The Defense Science Board
1998 Summer Study Task Force

on

DOD LOGISTICS TRANSFORMATION

Volume I
Final Report

December 1998

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DEFENSE SCIENCE
BOARD

JAN 1 8 1999

MEMORANDUM FOR UNDER SECRETARY OF DEFENSE (ACQUISITION AND TECHNOLOGY)

SUBJECT: Report of the Defense Science Board (DSB) Summer Study on DOD Logistics Transformation

I am pleased to forward the Final Report of Summer Study on DOD Logistics Transformation. This study was co-chaired by Phil Odeen and Bill Howard. It positively responds to DOD'S need to transform logistics to be prepared for 21St Century adversaries.

The Study initially aggregated their guidance into five areas of assessment: demand reduction and management; supply acceleration and management; leadership requirements; logistics information system requirements; and, asymmetric logistics vulnerabilities (CBW, IW, EW).

Three key things are identified in this study: there is a need to designate the DUSD(L) as a "Logistics System Architect" to reform multiple facets of the logistics arena; Logistics Transformation should be made a Defense Reform Initiative to ensure it has senior level support; and, finally that with a transformed logistics system, significant funds can be freed to pursue needed force modernization.

The Task Force has proposed clear and concise recommendations that can be quickly implemented. I concur with those recommendations and recommend that you review the Chairman's letter, and forward the study to the SecDef.

Craig I. Fields
Chairman

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DEFENSE SCIENCE BOARD

JAN 11 1999

MEMORANDUM FOR THE CHAIRMAN, DEFENSE SCIENCE BOARD

SUBJECT: Report of the Defense Science Board (DSB) Summer Study on DOD Logistics Transformation

Attached is the final report of the Summer study. The Summer Study was tasked to recommend actions to be taken that achieve "a true transformation – not marginal improvements" to the U.S. military logistics system. The study defines that "transformation in military logistics" as "a marked change in the nature and form of the structure and processes that equip, deploy and sustain military operations ."

The DOD Logistics Transformation Task Force worked in concert with the DSB's second 1998 summer study, Joint Operations Superiority in the 21st Century, (co-chaired by General Larry Welch, USAF-Ret and Mr. Donald Latham).

The Study emphasizes seven points:

- As concluded in the Joint Operations Superiority Summer Study, the principal operational challenge facing the U.S. military in the 21st Century is strengthening and preserving its capability for early, then continuous, application of dominant control effects across the full spectrum of conflict.
- The military logistics system is a critical enabler of deployment, then sustainment, of dominant full spectrum engagement effects.
- Today's U.S. military suffers from a separation of logistics from operations, an organizational principle of long standing, and a reliance on mass, rather than efficiency and certainty, to be effective. As now configured, the logistics system frequently constrains operations and drains scarce resources needed for force modernization.
- Failure to seamlessly blend military logistics with operations will be a showstopper for DOD's planned "Revolution in Military Affairs (RMA)"– a situation that demands immediate action.
- DOD must recognize that logistics transformation is a "BIG DEAL . . . a VERY BIG DEAL." Continuing to regard logistics as the secondary "tail" to warfighter doctrine, training and armament will have unacceptable consequences in the 21st century battlespace resulting in decreased ability to achieve national security objectives and cost.

- The military logistics system can be reformed. A "Transformed Logistics System" can be responsive to CINC (Joint Task Force Commander) needs, support rapid closure of combat power, permit a smaller footprint – both people and equipment, be more agile, responsive and survivable than today's system, fully integrate business processes and information systems, be well integrated with industry, and be significantly less expensive.

Transformation of the military logistics system is not deterred by knowledge of what to do, not primarily a structural issue, nor is it limited by lack of people, technology or resources. Instead, the most significant barrier to logistics change to meet 21st century needs is the lack of an overall business and information systems architecture focal point – a "champion" in the Arthurian sense.

The study's findings and recommendations are spelled out in five areas:

- Unified and specified CINCs are unable to perform their Title 10 responsibilities to plan and manage theater logistics. CINCs must be able to "pull" required support from the logistics system.
- DOD's logistics system is fragmented with no end-to-end control, integration, performance measures and accountability. Transformation of logistics business and information systems must be led by a Logistics Systems Architect with power to define and enforce an integrated system. We recommend that the USD(L) be designated this "Architect."
- Deployment and sustainment methods and equipment must change. Ability to deploy in undeveloped areas and under unfavorable conditions must improve; better use of commercial capability is needed.
- Decreasing logistics demand is a major element of cutting cost and improving flexibility. Force structure and weapons systems and equipment must be upgraded to reduce consumption.
- Logistics vulnerabilities need more attention. Exercises and plans must anticipate and deal with physical and information attacks on the logistics system.

Logistics Transformation should be made a Defense Reform Initiative. There are opportunities to save and redistribute billions to modernization.

Philip A. Odeen
Co-Chair

William G. Howard
Co-Chair

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FORWARD

This report summarizes the work of the Defense Science Board Summer Study Task Force on DOD Logistics Transformation. The study is comprised of two volumes.

Volume 1 contains a brief Executive Summary, the Task Force briefing charts with facing page text, followed by several appendices. Appendix A contains the Summer Study Terms of Reference. Appendix B lists the members and government advisors to the study. Appendix C is a Glossary of acronyms. Appendix D is a list of the briefings presented to the Task Force and the sub-panels. Volume 1 is the summary of the findings and recommendations of the task Force.

Volume 2 contains the sub-panels reports of the Task Force. The Task Force examined four major areas in preparation of the final report: Requirements; Deployment; Sustainment; and, New Capabilities, Each of these reports summarizes the work of that panel. Panel findings and recommendation in these reports, are those of the panel, and may or may not be incorporated into the final report in Volume 1.

EXECUTIVE SUMMARY

The 1998 Defense Science Board Logistics Transformation Summer Study was tasked to recommend actions to be taken that achieve "a true transformation – not marginal improvements" to the U.S. military logistics system. The DSB defines a "transformation in military logistics" as "a marked change in the nature and form of the structure and processes that equip, deploy and sustain military operations."

The DOD Logistics Transformation Task Force worked in concert with the DSB's second 1998 summer study, Joint Operations Superiority in the 21st Century, (co-chaired by General Larry Welch, USAF-Ret and Mr. Donald Latham).

The DSB Summer Study on DOD Logistics Transformation emphasizes seven points:

- As concluded in the Joint Operations superiority Summer Study, the principal operational challenge facing the U.S. military in the 21st Century is strengthening and preserving its capability for early, then continuous, application of dominant control effects across the full spectrum of conflict.

- The military logistics system is a critical enabler of deployment, then sustainment, of dominant full spectrum engagement effects.

- Today's U.S. military suffers from a separation of logistics from operations, an organizational principle of long standing, and a reliance on mass, rather than efficiency and certainty, to be effective. As now configured, the logistics system frequently constrains operations and drains scarce resources needed for force modernization.

- Failure to seamlessly blend military logistics with operations will be a showstopper for DOD's planned "Revolution in Military Affairs (RMA)" – a motivation that demands immediate action.

- DOD must recognize that logistics transformation is a "BIG DEAL . . . a VERY BIG DEAL." Continuing to regard logistics as the secondary "tail" to warfighter doctrine, training and armament will have unacceptable consequences in the 21st century battlespace resulting in decreased ability to achieve national security objectives and cost.

- The military logistics system can be reformed. A "Transformed Logistics System" can be responsive to CINC (Joint Task Force Commander) needs, support rapid closure of combat power, permit a smaller footprint – both people and equipment, be more agile, responsive and survivable than today's system, fully integrate business processes and information systems, be well integrated with industry, and be significantly less expensive.

Transformation of the military logistics system is not held up by knowledge of what to do, not primarily a structural issue, nor is it limited by lack of people, technology or resources. Instead, the most significant barrier to logistics change to meet 21st century needs is the lack of an overall business and information systems architecture focal point – a "champion (in the Arthurian sense).

The study's findings and recommendations are spelled out in five areas:

- Unified and specified ClNCs are unable to perform their Title 10 responsibilities to plan and manage theater logistics. ClNCs must be able to "pull" required support from the logistics system.

- DOD's logistics system is fragmented with no end-to-end control, integration, performance measures and accountability. Transformation of logistics business and information systems must be led by a Logistics Systems Architect with power to define and enforce an integrated system.

- Deployment and sustainment methods and equipment must change. Ability to deploy in undeveloped areas and under unfavorable conditions must improve; better use of commercial capability is needed.

- Decreasing logistics demand is a major element of cutting cost and improving flexibility. Force structure and weapons systems and equipment must be upgraded to reduce consumption.

- Logistics vulnerabilities need more attention. Exercises and plans must anticipate and deal with physical and information attacks on the logistics system.

Unified or Specified CINCs are unable to perform their Title 10 responsibilities to plan and mange theater logistics. CINC needs must drive the logistics process. He should have an in-theater logistics component commander to manage all common support / services in theater (peacetime training and war). The logistics component commander must report directly to the theater CINC. DOD should experiment with the JFACC model (task a service component commander).

Today, Services push initial deployment supplies to a theater with little CINC / theater planning and control. Unnecessary materiel clogs the lift and supply pipeline. This, in turn, creates an unnecessary sustainment burden. Combat forces lack confidence in the logistics system to supply their needs and insist on creating vast stockpiles of materiel before commencing operations.

DOD must improve the theater CINC's logistics information tools. These tools must provide dynamic planning / simulation capability, ability to specify deployment / sustainment packages, do consequence analysis, and be able to change "on-the-fly."

DOD's logistics System is fragmented; it has no end-to-end control, integrated performance and accountability. DOD lacks an overall vision of how to convert its logistics system to the needs of JV2010. A master functional overhaul of today's system is prerequisite to achieving "focused logistics and beyond."

Major corporations (including Caterpillar, Procter and Gamble, DuPont, Cisco, Wal-Mart, FedEx and Boeing) have been able to gain competitive leadership through world class logistics systems. They have re-engineered their business and information systems to support business goals. Commercial experience shows that tools and practices must be developed together.

The SECDEF should designate the DUSD(L) as the DOD Logistics System Architect to define system-wide functional performance and cost goals, lead in integrating logistics practices / supply chain management, develop a functional and technical architecture and execution roadmap, ensure that logistics fully integrates with operations, develop / manage the central implementation / transformation plan through decentralized implementation, and, finally, control funding, establish and monitor performance to the plan for Logistics System Transformation.

The USD(L), working as the Architect, and reporting directly to USD(A&T), would work closely with Service / Agency / CINC logistics leadership and industry logistics management leaders. The Architect should be affirmed by the Chairman, JCS.

The USD(L), as architect, must design a system for logistics based on best commercial practice and military needs using functional specifications, metrics, and warfighter requirements (outcomes). The architecture is envisioned as evolutionary model – one that adapts to operations concepts and requirements. A supporting

information tool concept and configuration model, with supporting technical interface standards and domain-peculiar requirements, should be directly tied to the architecture. The system should run in Common Operating Environment (COE) and employ principles of Open Systems for information acquisition and sharing.

Changing how we deploy and sustain is necessary. Only very light forces are deployable in days, Significant land-based combat power depends on PREP0 or ocean shipping (weeks to close). Limited capability of over-the-shore and primitive port techniques and equipment are a major limitation and risk. Deployment planning systems are inflexible and slow; data are often inaccurate and out-of-date. Responsibility for the process is fragmented, with many seams.

This study recommends that DOD:

- Tailor forces to probable lift capabilities; execute Defense Reform Initiative Decisions (DRIDs) to create unified movement system with authority to influence transportation systems acquisition.

- Exploit commercial lift to meet future requirements by using the growth in the civil airlift fleet to support strategic deployment. DOD should enhance CRAF to meet military requirements (such as door width and height, deck height and floor strength), and make CRAF use a key design criterion for land forces equipment.

- Support alternatives to delivery through fixed ports to facilitate operations in undeveloped areas. Support should be given to the Joint Logistics Over the Shore (JLOTS) initiative to create a Sea State 3+ capability. This would yield a 20 percent to 180 percent operating time improvement.

Decreasing logistics demand is key to cutting costs and improving effectiveness. There is a big payoff both in combat response and lower cost for early entry and continuous combat through faster combat forces deployment, smaller footprint in theater and more agile forces. Logistics demand reductions will also reduce the sustainment burden, further compounding demand reduction.

Demand reduction recommendations focus on lighter force structure, low consumption platforms development and other demand reduction techniques:

Force size and weight must reduced (along the lines of the Army After Next (AAN), Smart Ship, and the Air Force Expedition Forces) despite cultural barriers (against unmanned platforms, missiles versus artillery, and traditional crew size, for instance).

- Research and development should be directed at “agile force” platforms that require less field support.

- DOD should hold program mangers responsible for Total Owners Cost of both new and legacy platforms.

- Demand reduction should be a significant objective of the JROC / PPBS. DOD should invest to reduce life-cycle costs, improve reliability, maintainability, lower fuel / ammo / power consumption and decrease weight and crew size.

- DOD should competitively source weapons systems and equipment support above the unit level.

Logistics vulnerabilities need more attention. Logistics systems and nodes are particularly inviting targets to adversaries, and ranks with urban environments as a place for exploitation with minimum effort. The spectrum of logistics node threats is very broad and includes both adversary actions and the environment. Adversary

actions of concern include IW / EW against logistics communications and data, chem / bio attack on logistics nodes, opposed delivery (mines, subs) disruption of ports and airfields (both in theater and CONUS). Environment threats include high seas and winds, undeveloped ports and airfields, civil disruption (e.g., refugees), natural disasters, and inadequate civil response (i.e., other agencies).

Considerable attention has been paid to logistics vulnerability since 1990, but much remains to be done. Planning limits the impact of anticipated conventional attacks. The most vulnerable points are airlift takeoff and landing areas, PREPO sites, and civilian infrastructure. Serious vulnerabilities remain for concerted Special Operations Force (SOF) - like attack (on PREPO afloat, DLA Centers, supporting infrastructure and infrastructure). Sophisticated IW / CBW attacks could be devastating to logistics.

