July 1999

Product Support for the 21st Century

Report of the Department of Defense (DoD)
Product Support Reengineering Implementation Team

Section 912(c)

Foreword

This report on *Product Support for the 21st Century* charts some of the important next steps of continued acquisition and logistics reform. It identifies how the Department of Defense (DoD) will capitalize and expand on best practices—commercial and government—to transform weapon system support processes to meet the urgent operational needs of our warfighters. It emphasizes competition as a continuous life-cycle ingredient to provide best-value support and mandates continuous technology refreshment as an effective method to lower weapon system total ownership costs while at the same time satisfying the warfighters' operational and readiness requirements.

This document is more than a report. It is an *implementation strategy*, built on the Section 912(c) Report submitted to Congress by Secretary Cohen in April 1998. That report, *Actions to Accelerate the Movement to the New Workforce Vision*, responded to the requirements in Section 912(c) of the Fiscal Year 1998 National Defense Authorization Act. In that report, the Secretary of Defense tasked me to develop implementation plans in several areas. The following four areas were included in the "Restructure Sustainment" section of the 912(c) Report and are being implemented under the overarching umbrella of product support reengineering:

- Reengineer the Product Support Process to Use Best Commercial Practices
- Competitively Source Product Support
- Modernize Through Spares
- Greatly Expand Prime Vendor and Virtual Prime Vendor.

This product support reengineering implementation strategy is a critical part of our logistics transformation to achieve Joint Vision 2010. The strategies, implementation elements, and outcome objectives that are fundamental to product support reengineering coincide with the logistics transformation objectives of operational agility, improved customer service, and integrated logistics chains. The product support reengineering plans build on the promising initiatives in the Military Departments and Defense Logistics Agency and accelerate the adoption of best practices.

I appreciate the work by the implementation team comprised of more than 100 representatives from the Military Services, Defense Agencies, Joint Staff, and Office of the Secretary of Defense. The team had a complex task and synthesized the essential action elements. I pledge my support to the implementation efforts. I will continue to focus my attention and energy on five areas: pilot programs, financial processes and systems, information systems modernization and security, competitive base development, and warfighter-customer interfaces. I look forward to working with the DoD Components, the Congress, and industry as we use product support reengineering as a primary tool for meeting the customer requirements of our warfighters.

J.S. Gansler
Under Secretary of Defense
(Acquisition & Technology)

Product Support for the 21st Century

JULY 1999

The Department of Defense (DoD) developed and perfected the "mass" logistics model of the 20th century to deter and defeat opposing Cold War forces engaged across well-defined battle lines. This model, conceived during a period of relatively slow and expensive transportation and paper-based information, features several echelons of inventory and maintenance to enable timely response to the warfighter needs of forward deployed forces. Our mass model and infrastructure enabled us to defend U.S. interests successfully through the 20th century, culminating in our victory in the Cold War.

The Joint Chiefs of Staff anticipate that threats of the 21st century will create a vastly different battlespace than previously encountered; highly mobile, dispersed forces will engage throughout an area of operation. To support warfighter needs for mobilization and sustainment, the Department is transforming its mass logistics system to a highly agile, reliable system that delivers logistics "on demand." A key element of this transformation is replacing our multiple-echelon infrastructure with rapid, affordable transportation and information. This transformation will enable effective and efficient support of our current national strategy of force projection.

The commercial marketplace demonstrates that logistics support of products (or *product support*) can be optimized as a strategic advantage by focusing on customer service, integrating supply chains, capitalizing on rapid transportation, and exploiting electronic commerce. World-class firms demonstrate superior responsiveness to customer needs at almost half the cost of their average industry segments. These industry leaders meet scheduled delivery dates 17 percent more often and carry 60 percent less inventory than their industry average, while meeting customer-requested dates 90 percent of the time. Industry leaders clearly demonstrate the strategic benefits of agility and responsiveness—precisely the characteristics required by the Joint Chiefs of Staff for the 21st century.

Commercial leaders attain superior logistics performance by concentrating on three strategic objectives:

- Segmenting their markets and supporting infrastructure to focus on specific customer needs
- Strategic sourcing to select best-value, long-term partners
- Integrating their supply chains to achieve cross-functional efficiencies.

This implementation strategy documents DoD's approach for transforming product support to meet operational requirements based on best practices. The strategy is consistent with the Secretary of Defense's report to Congress, *Actions to Accelerate the Movement to the New Workforce Vision* (1 April 1998). The strategy was prepared by an integrated team comprised of representatives from the Office of the Secretary of Defense, Joint Chiefs of Staff, Military Services, and Defense Logistics Agency (DLA). The team, chartered by the Under Secretary of Defense (Acquisition and Technology), focused on the following four areas:

- Reengineer the product support process to use best commercial practices
- Competitively source product support
- Implement continuous technology refreshment
- Greatly expand Prime Vendor and Virtual Prime Vendor arrangements.

In addressing these areas, the team not only built on best commercial practices but drew on a robust set of DoD logistics initiatives. In response to operational requirements, the Military Services and DLA are sponsoring 159 initiatives that focus on improving product support. The projected investment in the initiatives is approximately $3.5 billion from FY99 to FY05.[1] Most initiatives are directed toward integrating the logistics chain to improve service and efficiency, as shown in Table ES-1. The table relates 300 DoD logistics initiatives, including the product support initiatives, to the strategic best practices and other operations and sustainment activities.

Table ES-1. Relating DoD Logistics Initiatives to Strategic Best Practices

Strategic best practice	Product support initiatives	Other logistics initiatives
Integrate the logistics chain	76 (48%)	56 (40%)
Competitively source product support	31 (20%)	35 (25%)
Adopt a customer orientation	23 (14%)	7 (5%)
Other operations and sustainment activities	29 (18%)	43 (30%)
Total	159	141

With the depth and breadth of the improvement efforts, our challenge is to extend the initiatives and couple them with appropriate commercial practices to reengineer product support effectively. To address this challenge, the Department will focus immediately on the following four areas:

- Reengineer product support from the warfighters through the sustaining base. This effort builds on Service initiatives to integrate their supply chains and includes simplifying customer interfaces, evolving customer

[1] The Military Services and DLA are also sponsoring an additional 141 initiatives to improve DoD's logistics performance at an investment level of approximately $1.8 billion (FY99 to FY05).

relationships based on output (i.e., readiness), ensuring appropriate combat support integration, enhancing interfaces with theater distribution, and continuing Service efforts to integrate across functions.

- Competitively source product support for 30 pilot programs (10 from each Military Department), leading to competitive sourcing for *all* major weapon systems by FY05.

- Expand Prime Vendor and Virtual Prime Vendor arrangements to appropriate consumables by FY05 by executing a systematic effort to link Prime Vendor and Virtual Prime Vendor strategies with pilot programs and extending those programs, as appropriate, to other weapon programs.

- Increase funding and incentives for reliability, maintainability, and sustainability (RM&S) enhancements through continuous technology refreshment in each Military Department by increasing program managers' life-cycle cost responsibilities, clarifying RM&S investment policy, and migrating to open architectures for new systems.

These four implementation actions will be undertaken first within the framework of pilot programs. Similarly, the pilots will test these actions before policy is revised to implement changes across all acquisition and sustainment programs. In addition to the high-priority implementation tasks, the following key enabling actions are needed to establish a coherent, supportive environment for the reengineered processes:

- Foster a competitive supplier base for product support through innovative partnering strategies and the elimination of barriers for life-cycle competition. These strategies will evolve based on pilot program experience in FY00 through FY02.

- Reengineer financial processes to support integrated product support practices, including the evolution of new activity groups to enable output-based customer transactions.

- Modernize existing logistics information systems to enable seamless, secure provision of product support. This effort will build on DoD initiatives to adopt commercial standards for electronic commerce and deploy secure, interoperable systems determined by unique Service requirements. Actions include migrating to commercial transaction standards, integrating supply and transportation systems, accelerating the deployment of intrusive diagnostics, and modernizing transaction systems to support customer-focused metrics.

Finally, as the Department gains experience through the pilot programs and proliferates reengineered practices, long-term actions are anticipated. They include enhancement of training and education, refinement of performance measurement,

evolution of activity-based costing, and development of revised policies and procedures.

These key actions will be undertaken in the following three phases to ensure the process changes meet warfighter requirements and the risks of process changes are mitigated:

- Phase I: Establish new product support environment (FY99–00)
- Phase II: Implement pilot integrated supply chains (FY00–02)
- Phase III: Implement full-scale integrated supply chains (FY02–05).

Results and lessons learned from the Phase II pilot programs will be provided to the Defense Systems Affordability Council to make mid-course corrections and adjustments before full implementation in Phase III.

Successful execution of the key enabling actions will permit DoD to migrate to a product support process with the following characteristics:

- Integrated logistics chains focused on customer service and system readiness—driven by unique requirements of the Military Services
- Customer relationships based on output (such as availability of mission equipment)
- Logistics chains integrated across industry and Government
- Best-value providers selected from Government, industry, or Government-industry partnerships
- Support environment that maintains long-term competitive pressures
- Secure, integrated information systems across industry and Government that enable comprehensive logistics chain integration and full asset visibility
- Continuous improvement of weapon system RM&S by dedicated investments
- Effective integration of weapon system-focused support to provide total combat logistics.

These characteristics describe a new product support process where currently disparate functions are integrated to focus on weapon system readiness. The primary provider (public or private sector) of product support is guided by outcome-determined incentives. This process adopts appropriate strategic commercial practices, capitalizes on Service and DLA initiatives, is responsive to the

operational requirements of Joint Vision 2010, and is consistent with the USC Title 10 responsibilities of the Military Departments and the commanders in chief.

Contents

Chapter 1 The Product Support Challenge 1-1

DoD Product Support Practices 1-1

DoD Product Support Scope 1-2

The Case for Change 1-4

Recent Commercial Experiences 1-6

The Mandate—Reengineer Product Support 1-8

Management and Analytic Approach 1-9

Subteam 2.1, Reengineer Product Support Process to Use Best Commercial Practices 1-11

Subteam 2.2, Competitively Source Product Support 1-11

Subteam 2.3, Modernize Through Spares 1-12

Subteam 2.5, Greatly Expand Prime Vendor and Virtual Prime Vendor Arrangements 1-12

Relationship to Team 2.4, Program Manager Oversight of Life-Cycle Support 1-12

Product Support 2005 Vision 1-13

Implementation Process 1-14

Implementation Approach 1-16

Report Organization 1-18

Chapter 2 Best Practices 2-1

Best Commercial Practices 2-1

Customer-Focused Service Strategies 2-1

Strategic Sourcing 2-2

Integrated Supply Chains 2-3

Related Commercial Practices 2-4

DoD Logistics Initiatives 2-6

Army 2-6

Navy 2-6

Marine Corps 2-7

Air Force 2-7

Defense Logistics Agency 2-8
MAPPING DOD INITIATIVES 2-9
Chapter 3 Product Support Implementation 3-1
REENGINEER LOGISTICS PROCESSES STARTING WITH THE WARFIGHTERS 3-1
EXPAND THE USE OF COMPETITIVELY SOURCED PRODUCT SUPPORT FOR NEW AND LEGACY SYSTEMS 3-5
IMPROVE RELIABILITY, MAINTAINABILITY, AND SUSTAINABILITY THROUGH CONTINUOUS TECHNOLOGY REFRESHMENT 3-11
Scope and Orientation 3-12
Ongoing Initiatives 3-13
Issues and Approaches 3-13
EXPAND THE USE OF PRIME VENDOR AND VIRTUAL PRIME VENDOR ARRANGEMENTS 3-16
Chapter 4 Key Implementation Enablers 4-1
DEVELOP A COMPETITIVE PRODUCT SUPPORT SUPPLIER BASE 4-1
REENGINEER FINANCIAL PROCESSES 4-4
Need for New Processes 4-5
Solutions 4-5
IMPLEMENT COMPLEMENTARY INFORMATION SYSTEMS STRATEGY 4-8
Chapter 5 Expected Product Support Outcomes 5-1
PRODUCT SUPPORT METRICS 5-1
Customer Wait Time 5-1
Joint Total Asset Visibility 5-2
Total Ownership Cost 5-2
Logistics Costs 5-2
Mission Support 5-3
PRODUCT SUPPORT MEASUREMENT 5-3
Competitively Sourced Product Support 5-4
Prime Vendor and Virtual Prime Vendor 5-4
Appendix A Product Support Study Group Charter A-1
Appendix B Long-Term Enablers B-1

Appendix C Section 912(c) Product Support Reengineering Participants C-1

Appendix D DoD Logistics Resources D-1

Appendix E Pilot Programs E-1

Appendix F References F-1

Appendix G Product Support Initiatives G-1

Appendix H Abbreviations H-1

FIGURES

Figure 1-1. Supply Chain Performance 1-7

Figure 1-2. Cumulative Change in Logistics Cost as a Percent of Sales for Commercial Firms 1-7

Figure 1-3. Implementation Team Structure 1-10

Figure 1-4. Analytic Approach 1-11

Figure 1-5. Phased Implementation 1-15

Figure 2-1. Model for Integrated Supply Chain Development 2-4

Figure 3-1. DLA Prime Vendor and Virtual Prime Vendor 3-18

Figure 5-1. DLA Strategic Materiel Sourcing Strategy Assessment Schedule 5-4

TABLES

Table 1-1. Product Support Cost Estimates (Then-Year Dollars in Millions) 1-2

Table 1-2. Product Support Personnel 1-3

Table 1-3. Wholesale Logistics Response Time by Segment (Second Quarter, FY99) 1-3

Table 1-4. Wholesale Logistics Response Time by Customer (Second Quarter, FY99) (Average Times in Days) 1-4

Table 1-5. Customer-Focused Supply Chains 1-8

Table 1-6. Integrated Approach 1-17

Table 2-1. Related Commercial Practices 2-5

Table 2-2. Relating DoD Logistics Initiatives to Strategic Objectives 2-9

Table 2-3. Relating DoD Logistics Initiatives to High-Priority Product Support Implementation Elements 2-10

Table 2-4. Relating DoD Logistics Initiatives to Key Product Support Enablers 2-10

Table 3-1. Reengineer Logistics Processes Starting with the Warfighters 3-4

Table 3-2. Expand the Use of Competitively Sourced Product Support for New and Legacy Systems 3-10

Table 3-3. Technology Refreshment Initiatives and Investment Levels 3-13

Table 3-4. Improve RM&S Through CTR 3-15

Table 3-5. Expand the Use of Prime Vendor and Virtual Prime Vendor Arrangements..... 3-20

Table 4-1. Develop a Competitive Product Support Supplier Base..... 4-4

Table 4-2. Reengineer Financial Processes to Facilitate Implementation of Weapon System Product Support..... 4-7

Table 4-3. Develop Information Systems Migration Strategies 4-12

Table C-1. Logistics Reform Senior Steering Group.....C-1

Table C-2. Product Support Senior Steering Group C-2

Table C-3. Implementation Team Members.....C-3

Table D-1. Logistics Programs ($ millions) D-1

Table D-2. DWCF Appropriated Orders ($ millions)..... D-2

Table D-3. DWCF Appropriated Orders Not in Logistics Programs ($ millions)..... D-2

Table D-4. Total Active Military and Civilian Manpower Not in Logistics Programs or DWCF..... D-3

Table D-5. Active Military and Civilian Logisticians as a Portion of Total Personnel Not in Logistics Programs or DWCF (FY97)..... D-3

Table D-6. Active Military and Civilian Logisticians Not in Programs or DWCF..... D-3

Table D-7. Reserve Personnel Not in Programs or DWCF D-3

Table D-8. Reserve Logisticians as a Portion of Total Reserve Personnel Not in Programs or DWCF (FY97)..... D-4

Table D-9. Reserve Logisticians Not in Programs or DWCF D-4

Table D-10. Summary ($ millions)..... D-4

Table D-11. Logistics Funding and Personnel—Updated D-4

Table D-12. Product Support Sales and Other Materiel Sales..... D-5

Table D-13. Directly Funded Logistics Programs ($ millions) D-6

Table D-14. DWCF Product Support ($ millions)..... D-6

Table D-15. Allocation of Product Support Manpower..... D-6

Table D-16. Manpower Costs Not in Logistics Programs or DWCF ($ millions) D-7
Table D-17. DoD Summary ($ millions) D-7
Table G-1. Product Support Initiatives G-1

Chapter 1
The Product Support Challenge

This report documents the Department of Defense's (DoD's) integrated strategy to implement reengineered product support processes. This strategy was prepared by a team of more than 100 DoD acquisition and logistics professionals from the Office of the Secretary of Defense (OSD), Office of the Joint Chiefs of Staff (JCS), Military Services, and Defense Agencies. This chapter summarizes key background information, including current DoD product support practices and scope, the case for change, recent commercial experiences, the product support reengineering mandate, the product support reengineering management and analytic approach, the product support 2005 vision, and the implementation process and approach.

DoD Product Support Practices

Product support is the package of support functions necessary to maintain the readiness and operational capability of weapon systems, subsystems, and support systems. It encompasses all critical functions related to weapon system readiness, including materiel management, distribution, technical data management, maintenance, training, cataloging, configuration management, engineering support, repair parts management, failure reporting and analyses, and reliability growth. The source of the support may be organic or commercial, but its primary focus is to optimize customer support and achieve maximum weapon system availability at the lowest total ownership cost (TOC).

Today, DoD product support processes and infrastructure reflect the military requirements, economic factors, and weapon system designs of the mid-to-late 20th century. Product support processes (such as requisitioning, supply, distribution, and transportation) are commingled with processes for other items to simplify the interface to the warfighters. Product support functions (such as technical data management, maintenance, configuration management, and cataloging) are performed by functionally consolidated staffs to gain apparent efficiencies of scale. The "efficiencies of functional scale" reached their pinnacle in the late 1980s under the guise of corporate information management and "functional economic analysis." The economics of relatively slow and expensive transportation dictated the design of multiple echelons of supply inventories and intermediate maintenance facilities to enable timely response to forward deployed forces. The design of new weapons throughout the 1970s and early 1980s further reinforced the multiple echelons, as weapon systems were *designed* for three and four levels of maintenance on the basis of efficiencies gained by employing the existing infrastructure. Finally, financial processes and information systems were

deployed that supported the "sale" of product support services from one function to another and ultimately to the warfighting customers. The fundamental challenge is to migrate these support processes to meet the requirements of agility, flexibility, and rapid response required to meet current warfighter needs.

DoD Product Support Scope

To focus on key issues, a quantitative understanding of current product support performance is needed. DoD product support is characterized as follows:

- It consumes more than $60 billion per year, or 73 percent of DoD's $85.1 billion annual cost of logistics (see Table 1-1).
- It involves approximately 876,000 uniformed and civilian personnel, or 70 percent of DoD's logistics personnel (see Table 1-2).
- It has a wide variation in customer service, including an average wholesale logistics response time (LRT) of 21.5 days and wide variability in performance at every node (see Table 1-3).

The DoD product support cost estimates in Table 1-1 are based on program elements, working capital fund transactions, and personnel labor classifications (see Appendix D).

Table 1-1. Product Support Cost Estimates
(Then-Year Dollars in Millions)

Functions	FY98	FY99	FY00	FY01	FY02	FY03	FY04	FY05
Depot maintenance [a]	7,283	6,273	5,903	5,999	6,248	6,290	6,586	6,628
Other national-level maintenance	4,230	3,889	3,930	3,886	3,941	3,933	4,057	4,131
Materiel management	19,380	19,097	19,110	19,591	20,003	20,281	20,914	21,341
Distribution	1,323	1,242	1,167	1,152	1,113	1,058	1,052	1,054
Transportation	1,482	1,309	1,464	1,483	1,561	1,587	1,621	1,659
Operational maintenance	16,609	16,756	16,743	17,003	17,340	17,737	18,210	18,712
Operational supply	5,525	5,576	5,579	5,665	5,777	5,911	6,063	6,224
Operational transportation	1,324	1,333	1,327	1,347	1,371	1,404	1,441	1,480
Other operational logistics	156	250	227	269	259	266	271	299
Other product support	5,130	5,898	6,048	6,004	6,143	6,314	6,498	6,648
Total	62,442	61,623	61,498	62,399	63,756	64,781	66,713	68,176

[a] Sales from the depot maintenance working capital funds (excluding ordnance depots) to appropriated funds; sales to other working capital fund activity groups are eliminated to prevent double counting.

The implementation team used the Defense Manpower Data Center and the Future Years Defense Program (FYDP) databases to identify personnel who provide product support. Table 1-2 lists personnel by function.

Table 1-2. Product Support Personnel

Functions	FY98	FY99	FY00	FY01	FY02	FY03	FY04	FY05
Depot maintenance [a]	76,454	68,860	61,987	61,089	60,254	59,679	59,606	59,306
Other national-level maintenance	16,490	12,919	13,378	13,118	12,657	12,435	12,430	12,429
Materiel management	41,018	39,781	39,068	37,487	36,497	35,446	34,665	34,077
Distribution	14,089	13,014	11,655	10,847	10,040	9,710	9,403	9,113
Transportation	4,756	4,738	4,684	4,662	4,670	4,688	4,690	4,690
Operational maintenance	428,036	417,922	403,320	398,121	394,373	392,904	392,536	392,429
Operational supply	150,438	146,749	141,327	139,443	138,057	137,673	137,537	137,470
Operational transportation	47,921	46,440	44,119	43,429	42,843	42,767	42,736	42,725
Other operational logistics	95,188	122,266	158,298	159,619	159,394	158,942	158,925	158,826
Other product support	1,602	1,462	3,744	3,677	3,618	3,647	3,636	3,681
Total	875,992	874,151	881,580	871,492	862,403	857,891	856,164	854,746

[a] Includes depot maintenance personnel funded by depot maintenance working capital fund program elements except ordnance depots. Ordnance depots are included in the "other national-level maintenance" category.

Wholesale LRT for all requisitions by segment is reflected in Table 1-3. The average order-receipt time is 21.5 days. Variability is expressed by the substantial difference in pipeline performance for 95 percent (LRT of 13.1 days) and 100 percent (21.5 days) of all requisitions. The wide variability in service undermines customer confidence and results in high "just-in-case" inventories and repetitious orders.

Table 1-3. Wholesale Logistics Response Time by Segment (Second Quarter, FY99)

Segment	Average time (days)
Requisition submission time	3.0
Inventory control point (ICP) processing time	10.8
Storage activity processing time	2.6
Storage activity to container consolidation point time	2.8
Container consolidation point processing time	3.3
CONUS in-transit time	6.3
Port of embarkation processing time	6.5
Port of embarkation to port of debarkation time	2.3
Port of debarkation processing time	4.1
In-theater, in-transit time	6.8
Receipt take-up time	0.8
Total order-receipt time (100 percentile)	21.5
Total order-receipt time (95 percentile)	13.1

Note: Time data include all customers (except foreign military sales, National Guard, Reserve Forces, and contractors), all priorities, and all geographic locations. Segments do not add to total order-receipt time because all requisitions do not pass through all pipeline segments. In-theater, in-transit time has been normalized by using first quarter data because of the anomalies in data received during the second quarter of FY99.

Wholesale LRT by customer is reflected in Table 1-4. The average order-receipt time for DoD is approximately 21 days.

Table 1-4. Wholesale Logistics Response Time by Customer (Second Quarter, FY99) (Average Times in Days)

Time	Army	Navy	Air Force	Marine Corps	DoD Average
Total order-receipt time (100 percentile)	19.9	29.8	20.8	13.4	21.5
Total order-receipt time (95 percentile)	12.8	19.1	10.8	7.7	13.1

THE CASE FOR CHANGE

The fall of the Berlin Wall ushered in a new era of national security with a dramatically different threat environment than we faced earlier in the 20th century. The reasonably well-defined threat environment of the Cold War, which prompted significant investment in in-theater infrastructure, personnel, and materiel, has been replaced by a very different environment characterized by random threats in many regions, prompting a need for highly mobile forces that can confront threats in multiple theaters.

The Joint Chiefs of Staff, in promulgating their "Joint Vision 2010" doctrine, outlined the critical need for the operational concept of "focused logistics." Logistics must be responsive, flexible, and precise to optimize the other operational concepts of dominant maneuver, precision engagement, and full-dimensional protection. Focused logistics is intended to be the fusion of information, logistics, and transportation technologies to provide rapid crisis response; track and shift assets even while en route; and deliver tailored logistics packages and sustainment directly to the strategic, operational, and tactical level of operations. Focused logistics promotes agile combat support characterized by the rapid deployment and sustainment of troops with a reduced mobility footprint and the capability to "reach back" for time-definite delivery and resupply of materials.

