. Parts and supplies must be delivered on time and in the right quantities either to maintenance and repair facilities or to units in the field. In addition, a successful PBA generally requires a continuous flow of high quality information about the status and history of every element of the supply chain and about the parts, systems or even platforms subject to the contract. Continuous and accurate information enables the PBA contractor to anticipate demand, identify and implement desirable change in design, fabrication or transportation of items and even alternative maintenance practices.

DoD also is pursuing innovative public-private partnerships (P3s) to maintain and improve core competencies at organic depot facilities and to make its facilities and workforce available to partner in industry initiatives. One of the most important contributions of the private sector to many of these partnerships is the provision of supply chain management techniques and capabilities. The DoD is marketing its reduced cost of labor and its renewed — and in some cases highly unique — industrial capabilities directly to industry as a means to keep industrial skills and facilities at the ready. The types of P3s are diverse and flexible, ranging from work sharing, teaming, facility and equipment leasing, to performance-based agreements. According to a study by the Industrial College of the Armed Forces:

> By applying industry best practices for SCM within the DoD, we will improve support to the warfighter and drive cost efficiencies throughout the DoD SCM enterprise. Imagine what the DoD or other federal agencies could do with resources freed up by lowering SCM operating costs 4 to 7 percent from current expenditure levels. With the DoD budget approaching $400 billion dollars, the potential savings are in the billions.[9]

Potentially one of the boldest steps in the transformation of DoD arising from the 2006 Quadrennial Defense Review, is the creation of joint capabilities portfolios. The purpose of these portfolios is to allow senior leaders from the Joint Staff and the Office of the Secretary of Defense (OSD) to oversee investment and operations in selected areas: command and control, net-centric operations, battlespace awareness and logistics. What each of these areas has in common is that they represent capabilities that can be found across the services and defense agencies. DoD has directed that a test case be conducted in Joint Logistics Portfolio Management under the guidance of the Joint Staff (J-4) and OSD/AT&L. The purpose of this test, according to OSD, is improvement in SCM.

> A Capability Portfolio Manager (CPM) will oversee each test case. The CPMs will ensure their portfolios are aligned with strategic objectives and the capability mix within each portfolio is optimized to meet warfighters' needs. The CPMs will integrate the efforts of capability providers through requirements identification, solution development, and execution oversight. CPM oversight will cover the spectrum of doctrine, organizations, training, materiel, leadership and education, personnel, and facilities solutions to meet operations needs of the joint warfighter in the CPMs' respective capability areas. Additionally, the CPMs will identify and assess risk in their portfolios to assist DoD senior leadership in balancing joint-warfighting demands against resource constraints.[10]

The decision to create a joint logistics portfolio is an explicit acknowledgement of the central thesis that underpins commercial SCM: the need to manage the supply process as a single integrated system.

THE PROCESS OF CHANGING DOD'S SUPPLY CHAINS

DoD has come to understand that it cannot transform its logistics "business" without altering the ways in which it organizes and manages its supply chains. It has begun to take significant steps to improve its SCM. Nevertheless, there are clearly continuing problems with the defense supply chain. According to recent Congressional hearings, support to Operation Iraqi Freedom and subsequent activities in Iraq has been marred by excess costs, difficulty in ensuring provision of spare parts and critical war items, and delays in moving vital materials to the warfighters and depots. Army Materiel Command (AMC) has been spending large sums on demurrage charges for thousands of cargo containers in Iraq that the military is unable to locate and return to the private companies that own them.

Progressively, DoD has adopted many of the principles and practices of commercial supply chain management. The military has done so as a result of its desire to improve both the wartime effectiveness and peacetime efficiency of its logistics system.