To address these concerns, the CJCS should: direct J4 to comprehensively review logistics / PREPO vulnerability and report results to SECDEF within 9 months; include Red Team assaults against logistics in wargames and simulations for both joint and service exercises; apply the same IW standards to logistics as are in use for other C^{3}I systems; and direct J4 action to assure the logistics-unique aspects of CBW are accounted for in planning.

COST Implication: The cost implications of these recommendations are about a $1 billion to the DOD budget, before logistics savings are counted. Logistics saving implications are approximately $10 Billion.

Issue *Addressed 1996 SS	End-State Cost Savings	Investment	Impact
1. *Strengthen CINC Pull**	Significant inventory reduction $1-2 B	Planning tools, prognostics, etc $150M per year	Greatly enhanced theater log support, and responsiveness; reduced footprint
2. Designate USD(L) as the Logistics Architect *Develop an integrated process and system**	Potential for: 10-15% direct labor; 15-30% indirect ($3-$6B); 5-15% non-labor ($1-3B)	Studies, focused systems, tools, etc--$140 M; Execute systems modernization within current systems $1.8 B budget	Ability to achieve "focused logistics"; true JTF supportability; Platform for continuous modernization; "Truly a national asset"
3. Commercial Lift Capabilities	Avoid future military lift investment	$100 M/year	Greatly increased lift and reduced need for military lift assets
4. *Demand Reduction**	$1-2 B / Year	R&D, reliability enhancements $500 M / year	Faster deployment of combat capability, smaller footprint, more flexibility, less maintenance; reduced lift burden, and military lift investment
5. Vulnerability	Opportunity Cost	$100 M / year	Avoid casualties and loss of assets: reduced risk to military support

The savings can be achieved and a Transformed Logistics System can be implemented. The SECDEF should consider making Logistics Transformation a Defense Reform Initiative

Annotated Briefing Slides
DOD Logistics Transformation

SLIDE 1 — Title Cover Sheet

The 1998 Defense Science Board Logistics Transformation Summer Study was tasked to recommend actions to achieve "a true transformation — not marginal improvements" to the US military logistics system. As defined by the DSB:

> "Transformation in military logistics is a marked change in the nature and form of the structure and processes that equip, deploy and sustain military operations."

Working in concert with the DSB's second 1998 Summer Study on Joint Operations Superiority in the 21st Century (co-chaired by General Larry D. Welch, USAF-Ret, and Mr. Donald C. Latham), the DSB Summer Study on DOD Logistics Transformation emphasizes seven points:

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Defense Science Board
Summer Study Task Force
Logistics Transformation

Co-chairs:

Phil Odeen Bill Howard

Logistics Transformation:Key to Full Spectrum Engagement

SLIDE 2 — Overview

The 1998 Defense Science Board Summer Study on Logistics Transformation was charged by the USD (A and T) on March 24,1998, to assess the logistics support requirements of the 21st century warfighter (JV2010 and beyond) and provide recommendations to attain "a true transformation – not marginal improvements" – to the military logistics system. Building on the 1996 DSB Task Force reports on Logistics Modernization and Strategic Mobility, this 1998 DSB Task Force further focused on logistics system cost reduction.

The DOD investment plans assessed by the 1996 DSB Logistics Modernization study continue to demonstrate a critical gap between unmet force structure modernization needs and escalating support and infrastructure costs. Task Force assessments of the 21st century military environment projected out to 2025 reinforce that this gap will continue to widen, with concomitant degradation of future combat capabilities, unless a comprehensive implementation approach to currently planned Focused Logistics (JV2010) and beyond logistics objectives is undertaken.

Beyond calling for a "true transformation" of the military logistics system, the Terms of Reference guidance provided to the Task Force was comprehensive. The USD(A and T) asked the Task Force to address:

- Use of commercial best practices and modern, commercial concepts
- "Smaller footprint"
- Implications of contractors "on the battlefield"
- Coalition operations and 3rd country support
- Adequacy of lift and ports
- Security against WMD
- Technology/IT to link combat and logistics
- Simulations to make logistics trades
- Activity based costing and management
- Metrics
- Funding and implementation
- And assess progress in implementation of the 1996 DSB logistics studies

The Task Force initially aggregated this guidance into five areas of assessment:

- Demand reduction and management
- Supply acceleration and management
- Asynchronous logistics vulnerabilities (CBW, IW, EW)
- Logistics information system requirements
- Leadership requirements

The Task Force further focused on logistics processes, measures, metrics, and implementation.

The Task Force study was configured by two initial observations. First, the current military logistics system, while ultimately effective for the most part, relies on mass rather than efficiency' to accomplish its support mission. This logistics mass constrains tactics and its cost absorbs a disproportionate part of the declining defense budget critically needed for force modernization. The Task Force recognizes and lauds the numerous ongoing and planned logistics improvements' many individually excellent' that are receiving attention by the Department or individual Services or Defense Agencies' but finds that fragmentation and lack of a systemic approach' do not add up to true logistics transformation and will not maximize needed logistics cost reductions.

The Task Force's second initial observation was that to achieve transformation in the logistics system, an extraordinary leadership commitment at the highest levels must direct and manage an implementation architecture which can move the military logistics system from a Cold War system and infrastructure to a true logistics transformation. The logistics transformation leadership challenge is more complex, involves more dollars and demands an order of magnitude more leadership attention than any major weapon system. Over the next 10 years, the department will spend $800 billion on its military logistics system. It is past time to transform it.

Overview

Defense Science Board
1998 Summer Study

- *The need*
  - To improve logistics system support to the 21st century warfighter while significantly reducing logistics costs
- *The tasking (from TOR)*
  - To achieve a true transformation--not marginal improvements -- to the logistics system
- *DSB study observations*
  - Current logistics improvements, while many are excellent, won't transform logistics, significantly enhance performance or maximize cost reduction
  - The transformation leadership challenge is orders of magnitude more complex than a major weapon system ($800B business over 10 years)

SLIDE 3 — Logistics Transformation: Key to Early and Continuous Combat Capability

The Defense Science Board sponsored two Summer Studies in 1998. This chart is an adaptation of a chart from the second study which focused on Joint Operations Superiority in the 21st century. For the Task Force study on Logistics Transformation for the 21st century, two changes were made in the other study's chart and one was made to add emphasis.

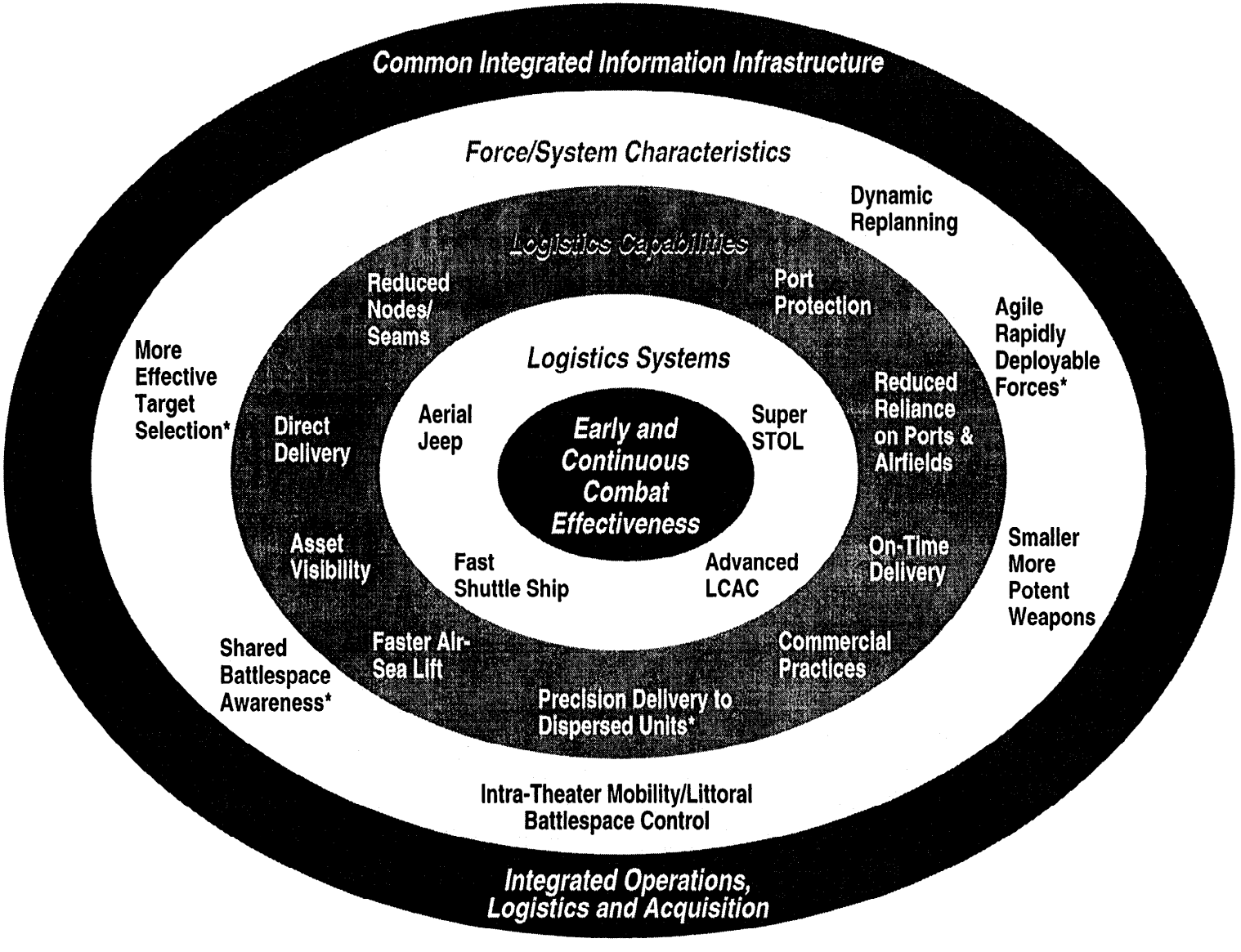
First, on the outer ring, the "acquisition" process was added as a critical element to integrating military logistics with military operations. The marriage of logistics support with operational ability, while critical, has a beginning and that is with requirements definition and acquisition of all things that support, move with, or sustain the war-fighter. The ability to achieve logistics transformation rests on ensuring a logistics system that operates seamlessly at the same TEMPO as war-fighting requirements and is an inseparable part of all DOD planning and execution business processes, not the least of which is the acquisition process. Unfortunately, today, the Department's requirements determination, planning, doctrine, training, simulation, financial and accounting, and procurement processes do not adequately integrate the logistics system into top level decision-making, resulting in a disconnect of the "tail" from the "tooth" and missed trade-off opportunities.

Second, the ring on "logistics capabilities" was highlighted to draw further focus to the inner ring on "logistics systems". Department leadership attention should focus on the fact, as depicted on this target chart, that the key to achieving the required war-fighting capability for the 21st century ("early and continuous combat effectiveness" across the full conflict spectrum) relies heavily, critically on the ability to provide, move, and sustain that capability. If those logistics capabilities and systems are not present, they become the decisive inhibitors, not critical enablers to the Department's planned "Revolution in Military Affairs". In short, logistics transformation to meet the demands of the 21st century is not an option; it's essential.

Beyond these two important areas of focus on this slide, it must be emphasized that the military logistics system must mirror the force/system characteristics depicted on the second outer ring. Of priority to the Department must be the ability of the logistics system for "dynamic replanning". An operational ability to plan and fight "on- the-fly" means little if the movement and sustainment of that operational ability cannot be equally dynamic.

Logistics Transformation: Key to Early and Continuous Combat Capability

Defense Science Board
1998 Summer Study



DOD Logistics Transformation

SLIDE 4 — Transformed Logistics System - Goals

The Task Force analyzed top level critical logistics capabilities needed to improve logistics system support to the 21st century warfighter and aggregated these into seven specific goals by which to guide and judge logistics transformation:

1. Be responsive to CINC needs

Stated in its simplest, this goal for logistics system transformation reflects a transformed logistics system which is driven by warfighter needs and led and managed in support of those needs by DOD's most senior executive leadership. In short, in the transformed logistics system, the customer drives the system.

To achieve this logistics transformation goal, the CINC must trust the system and have the authority and ability (systems, tools and process) to "pull" the logistics system to meet his warfighter needs. These needs can be described in quantitative and qualitative terms as:

- Ability to deploy significant combat capability, including ground forces in days, not weeks
- Flexible, tailored support
- Real-time logistics situational awareness
- Knowledge of assets, availability
- Ability to assess alternative courses of action
- Ability to act on information to change course of action
- improved tactical lift and management of theater logistics
- Effective logistics over the shore capability
- Dramatically reduced in-theater footprint
- Enhanced new survivability and countermeasures capability

To ensure the CINC's authority and ability, the Department's senior managers must ensure the systems, tools and process that provide it. To achieve that, logistics transformation must have the priority focus that will get the job done,

2, Provide rapid closure of combat power

While the Department's logistics system successfully accomplished an incredible movement of people and "things" in Operation Desert Shield, that success was predicated on a massive system of sea and air lift and prepositioned equipment. Once the deployment pipeline started to move, it took weeks to adjust or redirect it. Based on Department operational requirements for the future, current deployment systems fail to meet the future needs of the CINC for responsive warfighting force deployment and sustainment,

Without a transformation of this deployment system, the logistics system will constrain operational tactics and options. Given the proliferating asynchronous and asymmetric threats facing the US in the future, the inability to rapidly close combat power will move from limiting to lethal. As the Department builds agile force structures to meet future threats, logistics deployment and sustainment capabilities must be equally agile.

3. Permit smaller footprint – people, equipment, supplies

A third goal of logistics transformation is to break the Cold War logistics system reliance on mass to achieve effectiveness. The tremendous accomplishments of the U.S. military logistics system deserve high praise, but they come at tremendous effort and cost. The demands of the 21st century, in terms of both warfighting agility and resource constraints, can no longer sustain this mass approach to effectiveness.

