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Special Feature

Introduction

The science of logistics concerns integration of strategic, operational, and tactical sustainment efforts while scheduling the mobilization and deployment of units, personnel, equipment, and supplies in support

of the employment concept of the geographic combatant commander. The relative combat power that military forces can bring to bear against an enemy is enabled by a nation's capability to plan for, gain access to, and deliver forces and material to the required points of application across the range of military operations.¹

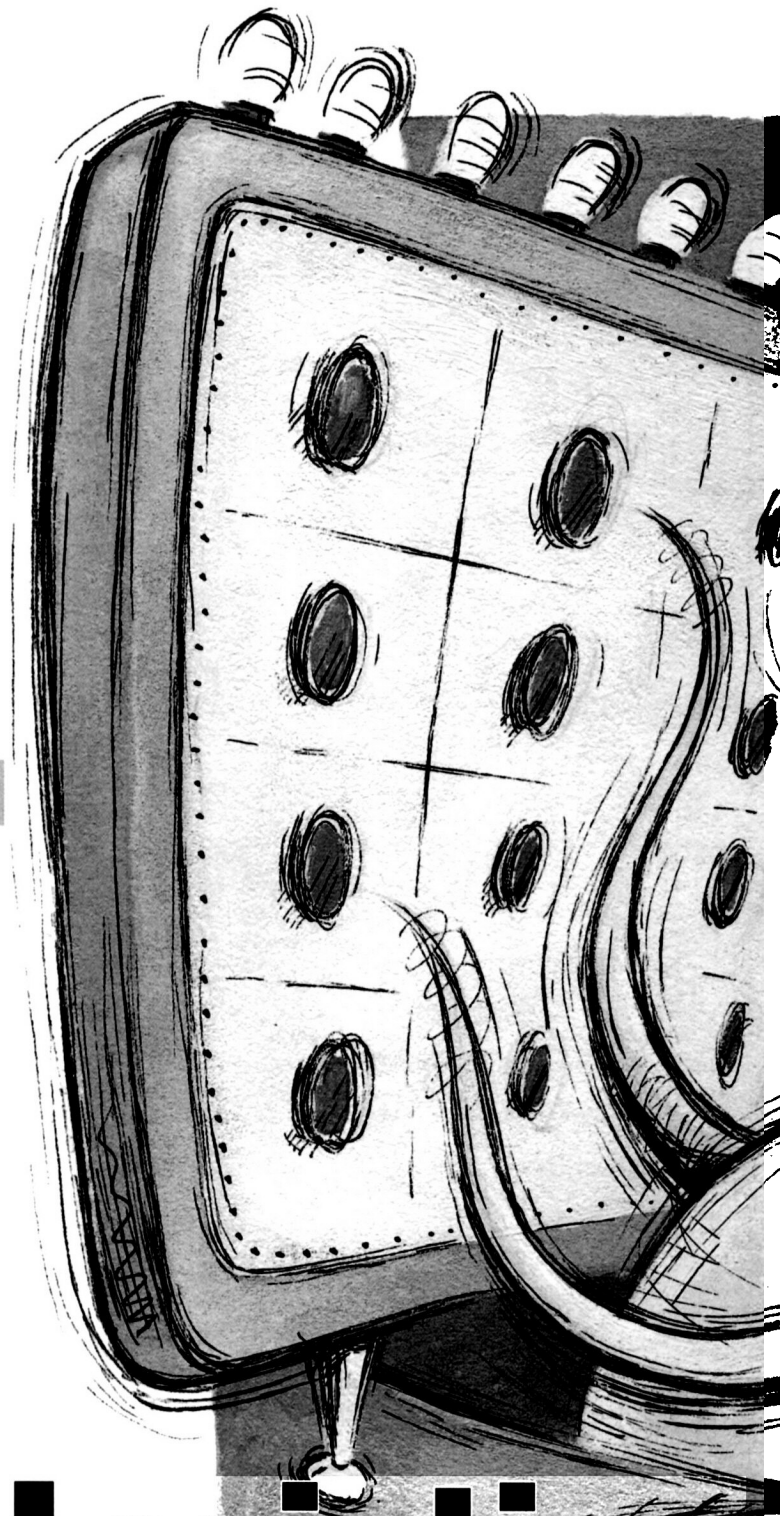
— *Joint Publication 4.0, Doctrine of Logistics Support of Joint Operations, 6 April 2000*

The excerpt above was taken from Joint Publication 4.0. It underscores the very nature of the changing face of logistics support across the Department of Defense (DoD). The point emphasized in Joint Publication 4.0 is that logistics enables our military to bring combat power against our enemy across a full range of military operations. Our military is transforming to meet a very different threat than those that emerged during the Cold War. These emerging threats require our forces to be more flexible, agile, responsible, and lethal. Secretary of Defense Donald Rumsfeld made the point during a Pentagon town hall meeting in March 2003 when he stated:

We entered the century really arranged to fight big armies, big navies, and big air forces, and not to fight the shadowy terrorists and terrorist networks that operate with the support and assistance of terrorist states. And that's why we are so focused on transforming the department and the armed services. To win the global war on terror, the armed forces simply have to be more flexible, more agile, so that our forces can respond more quickly.²

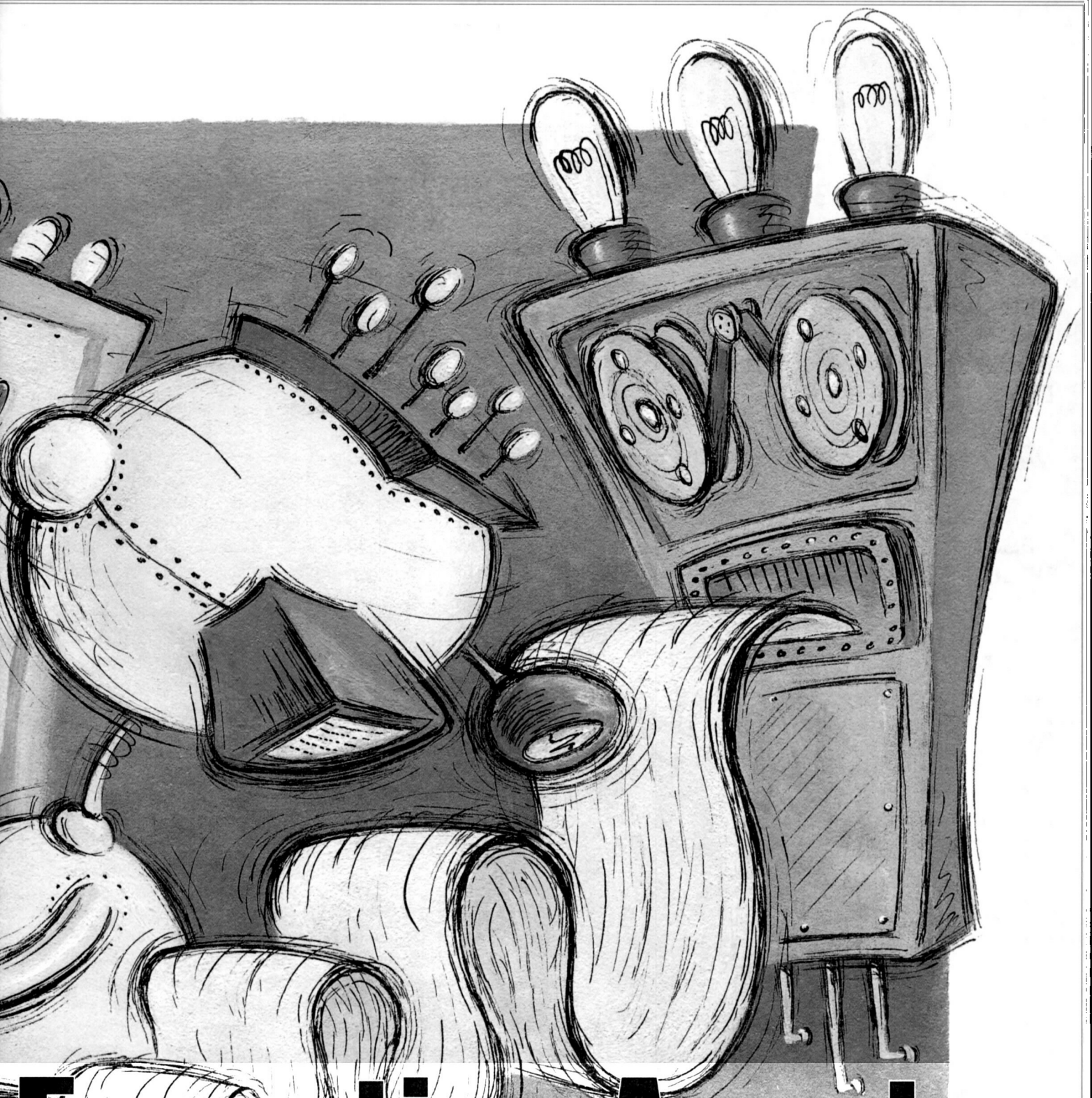
As part of the overall transformation process, the military is jointly moving ahead in transforming its logistics processes as well.