To provide focused logistics effectively, we have adopted the concept of time-definite resupply, a fundamental shift in the way we support deployed forces. In this support concept, resupply of deployed forces begins upon arrival, reducing their initial and total lift requirement. When combat commanders require an item, the system reaches back to the continental United States and delivers the right thing at the right place and time for immediate integration directly into the battlespace. This reachback approach is intended to make it possible to deploy fewer functions and personnel forward. This approach, in turn, will reduce the size and, therefore, the vulnerability of our forward-deployed forces. This doctrine necessitates the implementation of a highly flexible, agile, reliable, and more economical logistics system.

In addition, improvements in transportation technologies, increased equipment complexity, shorter equipment development cycles, and better information technology present a different set of economic factors than evidenced in the mid-20th century. For example, the Service Life Extension Program has enabled aging weapons systems to be outfitted with new technologies, prolonging their useful life and decreasing the need to develop new weapons systems. However, equipment life extensions also result in increased demands for maintenance, increased parts obsolescence, and potential decreases in military readiness. Also, as mobility requirements increase and units deploy with fewer parts in their prepackaged kits of supplies, the risk of not having a part needed to keep a weapons system operating increases. The logistics system of the next century must be suited for this new level of "environmental volatility."

Extensive actions have already been taken to respond to the changing environment. The Military Services and the Defense Logistics Agency (DLA) have initiated programs to streamline their infrastructure and improve processes:

- The Services and DLA are aggressively modernizing their systems to meet the Joint Vision 2010 operational requirements and the data interchanges envisioned by the Global Combat Support System (GCSS). (The Department spends approximately $2 billion annually to maintain and upgrade more than 1,000 logistics information systems in the Services and DLA.)

- The commands have initiated many efforts to integrate product support across functional boundaries, including integration of maintenance and supply, integration of supply and transportation, and instrumentation of the pipeline to provide in-storage and in-transit asset visibility (similar to Federal Express).

- Product support oversight and coordination have been integrated within the Services' product commands.

- Since 1988, storage space has been cut by 70 percent and the number of maintenance depots has been reduced by 50 percent.

However, despite 300 logistics improvement initiatives by the Services and DLA (including Velocity Management, Lean Logistics, and adoption of commercial practices such as direct vendor delivery [DVD] and just-in-time [JIT] delivery), total logistics costs continue to increase. (Congress needed to authorize and appropriate an additional $1 billion for readiness and spare parts procurement in FY99.) Part of the problem is that some improvement programs, such as some information systems improvements, tend to be single, isolated applications with limited interfaces that reinforce a functional focus rather than the weapon system focus needed to respond to theater requirements.

To ensure that the Department is transforming its product support effectively, ongoing initiatives must be melded with promising commercial practices that have already delivered the kinds of capabilities desired, such as increased mobility of assets and increased agility to respond to changing customer requirements. Together, they will help to create a logistics system suited for the 21st century.

RECENT COMMERCIAL EXPERIENCES

In response to challenges similar to the Department's, commercial firms recently focused on the following three primary areas to improve customer service and reduce logistics costs:

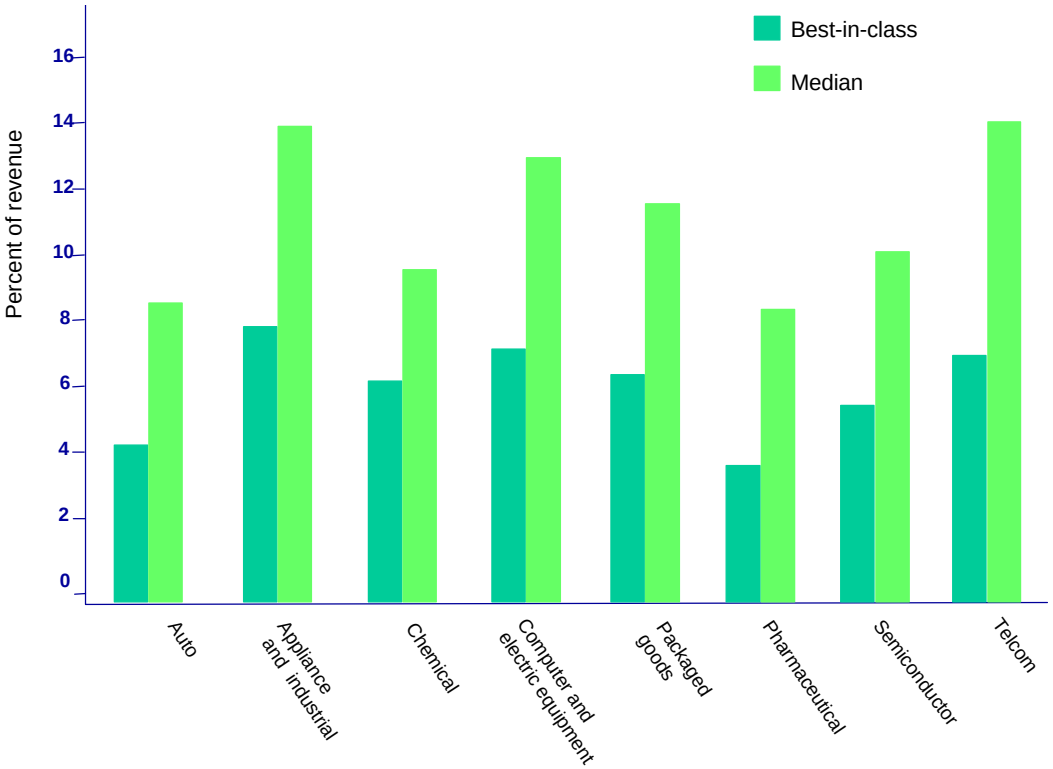
- Customer-focused service strategies (segmental logistics)
- Strategic sourcing
- Integrated supply chains that exploit electronic commerce.

This focus enables market leaders to exploit logistics and customer support as strategic discriminators to attain a competitive advantage. Compared to the average performance in their industry segments, best-in-class firms

- meet scheduled delivery dates 17 percent more often,
- meet customer-requested dates 90 percent of the time,
- carry 60 percent less inventory, and
- spend 45 percent less on supply chain costs.

The best-in-class corporations also require a smaller percentage of revenue to support logistics when compared to market segment competitors (Figure 1-1).

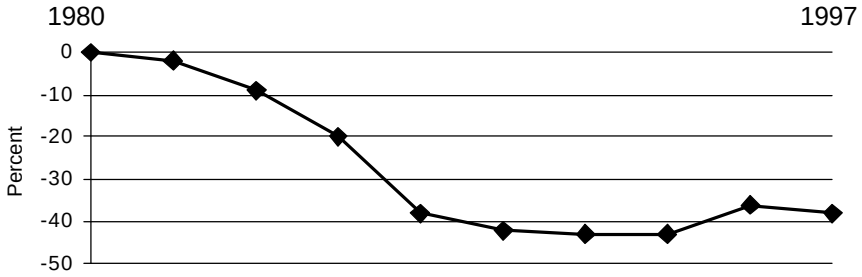
Figure 1-1. Supply Chain Performance



Note: Costs include materiel management, distribution, warehousing, and transportation costs. Source: Pittiglio Rabin Todd & McGrath.

Further, the firms realized a 40 percent reduction in logistics costs through the 1980s (while improving service) as shown in Figure 1-2. The Department benefits from these competitive advantages as a customer in many of these markets and can gain additional benefits by adopting appropriate commercial practices.

Figure 1-2. Cumulative Change in Logistics Cost as a Percent of Sales for Commercial Firms



Source: Herbert W. Davis and Company, Council of Logistics Management Annual Conference Proceedings, 5–8 October 1997.

To achieve the high levels of performance, world-class leaders adopt customer-focused, integrated supply chains built on the following key elements:

- Market segmentation that concentrates on customer needs
- Service-oriented cultures with empowered frontline employees
- Personnel policies that offer significant incentives for customer service
- Infrastructure scoped to meet customer expectations
- Metrics based on customer desires.

Although industry experiences are not completely parallel to DoD challenges, clearly the Department can greatly improve performance by adopting appropriate commercial practice elements. The key commercial practice elements are contrasted to DoD's historic circumstances in Table 1-5.

Table 1-5. Customer-Focused Supply Chains

Key elements	World-class companies	Historic DoD circumstances
Strategy	Segment the customer market	One size for all
Leadership	Foster service-oriented culture Declare war on bureaucracy	Focus on budget Functional consolidation and rigid policies enforced by bureaucracy
People policies	Motivate lavishly	Rigid personnel policies
Infrastructure	Match the infrastructure to the customer	Maintain infrastructure for potential mobilization
Measurement	Measure what customers want	Metrics geared to functional performance

THE MANDATE—REENGINEER PRODUCT SUPPORT

Section 912(c) of the National Defense Authorization Act for FY98 required that the Secretary of Defense submit to Congress an implementation plan for streamlining acquisition organizations, workforce, and infrastructure. Chapter 2 of the Secretary's report outlines the following five key actions to restructure sustainment processes:[1]

- Reengineer the product support process to use best commercial practices (BCPs)

[1] U.S. Department of Defense, Secretary of Defense, *Actions to Accelerate the Movement to the New Workforce Vision*, 1 April 1998.

- Competitively source product support
- Modernize through spares
- Establish program manager oversight of life-cycle support (PMOLCS)
- Greatly expand Prime Vendor (PV) and Virtual Prime Vendor (VPV) programs.

The Secretary also committed to "direct the Under Secretary of Defense (Acquisition and Technology) (USD[A&T]) to establish a task force charged with identifying ways to change the focus of the Department in product support from managing supplies (i.e., buying for inventory) to managing suppliers."[2] On 17 September 1998, the USD(A&T) chartered the Study Group to Implement Reengineered Product Support Practices under the leadership of the Deputy Under Secretary of Defense (Logistics) (DUSD[L]). (The study group was renamed the DoD Product Support Reengineering Implementation Team. The charter is in Appendix A.) The team was directed to focus on the following four actions:

- Reengineer product support
- Competitively source product support
- Modernize through spares
- Expand PV and VPV programs.

(Another task force was assigned the responsibility for establishing program manager oversight of life-cycle support.)

Based on ongoing improvement efforts and promising commercial experiences, the team had the following challenges:

- Accelerate ongoing DoD initiatives to achieve integrated supply chains
- Extend DoD efforts fully to migrate to customer-focused strategies and segmented logistics
- Introduce the use of strategic sourcing (competitive sourcing) to the full spectrum of product support services.

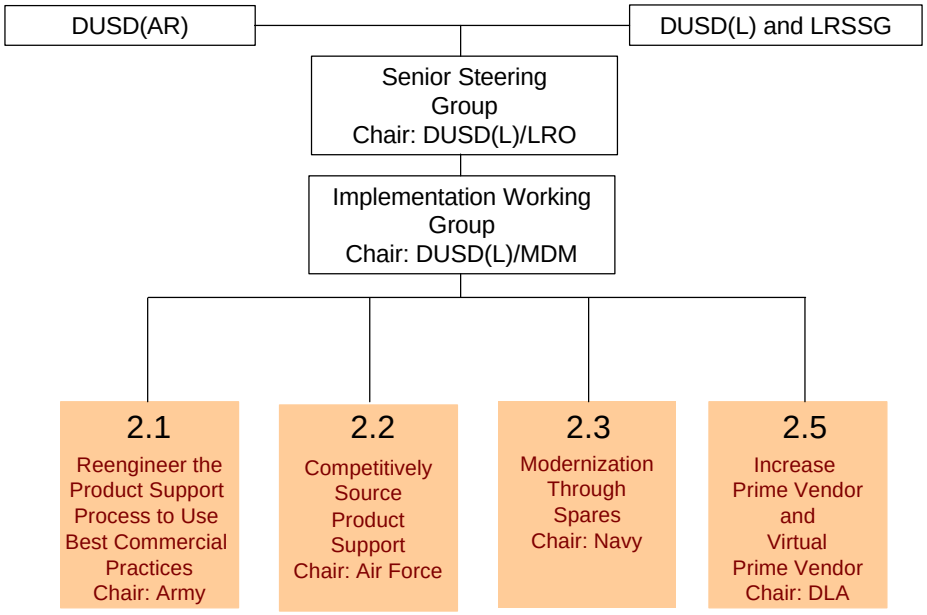
MANAGEMENT AND ANALYTIC APPROACH

The Product Support Reengineering Implementation Team was structured into four analytic subteams to concentrate on the four areas directed by the

[2] *Actions to Accelerate the Movement to the New Workforce Vision*.

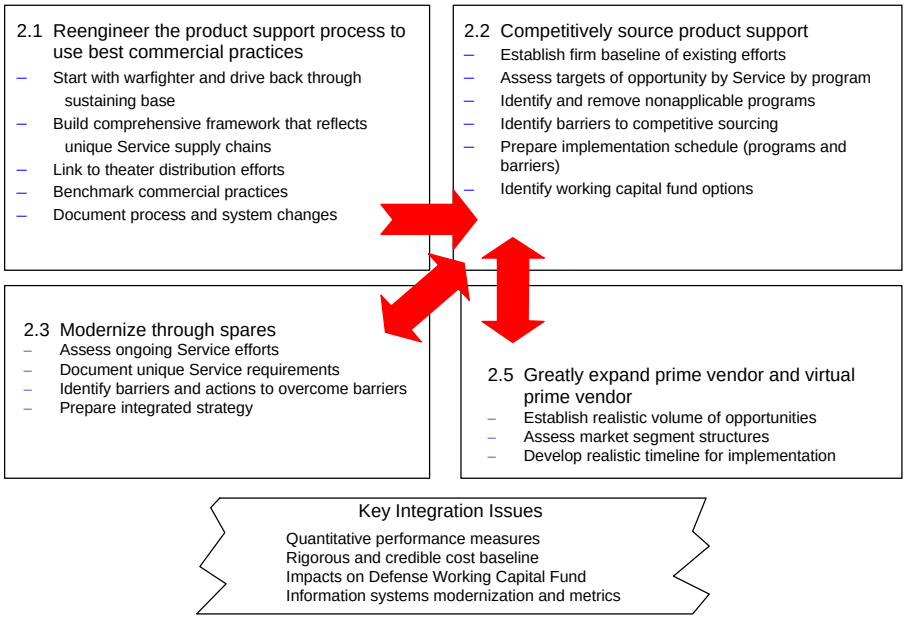
USD(A&T), as shown in Figure 1-3. The team was chaired by the DUSD(L)/Materiel and Distribution Management (MDM). Each Military Department and the DLA chaired a subteam. A Senior Steering Group (SSG), chaired by DUSD(L)/Logistics Reinvention Office (LRO), provided oversight. The SSG was comprised of flag-level officers and senior executives from the Military Services, DLA, Joint Chiefs of Staff, DUSD (Acquisition Reform [AR]), OSD (Program Analysis and Evaluation [PA&E]), and OSD (Comptroller). Further, the senior Service and DLA logisticians and the Joint Staff (J-4) as well as the Logistics Reform Senior Steering Group (LRSSG) were provided monthly status briefings. Through the SSG and in-process reviews, status was also provided to the DUSD(AR), who coordinates Section 912(c) efforts for the USD(A&T).

Figure 1-3. Implementation Team Structure



To implement reengineered product support practices, the team adopted an analytic approach based on the integration of objectives among the four subteams (Figure 1-4). This “to be” process provides the framework for competitively sourced product support, increased modernization through spares, and increased reliance on integrated logistics chains. As the Department competitively sources product support, subsets of opportunities emerge for VPV strategies in the areas of bench stock and common consumables. In addition, the team did *not* restrict itself to logistics processes. It assessed the relationship of reengineered product support processes to the financial management accounting and the warfighter processes.

Figure 1-4. Analytic Approach



Subteam 2.1, Reengineer Product Support Process to Use Best Commercial Practices

BCPs are techniques used by firms in private industry to achieve superior performance. The team examined logistics-based BCPs applicable to the Department. Key BCPs at the strategic level that cause successful changes in commercial logistics include customer-focused service strategies, virtual enterprises based on comparative advantage, and integrated logistics chains employing electronic commerce.

Subteam 2.2, Competitively Source Product Support

Product support is the package of support functions necessary to maintain the readiness and operational capability of weapon systems, subsystems, and support systems. Although functional elements are important inputs for providing product support, product managers will focus on products and outputs important to customers (such as weapon system availability and customer service). *Competitive sourcing* provides the incentive for major product support functions to be enhanced via best-value selection. The competition may involve a formal competition or business case analysis that considers public and private sources. Contractual relationships will range from a binding contract with a commercial source to a formal agreement with an organic source.

Subteam 2.3, Modernize Through Spares

Improvements in reliability, maintainability, and sustainability (RM&S) enhance readiness and can result in substantial savings in both operating and support (O&S) and TOC. Modernization through spares (MTS), an example of continuous technology refreshment (CTR), integrates modernization and technology insertion as a part of weapon system-oriented acquisition, modernization, and sustaining engineering. MTS maintenance efforts replace outmoded weapon system components with new components that have increased RM&S. Key enabling concepts are open system architectures and modularity.

Subteam 2.5, Greatly Expand Prime Vendor and Virtual Prime Vendor Arrangements

PV and VPV programs are industry-Government business arrangements along a continuum of interdependence that ranges from simple supply functions to integrated supply chain management functions. The arrangements provide broad commodity support for items in support of weapon systems with several applications and many users. Examples of commercial practices that leverage industrial capabilities are PV and VPV partnerships; corporate, long-term DVD contracts; on-demand manufacturing; and vendor-managed inventories. These practices allow DoD to take advantage of leading-edge logistics expertise and capacity in industry and focus DoD's mission support expertise on unique requirements. PV and VPV programs can be a source of consumable supplies for a weapon system supported through a competitively sourced product support arrangement.

Relationship to Team 2.4, Program Manager Oversight of Life-Cycle Support

A PMOLCS study group was chartered in parallel with the Product Support Reengineering Implementation Team. Responsibility for this complementary initiative was assigned to the Director of Systems Acquisition in the Office of the USD(A&T). The two teams have coordinated and integrated strategies and implementation actions throughout this study.

The intersection between the two efforts occurs in several areas. Both are analyzing product support functions—the PMOLCS group primarily from a cost visibility and control perspective and the Product Support Team from a functional reengineering perspective. Both are focused on reducing life-cycle costs. Both are addressing changes to policy, procedures, and financial practices. However, the main point of intersection is in pilot programs. Program manager (PM) pilot programs are the primary test beds for implementing product support reengineering initiatives. These pilot programs form the core for implementation actions envisioned for FY00–02.

PRODUCT SUPPORT 2005 VISION

With the clear challenge of an evolving national security environment, the Department is making the necessary changes to meet our operational requirements. By melding recent commercial experiences with our ongoing initiative, DoD is reengineering product support to have the following characteristics:

- Warfighter relationships based on output or weapon system readiness
- Single interface to users based on a sustainment support center that provides a single point of contact to customers in the field
- Product support services provided via integrated logistics chains consistent with unique Service requirements
- Weapon system PMs who serve as the focal points for product support; fleet management enabled by real-time health monitoring
- Performance-based logistics processes determined by outcomes and output-oriented metrics (e.g., mission-capable rates, flying hours, cost linked to support, customer service)
- Output metrics applied to Government and industry providers
- Logistics chains comprised of public and private-sector providers based on competitive, best-value selections
- Focused, sound, and timely business case analyses (BCAs) to support decisions for new support concepts
- Field support provided by organic or contractor personnel, consistent with commander-in-chief (CINC) and Service requirements
- Effective long-term supplier relationships achieved through industrial base assessments to create a strong competitive base, contractor influence with vendors to increase small business participation, and skilled Government personnel to manage support providers
- Proactive role for support providers that requires the evolution of support concepts based on operational performance
- Product support materiel delivered to the port of debarkation (or to the unit) based on CINC and Service requirements
- Predictive readiness tools, such as integrated databases and intelligent diagnostics

- Industrial and organic providers incentivized to insert technology continuously and improve RM&S by output-based agreements

- Product support for several platforms integrated with other combat support functions by organic personnel to provide full combat capability.

These features describe a product support process that adopts appropriate strategic commercial practices, capitalizes on ongoing Service and DLA initiatives, is responsive to the operational requirements of Joint Vision 2010, and is consistent with the USC Title 10 responsibilities of the Military Departments and the CINCs. The features reinforce the Services' responsibilities to equip the force and provide the Services with the flexibility to meet their unique requirements.

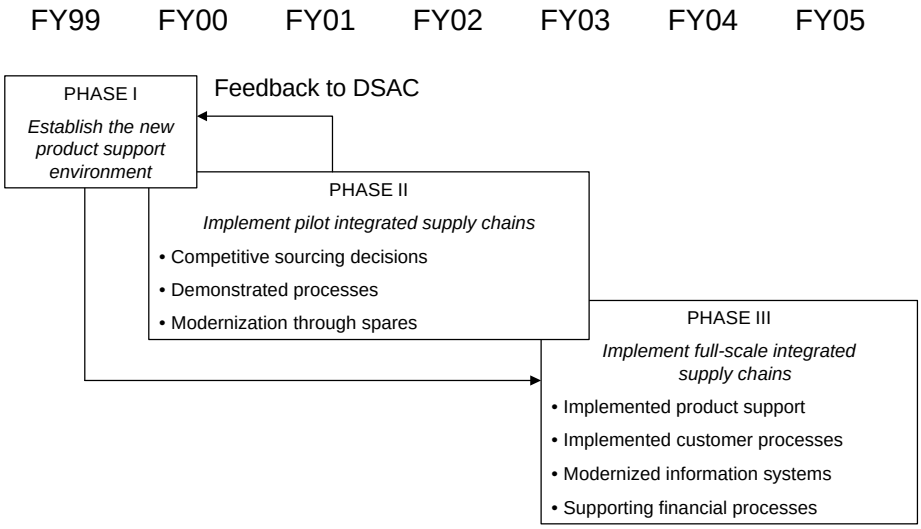
The primary implementing agent for product support is the weapon system PM. The term "program manager" refers to a generic weapon system or major commodity manager. The PM may be in the acquisition or logistics chain of command as determined by the DoD Component to meet the requirements of USC Title 10. The PM will use competition to select the best available sources to meet operational requirements at a reasonable TOC. As a result, logistics support will rely on a more open, flexible selection of support providers, whether public or private or a combination.

This process is a "radical" departure from DoD's historic tendency to centralize and consolidate functions. As such, the team recognizes the inherent possibility of some redundancy and overlap; however, as clearly demonstrated by the commercial sector's success with segmental logistics, the savings in customer service and reduced costs should outweigh significantly any "cost" of redundancy.

IMPLEMENTATION PROCESS

A significant process change, such as product support reengineering, must be done carefully and persistently. Concepts must be tested. Analysis, risk mitigation plans, and tools must be developed. Accordingly, key actions will be implemented in a phased implementation process as reflected by Figure 1-5.

Figure 1-5. Phased Implementation



Note: DSAC = Defense Systems Affordability Council.

In Phase I, OSD and Service staffs will refine the strategies in this report and develop implementation plans that set the environment for testing product support in the pilot programs. In general, this phase is for planning and approval of the pilot program strategies. Phase II concentrates on implementing the pilot program strategies built on integrated logistics chain frameworks. All basic strategies proposed by this report should be tested during this phase. Finally, based on the results from the pilots, full-scale implementation will be carried out in Phase III.

The Military Services and DLA are the primary organizations implementing Section 912(c) product support reengineering initiatives. The Services are responsible for planning pilot programs as the near-term implementation vehicles for product support strategies. DLA will associate its PV, VPV, and other commodity support strategies with these pilots. Accordingly, Service PMs and logistics commands should include DLA in weapon system integrated process teams and other pilot program forums. Successful pilot programs will serve as models for product support reengineering and policy changes.

The DUSD(L) chaired this implementation planning effort and will continue to maintain an oversight role by monitoring critical metrics associated with the strategic objectives in the *DoD Logistics Strategic Plan* and by assessing Service programs and budget strategies. The Product Support Reengineering Implementation Team was indispensable in developing this implementation strategy. However, the success of the implementation team was costly in terms of time spent in attending meetings, researching issues, and writing implementation strategies. Resolving problems in the pilot programs and converting lessons learned into weapon system support policy will require a similar team effort. To make this process as efficient as possible, the DUSD(L) will chair a virtual integrated process team. The team

will use an Internet site for exchanging information on strategies, issues, procedures, and status to maximize the productivity of team members and minimize the time needed for meetings. This Web-based tool will be accessible at http://orion.lmi.org/product_support. The team will assist the DUSD(L) in the pursuit of near-term initiatives by offering policy revisions and clarifications and establishing work groups, as agreed to by the DoD Components, for implementing the critical enabling actions.