4. Be agile, responsive and more survivable

To effect transformation, the logistics system must be trusted. For it to be trusted, it must adapt well to dynamic change at the OSD level, the CINC level, and in the battlespace, and it must be able to deliver to plan at those same levels. Today's U.S. military logistics system can be and has been incredibly effective. But at all levels, the logistics system attains effectiveness from a disproportionate effort to overcome a slow, time consuming, massive and cumbersome system. Whether in-theater, at the strategic to operational seam, or at the Departmental executive leadership level, to meet the needs of the 21st century military environment, logistics system agility is key.

The most agile, responsive, efficient, cost-effective, leveraged logistics system in the world has a short shelf life, however, if it is not survivable (e.g. CB, IW). The asynchronous threats of the future will target and maximize U.S. weaknesses. Whether it is C4ISR, deployment, LOTS, in-theater, or supply and maintenance, the enemy of the future will have available a vast array of abilities to counter and destroy not only combat forces but also their combat support. The transformed logistics system, above all else, must be survivable.

5. Fully integrate business processes and IS

Historically, the US. military has partnered with the private sector. In the 21st century, the merger of national security objectives, with commercial capabilities is a critical goal if the U.S. is to leverage its resources to meet the conflict spectrum of the future. Today, the Department is expanding innovative relationships with the commercial sector ranging from federated labs to teaming to contractor logistics support (CLS) to OEM contracts for cradle-to-grave support to direct outsourcing and privatization. The Task Force strongly encourages these efforts. For true logistics transformation, however, the Department's relationship must go beyond these individual target initiatives and form mutually symbiotic relationships which benefit both the government and the industrial sector. For such relationships to be successful, the transformed logistics system must mirror commercial practices and fully integrate its business practices and information systems.

6. Be well integrated with industry

See goal 5 above.

7. Be significantly less expensive

As a percent of TOA, the cost of combat support is unnecessarily expensive and unnecessarily absorbing dollars needed for force modernization. The lack of effective integration of logistics into the requirements, acquisition and operational systems precludes informed decision trade-offs The inability of current financial and accounting systems to provide visibility over functional and mission life cycle costs in terms of total ownership costs (TOC) further masks accountability and effective trade-offs and provides an insufficient mechanism or incentive to minimize TOC.

With focus on these seven goals, the Task Force assessed the systems, tools and processes required to attain a transformed logistics system. The overarching requirement to attain logistics transformation, however, remains the willingness of the Department's top leadership to plan and commit to a home run before they step up to the plate.

Transformed Logistics System - Goals

Defense Science Board
1998 Summer Study

The transformed logistics system will:

- Be responsive to CINC needs
- Provide rapid closure of significant combat power
- Permit smaller footprint -- people, equipment, supplies
- Be agile, responsive and more survivable
- Fully integrate business processes and IS
- Be well integrated with industry
- Be significantly less expensive

Need a homerun or don't step up to the plate

SLIDE 5 — Military Logistics Today: Investment in Enablers

Notwithstanding these Task Force logistics transformation goals, it is clear that major improvements have been achieved in military logistics over the last 2 decades. Due credit must be given.

As a result of investments, in both time, money and leadership, the United States today remains the best equipped, best trained and most lethal fighting force in the world. Its logistical support is still the envy of the world.

This nation and its military logisticians and transporters have much to be proud of. The last two decades have seen dramatic improvements in our ability to deploy and sustain our fighting force,

Here are but a few examples:

Airlift: Since the 1980's, our airlift capability has nearly doubled (from 25 million ton-miles (MTMID) per day to 46 MTM/D). Dollars are in the POM to procure at least 120 C -17's by 2010 to replace the aging C-141, providing a total airlift capability of 50 MTM/D. All will be equipped with Global Air Traffic Management (GATM). The Civil Reserve Air Fleet (CRAF) program is another good news story.

Sealift: In the 1980's, Army and Navy logistics over-the-shore (LOTS) forces had some interoperability and were relatively adequate during Sea State 2 (waves less than 3 feet high and winds less than 13 knots). Today, the Joint LOTS Board is developing joint doctrine and equipment that will survive and operate in Sea State 3.

C2 Command and Control in the 1980's were Service dependent and absent doctrine. Today joint logistics support doctrine exists and Joint C2 doctrine is in development.

Multinational Logistics: In the arena of Multinational Logistics, the draw down of U.S. presence in the 1970's required more reliance on Host Nation Support. However, FMS procedures and contracting rules were cumbersome, restrictive and complicated. The NATO Mutual Support Act of 1980 created the opportunity to expand agreements beyond NATO and now include coalition countries. For example, negotiated agreements have grown from around 20 in the early 80's to 34 today. Approximately 30 additional countries have been approved as eligible for future negotiations.

Information Fusion: Information technology has reconfigured our world. However, in the 1980's military information systems were totally stovepiped, lacked integration, and provided no visibility to the battlespace. Asset visibility in the 1980's, was untimely, cross Service incompatible, and just in case. Today, near-time ITV/TAV are nearing reality and joint doctrine is in development. Today, military information systems are growing information jointness (e.g., Joint Total Asset Visibility (JTAV), GTN, TC-AIMS II), merging logistics into operations (GCCSIGCSS) and beginning to evolve a common operating environment (COE). There still are major shortcomings in IT logistical systems as they remain lacking an overall architecture which links business processes and operations into an information system which can provide the capabilities required to achieve 2010 and beyond visions. But the stovepipes are beginning to break down.

Prepositioning and Configuring: Tremendous strides also have been made in the last 2 decades in accelerating logistics supply through prepositioning of equipment and supplies and configuring and containerizing loads for rapid deployment. Investment in prepositioned stocks has enabled significant deployment time reduction, albeit at significant effort and cost.

And the examples above do not include all of the tremendous improvements made since the 1980's in equipment maintenance quality, force medical protection, personnel sustainment (food, water, quality of life), etc.

These investments and improvements have resulted in a significant enhancement of logistics capability demonstrated in both Operation Desert Storm and more recently Desert Strike.

As General H. Norman Schwarzkopf said just a few years ago: "Operation Desert Shield was the fastest build up and movement of combat power across greater distances in less time that at any other time in history...can't give credit enough to logisticians and transporters who were able to pull this off." For instance, in 1990, a Division Ready Brigade (a light force) was moved to SWA in 61/2 days. Six years later in 1996, Operation Desert Strike moved the 3rd Brigade (a heavy force) to SWA in 4 1/4 days.

The bottom line is that U.S. military logisticians and transporters are still the world's best and improving.

So why is a logistics transformation needed? As the next two slides depict, there are two critical and compelling reasons: 1) first, today's logistics system capabilities cannot meet the requirements demanded of it in the 21st century, and 2) second, today's logistics system is unaffordable.

Military Logistics Today: Investment in Enablers-

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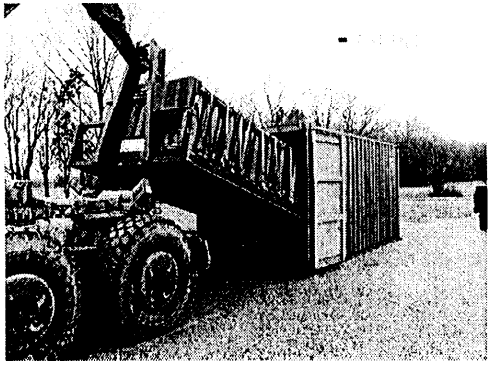
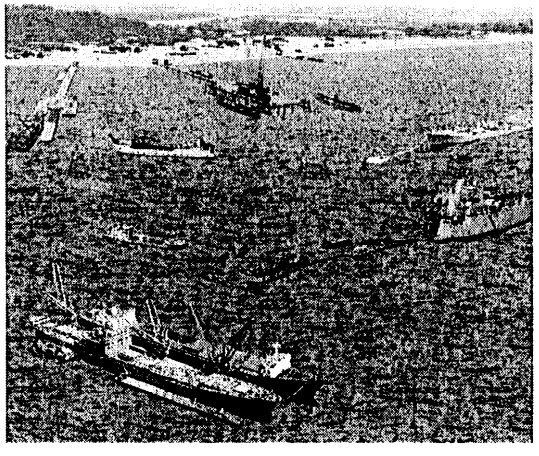
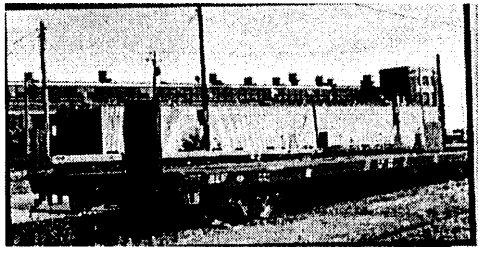


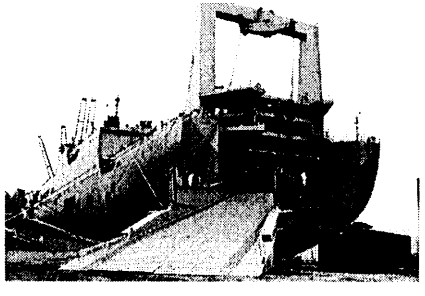
Strategically Configured Loads



JLOTS



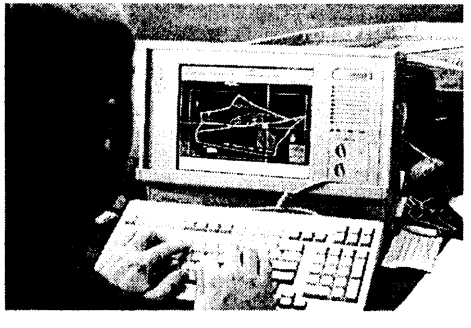
Rail Cars



RORO Ships

Improved Airlift

Sustainment of PREP0
- Army War Reserve Spt Cmd -



IS/IT

SLIDE 6 — Logistics System Requires Transformation (Not Marginal Improvements)

As this chart demonstrates in simple form below, the military environment in which our logistics system must perform is rapidly changing, dynamic, and uncertain. Logistics system transformation is required quite simply because the capabilities of today's military logistics system will not serve the military's requirements in the 21st century.

After nearly four decades of focusing our national security objectives and structure on a world configured predominately by two superpowers (U.S./USSR), it is sobering to reflect that this bi-polarity imploded in just a few years. While the United States today enjoys preeminent global economic and military superiority, it faces a range of current, evolving, and potential threats (non-traditional, transnational, regional, and even peer) that will likely challenge U.S. national security and the military forces which protect it in ways that will stretch even the most creative operational thinking as we move into the new century.

The logistics system must keep pace with this operational thinking. Today it is not. Indeed, as it is configured today, it cannot and often limits or constrains operations.

Projecting the 21st century military environment out to 2025, the Task Force reinforced that the following tactical logistics system capabilities are required in the 21st century battlespace:

- High system operational ability (reliability)
- Rapid, early closure of significant combat capability
- Logistics and combat C2 integrated
- Real-time visibility and control of the supply chain
- Agile, smaller in-theater logistics footprint
- Survivability
- CINC driven
- Trusted/delivers to plan

At the leadership level, additional capabilities must be in place to ensure a logistics system that will attain these characteristics:

- Focused vision and comprehensive logistics transformation plan
- Funded, multi-year planning with reasonable stability
- A top level forum for trade-offs, conflict resolution and monitoring
- Integrated IS and business processes
- Integrated decision-making (ACQ, OPS, LOG)
- Trusted, responsive management processes and tools
- A logistics system designed to be able to adapt well to change
- Vastly reduced cost

To attain logistics transformation, not just marginal improvements, the Task Force concluded that the six areas reflected on the left of the chart required the Task Force's primary attention:

- Logistics system integration
- CINC Pull vs Push system
- Demand reduction
- Deployment and sustainment
- Survivability
- Leadership

Leadership commitment to logistics transformation is the key to ultimate success.

System Requires Transformation
(Not Marginal Improvements)

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Area of Focus	Today's Capabilities	Transformation Requirements
LOGISTICS SYSTEM	Fragmented, stovepiped, provides limited visibility and inhibits efficient management	Needed knowledge. Integrated with excellent visibility across supply chain – able to manage and use real time. System Architect in charge.
CINC PULL VS. SERVICE PUSH	Services and DLA "push" logistics deployment, clog pipeline	CINC enabled to "pull" logsitics to meet needs, operations tempo
DEPLOYMENT AND SUSTAINMENT		
Combat Force Deployment	Heavy forces in weeks, very light forces in days	Entry in 24 hours, sustainability in 7 days
	Slow inflexible planning process based on inaccurate data	Planning process is rapid and flexible
	Functional CINC not in control of business practices	Improve and reduce costs of present transportation business process
Sea Port Requirements	Well developed for sea state 1 or 2 over-the-shore	Bypass ports with over-the-shore capability – at least sea state 3
DEMAND		
Footprint(in-theater)	Large and fixed	Small, dispersed, mobile
Weapon Systems	MILSPEC/organic repair/low reliability	Built for high reliability/commercial repair
SURVIVABILITY	Very vulnerable to chem/bio and IW, EW	Robust with good detection and mitigation methods
LEADERSHIP		
Executive Leadership	***Limites commitment and focus***	***Persistent vision, comprehensive plan, resource trades***
Acquisition/Operations/Logistics Integration	*Inefficient stovepipes*	***Fully** integrated; seamless; efficient over the full life-cycle*
Cost Reduction	*30% of DOD $ - no comprehensive plan*	*Minimized while meeting warfighter needs: TOC visibility/management*

SLIDE 7 — Logistics System Cost Baseline

The second major reason which demands transformation of our current military logistics system is its unacceptable and unnecessarily excessive cost both in terms of budget resources and manpower.

As depicted below (and based on a 1998 study done by the Logistics Management Institute), today's logistics system consumes approximately one third of the DOD budget and employs nearly one half of the Department's personnel. Departmental leadership must recognize a fundamental BOTTOM LINE: military logistics is eating into a disproportionately large part of the Department's dwindling resources, resulting in an unnecessarily excessive drain which is impacting operational readiness and drawing resources away from critical force modernization requirements.