In 2004, the Joint Staff updated its *Focused Logistics Campaign Plan*, which articulates a comprehensive, integrated approach for achieving full spectrum logistics support for the future joint warfighter.³ The plan is intended to be used at all levels of the Joint Staff, military Services and Agencies as the cornerstone for logistics transformation. The Office of Force Transformation within the Office of the Secretary of Defense (OSD) produced a joint concept for logistics entitled the *Operational Sense and Respond Logistics Concept Plan (S&RL)* which "is a transformational, network-centric, knowledge-driven



Logistics

Enhancing



Executive Agents

Support to the Joint Warfighter

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Article Acronyms

- APOD** – Aerial Port of Debarkation
APOE – Aerial Port of Embarkation
AFLMA – Air Force Logistics Management Agency
BOS – Base Operating Support
DAAS – Defense Automatic Addressing System
DDOC – Deployable Distribution Operations Center
DLA – Defense Logistics Agency
DFSC – Defense Fuel Supply Center
DFCC – Digitized Force Coordination Cell
DoD – Department of Defense
EA – Executive Agent
GAO – General Accounting Office
ICP – Inventory Control Point
ISR – Intelligence, Surveillance, and Reconnaissance
ITV – In-Transit Visibility
MILSTRIP – Military Standard Requisitioning and Issue Procedures
OEF – Operation Enduring Freedom
OIF – Operation Iraqi Freedom
OSD – Office of the Secretary of Defense
PBA – Performance-Based Agreements
QDR – Quadrennial Defense Review
RFID – Radio Frequency Identification
RMA – Revolution in Military Affairs
SPOD – Sea Port of Debarkation
SPOE – Sea Port of Embarkation
S&RL – Sense and Respond Logistics
USTRANSCOM – United States Transportation Command

concept plan that enables joint effects-based operations and provides precise, agile support.⁴ The two initiatives complement one another and provide the overarching guidance and approach DoD will use to transform logistics.

Logistics is a complex business, and while great improvements have been made since the first Gulf War to streamline processes and better respond to warfighter needs, much work remains. Several reports including recent General Accounting Office (GAO) and OSD-sanctioned after-action reports, as well as others on Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF) have highlighted the need for the type of transformational changes in logistics noted in the *Focused Logistics Campaign Plan* and the S&RL Initiative. Recurring themes in all of these documents focused upon the continuous need for improvements in areas such as end-to-end distribution, logistics enterprise and integration, and supply-chain management. The *Focused Logistics Campaign Plan* addresses the challenges noted in the reports through transformation in the areas of joint deployment/rapid distribution and agile sustainment. Under agile sustainment, one of the measures now underway to address future warfighter support is to reengineer the executive agent (EA) process. According to the plan, the use of EAs is one means to improve efficiency in the end-to-end distribution process, prevent duplication of effort, reduce waste of scarce resources, and provide a common means for warfighter support for certain commodities.⁵

In a memorandum dated March 2003, the Deputy Under Secretary of Defense for Logistics and Readiness, Diane K. Morales wrote, "Transforming logistics to meet the Future Logistics Enterprise objectives requires that we realign key roles and responsibilities to ensure end-to-end warfighter support, from requirements planning to acquisition through distribution and on to the ultimate customer."⁶ She went on to say, "The DoD Component sources of supply whether they are weapon system program managers, commodity executive agents, or traditional Defense Logistics Agency (DLA) or military Service material commands, must assume full responsibility for satisfying warfighter support, regardless of what entities are executing the supply chain."⁷ DoD Directive 5101.1, *DoD Executive Agent*, defines a DoD Executive Agent as, "The head of a DoD Component to whom the Secretary of Defense or the Deputy Secretary has assigned specific responsibilities, functions, and authorities to provide defined levels of support for operational missions, administrative, or other designated activities that involve two or more of the DoD components."⁸ The use of executive agents presents a real opportunity for DoD to capitalize on improvements in end-to-end distribution, supply-chain management, logistics integration and interoperability for commodities such as fuel, food, medical, and construction barrier materials.

How Did We Get Here

For nearly 30 days after D-Day, the requisition flow out of [3rd Infantry Division] dwindled to a trickle. During 3 weeks of intense combat operations, the logistics requirements for this superb division were nearly invisible to the sustaining base because their division's logisticians could not pass their requirements off the battlefield. An expeditionary Army

will not succeed if unit requirements are not visible in real time.⁹

Lieutenant General C. V. Christianson
Deputy Chief of Staff, USA/G4

Numerous articles and books have been published over the past several years on how to improve logistics support to the warfighter. DoD has made tremendous strides in logistics support during the past 20 years. General Christianson's remarks above highlight some of the difficulties our military faced during OIF and underscores the need for transforming logistics as our military looks to the future. An Air Force Logistics Management Agency (AFLMA) article noted, "The end of the Cold War and the experiences gained from conflicts in Grenada, Panama, and the Persian Gulf essentially brought the era of brute force logistics to a close."¹⁰ Interestingly enough, however, that article was written in March of 1999. In an era where America's military remains the preeminent force in the world, one could ask why transformation is necessary. The *National Security Strategy* published in 2002 greatly clarifies why our military must transform. It states:

The unparalleled strength of the United States armed forces and their forward presence has maintained the peace in some of the world's most strategically vital regions. However, the threats and enemies we must confront have changed, and so must our forces. A military structured to deter massive Cold War-era armies must be transformed to focus more on how an adversary might fight rather than where and when a fight might occur. We will channel our energies to overcome a host of operational challenges.¹¹

OSD and GAO Findings

The OSD-sponsored after-action report (*Objective Assessment of Logistics Operations in Iraqi Freedom*) published in March 2004 used the same term, brute force logistics, in its introduction when describing logistics support in OIF. The OSD report revealed numerous challenges in providing logistics support to the warfighter and noted that in one of the Army's after-action reports logistics was characterized as *brute force logistics*.¹² In both cases the authors were referring to the old practice of using large or massive stockpiles of supplies and equipment to support combat operations. This concept is analogous to a phrase coined by Lieutenant General Gus Pagonis after the Gulf War in which he described logistics support in terms of "moving mountains."¹³

Retired Rear Admiral Andrew A. Giordano wrote,

The military supply chain's only reason for existence is to deliver support to the warfighter in such a way that combat readiness is both achieved and sustained ... how to accomplish that objective is the question, and the answer lies in the reengineering of the military's supply chain's last and weakest line—delivery of support to the warfighter, in the way it is needed.¹⁴

Another logistician also argues that today's logistics and concepts of support are remnants of the old Cold War structure that was designed with an extensive infrastructure with somewhat predictable requirements.¹⁵ He argues further that this concept of support ultimately resulted in logistics tails characterized by stockpiles of materials at various echelons of support.¹⁶

After reviewing these thoughts, one could draw the conclusion that not much has changed over the past 20 years. However, that is not the case. The research for this article indicates that all of the Services now recognize the need to change legacy systems and

Article Highlights

Logistics is a complex business, and while great improvements have been made since the first Gulf War to streamline processes and better respond to warfighter needs, much work remains.

This article draws upon the lessons identified from various after-action reports and identifies many of the logistics successes and failures seen during OEF and OIF. Further, it examines the basic tenets of the *Focused Logistics Campaign Plan* concerning distribution, supply-chain management, and logistics interoperability, as well as S&RL concepts. The lessons from OEF and OIF can be tied directly to OSD and Joint Staff logistics transformation efforts, which are being undertaken to address logistics improvement. These efforts will provide the framework for EA initiatives and how they will enhance warfighter support. Finally, the article discusses the merits of the EA initiatives and the potential for success.

push toward more jointness and interoperability in logistics. This article draws upon the reviews of our most recent military operations as a means to identify the weaknesses in Service logistics operations that must be rectified in order to improve support to the joint warfighter.

The OSD report highlighted specific problems with end-to-end distribution and supply-chain management. Figure 1, taken from the OSD report, highlights the various nodes in the DoD distribution process. The chart provides a good illustration of the complexity of the distribution process. It also characterizes how loosely the actual supply chain is integrated should one try to trace the actual path a part would have to travel to move from the source provider to the intended recipient. Why is this important? This complex process is part of what generates the many problems for the Services as noted in their after-action reports in terms of in-transit visibility (ITV), supply-chain management, and distribution.

Referring to the chart, the OSD report specifically states, "each step in the chain is fully capable of executing its functional objective, but end-to-end warfighter support is not the primary objective." Processes at each of the nodes must be designed to be interoperable, and managers within the nodes must have the tools to perform their jobs in the context of an integrated solution.¹⁸ In a sense, all of the supply chains are optimized to support the individual Service requirements. However, one can

draw the conclusion that joint or interoperability support is difficult in the current setup because of fragmented or stovepiped logistics information systems. This issue is highlighted in the Services after-action reports as well.