Additionally, the DSAC will perform an oversight and monitoring role to ensure the integration of all Section 912(c) programs. The DSAC will serve many roles, including monitoring agent, change agent, Section 912(c) facilitator, and coordinator of good ideas or barrier resolution. The Reduction of Total Ownership Cost (R-TOC) working group, under the direction of the DSAC, will provide pilot program oversight.

IMPLEMENTATION APPROACH

The four major elements of the strategy are each discussed in separate sections of this report and each has an implementing plan. The four elements are reengineer using best practices (including integrated logistics chains), competitively source product support, implement continuous technology refreshment, and greatly expand PV relations. Because of the many interrelations between the four elements, a top-level implementing plan and context is needed. This plan will address their interactions and the best implementing approach to gain advantage from all four elements and provide a framework for evaluating, managing, and achieving the TOC savings and readiness improvements.

The approach for integrating the four elements will be a series of pilot programs that demonstrate the new ideas in 30 weapon programs. The series of pilots will be planned to demonstrate the interactions between the four elements and the best way to gain advantage from all four. The importance of the integrated demonstrations is that cost and readiness are functions of all planned process improvements and the interactions between them. The tradeoffs and investment balance between the four elements will be examined in the process of formulating the pilots. For example, improvement of reliability and maintainability can be traded off against improvement of the infrastructure response time that supports the most economical solution for achieving readiness.

The 30 pilots will be implemented to explore improvements in different weapon classes and among related groups of weapons. As the first step in planning the pilots, tradeoffs will be conducted for each weapon and among related groups of weapons to determine the best integrated approach for reducing TOC and improving readiness performed by industry or industry-Government teams. Combinations of competition and fiscal rewards can provide incentives for aggressive

thinking in this phase. The tradeoffs performed will consider implementation of all four elements.

Responsibility and authority must be assigned to the managers of the pilot programs to make the tradeoffs involving acquisition, logistics supplies, and manpower; program resources needed for investment; and recommend to the appropriate level the offsets for reduced TOC. Each Service and OSD will designate key officials who have the authority to implement the pilot programs.

Planning for the pilots must address the integration of horizontal and vertical improvements. This integration particularly affects information systems for managing spares, supplies, and repair scheduling. The weapon pilots need to demonstrate the integration of the systems that are supported by prime vendor (components), subsystem and subassembly management, and weapon system demand management. Interim approaches can be demonstrated on the pilots and then replicated as success is proven. As a by-product of the these activities, each Service will develop a series of tradeoff models to predict the effects and interactions on TOC and readiness.

Table 1-6 shows key steps in the integrated approach for demonstrating the process improvement efforts addressed in this report. This approach builds on and integrates key elements of the actions for each element.

Table 1-6. Integrated Approach

Phase	Action	Responsibility	Time
I	Assign authority and responsibility for making tradeoffs and decisions on the pilots	Service chiefs R-TOC Working Group	Oct 99
	Structure incentives for competition on the pilots to conduct the tradeoffs and establish initial stretch goals on the pilots	SAEs, DCSLOGs	Dec 99–Sep 00
II	Select implementing agents for each pilot	SAEs, PMs	Oct 99–Dec 00
	Based on completion of tradeoffs, estimate TOC goals and readiness goals; approve design of pilots	SAEs, PMs	Jun 00–Dec 00
III	Implement pilots and measure savings and readiness	SAEs, PMs	Jan 00–Sep 02
	Based on pilots, decide on information systems integration	Logistics managers	Jan 00–Dec 01
	Develop guidelines and policies for broad application	SAEs, DCSLOGs	July 00–Sep 02

Note: DCSLOG = Deputy Chief of Staff for Logistics; SAE = Service Acquisition Executive.

REPORT ORGANIZATION

The remainder of this implementation strategy presents actions to achieve reengineered product support processes. Chapter 2 describes best commercial practices and their relationship to ongoing initiatives in the Services and DLA. Chapter 3 presents critical actions associated with the four strategic product support reengineering areas identified by the Secretary of Defense. Chapter 4 presents critical enabling actions associated with fostering a competitive base, reengineering financial flows, and modernizing information systems.

In addition, the report contains eight appendixes. Appendix A is the study group's charter. Appendix B discusses long-term enablers. Appendix C is a list of SSG and implementation team members. Appendix D describes DoD logistics resources. Appendix E identifies product support pilot programs. Appendix F is a list of references. Appendix G is a list of product support initiatives. Appendix H is a list of abbreviations used in this report.

Chapter 2
Best Practices

This chapter discusses best commercial practices and recent Component initiatives. Best commercial practices are the basis for this report's three strategic objectives: adopt a customer and weapon system orientation, competitively source product support, and integrate logistics chains. This chapter presents the relationships among the three strategies and current Service initiatives to establish a framework for continuous improvement.

BEST COMMERCIAL PRACTICES

BCPs are techniques used by firms in private industry to achieve superior performance. The Department monitors BCPs to consider practices that may improve its operations.

In commercial enterprises, the field of logistics has seen revolutionary changes in the last decade. Logistics has moved from an administrative burden to a source of competitive advantage for many firms. Although many BCP studies have been published, most studies focus on specific process improvements, such as improved inventory management, better use of information in system requirement definitions, strong vendor relationships, and reduced cycle times. The implementation team focused on strategic best practices that deliver the greatest opportunity for improvements, including

- customer-focused service strategies,
- strategic sourcing, and
- integrated supply chains employing electronic commerce.

Customer-Focused Service Strategies

In the 1980s, many companies found that logistics had a key impact on the customer's satisfaction with a product. In the 1990s, other firms went a step further by orienting their logistics processes to meet the requirements of customer segments—even to the extent of creating parallel logistics chains with each chain dedicated to the needs of a segment. Since then, *segmental logistics* has become a dominant strategy for many commercial firms with world class logistics operations.

"Segmental logistics relates to providing specialized services over and above high-level basic service…. [The] provision of basic service is seen as necessary,

but not sufficient, to achieving world class status. True differentiation results from forging out a unique bundle of logistical services that are targeted to the precise requirements of selected customers."[1] In segmental logistics, firms choose their target segments, identify the service requirements for the segments, design the logistics chains to meet the service needs, and configure the chains for consolidation opportunities that do not jeopardize service performance.[2]

This approach is well suited for meeting the warfighting requirements of the 21st century. The requirements include "modular and specifically tailored combat service support packages."[3] The customized logistics packages need to be flexible to support contingencies from major theater warfare to humanitarian relief operations. The current DoD logistics system is not well structured to provide custom support. Its functional orientation, multiple handoffs, and disparate information systems are not suited for servicing the needs of a customer as the best private-sector companies are able to do. Adopting a weapons system orientation is a key first step for realizing a customer-focused logistics system.

Strategic Sourcing

Another BCP is to create a partnership with the logistics provider that delivers the best value to the customer. BCP firms are adept at outsourcing functions where someone else can provide improved service, lower cost, or both. As a result, supply chain alliances are common in the private sector. "Managers in most firms strongly agree that logistics alliances with suppliers, customer, and third-party organizations are and increasingly will become an integral part of their business strategy."[4] The size of the task outsourced can be a process (such as order processing) or function, or the entire logistics operation. Commercial firms choose the level that is appropriate to derive the benefit consistent with their strategic business goals.

One form of outsourcing is the use of third-party logistics (3PL) firms to manage parts supply. The commercial sector has seen a rapid increase in this kind of outsourcing. Third-party logisticians of this type are typically called *integrators* in the commercial sector (and VPVs by the Department). The integrator industry will grow from $700 million in 1994 to an estimated $10 billion by 2000.[5] Commercial firms use integrators to reduce the complexity of their logistics systems by reducing the number of vendors with whom they interact. Instead of working with a dozen suppliers in a commodity group, they deal with one integrator.

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[1] Council of Logistics Management, *World Class Logistics: The Challenge of Managing Continuous Change*, 1995.

[2] Fuller et al., "Tailored Logistics: The Next Advantage," *Harvard Business Review*, May–June 1993.

[3] U.S. Department of Defense, The Joint Staff, *Joint Vision 2010*, 1995.

[4] *World Class Logistics*.

[5] Frank Lynn & Associates, *Growth of the Integrated Supply Market*, 1997.

Another approach is the outsourcing of major functions. In the airlines industry, when new airlines desire to enter the industry quickly with minimal investment, they often choose to contract the maintenance function to repair vendors rather than make the substantial infrastructure investment to perform maintenance in-house. On the other hand, established airlines with extensive infrastructure tend to perform maintenance in-house because they have made a major infrastructure investment. These firms also sell their maintenance services to other airlines. Other industries have also outsourced functions. For example, Nike and Reebok have chosen to outsource the manufacturing and distribution of their shoes, while keeping the core functions of product development and marketing in-house. These firms believe the leverage in their industries lies in those two areas and not in production and distribution.

Finally, the idea of outsourcing the entire logistics function is increasingly common in industry. One survey of 250 executives reported, "A clear majority of respondents say their company agrees with the philosophy of outsourcing main functions that fall outside the realm of their own core competencies." As one executive stated, "We know we are losing flexibility because we are stuck in the old ways of doing it all in-house. We are considering outsourcing logistics, information services, and even accounting."[6] In the commercial sector, many firms that outsource their entire logistics operation realize savings of 20 to 30 percent.[7]

Integrated Supply Chains

Integrated supply chains are a best practice that is rapidly becoming a standard in commercial logistics. Although a standard definition of *integrated supply* does not exist, it generally means organizing the logistics activities associated with the delivery of a common product or set of products and operating seamlessly to optimize the performance of the activities rather than a single activity. (The commercial term "supply" connotes a broad collection of functions involved in creating, moving, or maintaining products—more similar to "logistics" for Defense activities.)

The first step for integrating the supply chain is integrating the functions and internal processes in an organization. "The commitment to internal process integration is fundamental to world class logistics."[8] Internal process integration helps to eliminate functional stovepipes and replace them with processes that focus on customers. The integration is then extended to suppliers and customers to create a fully integrated supply chain. Figure 2-1 depicts the progress a firm typically makes as its supply chain matures.

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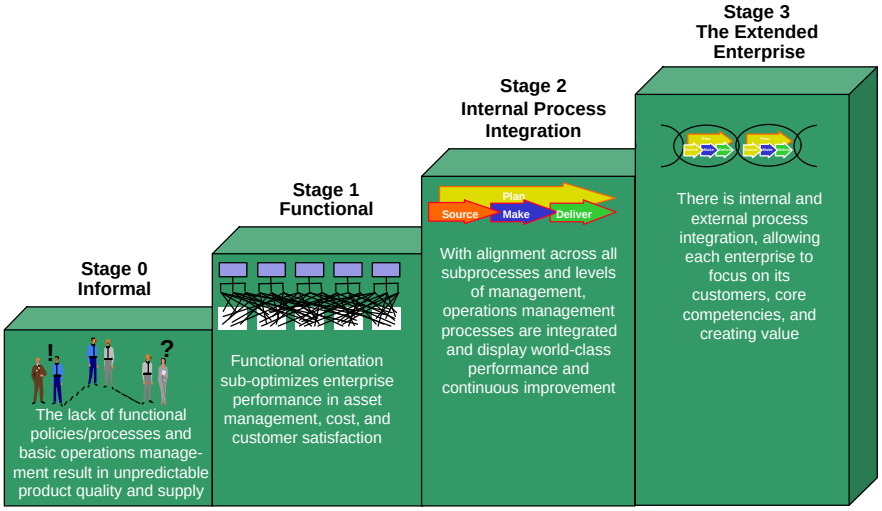
[6] Penske Logistics, *Supply Chain Logistics—Candid Interviews with 250 Key Executives in Top U.S. Corporations*, 1998.

[7] University of Maryland, "Toward a Net Centric Logistics: Change Management Practices in Vanguard Service and Manufacturing Firms," December 1998.

[8] *World Class Logistics.*

Figure 2-1. Model for Integrated Supply Chain Development



Note: Copyright, Pittiglio Rabin Todd & MacGrath, 1998.

Most firms begin as informal, startup firms with unrestrained processes; direction comes directly from the entrepreneur who started the firm. Logistics arrangements are similar, and the firm deals with suppliers and customers individually, depending on personal relationships, as the vehicle for conducting business. As the company grows, it formalizes its processes by functional lines to develop expertise in a few key areas. For decades, this model served American corporations. In the 1970s and 1980s, many companies began integrating their internal processes across functions to focus on product or process lines. This move was greatly facilitated by new information technologies that easily transmit information to a wide user base for many functions in a short period. All functions—from marketing to manufacturing and distribution—can access the data and make decisions quickly to benefit a product's life cycle. Internal barriers began to fall, especially when firms reorganized to take advantage of new technologies. In the 1990s, firms began extending this concept to include their suppliers and their customers, thereby shifting the paradigm and enabling entire supply chains to perform as a single entity—hence, the arrival of the "extended enterprise."

The Department can be considered to be in Stage 1, but is stretching to Stages 2 and 3 simultaneously. Functional walls in DoD are still high, but are declining through concerted actions by the Services. Some firms progress from Stage 1 through Stage 2 into Stage 3 in 10 to 15 years; the Department is attempting to reach Stages 2 and 3 simultaneously.

RELATED COMMERCIAL PRACTICES

Many related best practices occur in the context of the three strategic best practices. Table 2-1 lists some of them.

Table 2-1. Related Commercial Practices

Customer-focused service strategies	Strategic sourcing	Integrated supply chains
Defining customer service requirements using negotiations, surveys, and comprehensive cost-service modeling	Using integrators as a means of reducing the number of vendors	Simplifying and standardizing supply chain operations across the firm and the chain
Prioritizing customers by value to corporation and calculating the lifetime value of customers	Using 3PL providers to perform entire functions when they provide the best value	Employing accounting techniques (such as activity-based costing and management and total costing) to integrate internal functions and vendor operations
Creating delivery target windows that vary according to the value of the customer and priority of the item	Building corporate strategies on core competencies that provide guidance concerning acquisition, divestiture, and outsourcing	Employing information technologies (such as automatic identification technology, common databases, data warehousing, electronic commerce, and satellite-based asset tracking systems)
Selecting best segmentation schemes and aligning the organization	Using standard methodologies for conducting BCAs for outsourcing	Establishing relationship-based contracting with outcome incentives for vendors
Balancing build to order and build to inventory according to customer needs	Having best-value analyses performed by unbiased third parties	Sharing information openly with vendors
Using rigorous network configuration models to optimize paths for each customer and assess cost-service tradeoffs	Having cost accounting systems that clearly identify the cost of performing functions in-house	Using vendor-managed inventory and other forms of activity exchange
Consolidating activities across segments to minimize cost without sacrificing service		Employing chain-wide performance measurement systems
Using reliability-based logistics and flexible sustainment strategies		Hosting periodic forums with customers and supply chain partners
Designing products with an emphasis on logistics considerations, rationalizing product variants, and using common parts for several products		

Although Table 2-1 does not list all best practices, it lists some major practices that have helped to change logistics in the private sector. Not listed are practices that are primarily self-contained in a function (e.g., warehousing, maintenance, transportation management). These practices constitute continuous improvement and are part of the continuing evolution of functional performance. The practices in Table 2-1 contribute in ways that extend beyond their functions.

DoD Logistics Initiatives

The Military Services and DLA are sponsoring many initiatives to enhance the delivery of logistics services. The Services and DLA provided information to the study team on their current and planned initiatives for reengineering logistics processes and initiatives that promote the use of best private-sector logistics practices.

This information demonstrates that logistics strategies address both integrated logistics chains and product support in varying degrees. The Services and DLA identified 300 current and planned initiatives that are divided nearly equally between product support (159 initiatives) and other logistics activities (141 initiatives). (See Appendix G for a list of the product support initiatives.) This section describes the broad strategies being undertaken by the DoD Components and presents examples of targeted initiatives that promise positive, direct improvements for weapon system product support. The chapter concludes with a summary of the logistics initiatives and maps them to the best practices.

Army

The Army reported 63 initiatives; 38 focus on product support. An example is the Army Materiel Command's Integrated Sustainment Maintenance, a business process change designed to reduce the cost of component repair. This initiative centralizes the management of sustainment maintenance operations at national, regional, and local levels. It provides a single manager for sustainment maintenance, reduces redundancy in support and connects independent areas of capability. The goal is to provide the Army's sustainment maintenance capability to support all Army missions by maximizing repair capabilities and optimizing the use of available resources. The Army estimates repair parts costs will be reduced by $147 million through FY03.

The Army's Velocity Management strategy, initiated in 1995, encompasses many process improvements and demonstrates extensive logistics process reengineering. Its objective is to replace mass with speed and accuracy for the types of items and customers serviced by the Velocity Management program. Order and shipping times and repair cycle times have been improved significantly. Readiness increases, decreased supply workloads, and lower inventories demonstrate that savings can be achieved while improving customer service.

Navy

The Navy reported 44 initiatives; 34 are oriented to product support. As naval weapon systems remain in the active inventory longer, O&S costs become a larger portion of total system costs. The Navy's Commercial Operating and Support Savings Initiative (COSSI) has the potential to generate $3.3 billion in savings from an investment of $126 million from FY99 through FY05. Additionally,

both the Army and the Air Force are sponsoring 11 COSSI projects. Adapting commercial items for fielded systems is typically less expensive than using items with military specifications. Reducing O&S costs of fielded systems by technology refreshment is an integral part of the Navy's strategy to make funds available for modernization and maintain readiness and sustainability with less total obligation authority.

Reengineering Naval Supply (SUP 21) is a major logistics initiative. It applies business process reengineering concepts to achieve a 2005 end-state that focuses on best-value suppliers, integrated systems and technology, customer-centered metrics, and tailored customer support. One SUP 21 initiative is One Touch Supply that provides Web-enabled customer interfaces to improve requisition support functions, expand asset visibility and access, reduce LRT, and optimize the use of DLA and Navy-owned DLA stocks.

Marine Corps

The Marine Corps reported 56 initiatives; 40 are oriented to product support. Precision Logistics is a Marine Corps' capstone logistics concept that provides the framework, priorities, and direction for logistics process improvement based on strategic, operational, tactical, and doctrinal requirements. Precision Logistics is a designed, deliberate, and directive process to focus the efforts and resources in the direction that best supports the Marine Corps as a whole. It targets every process segment to provide superior logistics support to Marines. Significant objectives include reducing LRT, reducing logistics footprints, and implementing total asset visibility (TAV). Precision Logistics embodies many of the Marine Corps' initiatives, including a number with DLA as a partner.

An initiative that is part of Precision Logistics is the Asset Tracking Logistics and Supply System, a fully integrated supply, maintenance, and materiel readiness reporting system that will replace several legacy logistics systems. Another initiative, the Integrated Maintenance Concept, incorporates three aircraft maintenance concepts (fixed operating service periods, reliability-centered maintenance, and consolidated maintenance tasks) to minimize task duplication. It has two goals: decrease maintenance costs and reduce repair cycle times.

Air Force

The Air Force reported 58 initiatives; 26 focus on product support. The Integrated Maintenance Data System will be the standard Air Force system for maintenance production support and will collect and process equipment maintenance information at the point of maintenance. The system enhances maintenance production, increases readiness, and improves sustainability of weapon systems and equipment by improving the flow, accuracy, and availability of logistics information. The Air Force estimates savings of $1.6 billion during the next 10 years.

Agile Logistics is a major logistics improvement program to create a seamless chain of logistics processes and use information, repair, and transportation resources to maximize full-spectrum aircraft mission effectiveness and minimize deployed footprints. The program's goals are to establish a logistics chain focus throughout the Air Force, implement a logistics command and control system that allows logistics managers to obtain real-time data to prevent delays in the chain, leverage express transportation to increase flow velocity and decrease footprints, establish time-definite deliveries no later than day C+1 so deployed units can receive critical items, reengineer logistics chain subprocesses to eliminate duplication and increase flow velocity, and develop top-level metrics to track the cumulative effects of changes on combat capability and peacetime operating costs. Efforts include reengineering, consolidating, and merging of supply and transportation processes to reduce customer wait times and system costs.

Defense Logistics Agency

DLA reported 79 initiatives; 21 focus on product support. In addition to major overarching strategies and targeted initiatives of the Services, DLA reported a major business strategy that leverages private-sector capabilities by shifting to commercial practices, establishing private-sector relationships, reengineering and restructuring processes and infrastructure, and using best-value sources. The shift to commercial practices includes such initiatives as PV, VPV, vendor-managed inventory, corporate contracts, and long-term contracts. DLA is building new tools to expand and accelerate the shift to commercial materiel acquisition processes for weapon system product support.

DLA has also introduced its Lead Center concept and has reorganized to provide "one face to the customer" for a weapons or troop support system. Lead centers have been established for air and aviation systems (Defense Supply Center Richmond); land, sea, and subsurface systems (Defense Supply Center Columbus); and troop support and general supply (Defense Supply Center Philadelphia). In conjunction with the Lead Center concept, a network of weapons system support managers and weapon system points of contact has been established to resolve fleet readiness and supply support issues and to support Service PMs, depot maintenance activities, and major commands.

Another DLA initiative that improves customer support while generating savings is the Defense Logistics Support Command's Central Depot Concept. This initiative provides logistics support to the Army's Tobyhanna Army Depot from a central depot rather than a traditionally collocated depot. All wholesale materiel (except end items, unserviceable depot reparables, and some repair and return items) will be stocked at the central depot. Dedicated trucks will deliver all issues directly into Tobyhanna's Automated Storage and Retrieval System, thus bypassing DLA's depot. Savings of more than $43 million from FY00 through FY05 are primarily attributed to workforce reductions.

Most of DLA's product support initiatives concern expanding VPV across other commodities with digitization, electronic commerce (EC) and electronic data interchange (EDI), and paperless processes. Integrating the logistics chain and providing new information technology (IT) is the focus of Electronic Product Data Management, an initiative managed by the Joint Electronic Commerce Program Office. The initiative replaces manual management of weapon system product data with integrated electronic means. Although most technical data are delivered in digital form or converted immediately for storage digitally, considerable manual activity is still required. Manual product data management is costly and inhibits repository outsourcing and EC. This initiative seeks to access product data in a repository site (Government or industry) from any user site and relocate product data from a repository site to another repository site with no loss of coherency. Other goals include reducing the costs associated with product data storage and management and outsourcing Government product data repositories to industry sources. More than $50 million in savings are attributed to this initiative from FY00 through FY05.

MAPPING DOD INITIATIVES

This section maps the 300 DoD management initiatives to the strategic objectives, four elements of product support implementation, and three key implementation enablers that are described in Chapters 3 and 4.

Table 2-2 maps the 300 initiatives to the three strategic best practices. The largest group of initiatives focuses on integrating the logistics chain. These initiatives include information technology, EC and EDI, and reengineered processes. Initiatives that relate to adopting a weapon system orientation have a weapon system focus. Initiatives that relate to competitively sourcing product support include PV, contractor logistics support, and corporate contracting initiatives. A small group of product support initiatives—identified in the table as other operations and sustainment activities—does not directly relate to the three best practices but do enhance product support in other areas.

Table 2-2. Relating DoD Logistics Initiatives to Strategic Objectives

Strategic best practice	Product support initiatives	Other logistics initiatives
Integrate the logistics chain	76 (48%)	56 (40%)
Competitively source product support	31 (20%)	35 (25%)
Adopt a customer orientation	23 (14%)	7 (5%)
Other operations and sustainment activities	29 (18%)	43 (30%)
Total	159	141

Table 2-3 shows how many of the 159 product support initiatives contribute to the four high-priority elements of product support implementation as defined in this plan. As anticipated, the largest group deals with reengineering logistics

processes. About a fifth of the initiatives expand competitively sourced product support. Few current or planned PV, VPV, and technology refreshment initiatives were reported.

Table 2-3. Relating DoD Logistics Initiatives to High-Priority Product Support Implementation Elements

Elements of product support implementation	Product support initiatives
Reengineer logistics processes starting with the warfighters	68
Expand the use of competitively sourced product support for new and legacy weapon systems	31
Implement continuous technology refreshment	15
Expand use of PV and VPV arrangements	6

Table 2-4 shows how the 159 product support initiatives align with the three key implementation enablers described in this plan. Most of these actions deal with IT. Few initiatives are designed to develop a competitive supplier base or reengineer financial processes.

Table 2-4. Relating DoD Logistics Initiatives to Key Product Support Enablers

Key implementation enabler	Product support initiatives
Develop a competitive product support supplier base	10
Reengineer financial processes	5
Implement complementary information systems strategy	65

The many initiatives underway indicate that the DoD Components are making progress in some key areas. The challenge now is to ensure that progress is being made in the *right* areas. A major challenge is to develop an understanding of the quantitative effect of these initiatives. Each DoD Component needs to work to improve customer service metrics and measurement systems. Only by understanding the baseline processes and measuring changes will the Components realize the initiatives' full effect on product support and customer service.