In terms of active duty manpower, only about half as many active duty personnel are involved in combat roles as are involved in logistics. This ratio is totally unacceptable in a military environment which can only look to increasing demands on its operational TEMPO. Today's logistics system resource demands are not sustainable, The era of military logistics being able to rely on mass for effectiveness is over both in terms of affordability and incompatibility with tomorrow's operational requirements,

Logistics Cost Baseline

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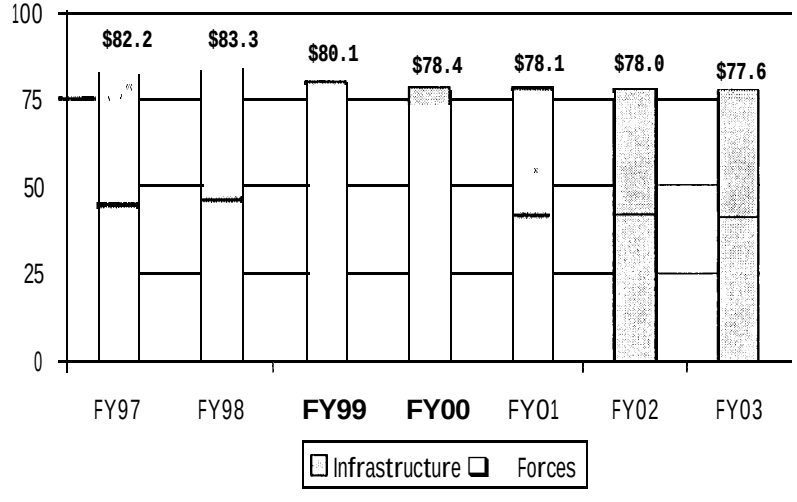
Logistics

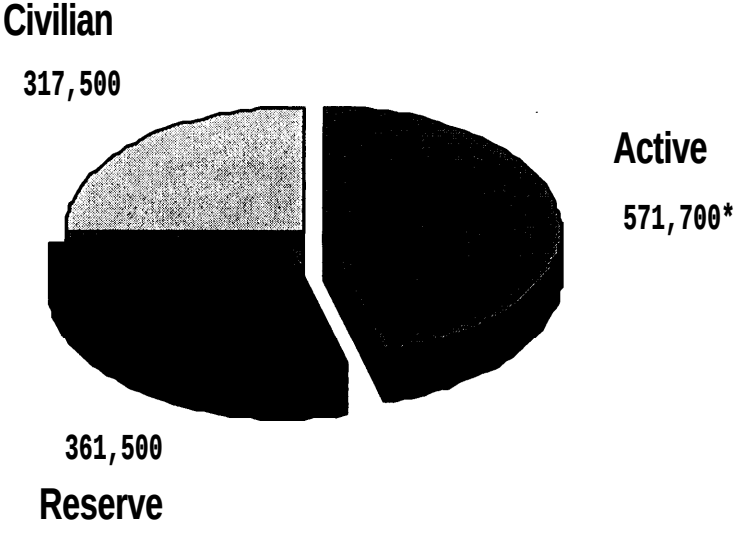
Funding in FY97 Constant Dollars ($Billions)



Source: LMI

Logistics Personnel

Total ▫ 1,250,000 people



*** Active duty combat forces 290,000 -- half size of active logistics forces**

1/3 of DOD budget and nearly 1/2 of DOD manpower is in Logistics

Slide 8 — Procurement and O and M

The logistics resource drain is further underscored. Since 1988, DOD has had to reduce its force structure by approximately 40percent, but the Operations and Maintenance (O and M) budget has only decreased by 16percent during this same period of time. However, an even more telling indicator is that in the same period of time, the Department's procurement budget has declined 56percent, or 3.5 times greater than the O and M reduction.

While O and M is not a perfect measure of logistics spending, it serves as a good proxy since logistics is by far the largest cost element within O and M. As current DOD weapon systems continue to age, their O and M costs will only continue to escalate, creating a continuing "Catch 22" where increasing logistics support costs continue to eat into the procurement account required to replace those aging systems.

In short, the "tail is eating the tooth". Logistics costs are unnecessarily constraining force modernization, resulting in an inability of the Department to replace aging systems which in turn is necessitating uneconomical repairs to sustain platform lives. Only a fundamental transformation of the military logistics system can reverse this unacceptable trend.

Procurement and O&M (FY97 $)

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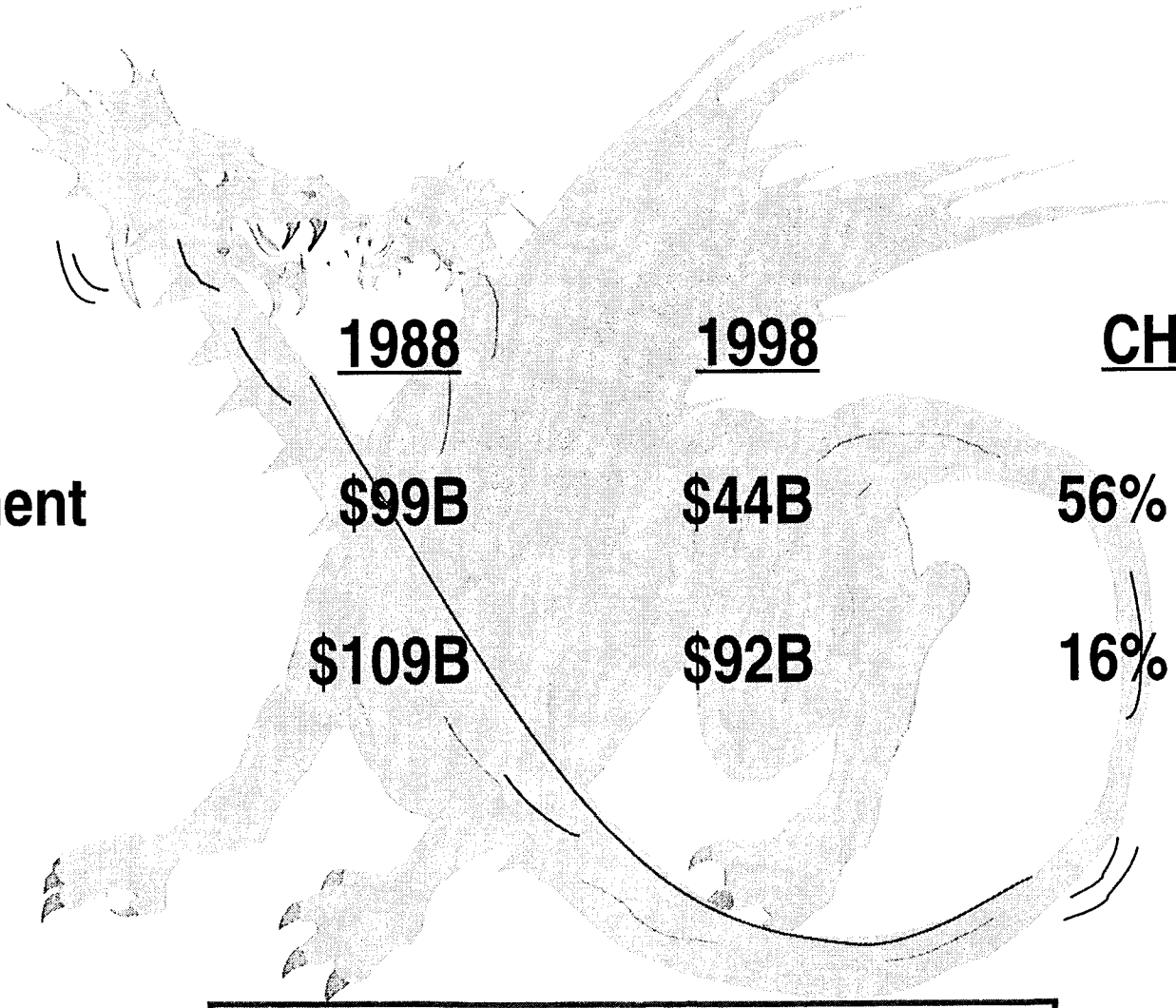
1998 Summer Study



	1988	1998	CHANGE
Procurement	$99B	$44B	56% reduction
O&M	$109B	$92B	16% reduction

Source: OSD/API

"The tail is eating the tooth"

SLIDE 9 — Summary of Issues

To address the problems and needs highlighted on the previous slides, the Task Force concentrated its efforts on 5 areas to achieve a TRANSFORMED LOGISTICS SYSTEM:

- CINC Pull vs System Push
- Logistics System Architect
- Demand Reduction
- Deployment and Sustainment
- Survivability

Based on the Task Force's specific recommendations in these 5 areas, combined with an enduring leadership commitment and stable plan, the Task Force believes that the Department can truly transform the current Cold War logistics system and processes from the deployment and logistical baseline of Desert Storm into an agile system which can support Joint Vision 2010 and move beyond to the DOD requirements "after next".

There are no "silver bullets" on the pathway to logistics transformation, but sustained commitment to and achievement of a combination of actions can and will result in a "true transformation" of our military logistics system.

Summary of Issues

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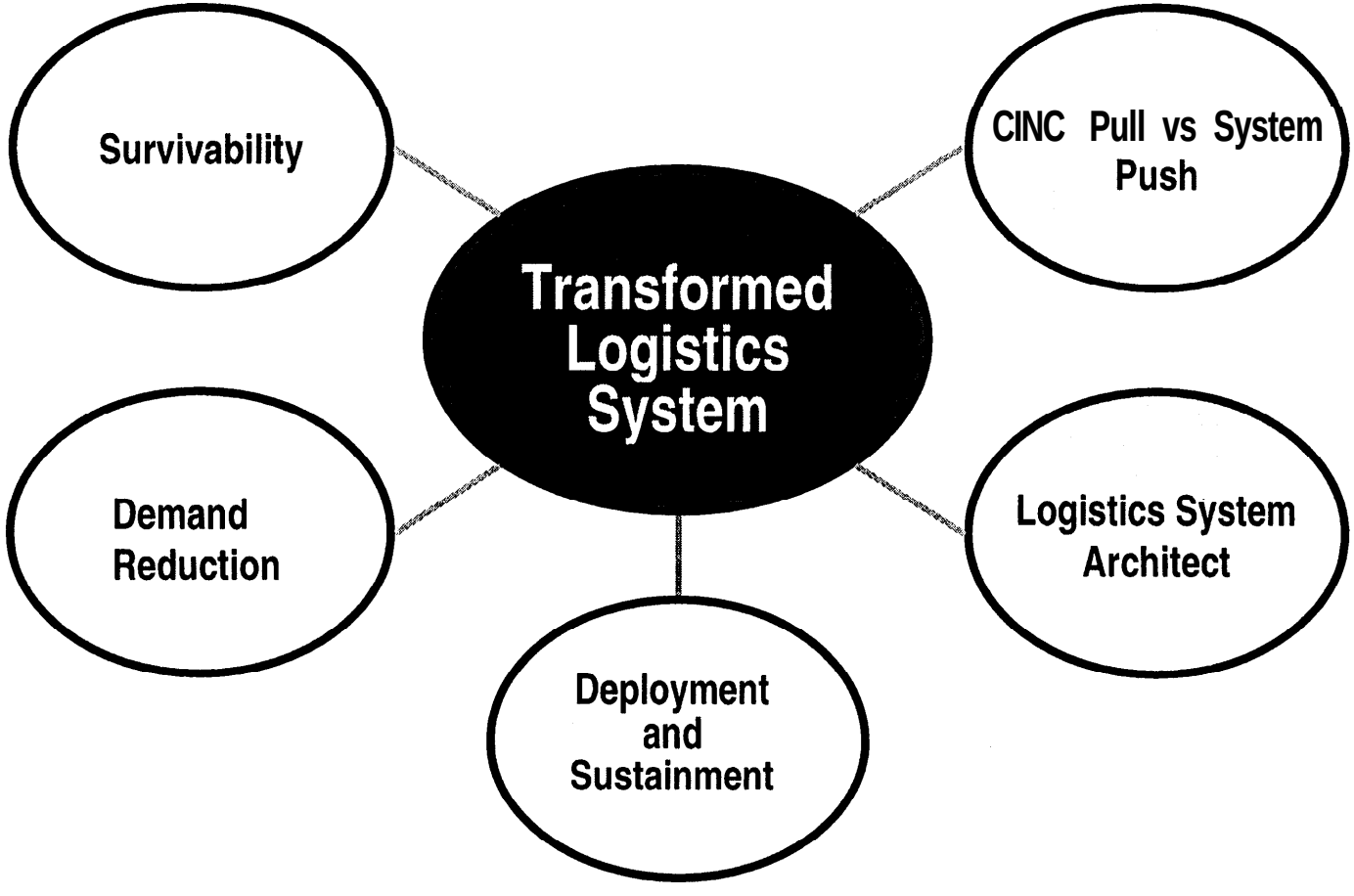