This is an area where using EAs to provide common commodity support has great potential. According to DoD 5101.1, "The DoD EA's authority takes precedence over the authority of other DoD Component officials performing related or collateral joint or multicomponent support responsibilities and functions."¹⁹ Essentially, commodity EA's have the potential to be more effective and efficient in optimizing common item support across the Services than the traditional service stovepipes that are not interoperable.

A GAO audit report released in December 2003 also noted similar logistics problems that occurred during the Gulf War and during OIF. The report specifically noted that the "failure to apply lessons learned from previous operations such as the Gulf War and the operations in Kosovo may have contributed to the logistics support problems encountered during OIF."²⁰ The GAO report cited four specific areas that led to logistics challenges during OIF.

- Poor asset visibility
- Insufficient and ineffective theater distribution capability

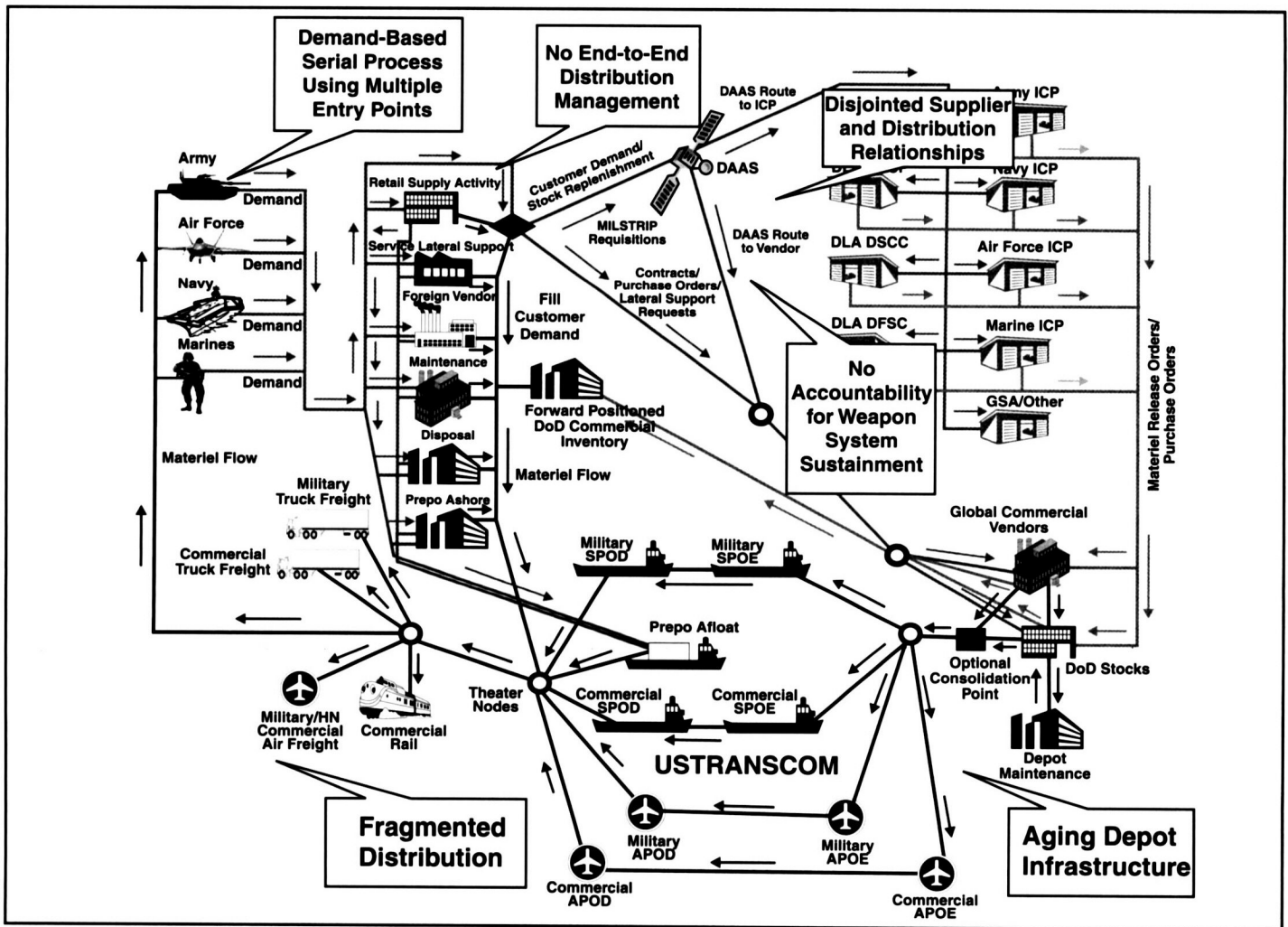


Figure 1. Current DoD Distribution¹⁷

- Failure to apply lessons learned from previous operations
- Other logistics issues

While citing the logistics challenges, the GAO report also noted the sheer magnitude and volume of supplies shipped to support the war effort. For OIF, DoD obligated \$28.1B of which \$14.2B was for operating support costs and \$4.2B was for transportation costs.²¹

Anthony Cordesman of the Center for Strategic and International Studies also wrote about some of the logistics challenges in OIF in a report entitled, *The Lessons of the Iraqi War: Main Report*, Mr Cordesman writes,

Advances in logistics allowed the United States to fight halfway around the world with an unparalleled tempo of operations ... the ability to refuel aircraft, move fuel and water, maneuver units, maintain and repair equipment in the field, and rearm and sustain was critical to every aspect of the war.²²

However, Mr Cordesman noted that the operation was not without its share of problems. He observed that,

US Forces did a great job of improvising and adapting; however, logistics and sustainment need to be better integrated into net-centric warfare and more attention is needed to improve the quality of communications in order to improve the tracking and force management capability at the battalion level and below.²³

Mr Cordesman's comments were similar to those noted in the OSD report.

potentially caused serious mission degradation.²⁶ Further, the report cited confusion in the area of BOS in locations occupied by joint forces. In some cases, units could not properly perform their assigned missions because of the lack of resources and adequate supplies. The report indicated that most of the problems occurred because of a lack of coordination, a difference in philosophy and definitions, and a fundamental understanding of what Joint BOS really meant among the Services.²⁷ The report concluded that these logistics issues led to inadequate support and mission degradation at those sites hosted by the Army.²⁸ Several key recommendations emerged from the Air Force report. The Air Force recommended that "cross functional and interagency planning efforts in regards to fuel need to be reviewed and executive agent responsibilities need to be reviewed by the combatant commander for his area of operations."²⁹ The Marine Corps faced similar logistics challenges during OIF. Most notably, the Corps faced problems that were related to outdated logistics information systems. The outdated systems caused problems with ITV and distribution. Lieutenant General Kelly, Deputy Commandant, Installations and Logistics, indicated that the Corps needed to replace its old legacy systems that were not responsive enough during the initial phases of OIF.³⁰ The general indicated the old stovepipe systems and processes caused problems with tracking and distributing parts and supplies as the units moved out from Kuwait.³¹ The general also commented that, "the days of putting mountains of

One can draw the conclusion that joint or interoperability support is difficult in the current setup because of fragmented or stovepiped logistics information systems.

Military Services and Agency Findings

A Headquarters Air Force, Installations and Logistics-sponsored *Capstone* report published in June 2003 cited numerous issues from OIF that fall into a category of lessons learned which the report characterizes as "enduring potholes." The findings applicable to this article fall into the categories of insufficient ITV, fuels restraints, and inadequate prepositioned assets. The report questioned whether the process used by the Air Force was really intended to provide the type of support outlined in the combatant commander's objectives or was the Air Force intent on providing support through brute force logistics?²⁴ Again, the words brute force emerge. The report went on to cite "the single largest failure was the failure to provide end-to-end (Port of Embarkation to final destination) ITV."²⁵

The Air Force after-action report listed two other areas that were found deficient and needing immediate attention. These two areas, fuels support and base operating support (BOS), have relevance to the EA initiative which will be discussed further in this article. The capstone report indicated that Air Force planners were unaware of the type of host nation support that would be available in the various operation locations required in the operational plan. The planners failed to properly conduct site surveys in these areas and the lack of fuel support could have

Marine Corps logistics on a beach are over and the Corps is now focusing more on seabasing and rapid joint operations."³²

In the February 2004 issue of the *Defense Transportation Journal*, an article entitled "Army Logistics White Paper—Delivering Material Readiness to the Army," listed four focus areas that the Army will use to change its future logistics systems. The four focus areas are as follows.