Several initiatives address limited but necessary logistics projects. However, the global shifts needed will come from the strategic change initiatives, such as Velocity Management, SUP 21, Agile Logistics, and Precision Logistics. Even these initiatives are not adequate to make a permanent shift towards a product-oriented logistics system. To provide significantly higher levels of product support, more focus is required in the following two categories of initiatives:

- Initiatives that increase customer orientation, particularly initiatives that develop performance metrics, tailored to the Services, for measuring customer support through the logistics chain
- Initiatives that competitively source product support.

Chapter 3
Product Support Implementation

This chapter identifies actions, responsible organizations, and milestones for implementing reengineered product support processes. Four action elements respond to the Section 912(c) Report tasking for detailed implementation plans for restructuring sustainment. A three-phased schedule sets the initiatives in motion, applies the initiatives to pilot programs, and fully implements integrated logistics chain strategies by FY05. The following four elements comprise the fundamental plan of action for product support:

- Reengineer logistics processes starting with the warfighters
- Expand the use of competitively sourced product support for new and legacy weapon systems
- Implement RM&S through CTR
- Expand the use of PV and VPV arrangements.

REENGINEER LOGISTICS PROCESSES STARTING WITH THE WARFIGHTERS

From the warfighter-customer perspective, new interfaces are needed to correspond to evolving processes. First, the interfaces must be simple and few. The warfighters' tasks in synchronizing joint forces in a dynamic, multidimensional battlespace against a broad range of adversaries are demanding and complex. In peacetime, the Military Services balance the demands of training with many administrative and quality-of-life responsibilities. The warfighters must not be burdened by complex support arrangements or independent maintenance processes. The customers demand a logistics system that is automatic, consistent, transparent, and easy to use. The warfighters must obtain support through key, easy-to-use interfaces for requesting and receiving services that provide detailed status information. In other words, comprehensive visibility and dynamic pipeline control prevail.

In addition, if DoD product support shifts to include an increased presence of contractor personnel at the interface between the area of responsibility and the national support system, support strategies must be consistent with Service policies for contractors on the battlefield. In accepting contractors in a theater of operation as an integral part of product support, deployment plans must include

contractors, their equipment, and supplies in the time-phased force deployment data (TPFDD).

Contractors on the battlefield and theater distribution decisions and processes remain fully within the jurisdiction of the CINCs and the Military Services. Theater distribution interfaces with national product support providers must be transparent to the warfighters. The objective remains to enable the CINCs to conduct the physical distribution of materiel and units, move information through Service and joint systems, and integrate the management processes of Service components into a seamless joint theater distribution system. In a theater, the primary distribution functional units are assigned to the Service components of the CINC and are the backbone of the distribution resource network.

Future support capabilities must retain flexibility for the warfighters to allocate DoD resources to areas where they are most needed. Current policies allow commanders to spend funds in their operations and maintenance (O&M) accounts with some latitude. Support arrangements must not force commanders into buying excessively expensive product support for some weapon systems at the expense of other systems, or at the expense of equally important needs. The Services must oversee incentives and award fees for outsourced services that support operational commanders. In addition to financial flexibility, new arrangements must evolve to allow operational flexibility. The support system must embed flexibility to respond to increases in demand on very short notice without undue turmoil. In short, the new arrangements must support a smooth transition from the peacetime rates (optempo) to wartime optempo without a decrease in system readiness.

1-877-HI-TACOM Field Interface Process

- Customer field support by Tank-Automotive and Armaments Command
- One-stop customer telephone assistance for more than 3,000 systems
- 24-hour supply and maintenance help
- Requisition input, modification, and status
- Direct links to research and development and maintenance centers
- Warfighter readiness increased from 89 to 93 percent

Warfighter needs can benefit from a public-private, long-term partnership that brings the power of the industrial base to the customers, consistent with the stated Joint Vision 2010 strategy of “reachback” to the CONUS for force sustainment. The focus is on outcomes (e.g., availability and readiness) rather than logistics process measures (e.g., parts on hand). Eliminating stovepipes through integrated logistics chains makes military and business sense. In these pursuits, warfighter objectives and product support reengineering objectives are in sync. In every decision, the long-term implications for the Department take precedence over short-term initiatives to reduce inventory, lower costs, speed order handling, or justify the continued need for organic support.

Support concepts will also accommodate peacetime readiness and quality-of-life concerns. Selected positions will be retained in the support structure to ensure that

adequate military and civilian personnel are available to satisfy projected mobilization or wartime manpower demands that cannot be met by personnel acquired after mobilization. Components will provide for the cost-effective utilization of military personnel in support functions during peacetime while, at the same time, maintaining their skill proficiency and availability in the event of a military crisis. In addition, adequate manpower will be retained in the support structure to provide for military career progression and ensure a sufficient base for overseas and sea-to-shore rotations. Product support reengineering proposals are focused primarily at the national level. However, national-level product support only affects a portion of the personnel involved (only 43,333 of the 645,286 military personnel were involved in national-level product support in FY98).

DoD policy requires that DoD civilian and military personnel perform inherently governmental functions. The Department also designates sufficient manpower to provide a minimum core capability of specialized, scientific, and technical skills to fulfill mission responsibilities or meet sudden and unexpected requirements. When determining the source of support for new and modified systems, the Department makes maximum use of contractor-provided, long-term, total life-cycle logistics support that combines depot-level maintenance for noncore-related workload with wholesale and selected retail materiel management functions. However, cost alone is not the deciding factor when making decisions as to the source of support for functions that directly support warfighting operations. DoD Components should assess the risks in having DoD civilians or contractors perform key support functions in theaters or areas of operations where hostile fire is expected. In situations where the risk is assessed to be inappropriate, risk avoidance takes precedence over cost savings. Risk avoidance also takes precedence when highly sensitive intelligence or security issues are concerns.

As pilot programs test aspects of product support, DoD will need to evaluate the impact of new support processes on rotational billets, the skill base, inherently governmental functions, and core workload. When preparing to implement new processes that have proven successful in pilots, PMs must have a clear understanding of personnel and core workload requirements. New support processes may change the classification of functions that are now considered inherently governmental or core workload. The DLA PV program has changed the support process for some commodities from buying, stocking, and shipping items to buying a level of customer support. The vendor is responsible for meeting customer requirements and performing to defined cost and performance criteria. In this example, determining how many items to buy and stock easily moved from a government function to a contractor function because the support processes were changed. The government core function also changed from managing spare parts to managing supplier performance.

The action plan in Table 3-1 presents a strategy to align product support reengineering initiatives with warfighter-customer requirements. Additionally, the action plan to test reengineered processes via simulation and operational

experiments, discussed in Appendix B, is a key element to ensure warfighters that the concepts enhance their abilities to perform all operational missions.

Table 3-1. Reengineer Logistics Processes Starting with the Warfighters

Phase	Action	Responsible organizations	Time
I (FY99–00) Coordinate new processes with customers	Clarify roles of the Military Services as the critical integrators of support provided to the CINCs and Service major commands	Joint Staff (J-4) CINCs Services DLA USTRANSCOM	Mar 99–Dec 99
	Develop customer interfaces to pilot program support chains	PMs Service Logistics Commands CINCs	Apr 99–Sep 00
	Ensure financing mechanisms for pilot programs maintain customer financial flexibility	Major commands PMs Service Logistics Commands OSD Comptroller	Jun 99–Mar 00
	Develop standard product support customer feedback process	Services CINCs PMs DLA	Jun 99–Sep 00
	Reengineer Class IX aircraft reparables process	Services	Jul 99–Jul 00
II (FY00–02) Assess and test new customer processes	Integrate weapon system support chains and sustainment packages into the TPFDD process (Joint Operational Planning and Execution System)	Joint Staff (J-4) CINCs PMs Services	Oct 99–Sep 00
	Assess viability of product strategies in the context of military rotation and retention objectives	USD(P&R) Joint Staff (J-1)	Oct 99–Sep 02
	Fully field test to investigate and evaluate current and future integrated supply chain processes in a joint operational environment	DUSD(L) Joint Staff (J-4) USCENTCOM	Oct 99–Sep 02
	Insert new financing procedures for pilot program support into Planning, Programming, and Budgeting Execution System	Major commands PMs Service Logistics Commands OSD Comptroller	May 00–Dec 00
	Test support procedures through modeling and simulation	Services DLA	Mar 00–Sep 02
	Test weapon system vertical product support logistics in the FY01 Chairman's Focused Logistics Wargame (FLOW) with emphasis on warfighter flexibility	Joint Staff (J-4) CINCs Services OSD Comptroller	Mar 01–Oct 01
	Implement customer feedback process	Joint Staff (J-4) CINCs Services DLA	Jun 01–Sep 02

Table 3-1. Reengineer Logistics Processes Starting with the Warfighters (Continued)

Phase	Action	Responsible organizations	Time
II (FY00–02) (continued)	Use simulations to demonstrate the impacts of policy changes on insertion of commercial practices	DUSD(L) USALIA Services DLA	FY00
	Promulgate successful initiatives to other commands and to all commodities	Services	FY00–02
	Implement new financing procedures for pilot programs	Major commands PMs OSD Comptroller Service Logistics Commands	FY01–02
III (FY02–05) Implement new customer processes	Continually test and improve revised procedures and adjust for availability, readiness, and customer expectations	CINCs Joint Staff (J-4) Services DLA	Oct 01–Sep 05

Note: USALIA = United States Army Logistics Integration Agency; USCENTCOM = United States Central Command; USD(P&R) = Under Secretary of Defense (Personnel and Readiness); USTRANSCOM = United States Transportation Command.

EXPAND THE USE OF COMPETITIVELY SOURCED PRODUCT SUPPORT FOR NEW AND LEGACY SYSTEMS

This section presents the Department's plan for maximizing competitively sourced, long-term, total life-cycle logistics support for new and legacy weapon systems. Properly incentivized public and private sources will provide sustainment support in a timely and efficient manner while reducing TOC. The plan is consistent with DoD policy in DoD 5000.2-R, which states, "Support concepts for new and modified systems shall maximize the use of contractor-provided, long-term, total life-cycle logistics support that combines depot-level maintenance for non-core-related workload along with wholesale and selected retail materiel management functions."[1]

Competitive sourcing provides major product support functions by a contractual relationship with a single source, based on best-value selection. The relationship results from formal competition or a BCA that considers public and private sources. Contractual relationships range from a binding contract with a commercial source to a formal agreement with an organic source. In the defense industry environment with relatively few qualified vendors, this strategy provides a

[1] U.S. Department of Defense, *Defense Acquisition Management Policies and Procedures*, DoD 5000.2-R, Section 3.3.8, "Source of Support."

flexible framework for the following spectrum of sourcing options, from most preferred to least preferred:

- *Marketplace competition*. A formal acquisition that involves several qualified commercial vendors. Contract award is achieved through a formal source selection.

- *Public-private competition*. The comparison of qualified sources, including commercial vendors and an organic organization.

- *Business case analysis*. A logical, analytical process to determine the best value and most effective means of product support if several qualified vendors do not exist. This option includes sole source contracts resulting from a BCA that determines the contractor as the best value for system support (e.g., an unsolicited proposal from an original equipment manufacturer or other sole source provider for long-term support). This approach, while not preferred, provides the basis for accountability, risk sharing, performance metrics, and incentives to ensure high-level performance.

The Department anticipates these arrangements will be executed through a variety of strategies (tailored to the requirements of a program), including flexible sustainment, integrated vertical support, prime vendors with public-private mix, performance-based contracts (e.g., Power-by-the-Hour), and fully organic solutions.

The Department will address the following issues while expanding competitive sourcing strategies:

- *Competitive base.* A broad, competitive defense industry base to foster competitive sourcing is lacking. This issue is discussed in Chapter 4 as a high-priority enabling action. The section, *Develop a Competitive Product Support Supplier Base*, defines actions the Department will take to foster a robust competitive supplier base.

- *Life-cycle support planning.* Military weapon systems remain in the inventory for extended periods of time, often far longer than originally planned. In addition, legacy systems are normally phased out of the inventory slowly and require continued support even as the installed base shrinks. During this period, the commercial defense industrial base may be unable to continue supporting legacy systems. Support planning should address this possibility. This planning may include contingency arrangements to transition from commercial to organic support during the legacy phase.

- *Legislative coordination.* The Department will establish a better dialogue with Congress for enabling broadened competitive sourcing and application of commercial practices. OSD will seek a proactive collaboration with members of Congress to foster a working environment that foregoes unwarranted prohibitive legislation. OSD, with the Services, will develop a balanced plan

for competitive sourcing. The Military Departments will advise Congress on expanded commercial practices (e.g., Section 347 of FY99 National Defense Authorization Act) and proposed policy changes affecting understandings between the Department and Congress (e.g., Financial Management Regulation revisions).

- *Integrated support strategies.* Competitive sourcing is a tool to enhance weapon system-oriented support approaches; however, the Department recognizes the value that common support structures provide. Examples are common avionics, aircraft engines, and support for many commercial commodities. The benefits include economies of scale, standardization, and configuration control. Sustainment processes will integrate the weapon system-oriented approaches with the commodity-oriented approaches to optimize support to the warfighters and maximize total logistics system value. Coordination is necessary among PMs, current logistics providers, customers, and industry to determine the supply chain strategy that best blends weapon system and common support structures. DLA and Service ICPs should be considered as sources of supply for common consumable and reparable items in integrated support contracts when they are the best value. This approach gives the support provider access to the leveraged buying power of the ICPs. Strategies will specifically address how organic and commercial providers are integrated in support of planned and unplanned deployments and assignments in hostile areas.

- *Optimizing Government-owned assets*. Inventories of spare parts, specific to a weapon system, owned by DLA and the Services will be used before additional spare parts are purchased as part of an integrated support strategy.

- *Contracting impediments.* Traditional contracting processes are not generally conducive to long-term, flexibly priced contracts with large businesses, frequently original equipment manufacturers. The challenge in competitive sourcing is to craft contracts that implement long-term partnering, have robust incentives, and allocate risk fairly between the Government and its contractors.

- *Access to technical data*. The failure to acquire or have access to weapon system technical data forces a dependency on the prime contractor for the life of an item and adversely affects competitive flexibility. DoD Directive 5000.2 provides clear policy guidance and states, “The PM shall provide for long-term access to data required for competitive sourcing of systems support throughout its life cycle.” Competitive sourcing strategies need to consider data use, data rights, data access, data possession, and data ownership considerations associated with acquisition strategies.

- *Impact on small business contract award levels.* Because large prime vendors and original equipment manufacturers are often the firms able to provide the full range of goods and services for product support to a major weapon

system, a conflict can occur with small business goals. Small business goals are currently measured in terms of *prime* contracts awarded and almost certainly will be affected by the new product support strategy; however, carefully crafted acquisition strategies should lead to an increase in amounts awarded to small businesses at the second tier or below. This initiative seeks to promote acquisition strategy incentives that will achieve an increase. Because second and third tier suppliers to prime contractors are frequently small businesses, this issue may be caused by a reporting problem than a shift from small business participation in weapon system support. As such, focusing on participation by underrepresented groups, rather than prime contract awards, may be a better measure of small business goals.

- *Method for costing product support.* The long-term benefits of weapon system product support by a commercial source may be worth a short-term cost increase; however, before a logical decision can be made, the short-term cost must be identified. At present, DoD lacks a methodology for determining the cost of transition to commercially provided product support. A methodology (i.e., a template for calculating costs and savings) is essential before developing plans to competitively source product support for legacy weapon systems. This methodology will be developed based on the experiences of the pilot programs. The Services are in the process of implementing activity-based costing and activity-based management. The product support costing methodology will be consistent with activity-base costing as it becomes available.

- *Competitive sourcing strategies.* The Office of Management and Budget (OMB) Circular A-76 prescribes procedures that require federal agencies to evaluate if Government or industry offers the best value for performing comparable commercial activities. Best value is determined through a comprehensive study that includes a cost comparison of the functions to be competed between the performing organization and private industry. Product support competitive sourcing is not compatible with the functional orientation of A-76 reviews. Product support brings support providers into an integrated logistics chain focus; on the other hand, A-76 structures work best in examining discrete functions, such as distribution operations, supply functions, and installation services. Additionally, federal law does not allow OMB Circular A-76 procedures to be used for competing some depot maintenance workloads. Accordingly, product support implementation efforts will be coordinated with the DoD Competitive Sourcing Overarching Integrated Policy Team sponsored by the Deputy Under Secretary of Defense (Installations) to determine competitive sourcing options for product support.

The implementation of competitively sourced product support represents a transition in Defense sustainment processes. This endeavor relies on near-term actions to determine long-term potential. The PM life-cycle pilot programs will be the Department's test bed for adopting initial competitive sourcing strategies. With appropriate oversight and key reporting mechanisms, program progress can be monitored and lessons learned applied to expand the strategies. Success can be measured via mission-capable rates, additional technology insertion, and weapon system support cost reductions. The major plan components in Table 3-2 include the following:

Navy Third-Party Logistics

- Commercial solutions to provide consumable and commodity materiel
- Shift in management focus from managing supplies to managing suppliers
- No added customer burden—transparent or easier for customers
- Reduced DoD investment in commercially available items, reduced prices, value-added services, and improved delivery
- On-line at Fleet Industrial Support Center San Diego

- *Phase I*. Initiate selection of PMOLCS pilot programs as suitable test beds for competitively sourced product support strategies; develop a guidebook and pilot program implementation plans, schedules, and tracking metrics; and initiate plan implementation.

- *Phase II*. Conduct an assessment of all remaining major weapon systems, while monitoring results of pilot programs, to identify targets of opportunity for implementing competitively sourced product support strategies and develop implementation plans; and update and revise the guidebook.

- *Phase III*. Implement competitively sourced product support strategies in remaining targets of opportunity, monitor progress in pilot and remaining weapon systems, implement savings from product support strategies, and use the guidebook throughout the Department.

Table 3-2. Expand the Use of Competitively Sourced Product Support for New and Legacy Systems

Phase	Action	Responsible organizations	Time
I (FY99–00) Initiate competitively sourced product support in pilot programs	Select suitable PMOLCS pilot programs as test beds for competitively sourced product support strategies	Services USD(A&T)/API DUSD(L) DLA	Jan 99–Oct 99
	Develop draft competitive sourcing guide	Services DLA	Jan 99–Oct 99
	Identify coordination mechanism for PMs to use in developing integrated support strategies	DUSD(L) Services DLA	Apr 99–Jun 00
	Assemble an OSD, Service, and DLA task force to develop costing and risk assessment methods used to justify Service product support initiatives and develop a proposed methodology	OSD Comptroller USD(PA&E)	Aug 99–Mar 00
	Coordinate competition issues (e.g., A-76, public-private depot maintenance) with DoD Competitive Sourcing Overarching Integrated Policy Team	DUSD(L) DUSD(Installations)	Sep 99
	Identify competitively sourced product support strategies to be tested in pilot programs	DUSD(L) USD(A&T)/API Services DLA	Oct 99
	Coordinate competitive sourcing strategies with Congress	USD(A&T) Services	Oct 99–Sep 00
	Initiate pilot product support strategies	Services DLA	Oct 99–Sep 00
	Develop implementation plans, schedules, and tracking metrics for pilot programs	Services DLA	Nov 99–Sep 00
	Identify competitive sourcing issues and options for pilot programs	USD(A&T) DUSD(Installations) Services OMB Industry	Jan 00
II (FY00–02) Conduct competitive sourcing assessment for all major weapon systems	Test costing methodology on pilot programs; revise and publish the final methodology	OSD Comptroller USD(PA&E) Services	Oct 99–Mar 00
	Monitor results of initial pilot program strategies, and revise guidebook and training	DUSD(L) USD(A&T)/API Services DLA	Jan 00–Sep 02
	Review all major weapon systems and identify remaining targets of opportunity to implement competitively sourced product support strategies	Service SAEs Service DCSLOGs	Oct 01–Sep 02
	Develop implementation plans for remaining targets of opportunity	Service SAEs Service DCSLOGs	Oct 01–Sep 02
	Expand costing methodology to legacy weapon systems	Services	Oct 01–Sep 02

Table 3-2. Expand the Use of Competitively Sourced Product Support for New and Legacy Systems (Continued)

Phase	Action	Responsible organizations	Time
III (FY02–05) Implement DoD-wide competitively sourced product support strategies	Implement competitively sourced product support strategies in remaining target of opportunity major weapon systems	Service SAEs Service DCSLOGs	FY02–05
	Monitor progress of competitively sourced product support strategies through reviews of implemented programs	Services DSAC DLA	FY02–05
	Ensure guidebook and strategies are institutionalized and savings are realized across DoD	USD(A&T) Services	FY02–05

Note: API = Acquisition Program Integration.

IMPROVE RELIABILITY, MAINTAINABILITY, AND SUSTAINABILITY THROUGH CONTINUOUS TECHNOLOGY REFRESHMENT

The Department is experiencing rapid increases in the ownership cost of legacy weapon systems. Recent reductions in Defense budgets have constrained development of new weapon systems and limited the procurement of systems in production. As a result, fielded systems are required to perform their assigned missions for greatly extended periods. The aging weapon systems require frequent and costly maintenance as a result of degraded reliability, a predicament that gains momentum each year they are retained. A significant and related contributing cause is the difficulty in obtaining replacement parts when original manufacturers are not interested in supporting DoD weapon system components that have become technologically obsolete.

Reducing ownership cost and improving readiness can be achieved by the following two approaches:

- Improve the efficiency of the supporting infrastructure (e.g., by improving the design of support processes and reducing infrastructure)
- Reduce demand for support by incorporating new technology that improves RM&S design characteristics.

The other product support implementation elements are principally concerned with the first approach. Exploiting CTR to lower cost (by more insertion of reliable, maintainable, and supportable technology) addresses the second approach and provides a means to solve wear and obsolescence problems. CTR is the *continuous* insertion of improved replacement or spare parts and components as a routine part of depot, intermediate, and field-level maintenance. CTR is beneficial because, in the application of today's engineering, high reliability and low ownership cost (and usually some performance improvements as well) are achieved together rather than being mutually exclusive. They are the results of rapid increases in circuit density, substitution of electronic and software components for mechanical components, and decreases in parts counts as a consequence of from commercial development. Further, modern practices, such as open systems and modular design, greatly facilitate CTR. Over the 20- to-50-year life of a weapon system, numerous technology cycles are likely, thus providing many opportunities to integrate new technologies. The program-centric approach to acquisition funding and management (i.e., nearly exclusive reliance on formal modification or other service life extension programs) and the accompanying tendency to minimize design changes, however, have impeded the ability to take advantage of these opportunities.

Navy Logistics Engineering Change Proposals

- Increased reliability, maintainability, reduced life-cycle weapons system cost
- Technology insertion or commercial items to replace poorly performing spares
- Sponsored and funded by Navy ICP to reduce or eliminate support costs while maintaining or improving safety and performance
- Projected cost avoidance of $407 million in FY99–05

Source: Responses to product support initiatives call and other Service data.

Scope and Orientation

This section describes the scope and orientation of efforts directed toward improving RM&S, makes a current assessment, describes needed changes, and presents an action plan. The original, related task, as defined in the Section 912(c) report to Congress, emphasizes MTS as a means to insert technology. However, the implementation team recognized that MTS is an important part of a technology refreshment strategy, but it is not the strategy itself for the following two reasons:

- Technology refreshment opportunities are much broader than MTS and include all RM&S initiatives. Examples of other opportunities are advanced inspection and maintenance procedures, advanced intrusive diagnostics and prognostics, and redesign of weapon systems.

- The current practice of modernizing through *spares* is largely predicated on existing commodity-oriented supply chains rather than supply chains oriented along a weapon system dimension. In the context of R-TOC, continued use of the commodity approach to attain a product result will provide limited gains.

As a result, the implementation team defined *scope* and *orientation* carefully. The scope of this activity encompasses all efforts to insert RM&S technology to reduce TOC and improve readiness. Additionally, effective execution of the action plan requires an integrated supply chain orientation where integration is by weapon system or product lines rather than by commodity.

Ongoing Initiatives

The implementation team identified more than 23 technology refreshment initiatives underway as of 1 February 1999. The initiatives can be classified into two categories as shown in Table 3-3.