No silver bullets -- but combination of actions will be transformational

SLIDE 10 — CINC Pull vs System Push

Summary of Issues

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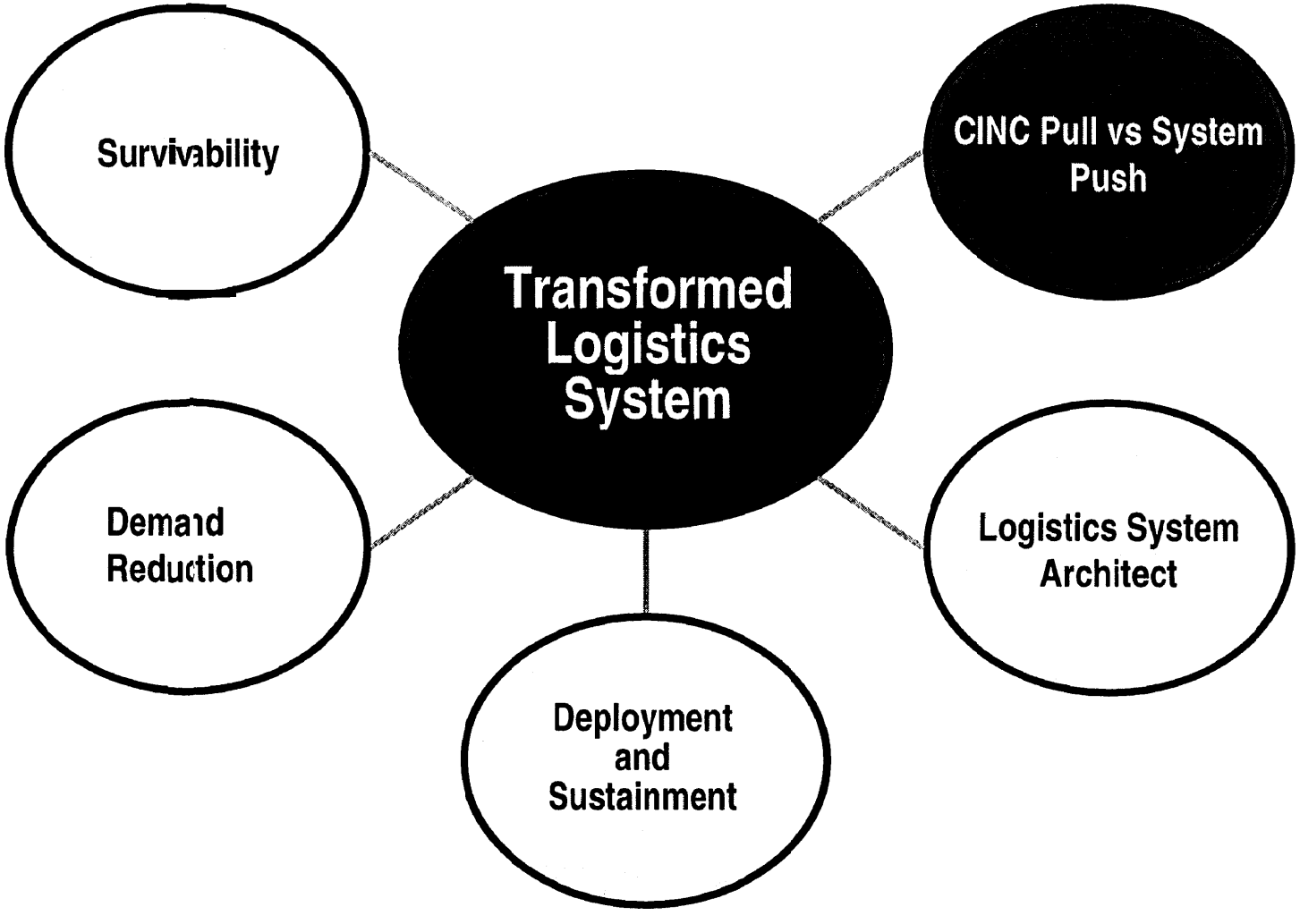
1998 Summer Study



SLIDE 11 — CINC "Pull" versus System "Push" – Findings

Today's process for supplying materiel to theaters of operations is essentially one of service-determined support (negotiated, certainly, with the unified commander), on a push basis. The CINC controls transportation by unit description. Combat forces have little confidence in the resupply system and tend to compensate by hoarding, creating vast stockpiles of materiel. Both the CINC's and Services lack visibility required to plan and manage the resultant readiness and footprint and the J-4 and his staff are, quite simply, overwhelmed. Imprecise logistics creates overstated demands for lift and pipeline space and crowds out or delays required resources. Excess equipment creates an unnecessary burden for theater logistics sustainment operations.

Precision logistics requires that the CINC JTF shape logistics to support operations by "pulling" needed supplies from the system.

CINC "Pull" VS. System "Push" -- Findings

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- Today's ClNCs are unable to exercise title 10 responsibility to plan and manage theater logistics
- Services push initial deployment supplies to theater with little CINC/theater planning and control
  - Unneeded materiel clogs lift and pipeline
  - Increases sustainment burden
- Combat forces lack confidence in the logistics system and build vast stockpiles of materiel to compensate

CINC / JTF Needs Must Drive Process

SLIDE 12 — CINC "Pull" versus System "Push" – Recommendations

Designate Theater CINC Logistics Component Commanders

Providing the CINC a robust capability to exercise his Title 10 authority to plan and direct "common" logistics support is a major step in achieving the CINC's control over the logistics pipeline. Further, a Theater Logistics Component Commander to manage the inflow of forces and sustainment packages according to CINC priorities, provide means for reception, staging, onward movement, and integration (RSOI) for the theater and operate the required facilities, (e.g., ports, airfields, staging and storage areas) is necessary to implement CINC control.

This Theater Logistics Component Commander should plan for and provide all common support and services to the forces in-theater, (e.g., theater distribution; movement control; construction, medical services, fuel, food, and water) outside the service component areas of responsibility. Elements of TRANSCOM and DLA should be attached to the Logistics Command as needed to manage the RSOI and DLA commodities. This will ease the peace-to-war transition and avoid the ad hoc logistics of past experience.

The Theater Logistics Component Commander also could provide the base for the "multinational joint logistics command" envisioned for NATO operations or other coalition operations where U.S. leadership is necessary.

An experiment using the Joint Forces-Air Component Commander model, where one of the service components is tasked with logistics C2 mission, would show how best arrange the responsibilities for both peacetime training, contingency planning, and execution.

Improve CINCs Ability to Tailor Deploying Forces to Meet Contingency Requirements.

The CINC's staffs need better tools to shape service recommended time-phased force deployment data (TPFDD) plans to eliminate unnecessary force structure, ammunition, and other sustainment supplies. Improved planning and simulation tools can provide vastly better replanning and consequence analysis than is now possible. These tools are essential to handle inevitable crisis contingencies. DOD should continue to fund development of the DARPA Advanced Logistics Program (ALP). The tools being developed under ALP are essential to develop "right-sized" deployment and sustainment packages, analyze various courses of action, and change logistic plans "on-the-fly".

Tools like ALP not only benefit the CINC's staff, they also help Service component commanders to do tradeoff analyses for use of CINC-allocated lift. Additionally, they help the Joint and Service staffs to perform force structure and sustainment analyses. This capability, including the ALP techniques, should become an important part of the Logistics System Architecture recommended later in this report.

CINC "Pull" VS. System "Push" -- Recommendations

Defense Science Board
1998 Summer Study

- Designate theater CINC logistics component commanders
  - Reports directly to theater CINC
  - Manages all common support/services in theater (peacetime training and war)
  - Experiment with JFACC model (task a service component commander)
- Improve theater CINCs logistics information tools to tailor deploying forces to meet contingency requirements
  - Provide dynamic planning/simulation tools (DARPA ALP)
  - Ability to specify deployment and sustainment packages, do consequence analysis, change "on-the-fly"
  - Provide CINCs the ability to directly locate and redirect assets

SLIDE 13 — CINC "Pull" versus System "Push" – Recommendations

Integrate Logistics and Operations

Theaters and the tactical units are the sources of information that define real logistics needs. Data that originates in the theater and tactical units — the tactical requirements as interpreted and defined by the theater CINC -- can and should drive the logistics process.

Real Time Monitoring of Requirements and Distribution

Major systems platforms can be automated to provide data in real-time on their operational condition and stores status. Besides its logistics and Combat Service Support (CSS) value, such source data automation can provide revolutionary operational benefits, Source-data automation can reduce time taken to communicate supply status and operational status (e.g., "How many weapons systems/people-in my battalion/squadron/ ship are combat ready?), and dramatically improve the logistics planning process at all echelons. The combination of platform source data with supply status (quantities and locations) and estimated time to repair systems allows planning that is accurate and detailed enough for logisticians to be able to tell combatants when and where they will be resupplied with needed materiel. The resultant present and projected operational status of systems and tactical organizations communicated in near-real-time will greatly facilitate course-of-action analysis.

Real Data for Logistics and Operational Decisions

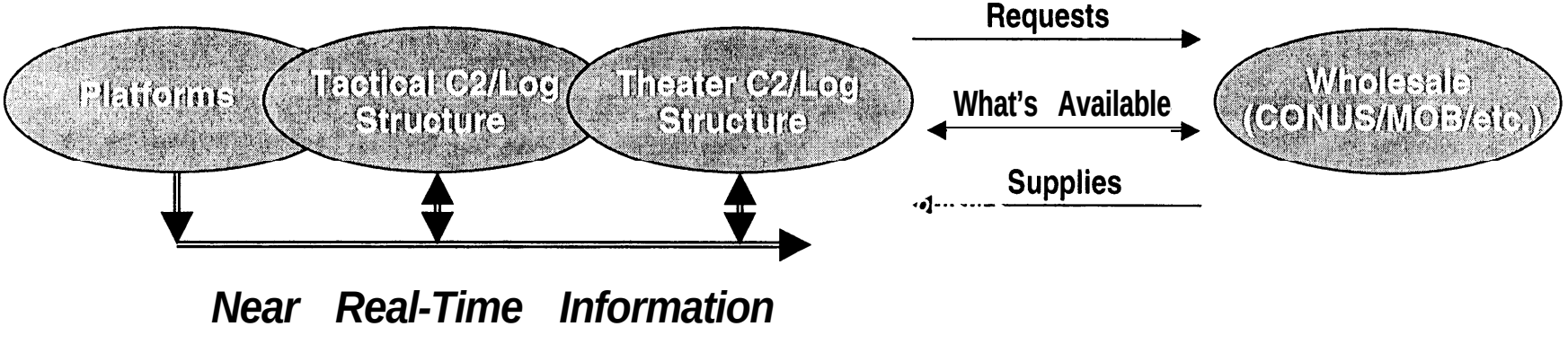
Integration of source-data automation with operational situational awareness, (real data — not estimates) opens additional possibilities for improved force effectiveness. Logisticians will be able to better control movement of supplies in the tactical area (by applying operational situational awareness and movement planning to combat trains and other supply vehicles), and better coordinate the rendezvous of resupply vehicles and ships with tactical units. A system incorporating source-data automation also permits operations planners and logisticians to relocate programmed materiel (e.g., fuel and munitions) and redirect shipments as operational needs and priorities change – all with predicable impact on operations results.

The cumulative effect of implementing these CINC Pull recommendations has the potential to revolutionize "battlespace" logistics in all Service component organizations. Together, they enable dramatic improvements in speed, precision, reliability, and predictability of logistics and CSS actions in the battlespace, and provide improved support to war-fighters at significantly less cost and lift.

Additionally, automated source-data integration strengthens the theater Logistics Component Commander by providing the tools he needs to accomplish his job. Having "someone in charge" is valuable in itself – having "someone in charge" with the information provided by an improved near-real-time system can greatly increase combat effectiveness. Fusion of new information with "someone in charge" that will bring about the long-desired integration of operations, planning, and logistics.

CINC "Pull" VS. System "Push" -- Recommendations (Cont.)

- **Provide tools to integrate logistics and operations**
  - **Real-time monitoring of requirements/ distribution**
  - **Real data for logistics and operational decisions**



SLIDE 14 — CINC "Pull" versus System "Push" – Recommendations

Build warfighter confidence through platform-based, user-friendly information technology, and process changes

Improved information availability and analysis can enable the CINC and his staff to tailor logistics activities to meet operational needs, and provide the insight into status and progress that will build war-fighter confidence in the new approach. The proposed new information tools are key enablers of the Revolution in Military Logistics, just as point-of-sale terminals have revolutionized supply chain management in the retail industry. Logistics system characteristics that are an integral part of the strategy to transform logistics to "CINC pull" include the following:

- Better Diagnostics Visibility – the ability to accurately foresee needs for fuels, munitions, parts
- Communication of requirements in near real time
- Status feedback from supplier to customer – what will be delivered, where and when
- Precise delivery (the "UPS Brown Truck")

Each of these characteristics is within the grasp of the CINC "Pull" system envisioned in this report. If achieved, the DOD logistics system will earn the trust of warfighters who depend on the logistics system to support them in accomplishing their mission. They, in return will find it unnecessary to insist on redundant supplies.

The logistics system envisioned in this report is significantly more reliable and responsive, requires less materiel, lift, and inventory, and can be made less vulnerable than today's massive system.

CINC "Pull" VS. System "Push" -- Recommendations (Cont.)