- Connect army logisticians
- Modernize theater distribution
- Improve force reception
- Integrate the supply chain³³

Three of the focus areas correlate directly with the logistics lessons learned from OIF. First, the Army has identified that its legacy logistics information systems are inadequate because of the lack of ITV. The lack of ITV limits the customers' visibility of the items ordered. In many cases, the customer reorders the same items. This results in a redundancy in items ordered and an inefficient use of scarce resources.³⁴

The second focus area deals with the problem of theater distribution. The white paper notes the "Army cannot respond rapidly and precisely when support requirements are identified ... effective theater sustainment relies solely on the fundamental

concepts of distribution-based logistics.”³⁵ The Army is working with its material command and the Defense Logistics Agency to integrate its logistics information systems to enable a more effective logistics distribution system.³⁶ The fourth focus area deals with the integration of the supply chain. In this effort, the Army is working toward a joint solution to provide the type of end-to-end supply-chain management that is intended to increase speed and deliver focused logistics.³⁷ A quote noted in the *Torchbearer National Security Report* in April 2004 from Michael Wynne, Deputy Under Secretary of Defense for Acquisition, Technology, and Logistics summed up the problems associated with the military’s old way of doing business in the following statement:

Whether push or pull, our current logistics are reactive. At best, unless we embrace a new paradigm, we will still be depending on the warfighters to tell [the logisticians] what they need, then trying to supply it as fast as [they] can. This amounts to an industrial age vendor struggling to satisfy an information age customer. Reactive logistics—the old logistics—will never be able to keep up with warfare as we know it.³⁸

The Army is working diligently to change its logistics support concept from one designed to fight the Cold War to one that is more joint and expeditionary in nature. Major General Terry Juskowiak and Colonel John Wharton wrote in an article for the

capabilities must be joint, flexible, and have a logistics infrastructure that can support simultaneous operations such as deployment, employment, sustainment, and also be integrated to provide a responsive end-to-end distribution system.⁴⁰

Another author wrote that during OIF, the Army’s combat service support units had to perform “miracle after miracle” in the area of distribution just to keep up with combat units.⁴¹ This author also made another more poignant comment by saying that, “the majority of the distribution challenges encountered in OIF were the very same ones faced in Operation Desert Storm 12 years earlier.”⁴² These comments further underscore the point that in order for the Army to be responsive and agile, it must transform its logistics support structure, which in the past relied on a massive logistics tail to support combat operations. General Juskowiak injects that the Army’s transformation strategy must undergo a cultural change and the logistics capabilities of all the Services must be fused with clear lines of command and control across DoD.⁴³ He further adds that the seams and gaps between the Services and Defense Agencies must be removed.⁴⁴

DLA, a \$25B enterprise, supplies more than 90 percent of the US military repair parts and 100 percent of its food, fuel, medical, clothing and textile, construction, and barrier material. DLA played an integral part in providing logistical support to OEF and OIF. According to Mr Allan Banghart, DLA’s director of enterprise transformation, the Agency started its transformation processes

The Air Force has identified the need to get more involved in collaborative planning with the Army and wants a better definition concerning executive agent responsibility.

Army Logistician, “The Army needs to be able to provide the combatant commanders an army that has logistics capabilities designed to support the commander across the spectrum of military operations.”³⁹ They also claim that the Army’s logistics

in the mid 1990s to build and sustain a logistics system that is capable and has agility to ensure warfighter readiness and sustainment.⁴⁵ Colonel Leonard Petruccelli, Director of Contingency Plans and Operations, states that “DLA has gotten

out of the business of warehousing huge mountains of items but now manages small hills of high demand items.”⁴⁶

In planning for OIF, DLA attempted to get out in front of the challenges associated with supporting the military forces over time and distance by working hand-in-hand with the combatant commander’s planning staff to build and push sustainment packages prior to the beginning of the campaign.⁴⁷ In preparation for the enormous logistics support packages for OIF, OSD allowed DLA \$924M of obligation authority to procure and acquire

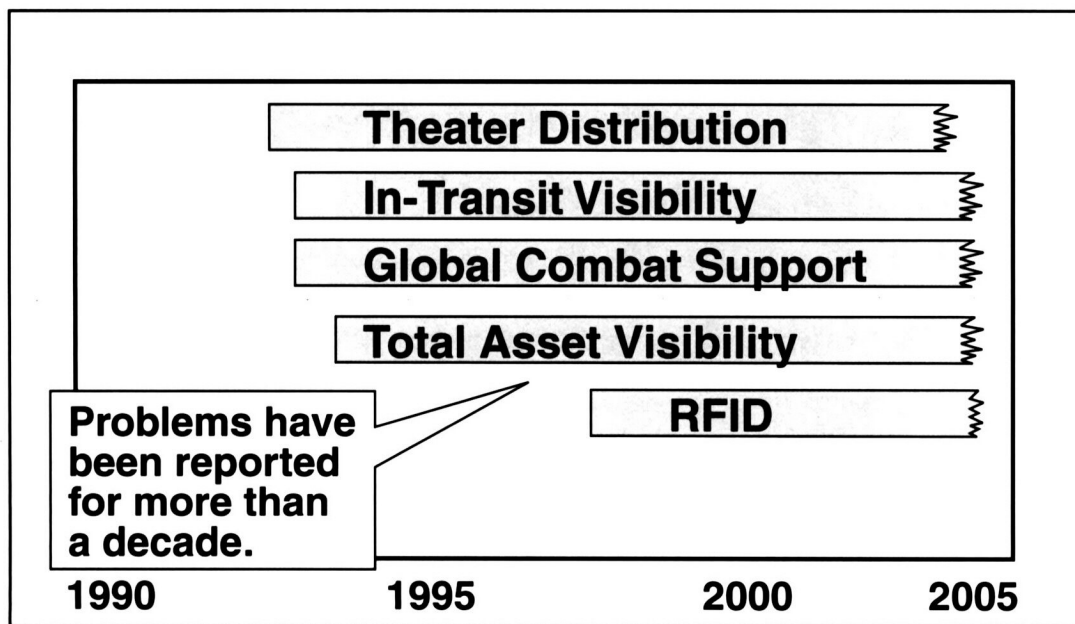


Figure 2. How Many Times Must We Learn the Same Lesson?

numerous types of supplies and equipment that would be in high demand once operations started.⁴⁸ DLA's director, Vice Admiral Keith Lippert indicated that "DLA used this effort to validate a new business model that moved away from large warehouses of material to one that now relies on technology and contractors to provide inventory as needed."⁴⁹

DLA's effort to lean forward in planning logistics support with the combatant commander paid big dividends in many cases. However, the OSD report cited numerous examples where the level of support did not have the anticipated impact as expected. More specifically, the OSD report indicated that the planning tool used by DLA, the Integrated Consumable Item Support Model, did an adequate job in determining fuel requirements but was less effective in determining requirements for repair parts and other commodities such as food, medicine, and so forth.⁵⁰ In addition, the OSD report indicated that United States Central Command and DLA's effort to forward position huge quantities of construction barrier material had less impact than expected due to the limited visibility of those items by the units that needed them. Consequently, many of the items were needlessly purchased locally.⁵¹ The OSD report also implied that the huge allocation of funds to DLA may have hampered the Services' ability to procure advanced funds for their service-unique requirements.⁵²

Despite the tremendous efforts of DLA, the agency also sees the need to continue to transform its processes to better support the warfighter. The problems noted in the OSD report associated with ITV, supply-chain management, end-to-end distribution, and collaborative planning all have implications for DLA. Admiral Lippert indicated that the agency is "reviewing the lessons from OIF to develop its strategies for the future to ensure improvements in the end-to-end process by improving its technological infrastructure and streamlining its business process in an effort to fully integrate the supply chain."⁵³

The Need to Apply Lessons Learned and Transform Logistics Practices

The OSD assessment, GAO report, Air Force capstone report, the *Torchbearer National Security Report*, and numerous articles written about the successes and failures of logistics operations during OEF and OIF all point to a couple of central themes. The Services and the combat support agencies must work to transform and integrate their logistics support activities. The *Torchbearer report* sums up the Army's initiatives through the following statement:

Army logistics has worked to reduce the iron mountains through better business practices and enhanced supply and distribution automation efforts which, to a large degree, have paid off ... what has not been realized is the end-to-end visibility over the supply chain and a responsive distribution-based transportation system focused on customer readiness.⁵⁴

The Marine Corps is changing its philosophy by no longer looking to put large logistics footprints on the beach. The Air Force has identified the need to get more involved in collaborative planning with the Army and wants a better definition concerning executive agent responsibility. DLA no longer manages large warehouses but instead stores smaller quantities of high-demand items and relies heavily on

technology, contractors, and vendor support in order to be more responsive to warfighter requirements.