In 2003, the Commander of TRANSCOM was designated the Distribution Process Owner (DPO) by Secretary of Defense Rumsfeld. This change was made to optimize distribution and transportation in order to minimize hand-offs and materiel handling points. Traditionally, the defense supply system has been segmented by commodity or class of supply, and the associated supply chains have been designed with the specific characteristics of those commodities. Each commodity supply chain contains a unique set of commercial and government/military links and distribution elements. As a result, there is not a single defense supply chain, but rather a collection of common commercial supply chains, usually involving commercial items, complemented by unique military chains for commodities such as explosives or other hazardous materials. Often the supply chains are segmented, with commercial companies providing support in peacetime or serving rear area use, and the organic supply base taking responsibility in wartime or for last mile delivery. The existence of multiple, parallel and segmented supply chains enormously complicate the process of SCM.

The DPO is meant to serve as the single entity to execute the strategic distribution system. The focus of the DPO extends from source of supply to a point forward in a theater as defined by the regional Combatant Commander. The plan is to design a single enterprise architecture for the end-to-end process, establishing business rules and performance metrics to link sustainment and distribution systems into a data warehouse where requirements are visible to distribution system customers. TRANSCOM is also responsible for developing, integrating and implementing a flexible logistics architecture. According to its 2005 Annual Command Report, TRANSCOM:

> ... is leading the collaborative effort to make joint logistics a reality leveraging experience and using information technology to consolidate logistics requirements in real time, compress the decision cycle, and empower smarter decisions. USTRANSCOM is synchronizing the deployment, distribution, and sustainment of forces to achieve maximum efficiency and interoperability by eliminating duplication and nonstandard practices. Together with its national partners, USTRANSCOM is building a truly seamless, end-to-end defense logistics enterprise.[11]

The system is strengthened by the growing and strong partnership between TRANSCOM and the DLA, which allowed and paved the way for the establishment of the first Deployment and Distributions Operation Center (DDOC) in the U.S. Central Command (CENTCOM). The DDOC was successful in breaking the bottleneck that

existed in the ports, establishing the shipment of pure pallets to theater, and increasing the visibility and trust in the supply chain. This was reinforced by the DoD initiative to employ Radio Frequency Identification (RFID) technology to all shipments. In 2004 DoD mandated the use of active RFID tags on all over ocean consolidated shipments. In January 2005, the DoD mandated the use of passive RFID tags on all shipments. DLA is also undertaking a series of initiatives to consolidate its activities, reduce redundancies and adopt commercial best practices.

TRANSCOM is also moving in the direction of greater use of partnerships with the private sector. One of its major efforts at change is the Defense Transportation Coordination Initiative (DTCI). The DTCI is intended to improve the reliability, predictability and efficiency of DoD material moving — first within the continental United States (CONUS) — by forming long-term partnerships with a world-class transportation management services coordinator. The initiative involves centralizing military domestic transportation scheduling and fulfillment with a third-party logistics provider.

DLA is one of TRANSCOM's primary partners in DoD's efforts to revolutionize SCM. Transformation of DoD's supply chain would not be possible without also transforming the agency responsible for managing the greatest share of DoD's inventory of supplies, parts and other materiel. DLA supports approximately 1,300 weapons systems, handles or manages an inventory worth $80 billion and responds to more than 20 million requisitions annually.

The DLA has made a commitment at the highest levels to transform its processes and operations, taking where possible, best practices in SCM from the private sector. It has instituted new policies and plans, including strategic distribution and a national inventory management strategy, designed to improve management of stockpiles and distribution. DLA is also expanding its public-private partnerships. One example of this is the Prime Vendor program. This program is a system of pre-arranged contracts with strategic suppliers — including contingency arrangements to support surge capability — that allows materiel to be shipped directly from manufacturers to intermediate supply centers or even to the warfighters.

In 2006, DLA published its Transformation Roadmap. At the heart of the roadmap are 13 initiatives designed to revolutionize most aspects of DLA's business. The initiatives are: Customer Relationship Management, Supplier Relationship Management, Business Systems Modernization, Distribution Planning and Management System, Integrated Data Environment, Business Systems Modernization Energy, National Inventory Management

Strategy, Global Stock Positioning, Executive Agent, Product Data Management Initiative, Workforce Transformation, Reutilization Modernization Program, and Base Realignment and Closure.