- Build warfighter confidence through **Platform-based, user-friendly IT and** Process changes
  - Better diagnostics, visibility to accurately predict needs for fuel, munitions, parts
  - Rapid, accurate communication of requirements
  - Status feedback from source to customer
  - **Precise delivery ("UPS brown truck" with super STOL)**
  - **Results**
    - **Improves force readiness**
    - **Reduces inventory levels, lift requirements, people**

Bottom Line - Better Confidence, Smaller Pipeline and Fewer People in Battlespace

SLIDE 15 — Logistics System Architecture

Summary of Issues

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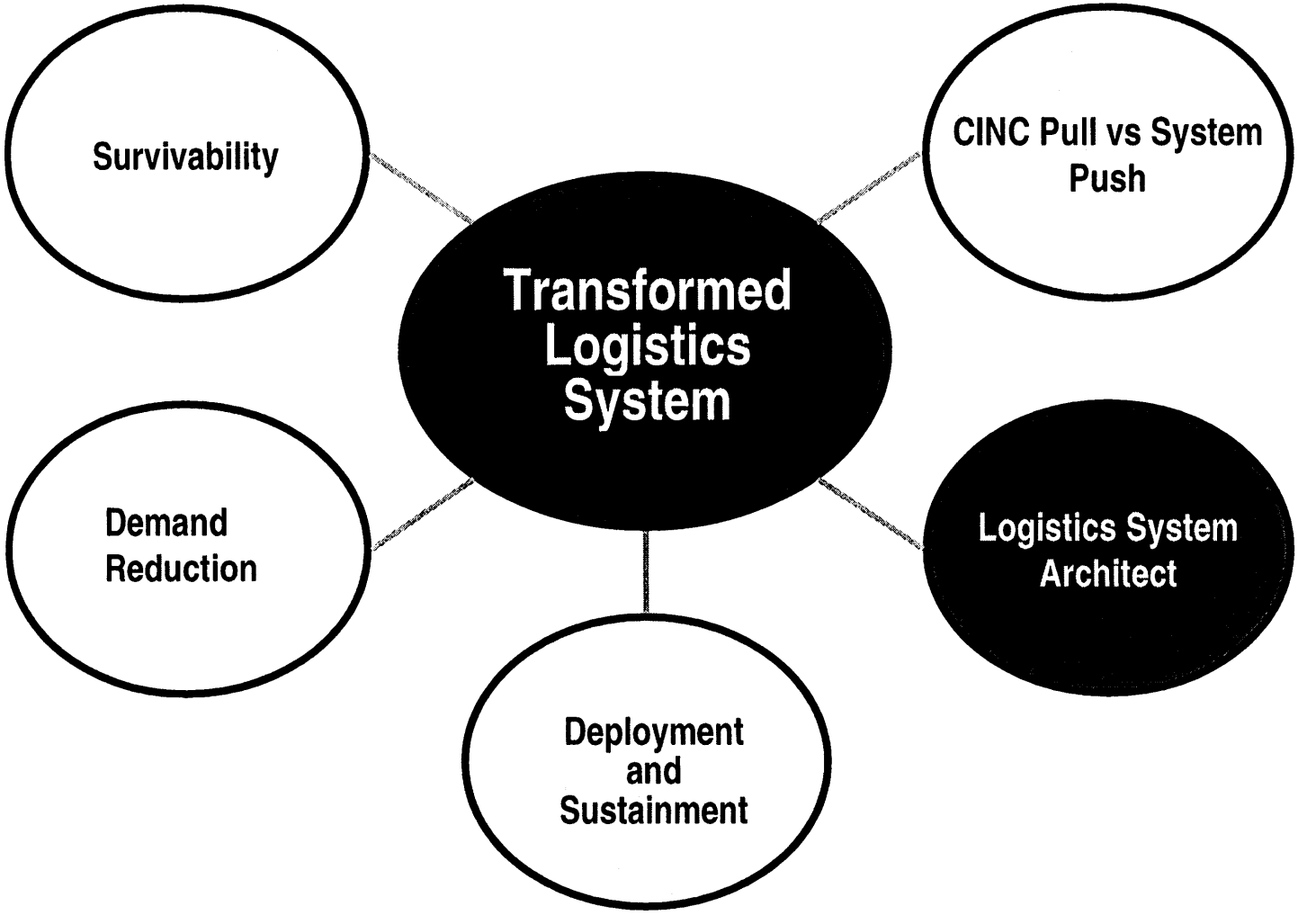
1998 Summer Study



SLIDE 16 — The Logistics System — Findings

Current systems are fragmented, ineffective and fail to exploit current technology and practices. DOD lacks a clear vision of how to build a logistics business and information system capable of meeting the Focused Logistics imperative of JV 2010. Each Service continues to build and maintain its own "stovepipe" logistics system to support its own equipment and personnel, just is it always has; logistic support across stovepipe boundaries is difficult, if not impossible. This "go it alone" approach is out of step with joint operations practices. Operational commanders must be able to direct logistics support for joint operations using a DOD-wide common framework to realize the benefits of CINC pull logistics. Achievement of a logistics business and information system that provides ClNCs with the information they needs to manage their Title 10 logistics responsibilities requires combining DOD's logistics legacy experience and skills plus JV2010 needs into a system which operates seamlessly and efficiently with a tempo and flexibility that matches future operational needs. The system must have global visibility, allow efficient, effective management and be governed by demand pull at the user end. It should be as inexpensive as possible, flexible, responsive and integrated. Most importantly, the change from today's fragmented logistics systems and practices to the future integrated system must be orderly.

A new approach to constructing DOD's logistics system is essential for the master functional overhaul needed to integrate business practices and information tools to support both theater and worldwide joint logistics needs.

Commercial experience shows that information tools and business practices must be co-developed. Caterpillar, Federal Express, Ryder and many other companies developed and maintained preeminent logistics capabilities by merging business and information system generation Further, experience from both military and commercial worlds indicates that strong, from-the-top leadership is mandatory for success in such major undertakings.

The Logistics System -- Findings

Defense Science Board
1998 Summer Study

- Current logistics systems are fragmented, ineffective and fail to exploit current technology and practices
- DOD lacks an overall vision of how to transform the logistics system to meet the needs of JV2010
- Changing today's fragmented logistics system to become the precision instrument required to efficiently meet CINC needs requires a master functional overhaul to integrate business practices and develop enhanced information tools
- Commercial experience shows that tools and practices must be developed together

Slide 17 — Transformation

The Logistics System Architect (LSA) is the pivotal actor in achieving a successful DOD Revolution in Military Logistics. The LSA is not merely an information specialist. He/she must comprehend logistics business practices in each DOD stovepipe, understand how information systems can support them and how to bring about transformation to an integrated systems that operates throughout DOD.

When successful, similar transformations in other environments have involved a champion. The LSA is that champion, not as a porn-porn cheerleader, but in the "Arthurian" sense of the word. The champion battles to achieve the vision of the future DOD logistics system. Major corporations who have made similar transformations were motivated by a senior central systems architect.

Transformation

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- Transition to an integrated logistics system requires the appointment of a logistics system architect

-- The logistics system champion --

- Major corporations (including caterpillar, proctor & gamble, DuPont, Cisco, Wal-Mart, FedEx and Boeing) have relied on senior central system architects to reduce cost and improve performance by integration and reengineering of their business practices and supporting information systems

Slide 18 — Architect Functions

The LSA truly performs an architectural function, He/she oversees and coordinates integration and reengineering of both business practices and supporting information systems so that they operate to achieve total supply chain management in a unified manner, not as one overlaid on the other. The LSA is guided by an overall picture of how DOD's islands of logistics activity interoperate to achieve overall Department objectives.

To perform his function, the LSA must understand the existing stovepipe systems, past attempts to unify them and why these attempts have not been effective. The architect must also understand DOD&information environment, open system architecture, and its common operating environment. Using his/her understanding, the LSA must characterize system-wide performance objectives. Basic requirements such as CINC pull must be reduced to performance specifications that guide system evolution. The Logistic System Architect must then develop a functional and technical architecture and roadmaps to guide migration to the envisioned system. The principle of CINC-pull requires that logistics be integrated with operations.

The Architect must ensure that the ongoing DOD thrust to emphasize the use of Open Systems Architectures in their broadest interpretation is pursued. Open System Architectures are a powerful new tool for addressing — up-front — many of the problems associated with our current logistics and support systems. Systems based on Open System principles can reduce spares inventory requirements along with associated lift and warehousing needs, avoid the diminishing manufacturing resources problem, and facilitate affordable upgrades to fielded equipment. Because this requires action during the acquisition phase of either new systems or system/sub-system upgrades, it's full effect will not be felt until a critical mass of such equipment is actually in the field. Although the Open Systems approach is strongly endorsed, it falls outside the scope of this report and thus is not treated further here. One should review the DSB Task Force Report on Open Systems Architectures.

Guided by the logistics system architecture, interface specifications and transition roadmaps, the LSA manages system realization even though implementation is done by individual process owners. The architect is the configuration manager who specifies performance and interfaces between system elements and systems assembler. The LSA's ability to manage realization of the logistics system for the 21st century must derive from his control of logistics system development funding.

Without the LSA, achievement of a DOD logistics system capable of Focused Logistics is not possible.

Architect Functions

- Understand existing stovepipe systems and prior DOD failures to address logistics systems
- Lead in integrating logistics business processes -- supply chain management
- Define system-wide functional performance consistent with open system architecture
- Develop functional and technical architecture & execution roadmap ensure that logistics fully integrates with operations
- -- Supply chain management
- Develop/manage the central implementation/transition plan
  - Decentralized implementation
- Control funding, establish and monitor performance to the transition plan for logistics system transformation

Slide 19 — The Architect

The Logistics System Architect derives authority from the Secretary's Title 10 responsibility to manage logistics overall. The LSA should report to the Undersecretary for Acquisition and Technology and should receive guidance and priorities from the Chairman of the Joint Chiefs of Staff.

The Architect

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This logistics system architect will:

- Derive authority from the SECDEF's title 10 responsibility to manage logistics
- Report to the USD(A&T)
- Receive guidance and priorities for military requirements from the CJCS

Slide 20 — Logistics System Architect - Recommendations

The Defense Science Board strongly recommends that the SECDEF designate the DUSD(L) as the Logistics System Architect to evolve a modern logistics business process and information system capable of efficiently providing Focused Logistics to meet DOD needs. The LSA must have mechanisms to control and enforce the architecture and specifications. This is a significant "do-differently" for DOD that is critical to realizing the promise of 21st Century logistics to support DOD operations.

Logistics System Architect -- Recommendation

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- *Designate the DUSD(L) as the logistics systems architect* to evolve modern logistics business processes and information systems and give him/her control mechanisms implement/enforce the architecture

Transforming is not business as usual

SLIDE 21 — Deployment and Sustainment

Summary of Issues

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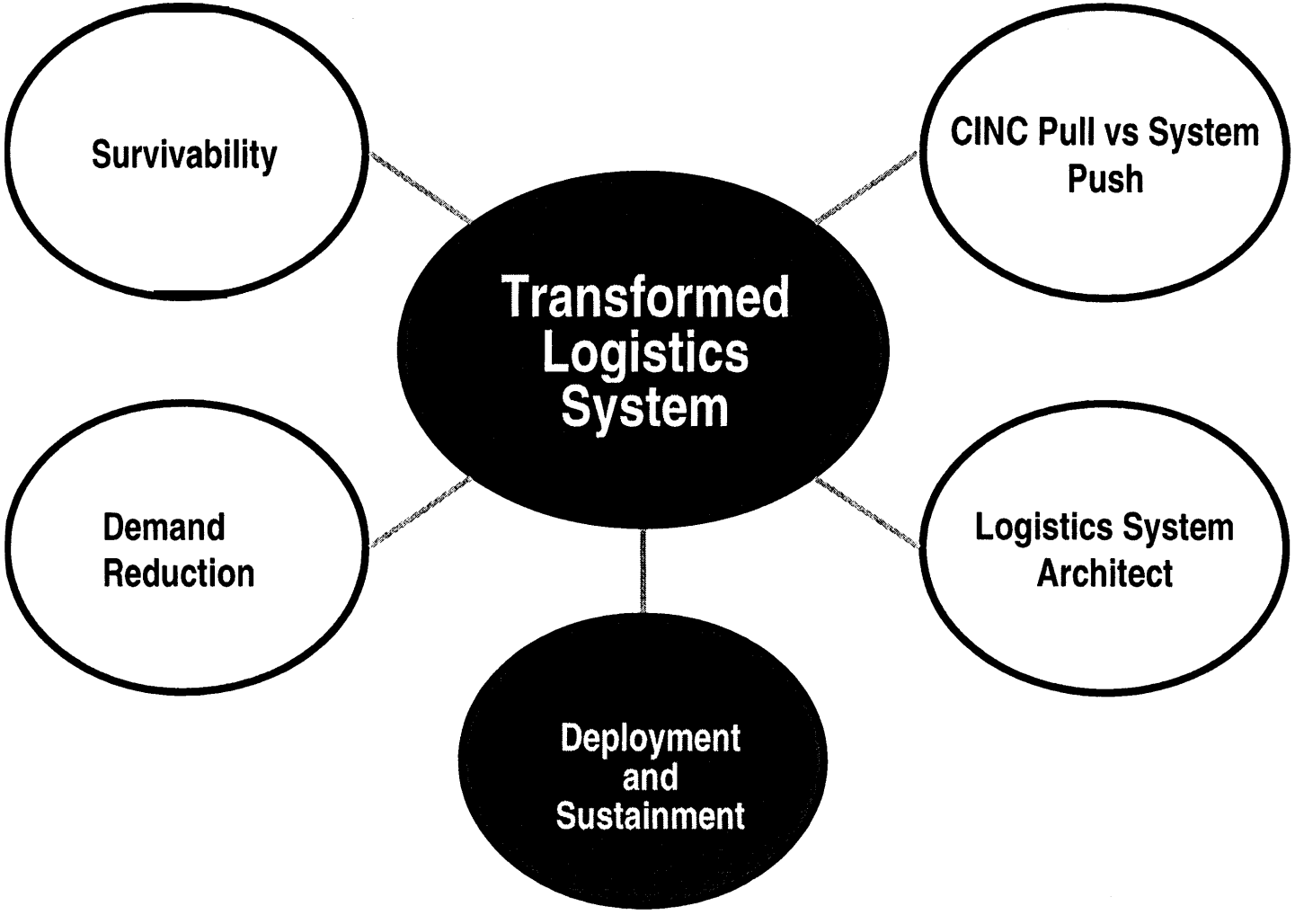

Slide 22 — Deployment and Sustainment – Findings

Current Lift Assets do not support early entry land force deployments

Although the US global mobility system has no peer in the world, it does not meet the future needs of the theater CINCs for responsive war-fighting force deployment and sustainment as described in JV 2010 and the DSB 1998 Joint Operations Summer Study.

- Only very light forces can be air deployed in days
- Significant early land combat power delivery depends on the availability of nearby land and sea based prepositioning, which is expensive, vulnerable, and politically constrained
- Follow-on forces deployment and sustainment take weeks to close, sailing from CONUS
- Shortfalls in over the shore, primitive port capabilities, and CONUS SPOE bottlenecks constitute a major limitation and risk

Throughput is the key to Force Projection. Requirements must be matched with the capacity and capabilities at the air/sea nodes, the adequacy of the enroute infrastructure, and the establishment of metrics/timelines for port operations improvements.

Supporting processes are inadequate and fail to exploit current technology

The Deployment and Planning Process is fragmented and responds poorly to the combatant CINC's needs in either deliberate or crisis planning situations. The process is rife with fragmented approaches requiring inordinate amounts of coordination, which adds several "seams" to those that naturally occur between commands, agencies, and modes.