The key word spoken and written by all is transformation. Logistics transformation requires that the Services and Agencies learn from past practices and institute reforms to be more responsive and agile to support the warfighter across the full spectrum of the battlefield. The Joint Staff's *Focused Logistics Campaign Plan* seeks to mitigate the myriad of logistics challenges identified in the various after-action plans. In the agile sustainment section of the plan, the Joint Staff has identified the use of EAs as a way to mitigate some of the inefficiencies and problems associated with current Service logistics practices. The plan specifically states: "A robust EA process for coordinating and providing common support to the warfighter can improve efficiency, reduce waste, and minimize duplication of effort among Services and Agencies."⁵⁵ Figure 2 poses a question worth considering: How many times must the logistics community continue to learn the same the lesson? This author would argue that the designation of EAs provides DoD a real opportunity to not only learn from previous lessons, but also an opportunity to implement an effective means to enhance warfighter support.

Taken from a briefing delivered by Ms Diane K. Morales in November 2003, Figure 2 illustrates a point addressed earlier. It addresses the fact that many of the very issues that DoD continues to tackle have been prevalent for over a 10-year period. In a speech given to the Conference of Logistics Directors in November 2003, Ms Morales used the chart to emphasize the point that the logistics community has been dealing with these issues since Desert Shield and Desert Storm but it is now time to build upon the current momentum in transformation and work to resolve these issues quickly.⁵⁷

Much of this section of the article was based on the OSD Assessment, which provides a more elaborate and detailed list of findings. Many of the report's findings are not new to the logistics community but the findings illustrate that much work is still required. More specifically, the report cites the following.

- Gaps in the supply chain (supply-chain management) due to Service-unique stovepipes and organization alignments
- Lack of extensive collaborative planning
- Lack of a single controlling element for intratheater movement (end-to-end distribution)
- Unreliable or inoperable logistics communications process (lack of ITV)⁵⁸

All of these findings, along with some lessons previously cited in the past, drive the need to transform DoD's logistics processes. Finally, the OSD report cites the need to change joint doctrine for logistics support of combat operations. Joint Publication 4.0 specifically states, "logistics planners must focus on seamless deployment, distribution, and sustainment in order to properly enable the employment concept of the mission or task."⁵⁹ The OSD report cites that joint doctrine for logistics is inconsistent and not directive in nature thereby causing the Services to relearn the same lessons each time they go to war.⁶⁰

What Are We Doing Now

Introducing change in any organization is never an easy process. Many in the logistics community have readily recognized the

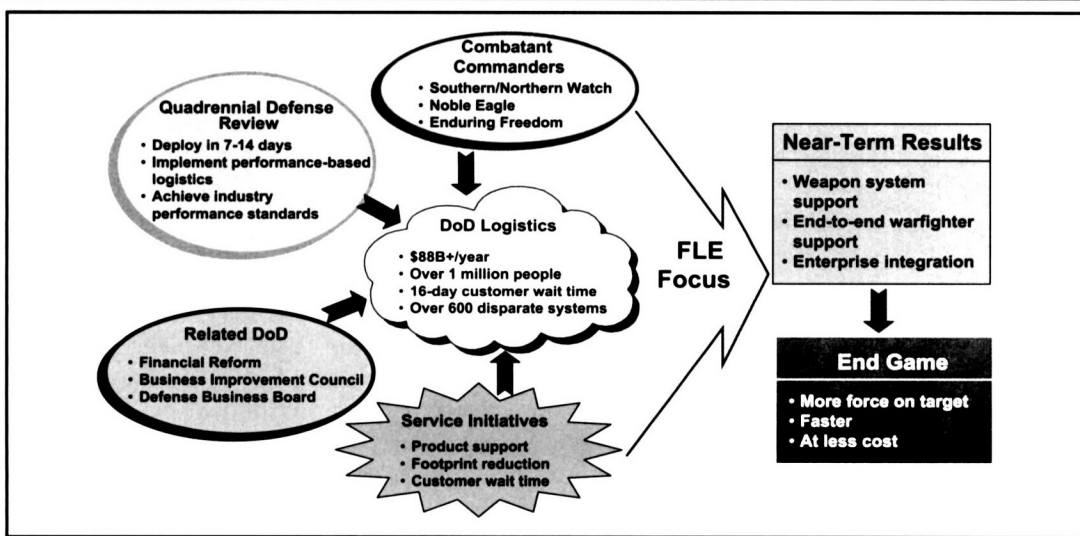


Figure 3. Change Drivers⁶⁶

need to transform current logistics processes and practices to ensure better support to the warfighter. John P. Kotter, a noted author on leadership writes “Transformation requires sacrifice, dedication, and creativity ... only leadership can get change to stick quickly by anchoring it in the very culture of an organization.”⁶¹ OSD, the Joint Staff, and the military Services and Agencies are all engaged in transformation processes. The Joint Staff’s *Focused Logistics Campaign* and OSD’s Office of Force Transformation’s *Operational Sense and Respond Logistics* concepts provide a backdrop for all of DoD’s transformation efforts in logistics.

DoD logistics is complex and enormous. Mr Alan Estevez, Assistant Deputy Under Secretary for Defense (Supply-Chain Integration) described DoD logistics in a briefing on DoD Logistics Transformation in April 2003. Mr Estevez iterates that “DoD logistics employs over one million personnel, engages over 80,000 industrial providers, consumes over \$85B a year and is still structured to win a Cold War due to its multi-echelon inventories and maintenance and its large capital-intensive footprint.”⁶² During OEF and OIF, the Defense Logistics Agency alone provided more than 66 million individual meals ready to eat and over 2.6 billion gallons of petroleum and lubricants.⁶³ The sheer magnitude of DoD logistics introduces impediments to transformation, but change is necessary in order to support the goals introduced in the *Focused Logistics Campaign Plan*. The campaign plan states “that transformed logistics capabilities must support 1) future joint forces that are fully integrated, expeditionary, networked, decentralized, adaptable, capable of decision superiority, and increasingly lethal, and 2) support future joint operations that are continuous and distributed across the full range of military operations.”⁶⁴

Logistics transformation has been underway for a number of years. Paul Needham writes that the “transformation of military doctrine, strategic and operational concepts, and logistics processes began in the aftermath of the first Gulf War when the Joint Staff published *Joint Vision 2010* and later *Joint Vision 2020*.”⁶⁵ Each Service has adopted new transformation strategies to ensure support to the joint warfighter. Figure 3 provides a good depiction of the many *change drivers* that provide the underpinning for DoD’s transformation efforts.

According to Needham, focused logistics is “intended to refocus the Services and the combatant commanders toward reducing forward inventories to a minimal amount and relying instead on consistent resupply.”⁶⁷ Under Secretary of Defense Morales commented in November 2002 that the *Quadrennial Defense Review* (QDR) provides the “blueprint for DoD to transform our forces to meet the threats of the 21st century by establishing a set of requirements for DoD

logistics.”⁶⁸ The logistics transformation guidance from the QDR is as follows:

As we contend with the difficult challenges of the war on terrorism, we must proceed on the path of transforming America’s defense. Our commitment to the nation will be unwavering and our purpose clear: to provide for the safety and well being of all Americans and to honor America’s commitments worldwide. As in generations before, the skill of our armed forces, their devotion to duty, and their willingness to sacrifice are at the core of our nation’s strength. We must provide them with the resources and support they need to safeguard peace and security not only for our generation but also for generations to come.⁶⁹

Accordingly, the requirements set by the QDR include the following.

- Project and sustain the force with minimal footprint
- Implement performance-based logistics to compress supply chains
- Improve weapon system readiness, and improve the availability of commodities
- Reduce cycle times to commercial industry standards⁷⁰

One of the outgrowths of the requirements established by the QDR is the mandated use of performance-based agreements (PBA) between DoD entities that are sources of supply and the customers at major command levels. In March 2003, OSD levied a requirement upon these parties to sign collaborative agreements that would employ a customer-focused supply-chain strategy.⁷¹ These PBAs would serve as a baseline for determining the sustainment requirements for the warfighter during execution of operational plans and also serve to codify realistic expectations between the customer and the supplier in terms of levels of support.⁷² The use of PBAs is also an attempt to provide end-to-end customer support and puts the onus for providing that support on the supplier to oversee the process from requirements planning to acquisition and onward to distribution to the customer.⁷³ This OSD guidance applies to program managers, weapons-system managers, [commodity EAs], combat support agencies, and the Services’ material commands that are responsible for execution of a supply chain. A key part of the initiative is the requirement

for collaboration between the source provider and the customer (warfighter). In addition, the supplier efforts to meet the customer's requirements have associated metrics that have been formally agreed upon.⁷⁴

Paul Needham injects that "logistics transformation is essential to the defense transformation efforts that have been labeled the revolution in military affairs (RMA)."⁷⁵ Needham suggests that the operational concepts being introduced by RMA which include joint response strike forces, enhanced information networking, swifter power projection, realigned overseas presence, accelerated deployment, maritime littoral operations and so forth, require a transformed logistics support process and logistics organizational structure.⁷⁶ OSD, Joint Staff, and all of the services and support agencies recognize the need to transform.