One of the most significant decisions made by the 2005 BRAC Commission was to transfer procurement management and related support functions for consumables and depot-level repairables (DLRs) to DLA. This change is intended to save DoD money by managing all procurements through a single agency. Because DLA will be responsible for all DLRs and consumables it will have greater leverage in the marketplace. A related change will be to centralize all depot-level maintenance supply, storage and distribution functions.

Other agencies and components play critical roles in the DoD supply chain and its transformation. AMC, Air Force Materiel Command (AFMC) and the Navy's Supply Systems Command have been innovators in the creation of PBAs. AMC has moved aggressively to create a single management structure for its responsibilities in the supply chain. All field logistics readiness centers have now been transferred from U.S. Army Forces Command to AMC. In addition, the Army's Directorate of Logistics (DOL) maintenance facilities are coming under control of AMC.

In 2005, the DoD submitted to Congress a comprehensive logistics strategy — the Business Enterprise Transition Plan.[12] A massive and complex document, it

spans the range of functions needed to create and manage a modern global supply chain. According to the Under Secretary of Defense for Acquisition, Technology and Logistics, Mr. Kenneth Krieg, "this plan describes a business transformation strategy properly aligned with the warfighting mission, a process centered on achieving business priorities with specific results-based outcomes and the mechanisms that will guide implementation."[13]

Ultimately, DLA's metrics for success must reflect improved value to the customers — first and foremost the warfighter, but also DoD which pays the bills. DLA could improve its own internal processes and accounting without providing additional value to the customer. For DLA's transformation to be judged a success it must both improve the delivery of materiel to its customers while also reducing the cost to them. Ultimately, DLA will need to look at its fee structure.

CRITICAL ISSUES IN TRANSFORMING THE DOD SUPPLY CHAIN

The above discussion clearly indicates an interest on the part of DoD in transforming its logistics system and SCM methods. The challenge facing DoD is not one of a lack of good intentions or even the absence of an understanding of what needs to be done. Rather, the most serious problem facing the department is making good on the initiatives already underway.

However, other issues and problems remain. Because the DoD supply chain is not a single process, owned by one headquarters or organization, the establishment of proper and comprehensive policies, metrics and methodologies is vital. In addition, DoD needs to consider ways of expanding its use of private sector expertise. In particular, as the Joint Staff and the Combatant Commanders consider the possibilities of unanticipated, new deployments to remote places, they should remember that there are few locations with which the global supply chain management companies are unfamiliar.

Leadership and Plan Implementation. The first critical issue is the most basic. DoD, its various commands and agencies, must persevere in implementing changes in SCM. Central to this effort is completion of the Supply Chain Management High Risk Improvement Plan. It seeks to implement a series of management changes, some organizational, others technological, that will provide increased oversight, control and visibility across the defense supply chain.[14] As a recent report by the General Accountability Office made clear, this will require strong and continuing high-level support for logistics transformation.[15] Implementing the Enterprise Transportation Plan is an even more formidable challenge.

In the view of some observers, the transformation process is moving too slowly. This is certainly due, in part, to the magnitude of the challenges. But it also reflects other factors such as: resistance from some quarters, risk aversion, uncertainty, lack of adequate education, etc. Anecdotal evidence also suggests that while DoD leaders support transformation, some in middle management are not yet convinced. The lack of an overall distribution policy — as distinct from a transportation policy — makes implementation more challenging and the education process more difficult.

Some experts have suggested the need for a global logistics command — a logistics Combatant Commander. The military has traditionally believed that unity of effort requires unity of command. This proposal also is a reflection of the experience in the private sector where a single manager of the entire supply chain is required in order to enforce discipline, implement changes, establish common standards and define investment priorities. It also is an admission of the difficulties inherent in the rights of the services under Title 10 to organize, equip and train its own forces. Despite discussions about a

single DoD supply chain, currently there are at least four of them, one for each of the services. These experts believe that supply chain integration is critical to that system's overall effectiveness and efficiency. Absent a single point of oversight and direction, it is relatively easy for the supply chain to sink into overall suboptimization, even as each individual part or service-specific supply chain strives to optimize its own activities.