The current system does not respond favorably to changes between deliberate arrangements and execution changes. Allied and coalition planning processes are not integrated until actual execution is underway. This precludes full realization of host nation support (HNS), rear area defense, and Joint Reception, Staging, Onward Movement , and Integration (JRSOI) capabilities from those fighting with us. It increases our reliance on bringing more sustainment from CONUS than deployed forces may need.

The responsibility for the Process is fragmented. There are several "owners" of this system consisting of military command and control, logistics, operations, and commercial information systems. Doctrine is crafted by several different agencies, and remains somewhat disjointed.

DOD must be able to improve throughput at the mode change location (seams). This will require modern, intermodal Material Handling Equipment/Container Handling Equipment (MHE/CHE), TRAMS and associated IT systems to complement the existing commercial infrastructure. DOD must continue progress towards containerization to take advantage of existing and future intermodal technologies.

Commercial World is investing heavily in related capability and technology

The current DOD logistics system has changed relatively little since World War II, and has become increasingly unaffordable.

Most recently, the 1996 DSB Summer Study on Innovative Infrastructure for the 21st Century recommended to shift the DOD logistics system to commercial world class logistics processes. Since the 1996 report, industry has further leap-frogged DOD — increasing performance and lowering costs — while the DOD system has not kept pace.

Some examples of successful industry initiatives and alternatives that DOD could embrace include:

- Contracting out/3rd-party logistics providers
- Contracting "in"
- Revised business practices
- Public-private partnerships
- "Leasing" arrangements
- Increased use and implementation of COTS products/systems/solutions
- Consolidation/elimination of selected (non-core) functions and activities

DOD out-of-step with commercial processes, Industry continues to outpace DOD in innovative logistics applications and the use of alternative logistics support methods. DOD has not capitalized on many of the processes, technologies or policies available in the private sector - conceivably widening the gap.

Deployment and Sustainment -- Findings

- Current lift assets do not support early entry land force deployments (JV 2010 and DSB)
  - Only very light forces are deployable in days
  - Significant land combat power depends on PREPO or ocean shipping (weeks to close)
  - Shortfalls in over-the-shore and primitive port capabilities are also a major limitation and risk
- Supporting processes are inadequate and fail to exploit current technology
  - Deployment planning systems are inflexible and slow; also data are inaccurate and often out of date
  - Responsibility for process is fragmented -- seams
- Commercial world is investing heavily in related capability and technology -- all enabled by Information Technology

Slide 23 — Deployment and Sustainment – Recommendations

Exploit Commercial Lift Capabilities to meet 21st Century requirements for deployment of a capable land combat force in 24 hours with follow-on forces in 1 week

A "21st Century Global Mobility System", responsive to the CINC's needs, should have the following capabilities:

- Deliver a light, agile, but lethal, air transportable land combat strike force with 24 hour global reach
- Deliver follow-on forces starting in 1 week
- Provide war-fighter requested, urgent, sustainment from CONUS within 24 hours
- Provide war-fighter requested less urgent sustainment from CONUS in 1 week
- Be independent of prepositioning and enroute bases

USTRANSCOM should establishing long-term objectives as follows:

- A global airlifter capable of 24-hour direct delivery from CONUS airbases to forward theater airbases · Tentative Objectives: 12,000 NM range, 600 knots speed, 75 ST capacity, 3000 x 90 ft APOD runway
- A global mobility vehicle (replacement for present sealift) capable of one week delivery from CONUS to the theater · Tentative Objectives: 12,000 NM range, 150 knots speed, 100,000 sq. ft capacity, integral loading or discharge at ports, over-the shore, or to an intratheater sea-based support ship

USD(A and T) should evaluate the feasibility of the various innovative commercial technology concepts, establish commercial partnerships, provide seed R and D funds with a commitment to procurement for the selected concepts.

Examples of these technologies, their characteristics, and current questions about meeting DOD objectives follow:

- Blended Wing Body Aircraft (500 knots, 12,000 NM, 75 Tons) -Limited cargo height, excessive landing distance
- Supersonic Transport Aircraft M2,4, 5,000 NM, 25T) · Limited range and cargo capacity
- Hydro-ski (200 knots, range, and capacity TBP) · Tests did not verify speed, TBP
- 200 knot Surfing Ship (200 knot, 20,000 Tons) · Unproven technology
- Wing in Ground Effect (450 knots, 6,000 NM, 125 T) · Limited range and excessive landing dimensions
- Large Airship (150 knots, global range, 500T)-questions regarding landing distance, uncertain takeoff/landing in high winds
- Fastship (40 knots, 4,000nm, 10,000T)- inadequate speed and range

Services/DARPA should initiate small-scale technology demonstrations with commercial partners to ensure that these new lift assets are maximized for military applications.

The very rapid growth of wide-body cargo airlift fleets should be exploited to help DOD meet its rapid deployment needs. This requires expanding CRAF to ensure the fleets will be available for DOD. It also requires DOD to pay greater attention in designing equipment to enable them to use commercial vice military airlift. Indeed, the ability to use CRAF aircraft should be a design focus for equipment design.

Deployment and Sustainment -- Recommendations

Defense Science Board
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- **Exploit commercial lift capabilities to meet 21st Century requirements for deployment of a capable land combat force in 24 hours with follow-on forces in 1 week**
  - TRANSCOM develop objectives to enhance defense value in new air and sea lift technology. For example:
    - **Blended Wing Body Long-Range Aircraft**
    - **Supersonic Transport Aircraft**
    - **200-knot Surfing Ship**
    - **Hydro-Ski**
    - **Wing in Ground Effect**
    - **Large Airship**
    - **Fastship**
  - Use the growth in large commercial airlift fleet to support strategic deployment
    - **Enhance CRAF to meet military requirements (door width & height, deck height, floor strength)**
    - **Make CRAF use a key design criteria for land forces equipment**

Slide 24 — Supporting the Future battlefield

As envisioned in the DSB Joint Operation Study, CONUS responsive logistics to the battlefield of the future, will need to be much more agile and less expensive. It will need to deliver and support capable early entry forces within 24 hours and be capable of sustainment for up to 7 days.

Support will need to be provided through the three axes depicted:

- Direct delivery: If APOD and SPOD are available and secure support may be provided directly to the combat area. Also needed is the ability to deliver materiel ashore if suitable ports are not available, and in heavy sea states. The JLOTS program would drastically improve our capability.
- Secure Airfield -- not in Combat area that will function as a transshipment area to the combat area. This APOD will require capable intratheater airlift. A Super Short-Take-Off-and Landing (Super STOL) is envisioned as an emerging requirement (C-130 cargo capacity, with a 600 take-off and landing capability, capable of land or carrier operations).
- Secure Ship – not in the combat area. Similar to the secure airfield, a secure ship would allow our logistics footprint to remain outside the combat area. It would also need a Super STOL capability for delivery to the combat area.

Supporting the Future Battlefield

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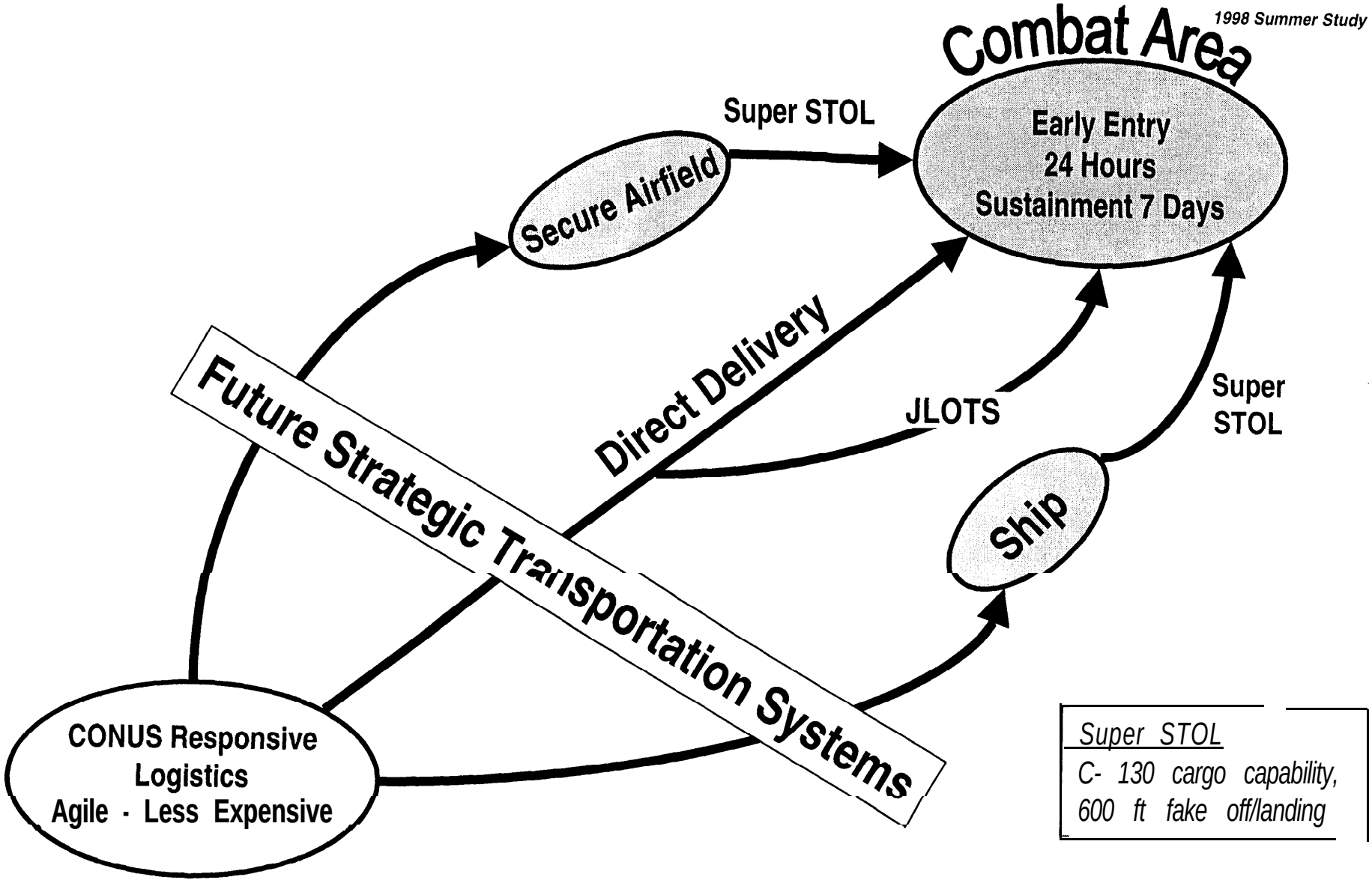

Super STOL
C- 130 cargo capability, 600 ft fake off/landing

Slide 25 — Deployment And Sustainment — Recommendation (Continued)

Support alternatives to delivery through fixed ports

Whether used as a stand-alone, over-the-beach deployment system or to augment offload capabilities in degraded or non-degraded ports, JLOTS has been proven in recent wargames to be a key force multiplier. However, while funding for some JLOTS systems is POM'd, funding for the remaining associated common systems (JMLS, stabilized cranes, RIBS, causeways) that will allow operations in Sea State 3 needs to be identified and accelerated to bring the systems on-line earlier that 2005. Lack of training will prevent full utilization of JLOTS capabilities. For long term, the ability to find and fund high-speed lighter systems, agile port concepts and potential offshore basing (MOBS) while maintaining the requisite training is critical.

Execute Defense Reform Initiative Decisions (DRIDs) currently being developed.

Assign USCINCTRANS Related Transportation Business Process Ownership

Recommend SECDEF assign USCINCTRANS requisite authorities over DOD transportation to:

1) preserve WARFIGHTING capability,
2) improve oversight and availability of Defense Transportation System (DTS) operations,
3) increase effectiveness and efficiency through improved operating processes, and
4) establish and enforce transportation information and performance standards.

USCINCTRANS must be empowered with a broad range of authorities to quickly tailor operating practices, acquisition strategies, workforce, and information technologies to meet rapidly changing business environments and ensure the best possible support to customers. This 'strategic agility" should also be available to USCINCTRANS by linking accountability for DTS operations with the requisite responsibilities to ensure success. These responsibilities should include:

- Authority to establish and enforce DTS-related information standards and architectures, within the overall DII COE and DOD data standards.
- Head of agency status to ensure a clear line of authority from the CINC to the contracting activities with the transportation component commands.
- Approval authority for DTS operating procedures in appropriate defense regulations.

These authorities will significantly improve USCINCTRANS' ability to shape the DTS to meet current emerging demands of the warfighting commanders. These recommendations have been submitted as proposed Department of Defense Reform Initiative Directives (DRIDS).

Deployment Planning Process

The Department needs processes and procedures that make planning and execution truly responsive to the warfighting CINC's needs. Current efforts embodied in the Deployment Process Improvement Working Group, go a long way to truly transforming them. The Department needs to implement the capabilities and revisions as described by this group. The envisioned dynamic planning process makes daily use of accurate data of unit and equipment status and Services must provide this data. The data will reside on a database accessible to both commander and planner and is the basis for the responsive and tailorable process.

The Department must fund and field the automated systems already in progress to further cement these revised dynamic planning and execution systems. JTAV, GTN, TC-AIMS II, and JFRG are primary systems in getting to 2010 levels of performance. Monies and program authority should be monitored at the Department level to ensure that these systems are fielded on time.

The funding of US seaport improvements is fragmented and does not generally support the National Military Strategy. Additionally, events are taking place where foreign investment in strategic ports and at strategic crossroads, (such as the Chinese SuperPort at the Panama Canal) that could have tremendous adverse impact on the flow of materiel through those nodes. DOD must be able to provide input into the port improvement process to ensure that designated strategic ports such as bridge/highway/rail infrastructure, port dredging, crane lift capacity, cargo staging areas etc have the necessary infrastructure to support the National Military Strategy.