In the updated *Focused Logistics Campaign Plan*, Vice Admiral Holder, Joint Staff Director of Logistics asserts that the very nature of future joint warfighting will demand improvements in logistics support processes, systems, and organizations in order for the logistics community to effectively deploy and sustain joint forces.⁷⁷ The lessons from OIF and OEF identified by OSD and the lessons from previous engagements, along with the change agents discussed earlier, all signify and necessitate the need for DoD logistics to transform. The *Focused Logistics Campaign Plan* sets the overall vision and outlines the strategy and direction for the logistics community to follow. As John P. Kotter noted in his book *Leading Change*, "reengineering,

commodities, facilities, operations, distribution assets, tactics, techniques, procedures, and so forth, that operate in a coherent, coordinated, self-synchronized, dynamically adaptive manner to meet commander's intent."⁸⁰

The concept paper also ties a number of lessons learned from OIF to the need for the type of sense and respond logistics advocated by S&RL. Again, the central themes (end-to-end distribution, total-asset visibility, and supply-chain management) emerge as focus areas that S&RL will be designed to improve. Table 1, taken directly from the S&RL concept document, lists some of the logistics issues from a US Army Rock Drill that will be addressed within the envisioned capabilities of S&RL. In essence, the capabilities being designed in S&RL to address these issues are complimentary to efforts being employed under the *Focused Logistics Campaign Plan*.

Conceptually, S&RL will have the types of technology embedded that will help the logistics community adapt its processes and structures to be more flexible and adaptive to supporting the warfighter across the full spectrum of military operations. Though still in the concept phase, S&RL is being designed with some key enabling concepts that can be directly tied to the EA initiative. The enabling concepts of S&RL fall under six categories: adaptability and speed, effectiveness, flexibility, modularity, integration, and options for military tasks and effects. Figure 4 depicts key and enabling S&RL concepts.

For purposes of this article, three of the enabling concepts (adaptability and speed, effectiveness, and flexibility) have direct

Many in the logistics community have readily recognized the need to transform current logistics processes and practices to ensure better support to the warfighter.

restructuring, and other change programs never work over the long run unless they are guided by visions that appeal to most of the people who have a stake in the enterprise: employees, customers, stockholders, suppliers, communities."⁷⁸ Although Kotter talks in business terms, one can easily substitute the American people and Congress as stakeholders, the warfighters as customers, and the logistics community as the suppliers and understand the gist of Kotter's point. DoD logistics transformation efforts have started with a clear vision and all parties in the logistics community are working on different aspects of the plan to shape logistics for the future.

Operational Sense and Respond Logistics

Complementary to the *Focused Logistics Campaign Plan* is the *Operational Sense and Respond Logistics Concept Plan* (S&RL) under development in the OSD, Office of Force Transformation. This concept expands or broadens the current logistics transformation efforts already underway. S&RL conceptually looks to use technology to *sense* customer needs and provide a rapid *response* to the customer demands.⁷⁹ According to the concept plan, "the resultant logistics structure created using sense and respond technology is a mosaic of suppliers, services,

applicability to the recurring themes mentioned—end-to-end distribution, total-asset visibility, and supply-chain management. First, S&RL will be designed to achieve adaptability and speed. The enabling concept is that "logistics networks will be designed to self-synchronize through a common environment and set of shared objectives to achieve satisfaction of operational requirements at the point of effect."⁸³ In other words, the logistics system will be designed to readily respond to changing customer needs by identifying requirements based on usage trends and abnormal demand patterns in real time.⁸⁴ This is counter to present day logistics processes that are designed for simple and procedural responses to customer demands.⁸⁵ Second, S&RL will be designed to make logistics support more effective by continually monitoring the evolving strategic, operational, and tactical situations and then tailoring logistics support packages to optimize support for the warfighter.⁸⁶ Third, S&RL will improve sustainment of the warfighter's requirement by employing a network that is highly flexible and includes a detailed knowledge base for asset visibility.⁸⁷ S&RL will be designed to "broaden the logistics resource base and assure visibility of all the elements and components of logistics assets from all potential sources to achieve full spectrum asset visibility."⁸⁸

Memorandum Issue	Analysis	Responsive Capability	
		Number	Capability
Distribution and logistics in the initial phases of OIF were chaotic, inefficient, and generated unacceptable risk to operations.	The primary focus of logistics operations should be achievement, in all phases of operations, of commander's intent, focusing on speed and quality/effectiveness of support versus mass and efficiency.	OIL-2	Synchronize logistics operations with commander's intent, operations functions, and ISR by maintaining and exploiting total situation awareness based on: evolving commander's intent; the strategic, operational, and tactical situation; the operational environment; and force capabilities.
Unclear that better, or even good planning would have made any difference.	Static, history-based planning factors are not adequate: dynamic adaptation of logistics support must be provided.	OIL-3	Anticipate force capability and logistics needs to proactively sustain the force and alter initial conditions.
DLA involvement in theater logistics operations needs to be formalized.	A single perspective of logistics, from point-of-effect to source-of-supply, and focused on achievement of commander's intent, must be developed, and should eliminate process and structure lines associated with hierarchical organizations.	SSPE-5	Permit the direct correlation of logistics resource demand to sustaining base suppliers and manufacturers, connecting point-of-effect to source-of-support, and enabling autonomic logistics.
Joint, multi modal, nodal and functional distribution organizations are necessary.			
Distribution community requires an integrated, vertical view of the supply chain starting with a view of the supported commander's requirements.			
Need to base distribution decision making on operational situational awareness. Move towards distribution metrics that are "effects based" rather than business based.	Commander's intent, including its expression in the form of desired effects, must be the predominant measure and factor in logistics support.	OIL-2	Synchronize logistics operations with commander's intent, operations functions, and ISR by maintaining and exploiting total situation awareness based on: evolving commander's intent; the strategic, operational, and tactical situation; the operational environment; and force capabilities.
		OIL-5	Implement commander's intent, expressed in effects, missions, and tasks, in every aspect of logistics, across the full range of military operations, and for the full set of force capabilities.
Disconnect evident between US Army Combined Arms Support Command and Department of the Army view on configured loads.	A single perspective of logistics, from point-of-effect to source-of-supply must be developed, and should eliminate process and structure lines associated with hierarchical organizations.	ASRL-3	Permit rule-based, adaptable, peer-to-peer, autonomous demand and supply of logistics resources across battle space elements in all organizations, services, and allied, coalition, and treaty organization forces.

Table 1. US Army OIF Logistics Issues (Rock Drill) Versus Capabilities ⁸¹

S&RL is intended to be "implemented as a cross-service, cross-organizational capability that provides end-to-end, point of effect to source of support network of logistics resources and

capabilities."⁹⁰ The enabling concepts of S&RL will complement the work already underway under the *Focused Logistics Campaign Plan*.

Focused Logistics Campaign Plan

The 2001 QDR provided the impetus for our military to take the necessary steps to transform in order to meet the challenges of a very different threat. The QDR requires the warfighters to shift focus from a threat-based mentality to a focus that now centers on a capabilities-based approach to deter and defeat potential adversaries.⁹¹ The guidance from the QDR and OSD has galvanized efforts to transform our logistics support strategies to support the warfighter in all types of operations regardless of whether the threat is symmetrical or asymmetrical. Two of the major initiatives in the *Focused Logistics Campaign Plan*, joint deployment/rapid distribution and agile sustainment provide the goals and strategies needed to rectify the many logistics challenges noted over the past decade and from recent assessments of OEF and OIF. The recurring logistics challenges were documented previously. The problems with global combat support (supply-chain management), distribution (end-to-end distribution), in-transit visibility, and total-asset visibility have been well documented and debated. The campaign plan lays out a strategy to combat these issues.

Under joint deployment/rapid distribution, one of the basic goals is to improve the distribution process. In an effort to make the distribution process more interoperable in terms of deployment, sustainment, and redeployment the Secretary of Defense named United States Transportation Command (USTRANSCOM) as the DoD process owner for distribution.⁹² Why is this important? This designation essentially puts a single entity in charge of the entire strategic distribution process. The idea behind this initiative is to synchronize the deployment and distribution capabilities of the Services and Agencies. After USTRANSCOM gained this designation, it partnered with DLA and the Services to establish a Deployable Distribution Operations Center (DDOC). The DDOC focuses upon providing improved total-asset visibility—in-transit visibility of force flow, sustainment, and retrograde.⁹³ Major General Dan Mongeon, Director of Logistics Operations, DLA commented,

The partnership between USTRANSCOM and DLA brings together complimentary capabilities and skills essential to effectively and efficiently support our military services ... it has allowed the synchronization of force deployment and the supply chain integration to support combat operations.⁹⁴

The agile sustainment initiative focuses upon material management,

prepositioned war reserve stocks, critical commodities, and force structure (combat support). Some of the goals of this initiative include implementing performance-based logistics, integrating the supply chains, reengineering the executive agent process, improving subsistence support, and employing the single fuel concept, to name a few.⁹⁵ As discussed earlier, the Service material commands, support Agencies, and the operational communities have already started the process of establishing performance-based agreements based on warfighter requirements.