Table 3-3. Technology Refreshment Initiatives and Investment Levels

Category	Example	Number of initiatives	Annual investment and payback
"Basket"	Navy logistics engineering change proposals	8	Approximately $400 million a year (R&D, O&M, WCF) Between 5:1 and 9:1 in 10 years
Specific weapon system or technology	2½-ton Truck Extended Service Program	More than 15	Unknown

Source: Responses to product support initiatives call and other Service data.
Note: R&D = research and development; WCF = working capital fund.

The first category consists of "basket" initiatives that are typically managed by ICPs. The second category includes initiatives for a weapon system or technology. The amount of $400 million a year is far too limited for an organization the size of the Department. For example, the U.S. Army's Tank-Automotive and Armaments Command manages about 10,000 configuration items on tracked and wheeled vehicles. The portion of the $400 million available to the command is approximately $5 million per year and permits technology insertion for 2 to 20 items a year.

Issues and Approaches

Technology refreshment is primarily managed in a process that has three significant issues. One issue is the funding policy and practice for weapon system maintenance, service life extension programs, and modifications, as codified in the Department's Financial Management Regulation (FMR) and interpreted differently by Service comptrollers, that complicates the Department's ability to improve the reliability and maintainability of weapon systems. The second issue is the excessive amount of time that product managers spend defending and managing small projects. The third issue is the dominance of closed architectures in

legacy weapon systems, which makes redesign necessary and technology refreshment difficult and costly.

FUNDING

As presently implemented, service life extension programs and modifications change design; O&M funds accomplish maintenance. The distinctions and their equivalents in earlier versions of the FMR were appropriate when

- technology cycles were similar to weapon system and major subsystem lifetimes (tens of years) and
- continuous technology insertion was not a viable alternative.

However, weapon system lifetimes range from 20 to 50 years, and technology cycles, especially for electronics and software, are 18 to 36 months. Further, as the Department implements an open systems approach using widely used, consensus-based, and de facto commercial standards to define interfaces and modular design to provide form-fit-function interface (F^3I) solutions, technology insertion can increasingly be a part of routine maintenance.

TIME

A nearly universal observation by product managers and engineers of systems in sustainment is that they spend an excessive amount of time seeking funds and defending projects that are small. Further, they use many sources (e.g., funds for developing installation kits); no source reliably provides funds in the time required by a project's schedule. The result is funding instability, projects are not started, large delays between development and installation, and projects are started but not finished. Thus, the opportunity to take advantage of technology refreshment and reduce TOC is missed.

An alternative approach is to implement a predictable technology insertion strategy. The two key aspects of this strategy are a predictable technology refreshment cycle and management of the cycle with stabilized funding (rather than management of technology insertion projects with unpredictable funding). Clearly, dissimilar products need different refreshment cycles. The Department needs to capture the best technology refreshment practices and promulgate them to all DoD Components.

CLOSED ARCHITECTURE

As previously noted, currently fielded systems are dominated by closed architectures. The architectures result in high redesign costs each time technology is inserted—a situation that needs to be changed if CTR is to occur at reasonable cost. An open systems approach, on the other hand, will develop an open architecture that reduces the problems. Effective open architecture uses modularized design and open systems specifications and standards at the appropriate level. It allows

easier technology insertion of commercial hardware and software products, and their subsequent upgrades; increased competition; and R-TOC. Easier technology insertion and increased competition in an open systems approach is the result of using common interface standards. Common interface standards allow industry to use innovative, often proprietary solutions internally while maintaining the interface design. Industry is incentivized to invest in and establish open standard-based product lines knowing that related future applications will be developed. By using standard product lines, developers can competitively select from several competitors and insert new technology when it becomes available. For legacy weapon systems, the open systems approach can provide F^3I solutions within existing packaging, power, and environmental constraints. In such cases, the open systems solution frequently requires less system resources because it tends to use newer, more efficient technologies than the legacy weapon systems or subsystems it replaces.

To improve RM&S, the Department must revise the 5000-series documents to embody continuous technology insertion in fielded systems to improve readiness and reduce the cost of ownership. However, Service funding levels are limited. As a result, technology refreshment funding for acquisition and sustainment programs must be increased with R-TOC-sponsored RM&S investment initiatives. Table 3-4 presents an action plan for enabling weapon system technology refreshment.

Table 3-4. Improve RM&S Through CTR

Phase	Action	Responsible organizations	Time
I (FY99–00) Prepare guidance	Revise Defense Planning Guidance and Program Objective Memorandum Preparation Instructions to include technology refreshment investments	USD(A&T)/API DUSD(L) R-TOC Focal Point Services	Jan 99–Mar 99 (Complete)
	Identify and implement strategies to accelerate RM&S investment	Services	May 99–Oct 99
	Revise 5000-series documents to embody continuous technology refreshment for fielded systems; link to existing policy on open systems	USD(A&T)/API R-TOC Focal Point DUSD(L) DOT&E Services	May 99–Jul 99
	Reform reprocurement practices to accomplish RM&S technology insertion	USD(A&T)/API DUSD(L) DUSD(AR) Director, Defense Procurement	Dec 99

Table 3-4. Improve RM&S Through CTR (Continued)

Phase	Action	Responsible organizations	Time
II (FY00–02) Promulgate reengineered policy and practices	Disseminate policies to Services, Agencies, and industry for implementing program management strategies and support structure realignment	R-TOC Focal Point USD(A&T)/API DUSD(L) Services	FY00–02
	Promulgate best practices	R-TOC Focal Point USD(A&T)/API DUSD(L) Services	FY00–02
	Promote by senior leadership emphasis in speeches, conferences, testimony, and reports	USD(A&T) Service SAEs	FY00–02
III (FY02–05) Monitor implementation of reengineered policy and practices	Monitor implementation through internal reviews and reporting	Services	FY02–05
	Monitor progress of initial strategy applications through reviews of pilot programs	R-TOC Focal Point Services DSAC	FY02–05
	Monitor implementation through Weapon Systems Integrated Process Team oversight	USD(A&T) Services	FY02–05
	Conduct audits and reviews	Service audit agencies DoDIG	FY02–05

Note: DoDIG = DoD Inspector General; DOT&E = Director, Operational Test and Evaluation.

EXPAND THE USE OF PRIME VENDOR AND VIRTUAL PRIME VENDOR ARRANGEMENTS

PV and VPV are industry-Government business arrangements along a continuum that ranges from simple supply support functions to integrated logistics chain management functions. A PV arrangement is a partnership with a vendor for commercial products and uses commercial pricing and established distribution arrangements. A VPV for consumables is a partnership with an integrated logistics chain manager to support a customer or at least one commodity or product line. A VPV for reparable items provides the same functions as a VPV for consumables, but may also provide depot repair; obsolescence management; technology insertion and reliability improvements; configuration management; and repair, overhaul, and disposal.

PV and VPV partnerships allow DoD to take advantage of leading-edge logistics expertise and capacity in industry and focus the mission support expertise of DoD personnel on DoD requirements. PV and VPV arrangements can offer significant

savings in support costs and can improve responsiveness. The use of PV and VPV arrangements should be expanded with other commercial contractual vehicles, such as corporate contracts, long-term contracts, direct vendor delivery, on-demand manufacturing, and related vendor-managed inventory relationships as appropriate. In some cases, hybrid logistics support solutions may be in the Department's best interest.

PV programs for commercial commodities demonstrate the success of this approach. The DLA Medical Program was started in 1993 to support DoD hospitals and other medical activities with pharmaceuticals. This program has been expanded to include medical and surgical supplies and has more than $1 billion in annual sales. Additionally, the program reduced LRT for activities in CONUS to 24 hours for most products and medical wholesale inventories by $200 million. Personnel resources in DLA's medical area were reduced from 496 full-time equivalents in FY94 to 386 in FY98. Similarly, PV programs have been expanded to other troop support and general commodities, including subsistence (a successful, fully deployed PV program), clothing and textiles, wood products, materiel handling equipment, automotive parts, diving and firefighting supplies, metals, and food service equipment. PV and VPV programs are common to all Military Services; therefore, the programs provide the ability to leverage DoD's purchasing power.

DLA and U.S. Marine Corps Fleet Automotive Support Initiative

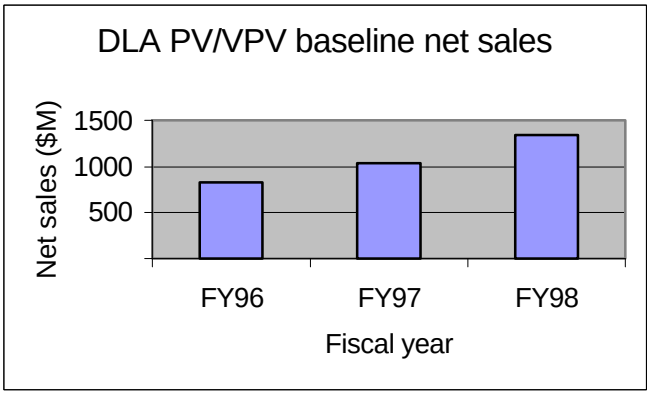
- Improves customer support by decreasing response time to obtain parts, reducing wholesale and retail inventories, and reducing total cost of automotive fleet support
- Reduces lead-times, life-cycle costs, and logistics response time
- Tests and demonstrates PV's ability to perform integrated logistics support by measuring delivery schedule and fill rate, force service support group inventory levels, customer satisfaction, and cost control
- Estimated savings of $3.5 million through FY05

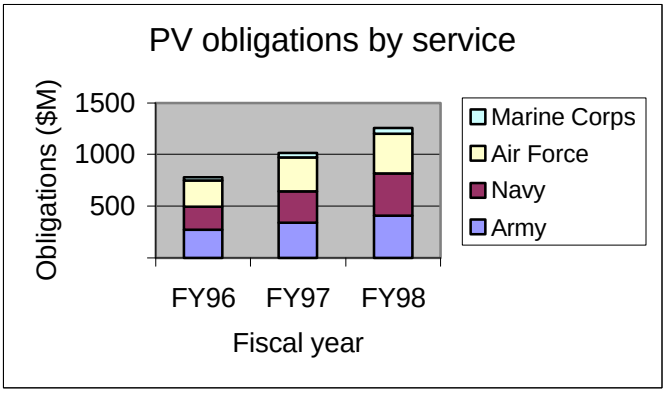
Another PV and VPV program that provides the opportunity to take advantage of items commonly used by all Military Services is the maintenance, repair, and operations (MRO) program. The program provides DoD activities with commercial supplies and items identified with national stock numbers that support public works and base maintenance missions. The MRO program capitalizes on industry-integrated supply chain management and electronic catalogs. The primary program benefit is the ability to provide items that regional customers desire quickly and reduce overall costs (e.g., infrastructure, inventory, and prices). The MRO program relies on extensive customer participation to take advantage of DoD's buying power. The program is fully supported by the Deputy Secretary of Defense and its use by DoD activities has been encouraged through Defense Reform Initiative Directive (DRID) #45. Nationwide MRO contract coverage was completed in July 1998. An MRO contract was awarded for Okinawa in March 1999 and an award for Germany is anticipated by August 1999, with other European countries to follow. DLA noted 64 customers use the program. MRO program sales are increasing (FY97 sales were $1.66 million, FY98 sales were $18.5 million, and FY99 sales were $16.2 million as of 1 April 1999).

Although the consolidation of requirements for troop support and general commercial items is a formidable task, weapon system spares and repair parts are greater challenges. The Industrial Prime Vendor (IPV) program is an example of a program for providing these items. The IPV program is based on the acquisition strategy for consumable items used in the overhaul, repair, and maintenance of weapons systems; the items, normally stocked at or near the point of use, are sometimes referred to as *benchstock*. Benchstock is comprised of commercial items, such as O-rings, bolts, screws, nuts, washers, seals, couplings, and rivets. Many items are used by many weapons systems and illustrate a horizontal support method. Contracts are being awarded to firms that demonstrate total logistics approaches for providing supplies, supply chain management, and anticipatory services (including technical and engineering support, forecasting, and configuration management). IPV efforts providing tailored logistics packages are improving weapons system maintenance activities. DLA awarded initial IPV contracts for maintenance sites at Naval Air Depots North Island and Cherry Point. Although the contracts have been in place only 6 months, the dollar values are more than $1 million for each site. Contracts have also been awarded to support Camp Pendleton, Camp Lejuene, and Okinawa. IPV efforts are underway for Air Force Air Logistics Centers and Navy fleet maintenance activities. Additional initiatives are being developed that address logistics support for specific weapons systems. Examples are DLA's efforts with Naval Aviation Depot Jacksonville to support program maintenance lines.

Figure 3-1 provides a baseline of the sales from DLA PV and VPV arrangements. These amounts include troop support and general items as well as Class IX weapon system-related spares. Current obligations of the Services and other customer activities under DLA's common support contracts are illustrated.

Figure 3-1. DLA Prime Vendor and Virtual Prime Vendor





PV and VPV arrangements not only enhance savings related to distribution functions, but also reduce the lead-time and cost of awarding and administering several contracts. Common support contracts of this nature can also reduce inventory

investments as well as promote savings through materiel acquisition economies of scale. The expansion of PV, VPV, and other commercial arrangements by common support providers can effectively be tracked through sales. However, support of these initiatives by customer activities, such as the Military Services, is monitored more effectively by obligations for common support vehicles.

Expanding logistics chain integration beyond current levels requires DoD-wide support. PMs, item managers, contracting organizations, users, organic support providers, and industrial partners need to understand the benefits of implementing PV and VPV programs and how to implement PV and VPV strategies. DoD guidance will include the following:

- Selection criteria for identifying initiatives for PV and VPV relationships
- Criteria for selecting vendors, including promotion of small and disadvantaged businesses at prime and subcontract levels
- Guidance from lessons learned on performance metrics that should be included in PV and VPV arrangements
- Templates for effective BCAs that promote readiness while reducing total DoD cost.

The PV and VPV user community will also have access to the following technological solutions that enhance ease of use and success of PV and VPV arrangements:

- Visibility of PV and VPV arrangements and identification of items they support
- DoD asset visibility
- Systems integration processes between legacy information systems and industry systems.

Industry will also be an active participant by offering innovative solutions for logistics chain integration. The solutions may be horizontal, like the IPV program, or vertical by providing logistical supply support for a weapon system or maintenance activity. Of paramount importance is the integration of horizontal and vertical PV and VPV programs to provide Department-wide efficiencies, thus maximizing savings.

DLA is implementing a strategic materiel sourcing strategy. Its goal is to assess its 3.8 million weapon system support items by FY05 to identify items that can be shifted to best commercial sourcing practices. The strategy consists of screening items to identify those likely to be acquired in the next several years. The items are grouped for assessment of appropriate contractual vehicles based on market research, commercial practices, customer-oriented and program-focused

arrangements, and manufacturing characteristics. As part of the process, new tools (such as World Wide Web Industrial Capability Assessment Program and Supplier Utilization through Responsive Grouped Enterprises) that enhance grouping by manufacturing characteristics are being developed to aid the analysis and resolution. The integrated support process will contribute in establishing contract methods, developing BCAs, and soliciting industry bids to determine a customer-focused, best-value logistics support solution. Solutions may result in a PV; VPV; corporate, long-term, or DVD contracts; on-demand manufacturing; vendor-managed inventory; continuation of organic support; or a hybrid to ensure the best support at the lowest TOC. DLA plans to assess candidates initially that will cover 73 percent of DLA's Class IX, spares and repair parts, annual sales.

Expansion of PV and VPV strategies includes the following actions, as described in Table 3-5:

- *Phase I (FY99–00)*. Create an environment that encourages the use of PV and VPV programs and concepts and provides the workforce the education and tools to identify and pursue opportunities for testing and implementing new logistics support solutions.

- *Phase II (FY00–02).* Implement new business practices and integrate horizontal and vertical supply chain programs seamlessly to optimize Department benefits.

- *Phase III (FY02–05)*. Fully integrate system interfaces and refine procedures to implement new business practices for lessons learned.

Table 3-5. Expand the Use of Prime Vendor and Virtual Prime Vendor Arrangements

Phase	Action	Responsible organizations	Time
I (FY99–00) Create environment conducive to PV and VPV expansion and identify programs for PV and VPV arrangements	Identify logical groups of active commodities for PV initiatives	Services DLA	Apr 99–Mar 00
	Train additional personnel in techniques of market research and BCAs	Services DLA	Jun 99–Mar 00
	Perform market research and find industry-based solutions to solve logistics support problems	Services DLA	Jun 99–Jun 00
	Screen customers to identify unique support requirements for VPV initiatives	Services DLA	Jun 99–Sep 00
	Assess impacts of legislative barriers on newly identified PV and VPV contracts	Services DLA Industry	Dec 99

Table 3-5. Expand the Use of Prime Vendor and Virtual Prime Vendor Arrangements (Continued)

Phase	Action	Responsible organizations	Time
II (FY00–02) Implement new business practices and integrate horizontal and vertical supply chains	Test integration of horizontal and vertical arrangements and coordinate with product support pilot program strategies	PMs and PEOs Services DLA Industry	Sep 99–Sep 02
	Prepare BCAs for identified PV and VPV projects	Services DLA	FY00–02
	Identify information systems data exchange, access issues, and other IT requirements.	Services DLA Industry	FY00–02
	Establish systems capability to identify items available from PV and VPV contracts, and identify PV and VPV contracts as tools for PMs and PEOs	Services DLA Industry	FY00–02
	Initiate appropriate action to ease PV and VPV implementation in response to legislative impacts identified during pilot programs	Services DLA Industry	FY02
III (FY02–05) Fully integrate system interfaces and refine procedures	Establish seamless integration of legacy and industry systems to ease use of PV and VPV arrangements	DUSD(L) PMs and PEOs Services DLA Industry	FY02–05
	Improve guidance to PMs and customers based on current best practices	DUSD(L) PMs and PEOs Services DLA Director, Defense Procurement	FY02–05

Note: PEO = Program Executive Officer.

Chapter 4
Key Implementation Enablers

The previous chapter discusses the four implementation strategies directly responsive to the Secretary of Defense Section 912(c) Report submitted to Congress. This chapter describes the three highest priority enablers of the strategies, as determined by the Product Support Senior Steering Group. Near-term and long-term progress on the product support reengineering actions discussed in Chapter 3 depend on the enabling actions discussed in this chapter. Those actions are the following:

- Develop a competitive product support supplier base
- Reengineer financial processes
- Implement a complementary information systems strategy.

In addition to the three critical enablers, five other long-term enablers are discussed in Appendix B.

DEVELOP A COMPETITIVE PRODUCT SUPPORT SUPPLIER BASE

The Military Departments are implementing a wide variety of integrated product support strategies that includes careful review and implementation of industry-led long-term support. As the Military Departments transition to product support competitive sourcing, the Department is focusing on the following three primary objectives related to the industrial base:

- Capitalize on the existing, competitive commercial base for product support services
- Maintain competitive pressure throughout the life cycle
- Ensure cost-effective product support during the retirement phase of the product life cycle.

Examples of industrially provided, integrated product support are dominated by strategies that depend on the original equipment manufacturer or prime contractor and include the C-17, the Apache Prime Vendor, and the V-22.

An initial extension of this approach is public-private competition; however, as the initial public-private competitions mature, the organic infrastructure may be reduced. Therefore, the public sector may not be a viable competitor for future competitions. Reliance on a sole source industry provider could develop without proactive intervention.

Conversely, the Military Departments and DLA possess extensive experience in competitive sourcing of selected product support functions, including data management, materiel management, distribution, and depot maintenance. Unlike the integrated weapon system strategies (that focus on the original equipment manufacturers), these competitions for "product support elements" attracted multiple offerors and world-class commercial providers, such as Federal Express. Based on this experience, the challenge is to expand these results to the large, integrated product support service providers.

The Department continuously takes proactive steps to develop and maintain a competitive industrial base. In the early 1980s, the Department developed alternate production sources and supplier bases for major weapon systems. In the late 1980s, as the need for high-volume production diminished, the Department maintained alternate suppliers for spare parts and consumables. Finally, in the mid-1990s, the Department emphasized civil-military integration to gain the benefits of a competitive commercial base.

To gain the benefits of a vibrant competitive supplier base, the Department must build on those historical efforts through the following key actions:

- Assess and define barriers to a competitive base
- Identify strategies to overcome the barriers
- Integrate actions with other initiatives
- Test processes through pilot programs
- Implement full-scale actions.

Those actions address the three primary barriers that inhibit a competitive product support base:

- High capital costs to develop facilities and equipment
- Systems knowledge of complex DoD weapon systems, including access to comprehensive technical data
- DoD procurement processes that discourage completely commercial vendors from being DoD providers.

The high capital costs of special equipment for unique Defense items are a significant barrier to market entry. In recent years, the Department dramatically reduced military standards to foster greater civil-military integration; however, currently fielded systems, manufactured in the 1970s and 1980s, are still predicated on unique military standards. The standards determine requirements for expensive special tooling and test equipment that is not readily available in the commercial market.

One promising approach for overcoming this barrier is increased partnering, particularly at maintenance depots. The depots possess the special equipment to support complex systems, and the equipment is underutilized. Through partnering agreements, the underutilized assets could be made available to undercapitalized, third-party providers. This potential approach provides the secondary benefit of avoiding duplication of expensive capital equipment.

The engineering and manufacturing knowledge of complex systems is also a significant barrier. During the competitive production era of the 1980s, extensive resources were invested in second-source "learning," even when most second-source producers were Defense-oriented. Extending that experience to commercially provided product support greatly compounds the challenge.

A promising approach for overcoming this barrier is a competitive strategy that packages the work to foster commercial participation. This strategy can be pursued by the PM or a product support prime contractor. Product support functions directly comparable to commercial efforts include data management, configuration management, materiel management, and distribution.

Finally, despite dramatic advances in acquisition reform, commercial logistics providers continue to be hesitant in pursuing and accepting Defense business. Most cited concerns include the complexity of the procurement process and cost-based pricing. The barriers will be rapidly overcome by increased use of output contracting and commercial acquisition procedures. This area is being studied by a research team at the Industrial College of the Armed Forces. Its preliminary results were presented at the PEO and Systems Commanders Workshop in April 1999. The workshop's results will be used to initiate a focused reprocurement reform effort in the summer of 1999.

To attack these barriers, DoD will continue to build on its civil-military integration and cooperative efforts with industrial partners. Activities also will *explore* the feasibility of employing current statutory provisions and partnering to foster greater commercial-Defense interaction. Milestones and actions are presented in Table 4-1.

Table 4-1. Develop a Competitive Product Support Supplier Base

Phase	Action	Responsible organizations	Time
I (FY99–00) Prepare strategy to develop competitive base	Hold PEO and systems command workshop for examining competitive base issues	DUSD(AR) DUSD(L)	Apr 99 (Complete)
	Identify costs, systems, and procurement process barriers to the development of a competitive base	DUSD(AR) DUSD(I&CP)	Apr 99–Jun 00
	Baseline DoD efforts to remove barriers	DUSD(L)/MP DUSD(AR) DUSD(I&CP)	Jun 99–Jun 00
	Initiate reprocurement reform initiatives	DUSD(AR) DUSD(L)	Jul 99–Sep 00
	Develop strategy to foster a competitive base	DUSD(AR) DUSD(L)MP DUSD(I&CP)	Sep 99–Jun 00
II (FY00–02) Apply competitive base strategy to pilot programs	Use development strategies to identify competitors for pilot programs and facilitate the competition	DUSD(AR) DUSD(I&CP)	Oct 99–Dec 00
	Develop life-cycle competition strategies in pilot programs	Service SAEs DUSD(AR)	Jan 00–May 01
	Evaluate results as a function of pilot efforts	DUSD(AR)	May 01–Apr 02
III (FY02–05) Implement actions to develop a competitive supplier base	Document lessons learned from pilot program competitions, including necessary regulatory and statutory changes	DUSD(AR)	Apr 02–Jun 02
	Coordinate and implement regulatory and statutory changes	DUSD(AR) Director, Defense Procurement	Jun 02–Jan 03
	Implement competitive base actions and strategies	DUSD(AR) DUSD(I&CP)	Jan 03–Sep 05

Note: DUSD(I&CP) = Deputy Under Secretary of Defense (International and Commercial Programs);
DUSD(L)/MP = Assistant Deputy Under Secretary of Defense (Logistics) for Maintenance Policy, Programs, and Resources.

REENGINEER FINANCIAL PROCESSES

The supply chain approach to product support uses competition to select the best support practices (commercial or organic). This strategy integrates many support functions (including maintenance, supply, distribution, and engineering) under a single manager. To accomplish this objective, DoD logistics support will rely on a more open, flexible selection of the best available source, whether public, private, or a partnership of public and private organizations. Using this approach, customers will buy a level of performance rather than individual spare parts, maintenance actions, or technical data. This approach will require a financial process that is more flexible than the Defense Working Capital Fund (DWCF) structure now used to fund maintenance and supply operations. As such,

this revised customer relationship must be supported by complementary financial processes, including appropriations, budgeted accounts, and working capital funds.