It can also be argued that with the designation of TRANSCOM as the DPO, the collaboration between TRANSCOM and DLA, the promulgation of the Enterprise Transportation Plan and the Supply Chain Management High Risk Improvement Plan, sufficient leadership and direction exist to achieve its transformation goals. Moreover, they argue, creating a Combatant Commander for logistics would entail radical rewriting of Title 10 Authorities in ways that might actually reduce the effectiveness of U.S. forces.

Metrics. Anyone involved in supply chain management will agree that establishing appropriate metrics is critical to improving the efficiency and effectiveness of the process. One of the revolutionary steps DoD took was to make supporting the warfighter the central tenet of logistics transformation. The goal of supporting the warfighter naturally dictates a new set of performance metrics for the supply chain and the organizations responsible for various elements of it. It also requires addressing a number of questions. Are the metrics being applied to supply chain management by the various responsible organizations appropriate? Are they adequate? Are there better ways to define success and measure progress?

The consensus among experts, both in government and in the private sector is that metrics should be customer-centric. For DoD this means delivery to the warfighter. Too often in the past, elements of the supply chain have developed metrics that only related to their specific functions. These input-output metrics often were not germane to the goal of supporting the warfighter because they did nothing to improve the flow of goods and services to the front. Once the customer-centric standard is accepted, specific metrics should be developed for each element in the supply chain back from the point of consumption to the point of origin for that material, part or weapons system. If an effective supply chain is one that provides the right part where it is needed at the right time, then one appropriate measure of performance across the entire system could be time-definite delivery. Another metric, one used by the depots and their private sector partners, is weapons system availability.

The various DoD plans and programs for transforming the supply chain tend to focus on three basic metrics: uniform performance or predictability, guaranteed delivery or defined speed, and complete visibility. These sound good and are, in principle. However, it is important to recognize the complexities and costs associated with guaranteeing delivery anywhere at anytime or the price that will have to be paid to provide everyone connected to the supply chain with complete visibility.

The DoD believes it has been fairly successful in getting supplies to the warfighter, but has no true measurement of what this effort costs. Every commercial supply chain (good or bad) takes price into account. But, for every dollar wasted on inefficient supply chain practices (such as sourcing from expensive locations, rehandling goods, transporting by air vs. surface due to poor planning, etc.), a vital piece of technology or system may not be funded. There must always be a mechanism that permits supplies to move to the warfighter regardless of the cost. But this should be a system of last resort. One of the lessons learned from Iraq is the danger of the military taking a "cost is no object" approach to sustainment. Consideration needs to be given to cost as a factor not only for supply chain operations in CONUS but

also for the operations of the supply system in a theater of conflict.

The Distribution Process. TRANSCOM is the designated distribution process owner. But, what does this mean? Who really owns the process? Where does that process begin and end? Although many will argue that there need not be a single owner of the entire process, the General Accountability Office pointed out the importance of an integrated strategic plan and central control over investments in business systems modernization.[16]

To date, TRANSCOM and DLA have been cooperating successfully to improve the effectiveness and efficiency of the supply chain. They are working to create common standards and to integrate their information systems. They are working on a dictionary of terms.

One effort with the potential to radically reshape DoD's management of its supply chain is the Defense Transportation Coordination Initiative. The purpose of DTCI is to exploit the experience, techniques and tools of the private sector to manage DoD's transportation needs, first in CONUS but eventually on a global scale. However, for the true benefits of the vision to be realized, DTCI must do more than merely coordinate transportation. The experience of the commercial world suggests the importance of having a single point of accountability and insight for the entire distribution system. If the DTCI process is intended to result in a transformation of the supply chain process, as originally described, it must do more than merely replace existing transportation services contracts. DTCI must be used as the vehicle to allow investment in modern SCM techniques and information processes. Also, once it has proven successful in reshaping domestic transportation, TRANSCOM will need to take the process global.