Reengineering the EA process provides DoD the opportunity to improve efficiency in providing common item support, reduce redundancy and duplication of requirements, and reduce the demands on scarce resources.⁹⁶ Transforming DoD logistics is a massive undertaking that will continue to evolve over the years through continual changes in technologies, better information systems, and more thorough integration of Service and Agency capabilities. The transformation process did not just start but is moving forward as a result of several change agents—QDR, Joint Staff and Service Initiatives, and the changing threat environment that has caused our military to shift its focus to be more agile, flexible, and expeditionary in nature. Transforming logistics will require large investments of funds to improve old legacy information systems and stovepiped business processes. However, some transforming initiatives can be realized through changing organization structures, designation of process owners, and utilization of the executive agency process.

Logistics Executive Agents: Short-Term Wins in the Transformation Process

The overall strategy for transforming DoD logistics will employ the use of long- and short-term goals. Short-term goals can be

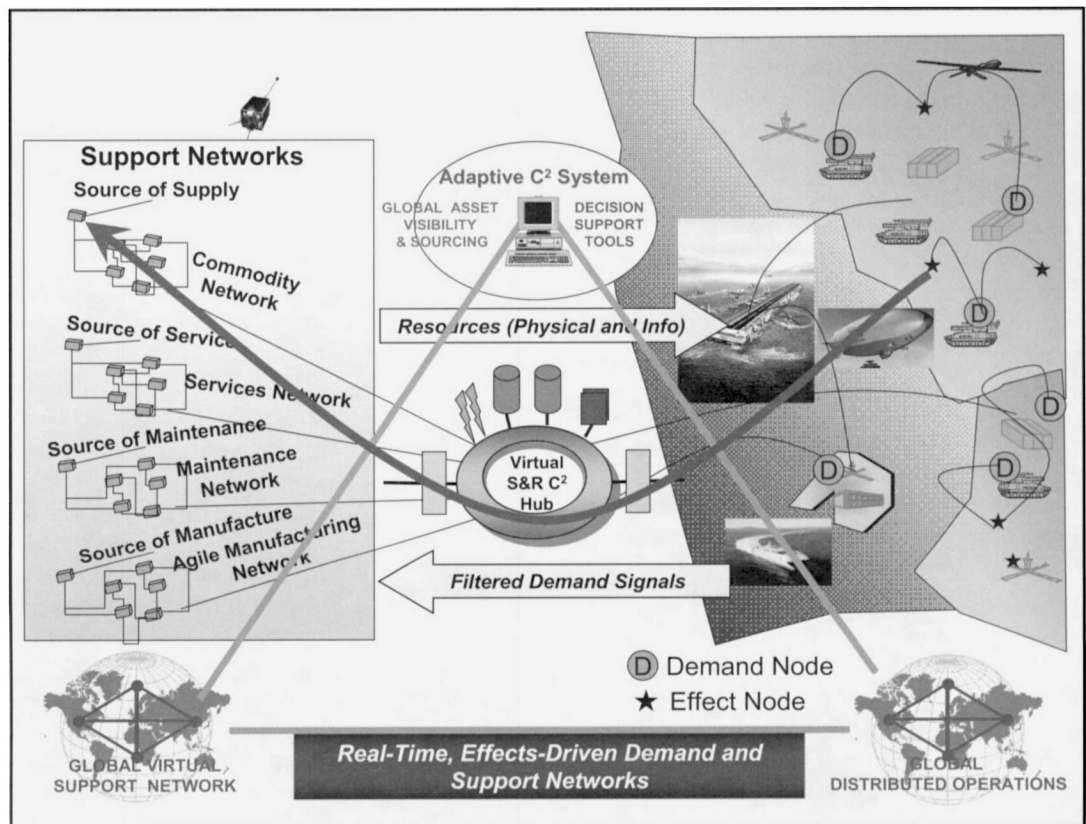


Figure 4. End-to-End Sense and Respond, from Point-of-Effect to Source of Support⁹²

realized or implemented in shorter durations than many of the more elaborate goals, which are reliant upon improvements in technology or funds. In fact, many commercial businesses use short-term goals or *quick wins* to build momentum toward achieving the organization's long-term goals. John Kotter writes, "short-term wins are important because they allow an organization to test its vision against concrete data."⁹⁷ He also believes that short-term wins allow the organization to adjust its vision and strategies. Without the concentration on short-term wins, developing problem areas may not have been realized until it was too late in the game.⁹⁸ The use of executive agents will allow DoD to gain short-term wins in the logistics transformation process.

As explained in the introduction, DoD Directive 5101.1 defines a DoD executive agent as "The head of a DoD component to whom the Secretary of Defense or the Deputy Secretary has assigned specific responsibilities, functions, and authorities to provide defined levels of support for operational missions, administrative, or other designated activities that involve two or more of the DoD components."⁹⁹ The directive also states that the designation of EA responsibility is conferred when DoD resources need to be focused on a specific area or areas of responsibility as a means to minimize duplication or redundancy.¹⁰⁰

Future logistics enterprise, one of the pillars of agile sustainment, includes a number of short-term goals. In a briefing presented to the Supply-Chain World Conference and Exposition held in April 2003, Mr Alan Estevez, Assistant Deputy Under Secretary of Defense (Supply-Chain Integration) identified three near-term goals to transform logistics. These were weapon system support, end-to-end customer support, and enterprise integration.¹⁰¹ The designation of EAs for common use commodities (food, medicine, fuel, and construction barrier material) across the military services incorporates the objectives of end-to-end customer support. Figure 5 depicts the integrated process embodied in the EA initiative.

OSD published the *Future Logistics Enterprise, The Way Ahead*, in June 2002. The document states the "desired result of the EA initiative is to align EA responsibilities that support the warfighter across the full spectrum of operations including support on an end-to-end basis and rapid response to all deployments, improved crisis and deliberate planning to include EA responsibility, and alignment of the resource (budget, force structure, and so forth) responsibilities associated with the EA."¹⁰³

Applying the EA Concept to Rectify Previous Lessons Learned

The actual designation of commodity EAs provides DoD with an opportunity to address some of the problems cited earlier. The OSD and GAO reports both cite numerous logistics challenges associated with end-to-end distribution, supply-chain management and in-transit visibility. DoD has officially designated DLA as the EA for bulk fuel, subsistence, and medical material. In each of the directives, DoD Directive 5101.8, *DoD Executive Agent for Bulk Petroleum*, DoD Directive 5101.9, *DoD Executive Agent for Medical Material*, and DoD Directive 5101.10, *DoD Executive Agent for Subsistence*, the EA has been charged with the responsibility to manage the supply chain, ensure effective end-to-end distribution, and provide visibility

of the various commodities throughout the supply chain. These designations are touted as short-term wins because they provide a potential *fix* to resolve some of the problems associated with only three of the ten classes of supply required to support the warfighter. However, these designations are relative to initiatives that are conceptualized in both the *Focused Logistics Campaign Plan* and S&RL.

The OSD report and other authors cited in this report characterized support to OIF as *brute force logistics*. The general impression gained from these reports and articles is that DoD needs to reengineer its logistics support processes and truly move away from logistics practices that were carried over from the old Cold War support structure. This is an area where EAs can provide a measure of improvement and help to move DoD away from the use of brute force logistics. For example, the EA for bulk petroleum is required "to engage with the DoD components including sharing and leveraging of DoD resources to reduce costs and avoid unnecessary redundancies."¹⁰³ The EA for medical material is required to work with the Joint Staff, the Combatant Commanders, and the military Services to consolidate medical material requirements for surge and sustainment, and to execute sourcing and distribution plans to support the warfighter in theater operations.¹⁰⁴ And finally, the DoD components are required to coordinate subsistence requirements with the DoD EA to "assure material availability during peace and war, and prevent duplication of resources."¹⁰⁵ The designation of EAs will therefore allow DoD to reduce costs and duplication of resources, consolidate requirements, and ensure availability of these critical commodities in both peace and war.

Application of the EA initiative has relevance to some of the military Service findings as well. It was noted in the Air Force after-action report that the planners were not aware of what host nation support was available at some locations and that site surveys were not properly conducted. The poor planning could have led to lack of fuel support and degraded mission capability at those locations. In addition, part of the problem cited in this particular case had to do with lack of clarity in which of the Services (Army or Air Force) had responsibility for base operating support. This is an area where the EA for bulk petroleum could have significant impact. The EA is required to "acquire, store, and distribute bulk petroleum to all DoD customers [wherever] and [whenever] it is needed across the full range of operational situations."¹⁰⁶ Further, the EA is required to "coordinate with all DoD components, provide visibility for US Government, allied, coalition, host nation, and commercial bulk petroleum assets."¹⁰⁷ The key words in the directive require the EA to provide bulk fuel whenever and wherever the fuel is needed. In this case, the designation of the EA will alleviate some of the challenges associated with planning for fuels support in joint operations in austere environments.