The effort to integrate weapon system logistics chains adds to the complexity of contracting for life-cycle support in terms of "levels of performance" rather than tailored spares, maintenance actions, or technical data. To assist in this effort, financial processes will be reengineered to predict all costs to the Service, including the costs of competitive sourcing; as well as a system's life-cycle cost. The reengineered financial processes will be tested during pilot program implementation. Policy changes will follow successful pilot tests.

Need for New Processes

The DWCF, as now configured, uses activity groups (business areas that have separate budgets) to fund supply, maintenance, and transportation functions. This structure allows activities in a functional area to select among the best available sources, but it inhibits support choices that make tradeoff decisions across functional areas. To implement a supply chain approach to product support successfully, the product support manager must be able to select integrated solutions that cross functional boundaries.

Product support managers need a financial management process that accommodates the product support strategy. Several programs are implementing or planning to implement product support strategies that include a public-private partnership. These programs are keeping all or part of depot-level maintenance in the public sector and using a private-sector team to provide wholesale supply and technical support. However, these programs could consider only a limited number of funding options. They choose to divert O&M funding from operational commands to the program office and remove supply inventory management from the working capital fund. Financial plans need to be developed that give the product support manager more than one option and lay out the processes to evaluate the costs associated with each option and the procedures to change to the new financial arrangements.

Army Single Stock Fund

- Merges wholesale and retail into single nationally managed fund
- Eliminates inefficiencies
- Increases readiness through rightsizing inventories
- Shortens supply chain
- Enables vertically integrated logistics environment

Solutions

Potential financial solutions can be grouped in two general categories. The first is to change the structure of the DWCF and make it a more attractive funding mechanism for product support strategies. The second is to remove support for selected weapon systems from the DWCF as they transition to a product support strategy.

Changing the DWCF may require the creation of a new activity group for weapon system product support. A product support activity group would allow O&M funds to flow to the users and maintain the buyer-seller relationship that exists between the customers and managers of working capital funds. Customers would continue to receive O&M funds as with current DWCF procedures. Customers would use their O&M funds to buy weapon system product support from the DWCF. However, instead of buying repair parts, the operating forces buy product support on an outcome (i.e., per hour, sortie, or mile) basis. The PM would use the DWCF as a funding source to buy support from organic activities, partnership arrangements, or private-sector providers. Inventory would be decapitalized from the supply management activity group and capitalized into the new product support, product activity group.

Using the DWCF as the budgeting and funding mechanism for product support may resolve problems associated with expiring funds and reprogramming funds between appropriations. Reprogramming funds related to technology insertion to improve reliability and maintainability is a recurring issue. Often a technology insertion requires research, development, test, and evaluation; procurement; and O&M funds to design, produce, and field an upgraded component successfully. Using the DWCF to finance technology insertion, as financed in the Navy Logistics Engineering Change Program, may provide a way to eliminate the need to obtain funds from three types of appropriations. The DWCF may also increase the visibility of support costs by weapon system to facilitate the programming and budgeting process.

The second approach, removing the weapon system from the DWCF, presents three issues: decapitalizing the inventory from the DWCF, buying the on-order pipeline, and compensating for the loss of surcharge revenue to the DWCF. Decapitalizing inventory (i.e., moving the inventory to another account) reduces the overall DWCF value, but also removes the support requirement from the DWCF. Therefore, additional funding to replace the inventory that is decapitalized is not required.

After the inventory is decapitalized, on-order materiel continues to be received from suppliers. The ordering activity usually continues to manage the on-order contracts, and the materiel is transferred to the new account. The DWCF pays the suppliers as the materiel is received and must be reimbursed for this outlay. Additional funding is not required to buy out the on-order pipeline. Funds for the pipeline (anticipated future sales) are included in the O&M budget. The O&M funds flow to the PM to pay for support of the weapon system.

When support for a weapon system is removed from the DWCF, a corresponding loss of sales and a decrease in surcharge revenues for supply management activities (or billable work-hours for maintenance) occurs. Until the supply management and maintenance activity groups bring operating costs in line with the reduced sales volume, the lost revenue has to be recovered. The DWCF can compensate for the

lost revenue by increasing the surcharge or work-hour rate, or the lost revenue can be paid from projected weapon system support savings. Changing incrementally from the DWCF to the new support structure can mitigate the loss of operating revenue.

The economic evaluation of the desired product support strategy needs to consider the revenue lost from decreased sales in the maintenance and supply activity groups as part of the BCA or the public-private competition. Developing new financial process and business rules is the first step in evaluating the costs and savings of weapon system support strategies.

Table 4-2 describes the steps to establish the new financial policies and processes. Phase I focuses on developing new financial processes and business rules. Phase II examines the processes for programming and budgeting for the pilot programs. Phase III expands the concept to new and legacy weapon systems being considered for weapon system product support.

Table 4-2. Reengineer Financial Processes to Facilitate Implementation of Weapon System Product Support

Phase	Action	Responsible organizations	Time
I (FY99–00) Develop revised financial policies and business rules	Establish a Product Support Financial Management Task Force to investigate the best methods to support weapon system product support	OSD Comptroller DUSD(L)	Sep 99
	Develop new financial processes and business rules for weapon system product support	Product Support Financial Management Task Force	Sep 99–Dec 99
	Review and approve new processes and business rules developed by the task force and establish time frames for changing a weapon system to product support	DUSD(L) USD(A&T)/API OSD Comptroller Services DLA	Jan 00–May 00
	Include pilot programs in FY01 DWCF Budget Estimate Submissions	OSD Comptroller Services DLA	Sep 99–Sep 00
II (FY00–02) Implement new DWCF policies for pilot systems	Implement new policies for the pilot programs	DUSD(L) OSD Comptroller Services DLA	FY00–02
	Validate and modify the new policies based on pilot program experience	OSD Comptroller Service SAEs	FY00–02
	Budget and program for additional weapon system product support implementations	OSD Comptroller Service SAEs	FY00–02

III (FY03–05) Expand policies to new programs	Implement additional integrated supply chain support programs	Services	FY03–05

IMPLEMENT COMPLEMENTARY INFORMATION SYSTEMS STRATEGY

Supply chains require not only integrated materiel flows, but also integrated information flows to allow providers (organic or commercial) to anticipate requirements by understanding their customers' status and plans rather than waiting for orders to arrive. Fleet management concepts for 21st century support are built on real-time monitoring of the prime mission equipment. Integrated information flows also give buyers' visibility into vendor capabilities and link common support processes to buyers and vendors. The DoD Components are investing significantly to modernize product support-related IT rapidly.

Consistent with the GCSS strategy, the DoD Components, in making their IT investments, are following an evolutionary development model that incorporates two basic guidelines: compliance with a common operating environment and a focus on shared data. Also consistent with the GCSS strategy, they are intentionally avoiding grand design approaches and relying on cooperation rather than explicit, centralized decision-making authority. Because shared data, a key to supply chain integration, is a major tenet of the GCSS strategy and decentralized decision authority is consistent with market segmentation (a commercial best practice), a marked change in strategy or fundamental rethinking of the Components' implementation approaches is neither needed nor warranted. Rather, a concerted effort is needed to ensure that IT investment priorities heed the exigencies of implementing the product support strategies described in this report. Almost certainly they do not at present.

Navy Supply Virtual Bidroom

- End-to-end electronic procurement system that provides secure transmission and safekeeping of solicitation, proposal, and award documents (normally not amenable to American National Standard Institute X12 transaction sets)
- On-line Naval ICP solicitations that include solicitations with unique qualities that preclude posting the solicitation in full text on another Web site
- Navy procurement opportunities available for browsing on the World Wide Web, quote via Internet, using portable document format standards

The first challenge is to shift to product-oriented supply chains. In this concept, product support managers (rather than only inventory managers) buy product support services (rather than only inventory) from commercial or Government sources. Implementation will almost certainly require a change in IT investment priorities because the present IT infrastructure supports the commodity-oriented supply chains—not product-oriented supply chains. Implementation will also

require a new focus on integration because product support providers will be using their information systems, and a buyer must not have to cope with vendor stovepipes. Integration will also be required to link providers of product support with providers of common logistics services, DoD buyers, and diagnostics embedded in weapon systems. Further, some legacy information systems, or at least major functional parts of them, will likely no longer serve a useful purpose and will need to be terminated.

Second, product engineering data are challenges because the competitive sourcing of repair and remanufacture cannot occur without trusted engineering data. Some of the Department's product data are still in paper or other nonelectronic formats, and conventions to ensure integrity of the data as they are electronically exchanged are not in place. Although ideally product data representation conforms to a single standard, such as the International Standards Organization's Standard for the Exchange of Product Model Data, no standard is available at the level of maturity required to support the full array of product data content, format, and functions. Therefore, product data repositories need to support several formats of data, and efficient data conversion software will be a continuing requirement. Beyond data conversion, the infrastructure needs to support product data sharing among vendor and Government programs. Policies for data management by data creators would encourage vendors to share information to reduce the breadth of stockage throughout the virtual Defense enterprise. The infrastructure will provide mechanisms and procedures to access product data regardless where they reside.

Air Force Integrated Maintenance Data System

- System for maintenance production support that collects and processes equipment maintenance information at the point of maintenance
- Single logical database that accesses historical, legacy data from other databases
- System that enhances maintenance production; increases readiness; and improves weapon systems and equipment sustainability by improving the flow, accuracy, and availability of essential logistics information

A third challenge stems from the business rules of legacy information systems, especially those used for materiel management. The business rules are so closely aligned with present ways of doing business that they are universally accepted and difficult to change. Further, when systems accomplish decision tasks largely on an autonomous basis, the business rules may not be visible. Redesign of legacy information systems to replace obsolete business rules while preserving the rules that represent valuable learning is a difficult and inevitable requirement. Redesign to a single standard, however, is not a requirement and, in fact, would hinder customer differentiation that is likely to be a key to success. Furthermore, traditional redesign approaches may not be sufficiently rapid to ensure DoD implements commercial practices that are evolving. Therefore, buying (versus building) and integrating commercial software with commercial practices embedded in them should be pursued when a match exists between the future business type of a DoD Component and available commercial software. This

software may be tailored if the tailoring does not risk continued commercial maintenance of the software. Rather, because the objective of the redesign is to adopt commercial business rules, the DoD processes should change to accommodate the commercial software.

Although this redesign approach need not result in standard information systems, standard management information is needed. A challenge in managing product support today is inconsistency in generating data that can be used to gauge the quality and efficiency of customer support. Both buyers and service providers need this information. The need for standard data sets to support management assessment or joint processes is critical because of the number of DoD customers a provider or market segment may support. For efficiency and competitiveness, a standard management information interface among buyers and service providers in a market segment is required.

The fourth challenge is minimizing interfaces a user has to master. Before the World Wide Web was developed, some users had to master as many as 18 interfaces to accomplish a simple task, such as checking the availability of materiel. Each interface had its own distinctive log-on and navigation features. Although the ubiquity of graphical user interfaces and Web technology has created a common look and feel and has great potential to facilitate electronic commerce, the rapid deployment of Web-based electronic “storefronts” is acting to increase the number of disparate user interfaces. Businesses resolve this issue by adopting common implementing conventions for a set of EDI transactions in their supply chains. They also adopt a common presentation scheme to their users. DoD has an initiative to implement commercial EDI transaction sets for logistics that will adopt implementing conventions for commercial interaction based on market segment. This transaction standard should be augmented with standards for presentation for common supply operations and weapon system-specific integrated electronic technical manuals.

In summary, the following information systems actions are critical:

- Continue to modernize DoD Component logistics information systems and the Defense enterprise’s product data distribution infrastructure
- Continue to transition to commercial transaction standards (such as American National Standards Institute X12)
- Upgrade the Defense Automatic Addressing System Center to enable enhanced customer service metrics and establish standards for management information generated by improved DoD and vendor systems
- Increase deployment of intrusive diagnostics and monitoring systems

- Migrate electronic technical manuals to interactive capability and integrate with requisitioning systems

- Accelerate deployment of the prototype post-fielding support analysis tool
- Modify IT implementation priorities incrementally, so product support processes, supporting IT infrastructure, and related policy and business rules evolve.

These efforts will continue to be coordinated by the Joint Electronic Commerce Program Office (JECPO) and the Logistics Information Board as indicated in Table 4-3.

Table 4-3. Develop Information Systems Migration Strategies

Phase	Action	Responsible organizations	Time
I (FY99–00) Coordinate IT efforts with product support implementation	Develop DoD logistics architecture	DUSD(L) Services DLA	Aug 99–Dec 99
	Establish revised logistics business system oversight mechanisms consistent with product support strategic objectives	DUSD(L) Logistics Information Board	Dec 99
	Implement electronic commerce with commercial trading partners (DRID #48) and transition to commercial electronic commerce standards	USD(A&T) JECPO Services DLA USTRANSCOM	Dec 99
II (FY00–02) Develop building codes	Define and implement a set of building codes to minimize proliferation of electronic commerce user interfaces and provide standard management information interface with service providers	DUSD(L) ASD(C3I) JECPO DISA	FY00–02
III (FY02–05) Deploy systems and modify priorities	Deploy improved logistics information systems and product data distribution capabilities while emphasizing product support and market segmentation, use of commercial software, and integration throughout the Defense enterprise	Logistics Information Board DUSD(L) Services DLA	FY02–05
	Modify IT implementation priorities so product support processes, supporting IT infrastructure, and related policy and business rules evolve	Logistics Information Board DUSD(L) Services DLA	FY02–05

Note: ASD(C3I) = Assistant Secretary of Defense (Command, Control, Communications, and Intelligence); DISA = Defense Information Systems Agency. Logistics Information Board members are DUSD(L), ASD(C3I), Joint Staff/J-4, Military Services, DLA, USTRANSCOM, and DISA.

Chapter 5
Expected Product Support Outcomes

This chapter discusses potential performance metrics to measure the results of the actions recommended in Chapters 3 and 4. The proposed metrics for product support are consistent with the LRSSG's strategic objectives and include customer wait time (CWT), visibility of repair parts, TOC, logistics costs, and mission support. The LRSSG will develop metric values as part of the FY00 edition of the *DoD Logistics Strategic Plan*. In addition, this chapter also suggests methods to measure the expansion of competitively sourced product support and PV and VPV programs.

PRODUCT SUPPORT METRICS

Metrics are required to measure progress in developing an integrated, warfighter-driven logistics chain that will be created by the following:

- Reengineering the logistics processes to improve customer service (including velocity, accuracy, reliability, and security) for providing rapid and assured supply at lower costs.
- Reducing the in-theater footprint by achieving a high confidence in the national level of supply and maintenance, rapid transportation, highly reliable equipment, reduced energy consumption, and enhanced field maintenance procedures.
- Reducing the infrastructure through reduced logistics personnel (military and civilian) requirements and fewer facilities.

The effect of the changes will be to make additional resources available for modernization while achieving better support for the warfighters. The metrics discussed in this chapter are management metrics to reflect the outcomes of product support initiatives. We fully expect other metrics will be used or developed by the Military Services and PMs to manage implementation of new processes.

Customer Wait Time

CWT measures the elapsed time from the customer order until the order is satisfied. CWT includes retail-level demand; therefore, it is more representative of overall system performance than LRT, which only measures wholesale requisitions. CWT captures the time to fill demands from available stock at the retail level as

well as the time to pass demands and receive materiel from the wholesale level. The goal is to develop the definition and process to measure CWT by the end of FY01 and to implement CWT measurement fully by FY06.

Joint Total Asset Visibility

The goal of the Joint Total Asset Visibility (JTAV) program is to provide DoD users with timely, accurate information on the location, movement, status, and identity of military assets (e.g., units, personnel, equipment, and supplies) and the capability to perform transactions using that information. The objective of asset visibility is to increase the opportunity for lateral redistribution of assets, improve responsiveness in filling high-priority requisitions, and reduce unnecessary inventory procurements. We are interested in the visibility of repair parts that support weapon systems or their equipment as a performance metric for product support. The assets for product support are wholesale and retail materiel in storage, materiel being purchased or repaired, and materiel moving between activities. The goal is to determine asset information requirements and the associated measures by the end of FY00 and implement comprehensive asset visibility by FY06. In July, 1999, 94 percent of DoD worldwide inventory is visible and accessible to the single integrated materiel manager.

Total Ownership Cost

TOC measures the financial resources to organize, equip, sustain, and operate military forces to meet national goals, policies, and standards for readiness, safety, and quality-of-life concerns. TOC consists of the costs to research, develop, acquire, own, operate, and dispose of weapon and support systems. The product support initiatives discussed in this implementation plan are intended to reduce the part of TOC that occurs after a weapon system is fielded. O&S costs are more than 60 percent of a weapon system's TOC. As the Department retains weapon systems for longer periods of time, the increased O&S costs become critical issues. Therefore, a weapon system's TOC is a key measure of a product support strategy. PMs are responsible for the continuous reduction of the life-cycle costs of their systems as part of the product support concept. The goal is to surpass or achieve TOC targets by FY00 that are 20 to 50 percent below historical norms for at least 50 percent of the systems in acquisition.

Logistics Costs

Reducing logistics costs in relation to the DoD budget is essential for ensuring that funds are available for modernization programs and operational readiness. Logistics costs include costs of logistics programs in the FYDP; sales from the DWCF to appropriated accounts for supply, maintenance, transportation, and distribution activity groups (not included in logistics programs); and costs of logistics personnel in other FYDP programs (not included in logistics programs or the DWCF).

For fielded weapon systems, the goal is to reduce logistics support costs 7 percent by FY00, 10 percent by FY01, and 20 percent (a stretch target) by FY05. The FY97 baseline is $82.5 billion.

Mission Support

One measure of product support is the ability of the supported weapon systems to meet a commander's mission requirements. Measuring weapon system readiness is critical in predicting a weapon system's ability to meet mission requirements. Most readiness indicators measure the time that a weapon system can meet one or more of its primary missions. Several factors external to product support (primarily supply, maintenance, and transportation) affect readiness, but readiness is an excellent overall indicator. System readiness can be considered an umbrella indicator. A significant change in readiness is a signal to evaluate maintenance, supply, and transportation performance indicators and determine if the cause is related to product support or other support elements. A mission-capable rate is frequently used to measure readiness, but it is not used by all Military Services for all weapon systems. The goal is to develop a documented baseline of applicable rates (mission-capable or other appropriate measures) by the end of FY01 and establish target rates by the end of FY06. The Military Services will develop the capability to measure by individual weapon systems, weapon system categories, and Service composites.

PRODUCT SUPPORT MEASUREMENT

The Secretary recently recommended product support initiatives in the areas of reengineering, CTR, competitive sourcing of product support, and PV and VPV strategies.[1] The first area, reengineering, encompasses hundreds of projects that range from very large initiatives with programmed funds to small projects funded by existing resources. The second area, technology refreshment (including MTS), also consists of hundreds of projects; some are funded by program management offices and others by the DWCF. The Services cannot track them effectively because of the diverse nature of reengineering and technology refreshment. In contrast, the areas of competitively sourced product support and PV and VPV are large projects with dedicated funding sources and PMs. As a result, the DoD Components can use measurement systems to track the expansion of product support and PV and VPV arrangements. The following subsections discuss how these initiatives should be tracked, the current baselines, and their expected growth.

[1] U.S. Department of Defense, Secretary of Defense, *Actions to Accelerate the Movement to the New Workforce Vision*, 1 April 1998.

Competitively Sourced Product Support

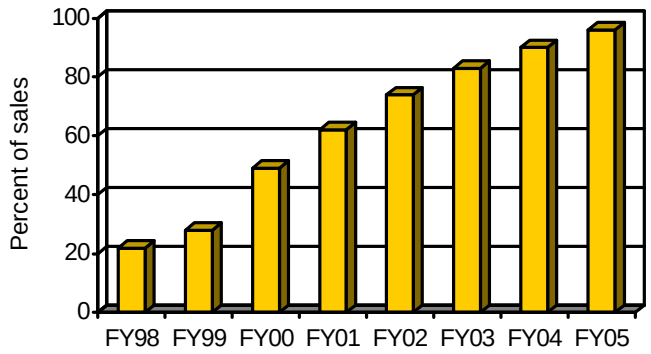
Product support can be measured in terms of dollars budgeted and programmed for product support strategies compared to overall national-level product support funding. Budgeting and programming information is not readily available to measure product support strategies. As product support is introduced and tested in pilots and other programs, budgeting and programming tools should be established to track the amount of product support being performed. Dollars budgeted and programmed for product support strategies will be the principal measure of product support implementation for the Military Services.

Prime Vendor and Virtual Prime Vendor

DLA is developing common support arrangements, in addition to PV and VPV, in the areas of corporate contracting, EC, and Internet applications, such as electronic malls. Similar to PV and VPV, the common support arrangements use integrated logistics chain principles to reduce DoD-owned inventory, lower operating costs, reduce materiel costs, and improve customer service. With PV and VPV, the support arrangements share common objectives and constitute the DLA strategic materiel sourcing strategy. The Department should track and project the expansion of all these programs.

The preferred method for measuring the strategic materiel sourcing strategy is sales volume. However, projecting the sales volume that may result from this sourcing strategy is difficult. Expansion of this strategy depends on identifying likely commodity groups, finding distributors for the commodities, and developing a BCA that supports using a common support arrangement to supply the selected group. This review process can be tracked and projected by measuring the sales volumes for the items being reviewed. Figure 5-1 shows projected sales for stock numbers that DLA has reviewed or plans to review for FY98 through FY05. Of the items that will be reviewed, not all items will be transferred to a common support arrangement. Items will be transferred only when a cost savings or performance improvement for customers clearly exists.

Figure 5-1. DLA Strategic Materiel Sourcing Strategy Assessment Schedule



Appendix A
Product Support Study Group Charter

This appendix includes the memorandum creating the Product Support Study Group and the charter that describes its roles and responsibilities.[1]

THE UNDER SECRETARY OF DEFENSE
3010 DEFENSE PENTAGON
WASHINGTON, D.C. 20301-3010

ACQUISITION AND TECHNOLOGY

17 SEP 1998

MEMORANDUM FOR THE SECRETARIES OF THE MILITARY DEPARTMENTS
CHAIRMAN OF THE JOINT CHIEFS OF STAFF
UNDER SECRETARIES OF DEFENSE
ASSISTANT SECRETARIES OF DEFENSE
GENERAL COUNSEL OF THE DEPARTMENT OF DEFENSE
DEPARTMENT OF DEFENSE INSPECTOR GENERAL
DIRECTOR OF OPERATIONAL TEST AND EVALUATION
DIRECTOR OF ADMINISTRATION AND MANAGEMENT
DIRECTORS OF THE DEFENSE AGENCIES

SUBJECT: Establishment of a Study Group to Implement Reengineered Product Support Practices within the Department of Defense

Section 912(d) of the National Defense Authorization Act for Fiscal Year 1998, directs the Secretary of Defense to conduct a review of the organizations and functions of the Department of Defense acquisition activities and of the personnel required to carry out those functions. In his letter to Congress transmitting the implementation plan directed by section 912(c) the Secretary of Defense committed to changing the focus of the Department from managing supplies (i.e., buying for inventory) to managing suppliers and fundamentally reengineering DoD product support practices. Such product support reengineering presents an opportunity to reduce infrastructure costs and improve warfighting capability by restructuring sustainment processes above the operational level and aligning DoD with commercial logistics processes.

Accordingly, I direct the establishment of a study group, to be led by the Deputy Under Secretary of Defense (Logistics), to determine how best to implement reengineered product support practices within DoD. The charter for the study group is attached. Please identify study group participants (as specified in the charter) to Mr. Randy Fowler by September 22, 1998. Mr. Fowler may be reached at (703) 695-5145, or at rfowler@acq.osd.mil. The initial study group meeting is scheduled for September 23, 1998, in the Pentagon, Room 3C640, 1300-1600 hours.

A final report of the study group will be provided to the USD(A&T), as specified in the attached charter, by March 1, 1999.

J. S. Gansler

[1] This charter established the Section 912(c) Study Group, which was subsequently renamed the DoD Product Support Reengineering Implementation Team. The other sections of this report refer to the study group as the implementation team.