DoD should give consideration to expanding the VISA and CRAF programs to include the incredible supply chain capabilities that have been developed by these "go to war" commercial partners. Instead of just a "Sealift Agreement" or "Reserve Air Fleet," the contracts could be "Distribution Support" contingency contracts. The services are expanding their contingency support contracts but these are separate from their transportation activities. Since many of the VISA and CRAF carriers are already active, handling materiel, they maintain prepositioned, expansive value-added services, people and facilities that could be rapidly brought into service.

Despite the progress made by TRANSCOM, DLA, AMC and others to streamline and integrate the distribution process, there is still the problem of transitions across organizational boundaries, known as seams in the supply chain. What is being done to smooth transitions

across the seams? DoD agencies need to identify ways to empower trusted supply chain managers with access to the entire process. They also need to eliminate unnecessary seams, as the private sector has done so well. Private companies are willing to go “on the shop floor” to ensure timely and accurate delivery of parts and supplies. DLA should be no different. This is an important aspect of changing the relationship between supply providers and their customers.

A key aspect of improving the distribution process is enhancing visibility throughout the supply chain. DoD is committed to achieving total asset visibility. Tagging shipments and even individual items is a part of total asset visibility; it has much to do with SCM, the rapid flow of accurate information across the supply chain, and removing or minimizing seams. Asset visibility does not amount to much if the processes and assets used to move materiel from one point to another are inadequate. Asset visibility is not just for the logisticians. Customers and vendors need information too. This is critical to getting the proper support from contractors who are manufacturing, packaging, transporting, assembling, maintaining, and repairing materiel. An effective supply chain information system should supply definite delivery times and content data to all customers.

Supply Chain Strategic Planning. One lesson of Operations Enduring Freedom and Iraqi Freedom was that despite the improvements in SCM since Desert Storm, there was little in the way of strategic planning for a major logistics activity. Moreover, nothing was done to integrate the contractor base into the planning process. DoD and the logistics community need to do more to prepare for new — and possibly unexpected — contingencies. Logistics wargaming, involving both the government and the private sector would be a good way to improve both logistics planning and contractor management. Supply chain strategic planning should also examine ways of anticipating future deployments and leveraging the resources and knowledge available in global 3PLs.

Both the Joint Staff and the Combatant Commanders should be engaged in the supply chain planning process. But private concerns need to be involved too. Many private logistics companies have extensive experience in crisis planning and even wargaming. Moreover, as contractors become even more important to U.S. power projection plans, they need to be brought into the planning process.

It would be a good idea to conduct logistics wargames involving both the public and private entities that contribute to the successful operation of the supply chain.

One proposal is to resurrect the Focused Logistics Wargames. The J-4 or AT&L would be the logical agencies to sponsor and direct these games.

Centralized inventory control and financial management. It is generally recognized that centralized management and oversight of inventory is critical to SCM. DLA has begun the process of centralizing its stockpiles and developing improved inventory information processes. And, it is working to modernize its legacy information systems and create an end-to-end enterprise resource planning environment.

Perhaps the most ambitious agenda for change is that confronting DLA — namely, its responsibility for all DLRs and consumables. It is not yet certain how this change will play out. There are many unanswered questions. For example, what is the business case for DLA assuming responsibility for the DLRs? What metrics will be associated with this new responsibility and will they dovetail with the activities of the depots and repair facilities? What difficulties are likely to confront DLA in implementing the BRAC decisions? What additional measures should DLA take to improve its chances of success? What changes are required in existing logistics information systems to implement management of consumables at the retail level in support of maintenance and repair activities?

DLA planners need to consider how the answers to these questions may affect its strategy for managing DLRs. Some of the depots have experienced parts supply problems due, in part, to DLA's focus on operating from centralized warehouses. For those in need of parts and supplies, speed and accuracy of delivery is more important than responsiveness to requests or accuracy of manifests.

It is important that cost savings be a metric for the transformation of the DoD supply chain. One reason for the proliferation of PBAs, P3s, indefinite duration/indefinite quantity contracts and other arrangements between the public and private sectors is to avoid the costs (and, in some instances, the delays) involved in using the government supply chain. DLA, for example, must review its fee structure as it implements the Transformation Roadmap.