In the OSD after-action report, four logistics challenges were noted that lend themselves to some resolution by using EAs for common commodities. These four areas addressed gaps in the supply chain due to service-unique stovepipes, limited collaborative planning, lack of a controlling element for end-to-end distribution, and lack of ITV. These four areas are addressed in the three commodity EA designations. More specifically, the EAs are required to collaborate requirements across all DoD components, manage the supply chain, provide

visibility of all available assets and ensure end-to-end distribution of assets across a full range of military operations.

Another benefit associated with the designation of EAs is there will be associated metrics and performance indicators that will give the users and suppliers feedback on the level of support being provided. For example, the EA for bulk petroleum is required to establish PBAs with the Components "to set mutually agreed upon expectations."¹⁰⁸ The EA for medical material is required "to assess and report Class VIII supply-chain performance and readiness to include a clear definition of surge and sustainment requirements and material on hand or under contract to meet Class VIII requirements."¹⁰⁹ In the case of the EA for subsistence, the combatant commander is required "to provide timely and accurate forecasts of requirements and feedback to the DoD EA for subsistence regarding the types and quantities of subsistence items to be procured and delivered across the full spectrum of military operations."¹¹⁰ The responsibilities assigned in the commodity EA directives are fully in line with the requirement for the suppliers and the customers to establish PBA as required by OSD guidance and logistics transformation guidance from the 2002 QDR.

The designation of DLA as the EA for three commodities provides the logistics community with some short-term wins in the transformation process. The EAs for these commodities now provide a single face to the customer and they are also responsible for end-to-end customer support and can eliminate gaps in the supply chain. This designation also requires collaborative planning between the EA and the commodity users, which in the long term, reduces duplication of effort and reduces unnecessary expenditure of critical funds for scarce resources. The designation of these commodity EAs will only address a small portion of the logistics challenges noted in the various OSD, GAO and Service-sponsored reports. However, these designations are one means to support the joint warfighter.

Conclusion

Transformation of DoD logistics is a huge undertaking and has been in progress for a number of years. The logistics community is transforming to ensure it can fully support the warfighter across the full spectrum of military operations. One of DoD's greatest challenges is transforming a military that was designed, structured, and funded to fight a Cold War enemy that no longer exists. Today's threat environment poses a very different enemy than our military was geared to fight. Consequently, the 2001 QDR, the national security strategy of 2002, and guidance from the Secretary of Defense have all established the requirement for transformation of our military forces. These change agents have spurred a series of initiatives intended to provide full spectrum logistics support to the

warfighter.¹¹¹ The use of EAs for common commodities is one means that is fully in line with the logistics transformation initiatives that will allow the logistics community to improve support to the joint warfighter.

DoD logistics has to adapt to be more agile, expeditionary, and flexible in nature. The Joint Staff's *Focused Logistics Campaign Plan* provides an overarching integrated approach to transforming joint logistics capabilities. OSD's *Operational Sense and Respond Logistics Concept Plan* seeks to exploit new technologies that will allow logisticians to sense the requirements of the warfighter and respond in a more expeditious manner. The military Services have all instituted transformation initiatives as well to improve end-to-end customer support, in-transit visibility, total-asset visibility and theater distribution. However, as mentioned earlier, many of the transformational changes have yet to have the impact intended. After-action reports and assessments from our recent experiences in OEF and OIF indicated that many of the logistics lessons identified from operation Desert Shield and Desert Storm are still plaguing our military today. The recurring themes fall into the categories that are all part of the transformation initiatives underway that DoD is working to resolve.

Transformation is a long-term process that will require huge investments in technology, organizational restructuring and realignments, and improvements in logistics processes and procedures. However, there are some areas that can have immediate impact without massive changes. The designation of executive agents for common use commodities such as fuel, food, medical material, and construction barrier materials is a near-term solution that has merit. The designation of DLA as the EA for these commodities is smart business. DLA already procures and manages the supply chain for these commodities. In essence, this designation will reduce duplication of effort on the part of the Services, improve the procurement process through consolidation of requirements, and provide for more efficient use of scarce resources (dollars). Several authors referenced in this report alluded to the fact that during OEF and OIF, the Services resorted to brute force logistics to support the military operations. This characterization of logistics support is reflective of an era when the Services pushed massive stockpiles of material and equipment to the theater of operations. This type of logistics support wasted critical funds and resources. EAs can alleviate

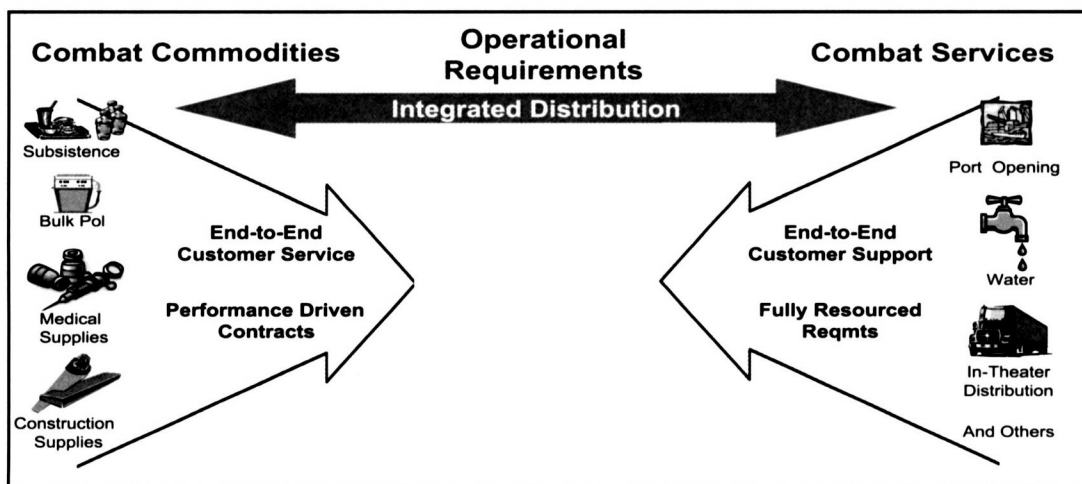


Figure 5. Executive Agents¹⁰¹


these types of problems for the commodities noted. The designation of EAs requires that the supplier collaborate across the Services and Agencies to determine requirements through mutual agreements. In doing so, brute force logistics for these three commodities should ultimately be a thing of the past.

The *Focused Logistics Campaign Plan* and the *Operational Sense and Respond Logistics Concept Plan* are solid roadmaps for transforming logistics. The basic tenets of the two plans include the need to make logistics more agile, more responsive, more accurate, and more reliable across the full spectrum of military operations. The designation of logistics EAs is but one small step in the overall logistics transformation process. It is, however, one means to enhance support to the Joint warfighter. Additionally, after DoD reviews the merits of these EA designations over time, DoD may find it prudent to designate EAs for other common commodities such as military clothing, and repair parts (consumable items). It is therefore the recommendation that DoD continues to designate logistics EAs for common use commodities where the benefits can be readily realized.

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The Themes of US Military Logistics

From a historical perspective, ten major themes stand out in modern US military logistics.

- The tendency to neglect logistics in peacetime and expand hastily to respond to military situations or conflict.
- The increasing importance of logistics in terms of strategy and tactics. Since the turn of the century, logistical considerations increasingly have dominated both the formulation and execution of strategy and tactics.
- The growth in both complexity and scale of logistics in the 20th century. Rapid advances in technology and the speed and lethality associated with modern warfare have increased both the complexity and scale of logistics support.
- The need for cooperative logistics to support allied or coalition warfare. Virtually every war involving US forces since World War I has involved providing or, in some cases, receiving logistics support from allies or coalition partners. In peacetime, there has been an increasing reliance on host-nation support and burden sharing.
- Increasing specialization in logistics. The demands of modern warfare have increased the level of specialization among support forces.
- The growing tooth-to-tail ratio and logistics footprint issues associated with modern warfare. Modern, complex, mechanized, and technologically sophisticated military forces, capable of operating in every conceivable worldwide environment, require that a significant portion, if not the majority of it, be dedicated to providing logistics support to a relatively small operational component. At odds with this is the need to reduce the logistics footprint in order to achieve the rapid project of military power.
- The increasing number of civilians needed to provide adequate logistics support to military forces. Two subthemes dominate this area: first, unlike the first half of the 20th century, less reliance on the use of uniformed military logistics personnel and, second, the increasing importance of civilians in senior management positions.
- The centralization of logistics planning functions and a parallel effort to increase efficiency by organizing along functional rather than commodity lines.
- The application of civilian business processes and just-in-time delivery principles, coupled with the elimination of large stocks of spares.
- Competitive sourcing and privatization initiatives that replace traditional military logistics support with support from the private business sector.