INTRODUCTION AND BACKGROUND[2]

A key tenet of the Department's Revolution in Business Affairs is restructuring its sustainment processes. Restructuring sustainment will result in more agile, more responsive product support processes. Likewise, it will result in fewer personnel in all aspects of product and commodity support and in fewer support organizations. Expanded reliance on competitive sourcing for product support will require the establishment and maintenance of long-term relationships with organizations (public and private) who are properly incentivized to provide dependable delivery at affordable prices. Innovative support concepts such as direct vendor delivery and prime vendor must be expanded. Aging weapon systems must be modernized by using modular components and open architectures to allow the introduction of new technology. Many types of acquisition and logistics initiatives must be combined to provide reengineered product support practices to allow the Department to shift a major share of its resources from infrastructure to modernization and combat functions.

In the recent Secretary of Defense Report to Congress, five actions were specified that must be taken to restructure DoD sustainment processes,[3] four of which are under the purview of this study group:[4]

- Section 2.1. Reengineer the Product Support Process to Use Best Commercial Practices
- Section 2.2. Competitively Source Product Support
- Section 2.3. Modernize Through Spares and
- Section 2.5. Greatly Expand Prime Vendor and Virtual Prime Vendor.

These actions will be examined both independently and in concert to determine implementation strategies to achieve desired reengineered product support processes. Clear identification of these implementation strategies will guide acquisition and logistics managers in developing product support concepts applicable to both legacy and new systems.

[2] The remainder of this appendix is the team's charter as prepared by the Office of the Deputy Under Secretary of Defense (Logistics).

[3] Secretary of Defense, *Actions to Accelerate the Movement to the New Workforce Vision*, April 1, 1998, pp. 6–10.

[4] The fifth action, Section 2.4., Establish Program Manager Oversight of Life-Cycle Support, is assigned to USD(A&T)/Acquisition Program Integration as the study team leader.

Authority and Direction

DUSD (Logistics) is directed to establish a study group to recommend actions necessary to implement reengineered product support practices. The study group membership shall include representatives from the following organizations:

- Office of the Secretary of Defense
  - DUSD (Acquisition Reform)
  - DUSD (Industrial Affairs and Installations)
  - Director, Test Systems Engineering & Evaluation
  - Director, Program Analysis & Evaluation
  - Director, Defense Research and Engineering
  - Director, Defense Procurement
  - DoD Comptroller
- Joint Staff/J-4
- Military departments
- DoD Inspector General
- Defense agencies.

Team members shall be selected to ensure both acquisition process and logistics management perspectives. This effort will be fully coordinated with the Section 912 study group examining Program Manager Oversight of Life Cycle Costs (PMOCLS) and the Logistics Planning and Integration Task Force initiated by the PDUSD(A&T).

Study Objectives

The study group shall determine how to implement reengineered product support practices within DoD. The study group shall be guided by, but not limited to, the following objectives:

- Define the scope and context of product support.
- Identify existing funding and manpower levels required to provide weapon system product support.

- Determine which elements of reengineered product support are key to support JV2010 Focused Logistics and the *DoD Logistics Strategic Plan*.
- Examine leading examples of reengineered product support practices, for example:
  - Army
    - Paladin M109 mobile howitzer
    - Apache helicopter support
    - Mobile subscriber equipment
    - Revolution in Military Logistics
    - Velocity Management
  - Navy
    - Ballistic Missile Program
    - DD-21
    - Regionalization
    - Supply system reengineering
    - Direct Vendor Delivery (DVD) for Reparables
  - Air Force
    - C-17 Flexible Sustainment
    - F-117 Contractor Support
    - Strategic Sourcing Program
    - Agile Logistics
    - Performance-Based Business Environment
  - Defense Logistics Agency
    - DVD
    - Prime Vendor
    - Virtual Prime Vendor

  - "E-Mall" technology
  - Flexible on demand manufacturing.

- Examine programs underway that are reducing total ownership costs such as the Commercial Operations and Support Savings Initiative (COSSI).
- Examine ways to leverage commercial technological advances to reduce operations and support costs.
- Describe the relationship between life-cycle product support and the weapon system acquisition process.
- Determine criteria to select weapon systems best suited for contractor-provided product support.
- Identify strategies to integrate product support concepts with existing and future standard supply, maintenance, transportation, and information systems.
- Identify how to integrate product support strategies with theater support and the warfighter.
- Identify the risks associated with the proliferation of unique product support structures and identify opportunities to reduce that risk.
- Identify actions necessary to incentivize greater sustained investment in modernization through spares (MTS) and reliability, maintainability, and supportability (RM&S) initiatives.
- Determine to what extent MTS and RM&S initiatives should be pursued under commercial product support (e.g., power-by-the-hour, Direct Vendor Delivery for Reparables) and to what extent through direct investments.
- Identify metrics that demonstrate progress toward competitively sourced product support strategies (e.g., indicate on a weapon system basis the amount of competitively sourced product support as measured by operations and support costs).
- Assess financial control and property accountability implications.
- Assess the viability of the A-76 process as a tool for competing product support; identify and assess alternatives to the A-76 process.
- Identify how product support strategies can best embrace private-sector-type supply chain integration and best value sourcing.

- Assess viability of greatly expanded vendor managed inventory.
- Identify changes necessary to implement a streamlined buyer-seller approach for logistics working capital funds.
- Identify legislative and regulatory changes that must be made to implement product support concepts.
- Recommend actions necessary to remedy issues and concerns that prevent implementation of desired product support strategies.
- Identify acquisition strategies that best promote competition for product support in each segment of the weapon system life cycle.
- Recommend across-the-system, infrastructure-wide solutions, in addition to strategies related primarily to individual weapon systems.
- Identify current Acquisition Reform initiatives to be considered as tools to implement product support reengineering strategies.

SCHEDULE

The study group will:

- Provide an in-process review (IPR) to the USD(A&T) and other study team senior leadership 60 days after start.
- Report its conclusions and recommendations to the USD(A&T) by February 12, 1999.
- Provide a final report to the Deputy Secretary of Defense by March 1, 1999.

Appendix B
Long-Term Enablers

The following long-term enablers increase momentum as the Department makes progress on the implementation actions, gains experience through the pilot programs, and proliferates the reengineered practices:

- Revise DoD policies
- Provide training and education for the future product support workforce
- Develop performance measurement systems
- Improve cost management processes
- Test reengineered processes via simulation and operational experiments.

These enablers are presented in this appendix.

REVISE DOD POLICIES

Acquisition and logistics policies will evolve to meet DoD's need for agile, robust, and affordable product support processes. Policy revisions, based on the results of the pilot programs, will create a product support environment that contributes to improved mission-capable rates of weapon systems and equipment, more cost-effective life-cycle support, and improved customer responsiveness. Applicable policy changes will provide a catalyst to enable integrated support structures, greatly expanded competitive sourcing, rapid technology insertion, and a broadened scope of PV relationships. Underlying the changes will be a strong emphasis on performance-based logistics mechanisms and accountability for costs throughout a weapon system's life cycle.

Improving product support requires a policy change that promotes a new support environment that recognizes the strengths of the public and private sectors and focuses on implementation and accountability. Identifying areas for policy change is the starting point, and the effort cannot be constrained. This policy review cannot merely ask if policy deficiencies exist. Instead, DoD policy makers need to ask, "What policy is needed to promote dramatic change actively?" and "Does the policy hold implementing organizations accountable for product support outcomes?" They must review policy documents for potential modifications (e.g., DoD Directive 5000.1, DoD Regulation 4140.1-R, DoD Directive 4151.18, and Service regulations) identified as the pilot programs implement integrated logistics chain strategies. Policy makers must also assess the Title 10 implications

of PMOLCS, explore OMB Circular A-76 impediments, and investigate the need for a standard BCA process and the relationship of the BCA to the OMB A-76 process. The Department must strengthen mandatory and discretionary references in DoD and Service acquisition deskbooks regarding commercial practices and "right-sourcing" life-cycle support.

Revised policies will contain a mandate for more efficient, life-cycle, and competitively based product support. Improved service to the warfighters and infrastructure reduction will be the impetus of policy refinements. These benefits will be the basis for building implementation momentum. Senior leaders in the Department and industry need to be enthusiastic and persistent in advocating the benefits of strengthened product support emphases in DoD policy. Only careful implementation and monitoring will bring the benefits promised by strengthened policies. Reviews, reports, and audits of OSD, Service, Defense Agency, and congressional organizations will provide the oversight to monitor implementation of Section 912(c) policies and reform initiatives. Policy revisions are a starting point to improve product support based on commercial practices, competitive sourcing, MTS, PMOLCS, and expanded PV and VPV opportunities.

PROVIDE TRAINING AND EDUCATION FOR THE FUTURE PRODUCT SUPPORT WORKFORCE

All Section 912(c) efforts have a vitally important responsibility to include training and education requirements in their implementation plans. The training and education will energize "Team Acquisition," a culture of cross-functional teams focused on the entire portfolio of acquisition (including logistics) management. New roles and responsibilities will evolve, and new qualifications will contribute to the transformed team organization.

Training and education require top-down direction and support. The Section 912(c) effort on commercial business environment offers the plan of action for this executive anchoring. The Department is examining a change acceleration program founded on a commercial model. The program provides a template for fostering executive support that cascades knowledge and skills to all workforce levels.

With the training and education vision for Section 912(c) implementation, product support reengineering training and education will *not* be stand-alone. Instead, the product support workforce will be trained as part of an enterprise cultural change program. Tools for the adoption and acceleration of reengineered product support strategies will be injected into all forums where the acquisition and logistics workforce receive professional development. The forums include Defense Acquisition University (DAU) courses, DoD Component acquisition and logistics curriculum, and on-line training products. Similarly, private-sector or university programs that maintain core competencies in training state-of-the-art and state-of-the-practice processes have increasing relevance to the Department.

The following subject areas are candidates for product support reengineering training and education emphasis:

- Open systems
- Single process initiative
- Affordable readiness
- Flexible sustainment
- Modeling and simulation
- Business case analysis
- Total ownership cost
- Alpha acquisition
- Human behavior in organizations
- Change management
- Competitive sourcing
- Integrated supply chain management
- Change management
- Benchmarking
- Enterprise resource planning
- Electronic commerce
- Activity-based costing
- Core requirements
- Conflict resolution

The workforce must develop skills in applying best practices, making customer service a primary focus, and managing suppliers—not supplies. Instilling the product support reengineering vision requires development and training of senior leaders, program management personnel, staff specialists, and functional specialists who will manage and lead the Service and Agency reengineering effort. To realize the benefits of reengineered product support and best commercial practices, DoD leaders need to incentivize the workforce to embrace change, take reasonable risks offering extraordinary returns, and implement new initiatives in the face of outmoded processes. New approaches will be given an opportunity to be successful.

DoD must take action to make culture changes, create a shared vision and commitment across organizations, and put new business ideas into practice. DoD must identify within the re-identified Acquisition Workforce where product support training and education requirements must be bridged with “Team Acquisition” disciplines. DoD must develop training and education in response to pilot program lessons. The DAU must identify subject matter experts and, with their help, update curricula and courses to reflect product support reengineered policy and guidance. They must consider the use of self-paced and distance learning courses to distribute this learning. OSD, the Services, and DLA must initiate contact teams and distribute templates and guides on reforms and process changes. They must initiate training partnerships with academia and industry providers. The DAU must review and refine the curricula and partnering relationships as DoD continues in workforce conversion training.

DEVELOP PERFORMANCE MEASUREMENT SYSTEMS

In the Department, performance measurement has long been an established part of logistics performance. Product support only increases logistics dependency on robust performance measurement systems. PMs need performance metrics aligned to weapons systems to ensure the warfighters are provided the proper support,

whether the support is from a vendor or an organic provider. PMs must ensure that vendors perform in accordance with the terms and conditions of their contracts. Performance data are also needed for competitive bidding of logistical support; they provide a baseline for comparing current performance with the anticipated performance of a potential provider.

Performance data are also used to integrate the logistics chain. All partners in the logistics chain need to meet periodically to review performance data and develop innovative solutions for improving operations. Performance data are useful for reconfiguring logistics networks (with or without changing providers). Performance data are also essential for maintaining the balance between service and costs for weapon system support. OSD and Component headquarters need DoD-wide data to determine if the strategic directions are delivering the expected results and if a change to strategic plans is required. The data can also help in assessing the ability of the DoD logistics system to support major theater warfare and large contingency operations. The Department needs to embrace performance measurements in a way that promotes results and improvements for logistics operations. Using performance metrics effectively requires the following capabilities that the Department does not have:

- A framework for linking metrics to processes, and processes to logistics performance
- Common systems with open sharing of performance data
- Summary information that allows senior officials to make strategic decisions without excessive details
- A process for corrective action to improve logistics performance without isolating and alienating the responsible activity (i.e., focusing on the process, not people)
- A means for entering vendor performance data seamlessly into DoD systems
- Baselining and benchmarking of similar processes to establish standards and opportunities for improvement.

DoD must adopt a measurement methodology based on a complete assessment of strategic logistics metrics and an assessment of the capability of systems to provide these metrics. Major commands must develop plans to implement performance measurement systems. Concurrently, DoD must remain at the forefront of logistics development through its participation in industry-led logistics benchmarking studies. Coincidentally, DoD may now hold vendors accountable for providing their own customer performance review data. Through performance measurements, DoD can attain a high level of customer awareness that leads to vastly improved warfighting capability. Effective leadership and mutual cooperation are the critical elements of a successful plan.

APPLY ADVANCED COST MANAGEMENT TECHNIQUES

In addition to financial process changes, the Department needs to use advanced cost management techniques. Since the early 1990s, the Department has been encouraged by Congress to improve its accountability of budgeted funds. In 1997, the National Performance Review mandated that cost accounting practices identify weapons system life-cycle costs. Subsequently, the Department began a project to develop a strategic direction for implementing activity-based costing and activity-based management. Full implementation is essential to product support reengineering.

The Services and Agencies will be encouraged to share resources and lessons, develop a common framework of terms and definitions for activities performed throughout the Department, and use common metrics for planning and managing implementation of activity-based costing and management. Common definitions for functions and processes will enable benchmarking and sharing of best practices and serve as a foundation for sophisticated dynamic modeling of processes that correlate resource levels to capability levels.

Defense managers need to know their costs and be motivated to improve quality and reduce costs. Efficient and effective product support requires the ability to view costs from a variety of perspectives (e.g., by weapon; organization; appropriation; base or installation; mission area or warfare task; and function, process, or activity). PMs need accurate product costing (that links O&S costs to weapons systems) to select a provider among organic and commercial organizations during competitive sourcing. Activity commanders (commanders of maintenance depots or distribution centers) will calculate transfer prices (cost recover factors or surcharges for each weapon system) for their support to PMs. Supply chain mangers will need accurate product costing to establish optimum network configurations to integrate vendor and organic activities and create logistics segments. DoD must develop plans to implement activity-based costing, activity-based management, product costing, and life-cycle costing to support these managers.

The method used to determine the costs of product support initiatives will be consistent with Service activity-based costing and activity-based management processes. An important feature of product support is the selection of the best-value logistics support provider (public or private). Activity-based costing and activity-based management methods appear to be the best way to determine logistics support costs. Knowing the full cost of organic processes is essential in making fair comparisons between competing organic providers or between organic and private-sector providers.

TEST REENGINEERED PROCESSES VIA SIMULATION AND OPERATIONAL EXPERIMENTS

Changes in the DoD product support processes must be undertaken with care so that warfighting capability is not compromised. To ensure appropriate maturation of new product support processes, the new processes will be subjected to a two-tier testing regime:

- Modeling of common processes
- Operational test by the USCENTCOM as part of the Joint Warfighting Logistics Initiative.

First, the G2 programming language (a rapid prototyping, reengineering-type program that can create a bridge to legacy information systems) will be used for modeling the end-to-end process. Existing models will be used extensively. The Joint Chiefs have completed significant modeling for Joint Vision 2010. In addition, the USTRANSCOM completed the initial modeling of the strategic transportation process for sustainment. The USALIA Rock Drill model provides a virtual environment that allows testing of ideas and changes in an undisruptive, low-risk environment. USTRANSCOM has also developed a translator for converting process models into G2. The translator will use modeling work by Joint Logistics Systems Center, JTAV, and USTRANSCOM. The integrated model will focus on the following common processes:

- Requisitioning through Defense Automated Addressing System (in Military Standard Requisitioning and Issuing Procedures or Defense Logistics Management System)
- Interservice redistribution based on the business rules established for JTAV (determined by Service requirements)
- DLA warehousing and distribution
- Strategic transportation
- In-theater distribution performed primarily by the U.S. Army as executive agency.

The purpose of the model is to integrate each Service's optimized processes and simulate joint warfighting support.

Second, revised processes will be tested by USCENTCOM to demonstrate the impacts of policy changes on the insertion of commercial practices. The operational test will incorporate automatic identification technology, revised customer processes, in-theater distribution, and modern information systems. It will

investigate and evaluate current and future integrated supply chain processes in a joint operational environment.

Appendix C

Section 912(c) Product Support Reengineering Participants

LOGISTICS REFORM SENIOR STEERING GROUP

Table C-1. Logistics Reform Senior Steering Group

Principal	Organization
Mr. Kallock	DUSD(L)
LTG Glisson	DLA
LTG McDuffie	JCS (J-4)
LTG Coburn	Army
Ms. Whittemore	Navy
LTGEN Handy	USAF
MG Higginbotham	USMC
LTG Thompson	USTRANSCOM
Mr. Leary	DISA
Mr. Orsini	Army (ASA [AL&T])
Mr. Mills	Army (HQ, Army Materiel Command)

PRODUCT SUPPORT SENIOR STEERING GROUP

Table C-2. Product Support Senior Steering Group

Component	Name	Organization
OSD	Walt Atchley	DUSD(L)/MDM
OSD	Allen Beckett	PDUSD(L)
OSD	Lou Kratz	DUSD(L)/LRO
OSD	Bob Mason	DUSD(L)/MPP&R
OSD	Ric Sylvester	DUSD(AR)
OSD	Don Tison	OSD(PA&E)
Joint Staff	COL James Pillsbury	Joint Staff/J-4
Army	Larry Scheuble	HQ AMC
Army	MG Sullivan	HQDA DCSLOG
Air Force	Grover Dunn	USAF/IL
Navy	RADM William R. Klemm	OPNAV (N43)
USMC	BG Hal Mashburn	USMC (LP)
DLA	Brad Bergman	HQ DLA

IMPLEMENTATION TEAM MEMBERS

Table C-3. Implementation Team Members

Component	Name	Organization
OSD	Bud Applegate	DUSD(L)/MPP&R
OSD	Jack Barmore	MRM15 Reengineer Team
OSD	Pam Bartlett	USD(P&R)
OSD	Ian Birdsall	Logistics Management Institute
OSD	Roger Clark	DUSD(L) CACI
OSD	Phil Degen	Defense Procurement
OSD	George Desiderio	DTSE&E
OSD	Pete Dingeldey	DUSD(L)/LRO (CACI)
OSD	Tom Dufresne	OSD/PA&E
OSD	Karen Dunn	DUSD(AR)
OSD	CAPT Steven Fahrenkrog	DUSD(AR)
OSD	Jim Forbes	Logistics Management Institute
OSD	Randy Fowler	DUSD(L)/MDM
OSD	Susan Haley	OUSD(A&T) SADBU
OSD	Neil Hamblin	Logistics Management Institute
OSD	Hal Henry	OASD(C3I)
OSD	Linda Hutchison	Logistics Management Institute
OSD	Wendell Irby	USD(A&T)/API
OSD	Tom Johnson	DUSD(L)/LRO
OSD	James Jones	DUSD(L)/MDM
OSD	Ray Kidd	DoDIG
OSD	Lou Kratz	DUSD(L)/LRO
OSD	Tom Lavery	OSD Comptroller
OSD	Bob Leach	USD(A&T)/API
OSD	Ken Lindstrom	Logistics Management Institute
OSD	Sherry McNeil	DUSD(L)/MDM
OSD	Stephen Ruszczyk	DUSD(L)/LRO
OSD	Tilghman Schraden	DoDIG
OSD	Dave Sprenkle	DUSD(L)/LRO
OSD	John Walsh	OASD/RA

Table C-3. Implementation Team Members (Continued)

Component	Name	Organization
Joint Staff	CDR Dave Baucom	Joint Staff/J-4
Army	Fern Gaffey	USALIA
Army	Rick Grube	HQ AMC
Army	Larry Hill	HQDA DCSLOG
Army	Alvin Hopkins	PM Apache
Army	Cathy Leach	HQ AMC
Army	Steven Martin	SARD-ZCS
Army	Robert Matthews	AMCLG-LS
Army	Betsy McChesney	SARD-RP
Army	John Meyer	HQ AMC
Army	Lynn Mohler	HQ AMC
Army	Michael Rybacki	USALIA
Army	Larry Smith	USALIA
Army	Vick White	HQ AMC
Army	Harro Zuest	HQ AMC
Army	Roger Goodson	HQ AMC
Navy	CDR Brad Bellis	OPNAV (N41)
Navy	Charlie Borsch	OPNAV (N43)
Navy	Albert Fitzgerald	NAVSUP
Navy	Mike Hogan	NAVSUP
Navy	Mike Howard	PMS 210, AMCM NAVSEA
Navy	Willie Jones	NAVSEA LOGCEN LPD-17
Navy	Bob Kennedy	NAVAIR
Navy	Clifton Mitchell	NAVSEA
Navy	Michael Taylor	NAVICP Code 001A
Air Force	Debora Bereda	USAF/ILMY
Air Force	Steve Cain	USAF/ILMM
Air Force	Jerry Cothran	USAF/ILMY
Air Force	Barbara Fritz	USAF/ILSY
Air Force	Craig Jones	USAF/ILSY
Air Force	Chris Jugler	USAF/ILMY
Air Force	LTC Laura Martin	SAF/AQXA
Air Force	Glenn Miller	AFMC/DRI
Air Force	MAJ Craig Romero	USAF/ILMM
Air Force	MAJ Dave Snyder	AFMC/DRI
USMC	Keith Rineaman	USMC-LPP-2
DLA	Regina Bacon	DLA-DG
DLA	CAPT Steve Brooks	DLA-DCMC-B
DLA	Mikal Brown	Defense Supply Center Richmond

Table C-3. Implementation Team Members (Continued)

Component	Name	Organization
DLA	CAPT Shaw Cohe	DLA
DLA	Wayne Easter	DLA-DCMC
DLA	Greg Ellsworth	DLA-DLSC
DLA	Catherine Heretick	DLA DLSC
DLA	Jason Hirsh	DLA-DLSC
DLA	Martha King	DLA-DLSC
DLA	Ed Leslie	DLA-DLSC
DLA	Kevin McKenna	DLA-DLSC
DLA	Paul Sabatini	DLA DLSC
DLA	Sharon Sellers	DLA DLSC
DLA	MAJ Floyd Smith	DLA DCMC
DLA	Rosalind Thomas	DLA-DLSC
Other Agency	Vickey Carey	U.S. Special Operations Command
Other Agency	Lou Cartwright	Defense Intelligence Agency
Other Agency	Marty Horechny	Defense Information System Agency
Other Agency	Sheila Lewis	U.S. Special Operations Command
Other Agency	John McGuinness	National Imagery and Mapping Agency
Other Agency	Jeff Miller	Defense Contract Audit Agency
Other Agency	COL Ed Ryder	Defense Security Assistance Agency
Other Agency	Bernie Younger	National Security Agency

Appendix D
DoD Logistics Resources

This appendix describes the method used to determine the cost of logistics and the cost of product support (a subset of the cost of logistics). The method to determine the logistics cost baseline is discussed in the first part of this appendix. The remaining sections present the product support cost analysis.

LOGISTICS COST BASELINE

In this appendix, the definition of *logistics* is limited to the maintenance, supply, distribution, and transportation. The DoD logistics resource costs are determined by the following components:

- Resources in logistics programs
- Purchases from the DWCF that are not included in logistics programs
- Active military and civilian logisticians not reflected in logistics programs or DWCF purchases
- Reserve logisticians not reflected in logistics programs or DWCF purchases.

Logistics Programs

The first step in developing the logistics cost baseline was to identify logistics programs in the FYDP database. Military personnel (MILPERS) and O&M from the logistics programs are included in the logistics cost baseline. These resources are listed in Table D-1.