More broadly, integration of the DoD supply chains will continue to be extremely difficult so long as success is defined in terms of dollars of sales. There is little incentive for cooperation between entities if it leads to reduced sales. Moreover, when dollars of sales is the metric, there are great incentives for entities to retain work in-house and to limit innovative arrangements if they save money.

Global and CONUS Base Restructuring and Realignment. The implications for logistics of both BRAC and the Integrated Global Presence and Basing Strategy have yet to be completely understood. Major changes have been mandated in both domestic basing and in the basing of U.S. forces overseas. Have these changes been factored into a distribution strategy? What are the implications of increased concentration of U.S. forces and supplies in CONUS for force projection and the distribution process?

BRAC and global restructuring will markedly change demands on the DoD supply chain. In particular, support for power projection will become more challenging as more forces and supplies are based in CONUS. The DLA program for strategic distribution may make it more difficult to achieve time definite delivery to bases and depots throughout CONUS or to expeditionary locations overseas.

The Global Force Posture changes will place increased importance on having an executable plan for access to infrastructure in CONUS locations of strategic importance. The BRAC Overseas Basing Commission pointed this out as a key issue in their report to Congress.

Initiating the steps to establish executable pre-negotiated agreements with private sector companies who have established global logistics assets at port locations and in country interiors, including road/rail routes, could have multiple benefits to the DoD.

Access to existing infrastructure (maintained through commercial activity) including storage, transportation carriers, rail carriers, etc. may be an imperative in the context of the new Global Basing strategies. Space may be sparse in locales where additional basing and access rights would be important for an expeditionary force posture (places like Singapore and Okinawa). Many governments where the U.S. hopes to have a presence may not be capable of helping with paying upfront costs (such as Morocco, Bulgaria, Romania, Hungary, Poland, Uzbekistan and India). Therefore the relationships with the private sector are key to establishing capability within such a region. The private sector can provide experienced assistance with loading and unloading of equipment, troop movements, relocation of ammunition and fuel, and sustaining flows of materiel and supplies even when access to facilities is not part of the equation. It may be the private sector's labor pool that is of interest to the DoD. Their knowledge base of local culture, transportation routes/issues that may have military importance, and customs operations, could be a valuable intelligence and planning asset for the military. Private sector political relationships with host countries can be an enabler for the DoD. The continuity of presence within a country offered by the private sector may be the best mechanism to ensure the location of prepositioned unit sets, unit stocks and configurations, that are protected from environmental and security threats, maintained and updated.

Outsourcing — privatization. Without question, DoD has made progress in outsourcing and otherwise accessing the private sector through A-76 actions, PBAs and P3s. But clearly more could be done to make use of the power of the private sector and, in particular, commercial companies. One way is for DoD to acquire greater access to the best practices of industry, either through partnering arrangements or contracting with high quality private practitioners of transformational SCM to provide management oversight and training. There are many examples where such efforts have paid off handsomely for DoD. Standard Aero is bringing its enormous experience in managing the maintenance, repair and overhaul process, including the parts supply chain, to the transformation of operations at the Oklahoma Air Logistics Center. Maersk has provided the DoD with distribution services around the globe and currently manages a portion of the U.S. fleet of prepositioned ships.

What additional steps should DoD take to make the military supply chain environment friendlier for the private sector, in general, and commercial companies, in particular? DoD and its components should avail themselves of the experience and capability resident in the private sector in SCM, inventory control, process reengineering and total asset visibility. Companies such as Maersk, C.H. Robinson, UPS and others have commercially-proven SCM capabilities that could assist DoD in eliminating seams in the supply system and improving asset visibility. The DoD should leverage the experience of Maersk and the other global SCMs in managing global, commercial supply chains for major retailers such as Walmart, Target and Home Depot.

It is also important to develop procedures to deal with "access denial" scenarios, however geographically limited or transient they might be. If the private sector entity cannot get into the theater or beyond a point within the theater, there must be processes and decision trees to accommodate those exigencies.

The last mile. Current efforts to create a logistics common operating picture and a seamless process are challenged by the difficulties encountered in the so-called "last mile." The visibility provided from factory/depot into theater is lost at that point — the current RFID

process is not functional below the container level. Moreover, the process is equally opaque for items moving the other way. How can DoD improve its performance over the last mile? What role is there for the private sector in this part of the supply chain?

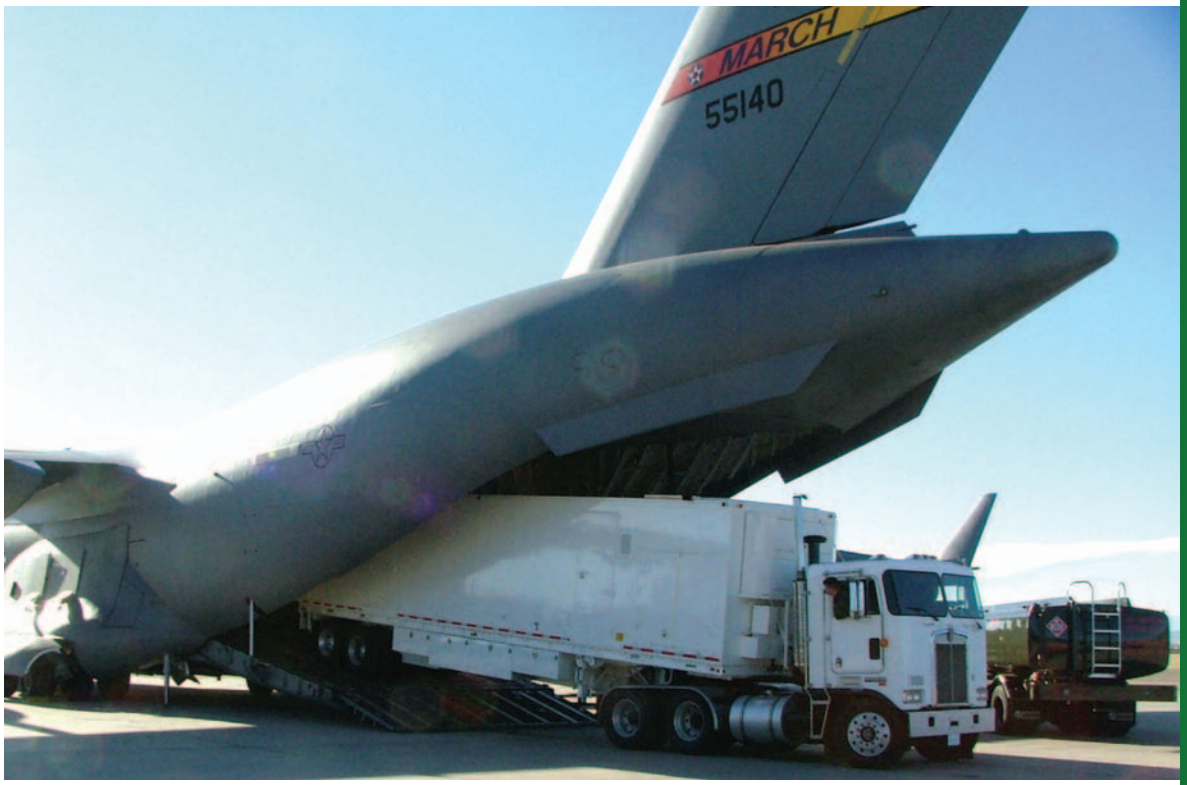
The “last mile” problem has bedeviled supply chain transformation. It is readily apparent that a combination of government and private resources can achieve the timely and accurate delivery of goods into theater. Look at the ability of Maersk, UPS, Caterpillar and Halliburton to get resources and commodities to and from the farthest reaches of the world. The question is whether the military needs to be fully responsible for delivery over the so-called last tactical mile? Even here, Iraq demonstrates that others can do the job. They may need security (their own or that provided by the military) but they can make it the last mile.