Table D-1. Logistics Programs ($ millions)

Appropriation	FY97	FY98	FY99	FY00	FY01	FY02	FY03
MILPERS	5,233	5,440	5,924	5,822	5,939	6,046	6,230
O&M	13,528	14,031	13,961	13,841	14,131	14,352	14,570
Revolving and management	1,423	1,104	449	337	369	374	381
Total	20,184	20,575	20,334	20,000	20,439	20,772	21,181

DWCF Purchases Not in Logistics Programs

The second step selects from the DWCF business plans the revenues from DoD appropriated accounts that are reported by the supply (including distribution), maintenance, and transportation business areas as shown in Table D-2.[1]

Table D-2. DWCF Appropriated Orders ($ millions)

Business area	FY97	FY98	FY99	FY00	FY01	FY02	FY03
Supply	20,913	22,683	22,410	22,492	22,939	23,315	23,494
Maintenance	8,377	8,641	7,550	7,186	7,280	7,558	7,610
Transportation	3,804	4,092	3,931	4,147	4,234	4,334	4,455
Total	33,094	35,416	33,891	33,825	34,453	35,207	35,559

Some DWCF purchases in Table D-2 are included in logistics programs. Previous analysis with the OP-32 budget document indicates that the overlap equates to about 25 percent of the O&M resources that are included in the logistics programs. This overlap was also tested with 18 high-value Air Force logistics programs. The programs confirmed the 25 percent overlap. Table D-3 reflects this adjustment.

Table D-3. DWCF Appropriated Orders Not in Logistics Programs ($ millions)

Category	FY97	FY98	FY99	FY00	FY01	FY02	FY03
Total DWCF purchases	33,094	35,416	33,891	33,825	34,453	35,207	35,559
Less 25 percent of O&M	3,382	3,508	3,490	3,460	3,533	3,588	3,643
Total	29,712	31,908	30,401	30,365	30,920	31,619	31,917

Active Military and Civilian Logisticians Not in Logistics Programs or DWCF

To determine civilian and active duty military logistics personnel not in the logistics programs or DWCF, we used the Defense Manpower Data Center database for FY97. The database links personnel to programs in the DoD budget and identifies personnel that have logistics job codes. The database contained 585,045 civilians and active duty personnel that were not in the logistics programs or DWCF.

The Defense Manpower Data Center database contains only personnel information for the current year. To develop estimates for FY98 through FY05, we

[1] These amounts reflect a straight-line extrapolation for four business areas for which we had only FY97 budget data. The business areas are Army Depot Maintenance—Other, Navy Depot Maintenance—Other, Navy Depot Maintenance—Ordnance, and Military Sealift Command.

calculated the ratio of active military and civilian logisticians (not in logistics programs on DWCF) in the manpower database to the total manpower (logisticians and non-logisticians not in logistics programs or DWCF) in the FYDP for FY97. The ratio is applied to total manpower projects in the FYDP for FY98 through FY05 to determine the number of logisticians not previously counted in logistics programs or DWCF. Table D-4 lists the DoD personnel not included in the programs covered by the DoD logistics programs.

Table D-4. Total Active Military and Civilian Manpower Not in Logistics Programs or DWCF

FY97	FY98	FY99	FY00	FY01	FY02	FY03
1,793,832	1,769,151	1,724,103	1,695,167	1,674,550	1,662,357	1,656,501

The ratio for FY97 is presented in Table D-5.

Table D-5. Active Military and Civilian Logisticians as a Portion of Total Personnel Not in Logistics Programs or DWCF (FY97)

Total	Logisticians	Ratio
1,793,832	585,045	0.33

Applying the ratio in Table D-5 to Table D-4 gives the results in Table D-6.

Table D-6. Active Military and Civilian Logisticians Not in Programs or DWCF

Category	FY97	FY98	FY99	FY00	FY01	FY02	FY03
Logisticians	585,045	576,398	561,903	552,460	545,877	541,934	539,921
Cost per manyear	$50,000	$51,400	$53,000	$54,600	$56,200	$57,900	$59,650
Total cost ($ millions)	$29,252	$29,627	$29,781	$30,164	$30,678	$31,378	$32,206

Reserve Logisticians Not in Programs or DWCF

Similarly, the Reserve logistics personnel not in logistics programs for FY97 are 302,651. Table D-7 contains the number of Reserve personnel not in the logistics programs.

Table D-7. Reserve Personnel Not in Programs or DWCF

FY97	FY98	FY99	FY00	FY01	FY02	FY03
882,374	873,591	830,884	820,575	806,413	791,669	790,867

The ratio of Reserve logisticians to total Reserve personnel is presented in Table D-8.

Table D-8. Reserve Logisticians as a Portion of Total Reserve Personnel Not in Programs or DWCF (FY97)

Total	Logisticians	Ratio
882,374	302,651	0.34

Table D-9 presents the final result for Reserve logisticians for the FYDP.

Table D-9. Reserve Logisticians Not in Programs or DWCF

Category	FY97	FY98	FY99	FY00	FY01	FY02	FY03
Logisticians	302,651	299,718	285,605	282,239	277,628	272,846	272,588
Cost per manyear	$10,000	$10,280	$10,600	$10,920	$11,240	$11,580	$11,930
Total cost ($ millions)	$3,027	$3,081	$3,027	$3,082	$3,121	$3,160	$3,252

Logistics Cost Baseline Summary

Table D-10 summarizes the logistics cost for logistics programs, the DWCF, active military and civilian personnel, and Reserve and Guard personnel.

Table D-10. Summary ($ millions)

Category	FY97	FY98	FY99	FY00	FY01	FY02	FY03
Logistics programs	20,184	20,575	20,334	20,000	20,439	20,772	21,181
DWCF purchases not in program elements	29,712	31,908	30,401	30,365	30,920	31,619	31,917
Active military and civilian logisticians	29,252	29,627	29,781	30,164	30,678	31,378	32,206
Reserve logisticians	3,027	3,081	3,027	3,082	3,121	3,160	3,252
Total	82,175	85,191	83,543	83,611	85,158	86,929	88,556

The results of the initial analysis were updated using the FYDP database from the FY00 Program Objective Memorandum. This update is shown in Table D-11 for funding and personnel and is the baseline for the product support cost analysis.

Table D-11. Logistics Funding and Personnel—Updated

Category	FY98	FY99	FY00	FY01	FY02	FY03	FY04	FY05
Funding ($ millions)	$85,110	$83,673	$83,822	$85,197	$87,025	$88,537	$91,213	$93,278
Personnel	1,244,013	1,237,772	1,244,631	1,231,384	1,219,419	1,214,069	1,212,634	1,210,832

PRODUCT SUPPORT RESOURCES

The logistics resource analysis serves as the baseline for the product support analysis. Product support is the part of the logistics resource baseline related to weapon systems and support equipment. The Section 912(c) Report emphasized changes in logistics processes that had the greatest effect on the national level of support. As a result, dividing product support into two parts—national level and operational level—is necessary. National product support is the part of the logistics resources that does not deploy. Operational product support is the part of logistics resources that does deploy. When resources in a single program element (for directly funded logistics programs or DWCF) or major force program (for manpower) support both product support and other logistics functions, resources are allocated 88 percent to product support and 12 percent to other logistics. This allocation is based on the assumption that the resources dedicated to managing, receiving, storing, issuing, and transporting materiel is proportional to the value of the materiel handled. Sales from Service ICPs and DLA hardware centers were assumed to be sales of product support materiel. Sales of clothing, medical, and subsistence materiel were considered to other logistics support materiel. Table D-12 identifies product support sales in each of these areas. This allocation was not applied to all program elements and major force programs, but only to programs that performed both product support and other logistics functions.

Table D-12. Product Support Sales and Other Materiel Sales

DWCF activity group sales	FY97 ($ millions)	Percent
Service ICPs, DLA hardware centers, and fuel	23,736.8	88
Clothing, medical, and subsistence	3,241.3	12
Total	26,978.1	100

By allocating resources to product support and to other logistics when activities are performing both functions, we assume that capital and labor resources are divided by the same 88-12 relationship as the value of the materiel handled. This division is used only for logistics program elements, DWCF activity groups, or manpower in major force programs that handle both types of materiel.

PRODUCT SUPPORT PROGRAM ELEMENTS

Each logistics program element was analyzed and placed in a product support classification or allocated between a product support classification and other logistics resources. Table D-13 shows product support categories for logistics program elements.

Table D-13. Directly Funded Logistics Programs ($ millions)

Category	FY98	FY99	FY00	FY01	FY02	FY03	FY04	FY05
National product support	8,877	8,587	8,697	8,724	8,963	9,094	9,386	9,615
Operational product support	4,258	4,828	4,992	5,013	5,120	5,273	5,418	5,565
Other logistics	7,440	6,919	6,955	7,119	7,266	7,400	7,652	7,867
Total	20,575	20,334	20,644	20,856	21,349	21,767	22,456	23,047

DWCF PRODUCT SUPPORT

The DWCF analysis covered four activity groups: supply, distribution, maintenance, and transportation. The supply and distribution activity groups are divided 88 and 12 percent between national product support and other logistics resources respectively. The maintenance activity group is all national-level product support. The transportation activity group is considered strategic lift and is placed in other logistics resources. The cost of moving materiel in support of weapon systems or support equipment is considered second destination transportation and is a directly funded logistics program. Table D-14 shows product support categories for the DWCF.

Table D-14. DWCF Product Support ($ millions)

Category	FY98	FY99	FY00	FY01	FY02	FY03	FY04	FY05
National product support	25,851	24,544	24,160	24,647	25,186	25,362	26,195	26,582
Other logistics	6,141	5,940	6,128	6,267	6,395	6,520	6,750	6,862
Total	31,992	30,484	30,288	30,914	31,581	31,882	32,945	33,444

MANPOWER PRODUCT SUPPORT

Manpower costs not included in logistics programs or in the DWCF are allocated between product support categories on the basis of major force program. The allocation is made in Table D-15.

Table D-15. Allocation of Product Support Manpower

No.	Major force program title	National product support (%)	Operational product support (%)	Other logistics (%)
1	Strategic Forces	–	88	12
2	General Purpose Forces	–	88	12
3	Command, Control, Communications, Intelligence, and Space	–	88	12

Table D-15. Allocation of Product Support Manpower (Continued)

No.	Major force program title	National product support (%)	Operational product support (%)	Other logistics (%)
4	Mobility Forces	–	88	12
5	Guard and Reserve Forces	–	88	12
6	Research and Development	–	–	100
7	Central Supply and Maintenance	88	–	12
8	Training, Medical, and Other Personnel Accounts	–	–	100
9	Administration and Associated Activities	–	–	100
10	Support of Other Nations	–	–	100
11	Special Operations Forces	–	88	12
–	Unknown	4	68	28

The results of this allocation are presented in Table D-16. Because the manpower costs are external to logistics programs and the DWCF, they are predominately logistics costs associated with operational units.

Table D-16. Manpower Costs Not in Logistics Programs or DWCF ($ millions)

Category	FY98	FY99	FY00	FY01	FY02	FY03	FY04	FY05
National product support	1,305	1,318	1,322	1,342	1,367	1,397	1,428	1,460
Operational product support	22,153	22,347	22,327	22,673	23,121	23,655	24,288	24,956
Other logistics	9,087	9,191	9,241	9,411	9,608	9,837	10,098	10,372
Total	32,545	32,856	32,890	33,426	34,096	34,889	35,814	36,788

PRODUCT SUPPORT SUMMARY

Table D-17 is a summary of the total logistics costs by category.

Table D-17. DoD Summary ($ millions)

Category	FY98	FY99	FY00	FY01	FY02	FY03	FY04	FY05
National product support	36,033	34,449	34,179	34,713	35,516	35,853	37,009	37,657
Operational product support	26,411	27,175	27,319	27,686	28,241	28,928	29,706	30,521
Other logistics	22,668	22,050	22,324	22,797	23,269	23,757	24,500	25,101
Total	85,112	83,674	83,822	85,196	87,026	88,538	91,215	93,279

Appendix E
Pilot Programs

PMOLCS pilots are listed in Table E-1. The Military Services reported that 28 of the 30 pilots are using or will use product support reengineering strategies.

Table E-1. Pilot Programs

Name	Military Service	Product support
AH-64 Apache Prime Vendor Support	Army	X
M-1 Abrams	Army	X
M109 Family of Vehicles	Army	X
Advanced Field Artillery Tactical Data System	Army	X
Crusader Advanced Field Artillery System	Army	X
Heavy Expanded Mobility Tactical Truck System	Army	X
Multiple Launch Rocket System High Mobility Artillery Rocket System	Army	X
RAH-66 Comanche	Army	X
M113 Family of Armored Vehicles	Army	X
Tube-Launched, Optically Tracked Wire-Guided Missile System Improved Target Acquisition System	Army	X
Aviation Support Equipment (including Consolidated Automated Support System)	Navy	X
AN/BQQ-10 Acoustic Rapid Commercial Off-the-Shelf Insertion	Navy	X
Standoff Land Attack Missile Expanded Response	Navy	X
Meteorological and Oceanographic Systems (Shipboard Meteorological and Oceanographic Observing Systems)	Navy	X
Airborne Mine Countermeasures (Advanced Airborne Mine Countermeasures Equipment)	Navy	X
Rapid Idea Prototyping Program with Integrated Technology	Navy	X
EA-6B Prowler	Navy	X
AEGIS Combat Systems Weapons Systems Modifications	Navy	X
Advanced Amphibious Assault Vehicle	Navy	X
H-60 Helicopter	Navy	X
F-16 Fighter Falcon	Air Force	X
Space-Based Infrared System	Air Force	
B-1 Lancer	Air Force	X
C-5 Galaxy	Air Force	X
F-117A Nighthawk	Air Force	X

Table E-1. Pilot Programs (Continued)

Name	Military Service	Product support
C/KC-135 Stratolifter/Stratotanker	Air Force	X
Cheyenne Mountain Complex Integrated Space Command and Control Program	Air Force	X
Airborne Warning and Control System	Air Force	
Joint Surveillance and Target Attack Radar System	Air Force	X
C-17 Globemaster III	Air Force	X

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Appendix G
Product Support Initiatives

Table G-1 lists DoD product support initiatives.

Table G-1. Product Support Initiatives

Component	Initiative title
Army	
	Abrams Electronic Muzzle Reference Sensor
	Abrams Integrated Management
	Apache Prime Vendor Support
	Army Technical Manuals
	Army Total Asset Visibility
	Consolidation of Routing Identifier Code and Commodity Command Standard System Files
	Crusader Contractor Life-Cycle Support
	Depot Repair Process Improvements
	Direct Vendor Delivery and Electronic Data Interchange
	Dormant Stock
	Flexible Long-Term Contracting: TRI-TAC Sole Source Items
	Flexible Computer Integrated Manufacturing
	Flexible Long-Term Contracting
	Focused Sustainment
	Government-Contractor Concurrent Spare Parts Support
	Integrated Sustainment Maintenance
	Interservice Materiel Accounting and Control System
	Integrated Sustainment Maintenance HET/HEMTT Engine Conversion
	Lead-Time Reduction
	Lithium Manganese Dioxide Pouch Batteries
	Logistics Integrated Data Base
	Logistics Optimized Government Support
	Logistics Reinvention Initiatives
	M109 Family of Vehicles Fleet Management
	Modernization Through Spares
	Operations and Support Cost Integrated Process Team
	Paperless Fielding
	Paperless Procurement Work Directive System
	Partnership for Reducing Operating and Support Engine

Table G-1. Product Support Initiatives (Continued)

Component	Initiative title
Army	
	Rechargeable Batteries
	Revise Maintenance Service Intervals
	Shared Data Environment with Industry
	Single Stock Fund
	Telemaintenance
	Telemaintenance/Real-Time Maintenance
	Value Concepts
	Virtual Integrated Materiel Management Center
	Wholesale Logistics Modernization Program
DLA	
	Automotive Prime Vendor Overseas
	Bell Helicopter Contract
	Boeing Helicopter Contract
	Boeing-Seattle Contract SP040097D9402
	Central Depot Concept
	Demilitarization Centralization and Management
	DLSC 21/Virtual Inventory Control Point
	DoD Electronic Mall
	Defense Supply Center Richmond Electronic Catalog Program
	Electronic Product Data Management
	Fleet Automotive Support Initiative
	HAC Corporation, C-141 Spoilers, SP046097D4062
	Industrial Prime Vendor
	Interactive Electronic Technical Manual Interoperability
	Joint Total Asset Visibility
	M9 Armored Combat Earthmover Support Initiative
	Medium Tactical Vehicle Replacement
	Past Performance Automated Information System
	Submarine Base Kings Bay Technical Library
	Technical Data Management System
	Workload Reduction
Air Force	
	Agile Logistics (formerly known as Lean Logistics)
	Aircraft Repair Enhancement Program
	Advanced Medium Range Air-To-Air Missile Reduction in Total Ownership Cost
	Commercial Contracting Practices
	Consolidated Serviceable Inventory and Performance-Based Requirements
	Contract Repair Enhancement Program

Table G-1. Product Support Initiatives (Continued)

Component	Initiative title
Air Force	
	Corporate Contracts
	Depot Repair Enhancement Program
	Engine Regionalization Repair Center
	Execution and Prioritization of Repair Support System
	F-117 Reduction in Total Ownership Cost
	F-16 Reduction in Total Ownership Cost
	HQ Air Force Special Operations Command Logistics Reengineering
	In-Transit Visibility Standardization, Tracking, and Readiness
	Increased Depot Maintenance Privatization
	Integrated Digital Environment for Major End Items
	Integrated Maintenance Data System
	Maintenance Standardization and Readiness Program
	Materiel Resource Planning
	Pipeline Tracking Analysis and Metrics System
	Reengineering Supply Support Process
	Reliability Centered Maintenance Demonstration
	Reliability, Maintainability, Deployability, and Cost of Ownership Analysis for Air Mobility Command
	Requirements Management System
	Virtual Prime Vendor
	Warner Robins Air Logistics Center Contract Repair Prototype
Marine Corps	
	AAV RAM to Standards
	Aircraft Corrosion Control Program
	Alternate Power Source for Communication Equipment Test
	Asset Tracking Logistics and Supply System II+
	Automatic Identification Technology
	Automating Increased Echelon of Maintenance Requests
	Cash Management
	Communication and Electronic Rechargeable Batteries
	Competitive Sourcing Functions
	Computer System Standards
	Daily Supply Requisition Cycle
	Direct Delivery
	Electronic Partners for Aircraft Maintenance
	Equipment Maintenance Assistance Team System
	Global Electronic Contracting
	Ground Equipment Maintenance Organizational and Methodology Study

Table G-1. Product Support Initiatives (Continued)

Component	Initiative title
Marine Corps	
	In-Theater Logistics Footprint
	Integrated Maintenance Concept
	ISO 9000 Implementation
	Logistics Command and Control
	Maintenance Automation Project
	Maintenance Depot Competition
	Maintenance Depot Program Management Department
	Materiel Fielding System
	Night Vision Goggles Direct Vendor
	Paperless Contracting
	Paperless Technical Assistance Reports
	Product Data Reporting and Evaluation Program
	Reduce Operating Stocks
	Reparable Assets Management Automation
	Secondary Repairables Process Test
	Stock Funded Inventories Replacement
	Storage, Retrieval, Automated Tracking, Integrated System
	Total Asset Visibility
	Total Ownership Costs System
	Vehicle Battery Program
	War Reserve Requirements
	Wartime Responsiveness Model and Methodologies
	Wholesale Logistics Response Time
	Written Instructions Request On-Line Process Handler
Navy	
	Automated Information Technology
	Commercial Operating and Support Savings Initiative
	Consolidation and Direct Delivery
	Consumable Aviation Allowance Product
	Contractor Logistics Support
	Direct Vendor Delivery
	DLA Savings Through Value Enhancement Program
	Department of Navy Enterprise Investment Council
	Inventory Control Point Consolidation
	Inventory Reduction—Wholesale
	Logistics Response Time Reduction
	Logistics Engineering Change Proposals

Table G-1. Product Support Initiatives (Continued)

Component	Initiative title
Navy	
	Long-Term Contracting (Corporate Contracting)
	Manufacturing Resource Planning II
	Mini Stock Point
	Multi-Echelon/Multi-Indenture Readiness-Based Sparing
	Naval Air Systems Command Affordable Readiness
	Naval Supply Systems Command Virtual Bidroom
	Navy Electronic Commerce On-Line
	Naval Surface Warfare Center Technical Manuals
	One Touch Supply
	Paperless Processing—Digitizing Technical Data
	Paperless Processing—Paperfree Acquisition
	R-Supply
	Readiness-Based Sparing
	Readiness Support Center
	Reliability-Centered Maintenance—Submarine Air Purification System
	Retail Inventory Reduction Initiatives
	Serial Number Tracking
	Strategic Wholesale Inventory Positioning in Japan
	Submarine Maintenance, Engineering, Planning, and Procurement Activity
	Technical Manual Publish on Demand System
	Unfunding Aviation Shore-Based Consolidated Allowance List at Fleet and Industrial Supply Center Yokosuka
	Variable Surcharge

Appendix H
Abbreviations

3PL	third-party logistics
AF	Air Force
AFMC	Air Force Materiel Command
AMC	Army Materiel Command
ANSI	American National Standards Institute
ASA	Assistant Secretary of the Army
ASD(C3I)	Assistant Secretary of Defense (Command, Control, Communications, and Intelligence)
ATLASS	Asset Tracking Logistics and Supply System
BCA	business case analysis
BCP	best commercial practice
CINC	commander in chief
CLS	contractor logistics support
CONUS	continental United States
COSSI	Commercial Operating and Support Savings Initiative
COTS	commercial-off-the-shelf
CTR	continuous technology refreshment
CWT	customer wait time
DAU	Defense Acquisition University
DCMC	Defense Contract Management Command
DCSLOG	Deputy Chief of Staff for Logistics
DISA	Defense Information Systems Agency
DLA	Defense Logistics Agency
DLSC	Defense Logistics Support Command
DoD	Department of Defense
DoDIG	Department of Defense Inspector General
DOT&E	Director, Operational Test and Evaluation

DRI	Defense Reform Initiative
DRID	Defense Reform Initiative Directive
DSAC	Defense Systems Affordability Council
DUSD	Deputy Under Secretary of Defense
DUSD(AR)	Deputy Under Secretary of Defense (Acquisition Reform)
DUSD(I&CP)	Deputy Under Secretary of Defense (International and Commercial Programs)
DUSD(L)	Deputy Under Secretary of Defense (Logistics)
DUSD(L)/MDM	Assistant Deputy Under Secretary of Defense (Logistics) for Materiel and Distribution Management
DUSD(L)/MP	Assistant Deputy Under Secretary of Defense (Logistics) for Maintenance Policy, Programs, and Resources
DVD	direct vendor delivery
DWCF	Defense Working Capital Fund
EC	electronic commerce
EDI	electronic data interchange
F^3I	form-fit-function interface
FLOW	Focused Logistics Wargame
FMR	Financial Management Regulation
FY	fiscal year
FYDP	Future Years Defense Program
GAO	General Accounting Office
GCSS	Global Combat Support System
HQ	Headquarters
ICP	inventory control point
IPR	in-process review
IPT	integrated process team
IPV	Industrial Prime Vendor
IT	information technology
J-1	Director for Manpower and Personnel
J-4	Director for Logistics
JALB	Joint Aviation Logistics Board

JCS	Joint Chiefs of Staff
JECPO	Joint Electronic Commerce Program Office
JIT	just-in-time
JTAV	Joint Total Asset Visibility
LRO	Logistics Reinvention Office
LRSSG	Logistics Reform Senior Steering Group
LRT	logistics response time
MILPERS	military personnel
MILS	military standard
MRO	maintenance, repair, and operations
MTS	Modernization Through Spares
O&M	operations and maintenance
O&S	operating and support
OEM	original equipment manufacturer
OMB	Office of Management and Budget
OSD	Office of the Secretary of Defense
PA&E	Program Analysis and Evaluation
PDUSD	Principal Deputy Under Secretary of Defense
PE	program element
PEO	Program Executive Officer
PM	program manager
PMOLCS	program manager oversight of life-cycle support
POM	Program Objective Memorandum
PSA	Principal Staff Assistant
PV	Prime Vendor
R&D	research and development
RM&S	reliability, maintainability, and sustainability
R-TOC	Reduction of Total Ownership Cost
SAE	Service Acquisition Executive
SSG	Senior Steering Group
SUP 21	Reengineering Naval Supply
TAV	total asset visibility

TOC	total ownership cost
TPFDD	time-phased force deployment data
USALIA	United States Army Logistics Integration Agency
USAF	United States Air Force
USC	United States Code
USCENTCOM	United States Central Command
USD(A&T)	Under Secretary of Defense (Acquisition and Technology)
USD(A&T)/API	Under Secretary of Defense (Acquisition and Technology)/Acquisition Program Integration
USD(P&R)	Under Secretary of Defense (Personnel and Readiness)
USMC	United States Marine Corps
USTRANSCOM	United States Transportation Command
VPV	Virtual Prime Vendor
WCF	working capital fund