Open architectures/business model. The terms “open architecture” and “open business model” have become the new buzz words in the acquisition world. Yet, they have more than a little merit. Traditionally, DoD has gone with closed systems due to the need to develop unique processes and hardware. Today, commercial-off-the-shelf software and hardware are often as good as purpose-built systems and are a lot cheaper. Moreover, an open architecture can draw for technology refresh from any available source. This usually means more rapid insertion of new technology at lower cost than is possible with a closed system. The Littoral Combat Ship program is an example of a procurement that has taken to heart the open architecture and open business model philosophies. The collaboration of original equipment manufacturers and maintenance, repair and overhaul firms at depots such as Kelly USA and Oklahoma City has produced reduced cost and more rapid throughput. These are examples of the power of open architectures.

Open architectures are critical to enabling systems to readily interact, the so-called “plug and play” model. An open business model may be even more important insofar as it creates opportunities to access the broadest possible base of vendors. This, in turn, allows for improved technology refresh rates and decreased costs to the government. Open architectures and business models can have a powerful impact on SCM by enabling improved rationalization of activity, reducing seams and improving costs.

CONCLUSIONS

Transformation of the supply system is one of the most important initiatives undertaken by the Department of Defense in the past decade. DoD has wisely sought to model its efforts, to a significant extent, on the SCM successes of the private sector. It is clear that in many ways the revolution in commercial SCM has shown the way for the military in its transformation of the supply chain.



From the boardroom to the battlefield, the key components of industry success are also applicable for the DoD — SCM is at the core of fundamental business success. Companies that improved business processes and strengthened relationships with their customers and suppliers have not only survived — they have thrived. Those lacking the agility and commitment to change did not — and they either have failed completely or fallen further behind industry leaders.[17]

It is true that there are some notable differences between the problems facing commercial and military supply chains. The problem of the "last mile" is particularly challenging for the military. However, there are also many similarities. In particular, the private sector has led the way in developing tools and techniques for effective and efficient supply chain management. Because much of the DoD supply chain operates behind the battlefield, indeed in CONUS, there remain tremendous opportunities to improve the defense supply chain through even greater application of commercial practices than has hitherto been the case.

The most valuable lessons from the commercial SCM world are relatively straightforward. The first lesson is the need to integrate the elements of the supply chains under centralized guidance, if not control. This is important for two reasons. It will reduce the number of seams in the supply chain which are often the source of supply delays and disruptions. Also, it will allow for improved asset visibility.

The second lesson is the value of metrics. It is difficult to integrate a supply chain without a set of well-articulated goals and measurable performance standards or metrics. These metrics must be customer-centric, actionable and clear. For metrics to influence the performance of the supply chain elements it must be evident to all, particularly middle managers, that they will be held accountable for meeting leadership's goals.

The third lesson is the value of private sector support to the military supply chain. In case after case, the private sector has demonstrated that its approach to SCM can improve the supply chain's efficiency and effectiveness. As the size of the U.S. military shrinks, forces return from overseas and budgets tighten, reliance on the private sector to manage and maintain supply chains will only grow. DoD needs to make better use of private sector companies in the management its supply chains. The private sector possesses a wealth of assets, experience in managing complex supply processes and experience in difficult and challenging parts of the world. In

addition, the private sector has developed processes, techniques and data bases for meeting commercial clients' very stringent demands for maintenance, repair and overhaul. Where these skills have been applied to support military requirements, the results have been dollars saved and increased efficiency.

Private sector SCM companies are a strategic asset to the military. They need to be brought into DoD's and the Combatant Commander's strategic planning processes. These companies have unique knowledge that can enhance military planning. There are likely to be instances where global SCM companies have greater knowledge than government sources regarding locations where the military will be deploying forces.

DoD and the services need to aggressively build on their own new initiatives and the existing base of support provided by private industry to create a model supply chain. The more assiduously this is done, the more effective and efficient will be the result. In an era of tightening budgets and continuing far-flung military commitments, a new model supply chain is essential to U.S. national security.

ENDNOTES

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