Deployment and Sustainment -- Recommendations (Continued)

Defense Science Board
1998 Summer Study

- **Support alternatives to delivery through fixed ports**
  - **JLOTS funding (SS3+, breakwater systems, stabilized cranes)**
  - **20-180% operating time improvement**
- **Execute Defense Reform Initiative Decisions (DRIDs)**
  - **Assign CINCTRANS related transportation business process ownership**
    - Cost avoidance and efficiencies
    - Significant near-term savings ($200M+)
  - **Deployment Planning Process**
    - Implement processes and policies that are responsive, and tailorable to the CINC's warfighting needs
    - Fully fund and field automated systems for dynamic planning and execution (GTN, JTAV, TC-AIMS II, etc.)

Slide 26 — Deployment and Sustainment Recommendations (Continued)

Sustainment effort drives most CONUS logistics system costs.

Sustainment effort drives most of the CONUS logistics system costs. Major savings are possible if the issues addressed in numerous DSB, DOD, and external studies are addressed and implemented. The key actions to be taken involve outsourcing greater reliance on contractor logistics support and consolidation and closure of facilities and bases. Savings in the billions of dollars are clearly feasible. The major barriers to their implementation are cultural and political.

The transformed logistics system will reduce the logistics base in theater as well as in CONUS and enhances the flexibility of the overall system.

CINC pull will reduce demand on the system. The shift to contractor and third party logistics are projected to realize a 25 percent savings at DLA similar to the 50 percent realized at Worldwide express and DHL. Indeed, a series of commercial companies briefed the Summer Study team and reported consistent cost savings and productivity improvements then they took steps similar to those recommended in this report.

The DOD logistics system must become an efficient arranger of services and support as well as a provider of products and services. The “arrangement” recommended is to use best commercial business practices to the greatest extent. Balance and judicious management must be exercised to ensure control of future costs and sub-optimization. The wholesale privatization of functions leads to loss of organic capability that can’t be easily restored. These risks need to be assessed in detail to ensure that war-fighter support does not deteriorate but is enhanced.

A comprehensive plan must be developed to address all the aspects of incorporating the best of commercial practices and benchmarks into the DOD system as well as furthering those open 1996 DSB recommendations. However, warfighter requirements should PULL the system thereby decreasing the footprint and increasing responsiveness.

Deployment and Sustainment -- Recommendations (Continued)

- **Sustainment effort drives most CONUS logistics systems costs (ICPs, supply point, depots, etc.)**
  - Major savings are possible -- use to fund logistics transformation and the procurement account
  - Issues addressed in numerous DOD, DSB, external studies
  - Barriers are cultural and political
- **Transformed logistics system reduces logistics base in theater and CONUS and enhances flexibility**
  - CINC pull reduces demand on supply system
  - Shift to contractor logistics support and 3rd party logistics and other commercial practices
    - Major cost/people savings in DLA (25%)
    - Worldwide express/DHL (50%)

SLIDE 27 — Demand Reduction

Summary of Issues

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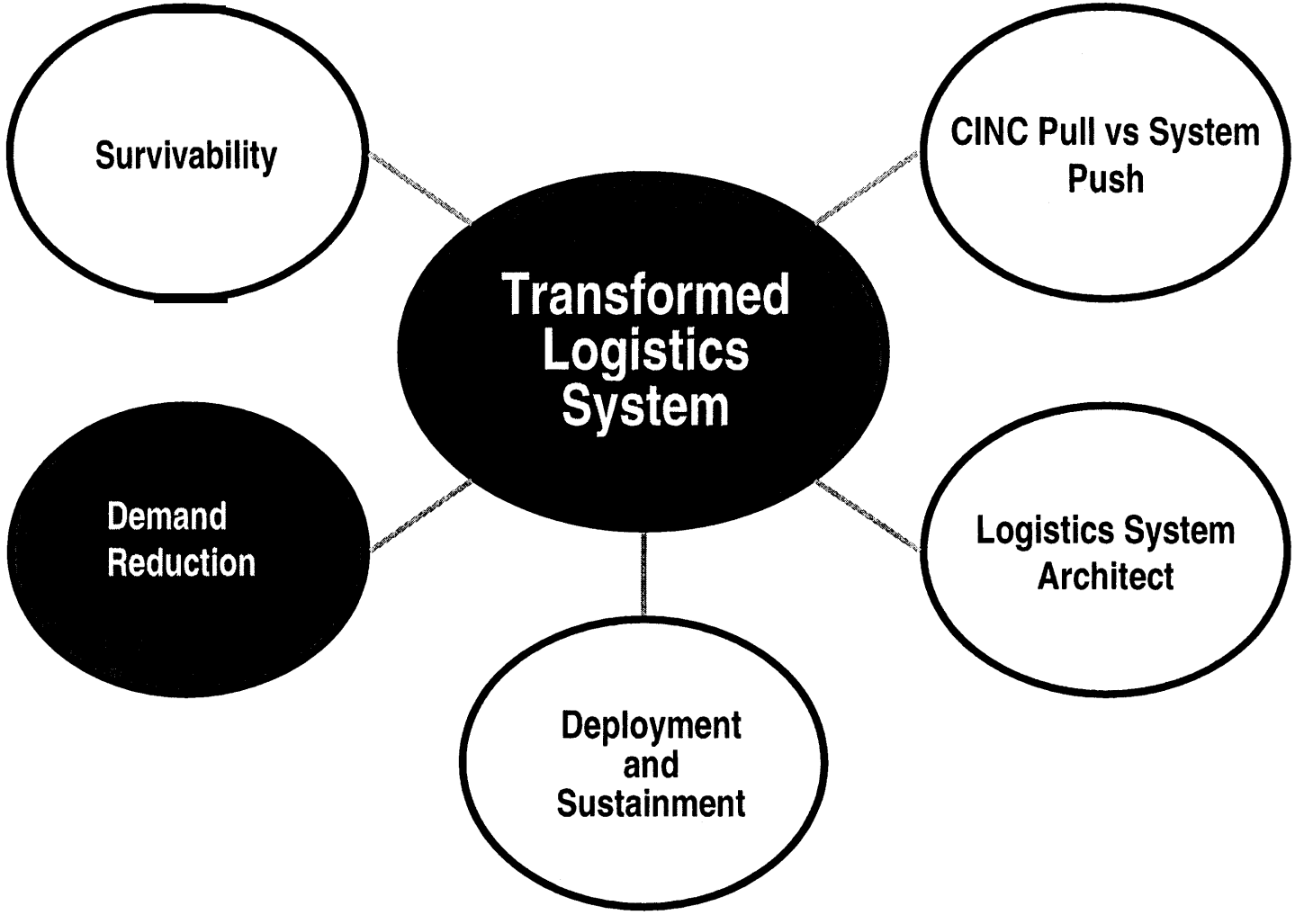

SLIDE 28 — Demand Reduction — Findings

Today's forces are too heavy to permit rapid deployment unless most equipment is prepositioned in the theater. This fact necessitates the large investment undertaken to establish, and sustain such forward deployed equipment.

Reducing U.S. forces' demand for materiel, people and logistics support pays off in big ways. It makes it possible to deploy combat forces more rapidly. It also permits, a smaller footprint in the battlespace (therefore a smaller force protection requirement), more agile forces, and lower operating and support costs. The challenge of demand reduction is to achieve this while simultaneously ensuring fully adequate operational availability of weapons system and the personnel in the battlespace necessary to sustain continuous combat.

The logistics support demands of U.S. forces can be significantly reduced within acceptable risks to combat effectiveness and personnel health and safety.

In-theater logistics demand can be reduced in two ways: (1) redesigning of combat and support organizations and their equipment to reduce their size, weight and consumption rates (e.g., fuel, water and munitions), and (2) adopting management techniques that reduce system / equipment maintenance demands and supply consumption. When successfully achieved, reduced demand lessens support personnel and inventory requirements, and allows for a sharp reduction in the size of supply materiel, and a much more agile force.

Demand Reduction -- Findings

Defense Science Board
1998 Summer Study

- Today's forces are too heavy to permit rapid deployment unless most equipment is prepositioned in the theater
- Big payoff for early entry and continuous combat
  - Faster deployment of combat forces
  - Smaller footprint in theater
  - More agile forces
  - Lower costs
- Reduces subsequent sustainment burden
- Opportunities to reduce demand include:
  - Redesigned force structure and equipment
  - Other demand management techniques

Critical to 21st Century Logistics Vision

SLIDE 29 — Demand Reduction – Recommendations

Lighter Forces and Equipment

Findings ways to lighten deploying forces in terms of size, weight and manning, is critical to reducing logistics demand. The Army After Next (AAN), Air Force Expeditionary Forces and the Navy "Smart Ship" programs are illustrations of how technology advances in materials, energetics, information, and sensors can make possible new force concepts that are lighter, yet still pack the combat punch of today's heavy conventional forces through use of vastly improved situational awareness, precision guided munitions, unmanned platforms, knowledge management and high reliability systems. Each of these lightened force concepts provides improved agility, reduced vulnerability and global reach through reduced logistic demand.

In designing future platforms it is critical that services attention be given to size (e.g., to be moved by commercial wide-body jets), weight (to ease shipping and fuel consumption) and technology to reduce maintenance and support needs in the theater of combat. Over time these actions will dramatically reduce the demand on deployment capability and sustainment needs.

Cultural Barriers

Initiatives to lighten force structure and equipment often face cultural barriers within the Services. Reductions to platform manning (crew size) and use of unmanned air and ground platforms will require strong leadership commitment if they are to become reality.

Force Consumption Rates

Technology is a key enabler for demand reductions through lower consumption rates, especially repair and maintenance parts. DOD R and D efforts should be focused on research that will reduce consumption rates for both new and legacy weapons systems / equipment. Programs that address weight and fuel / power reduction, precision guided munitions, increased reliability / durability, "self-healing" and graceful degradation, and ease of repair are all contributors to consumption rate reduction. Increasing the mix of PGMs could reduce munitions demand by 25percent of present estimates with the same target effects; fuel consumption reductions of 50percent for land, air and sea platforms appear feasible as a result of DOD and commercial R and D efforts on hybrid engines, fuel cells, electric drive and other technologies. While battery technology improvements are happening slowly, efforts to reduce power consumption in electronic equipment are progressing briskly.

Demand Management

Demand reduction also requires management changes in the way Unified Command customers and the Services manage consumption. Commercial firms have found that demand management is a critical component of competitive advantage. Leading firms have learned how to anticipate changing consumption patterns and how to respond quickly. This supply chain management is precisely what DOD's logistics system needs.

CINC "Pull" covered earlier in this report is the first management change required. Their changing needs must stimulate the supply system to respond to fuel, water, munitions, parts requirements as the situation changes. There must be no "empty shelves," but there must be no excess supplies either.

Demand Reduction -- Recommendations

Defense Science Board
1998 Summer Study

- **Force structure**
  - Reduce size & weight, and use fewer people
    - Examples: army after next (AAN), smart ship
  - Must overcome the cultural barriers, e.G., Crew size, use of unmanned vehicles, artillery vs. Missile
    - Focus R&D on "agile force" with fewer platforms
  - Apply R&D to reduce consumption rates, i.E., PGM; fuel efficient, super reliable equipment

Critical to goals of DSB 96 SS on Tactics and Techniques ...; DSB '98 SS Joint Operations Superiority in the 21st Century

Slide 30 — Demand Reduction — 2nd page of recommendations

Make Program Managers Responsible for Total Ownership Cost for both New and Legacy Systems.

DODI 5000.1 and current DOD practice fixes responsibility for Life Cycle Support of new systems with Program Managers. This policy has not been extended to legacy systems, where support responsibility is diffused among organizations and commodity and maintenance managers in the Service materiel commands and DLA. This recommendation is a repeat of similar recommendations made in earlier DSB studies: responsibility for managing weapons systems from "cradle to grave" should be explicitly assigned for the life of the equipment to appropriate Program Managers, whose reporting chain extends either through a Program Executive Officer or Systems / Materiel Command to the Service Acquisition Executives.[1]

A standard process should be established for defining and measuring Total Ownership Costs (TOC) including standard rules for allocating indirect costs and a method for assessing the impact on contingency lift requirements. TOC and lift goals and other demand reduction requirements should be passed along to industry in contracts.

Platform-level Program Managers today control 30 percent or less of the TOC of their systems. Service budgeting and financial procedures should be modified to enable flexible funding between sustainment and investment accounts in new budget years; investments that reduce operational support requirements of legacy systems should result from these shifts.

Role of JROC/ PPBS

Logistics demand reduction will only occur if it is a priority at every step in the JROC and PPBS processes. Stronger efforts to produce joint requirements to cut redundant and single-service logistics requirements are needed

1 This policy was recommended by the DSB Acquisition Work Force Sub-Panel in its March 1998 report, and partially adopted by the Secretary of Defense in his report to the Congress ("Secretary of Defense Report to Congress: Actions to Accelerate the Movement to the New Acquisition Workforce Vision," dated April 1, 1998, pages 9 and I0) committing to having the Services designate ten major systems for PM management of product support, Similar recommendations are included in the DSB 1996 Summer Study "Innovative Support , , ." and the report of the DSB Task Force on Logistics Modernization of April 1996.

Invest to Reduce Life Cycle Costs

Based on business case analysis, legacy systems should be evaluated to determine where investments can be made in TOC reduction, service life extension, or, in some cases disposal. High-leverage areas for attention include re-engining ground platforms (e.g., hybrid-electric), band tracks, fuel cells and other non-battery power technology. The payoff from investments in reliability, durability, and maintainability was identified in the DSB's 1996 study, "Logistics Modernization."

Program managers, and producers continually propose other investments. The problem is finding the $300 – $500 million a year to invest. Two other ways to fund these investments following. Planned buys of reparables could be competed as long-term (base year plus option years) contracts with form-fit-function performance specifications and incentives for reliability/durability. "Best value" source selection would stress expected improvements over the current component. A second approach would utilize the contractor-logistics support (CLS) mechanism to incentivize overall operating and support cost reduction based on lower spares demand DOD an incentive the prime would be persuaded to pass on.

Competitively Source Product Support

Weapons System Program Managers, assigned "cradle to grave" responsibility, should be required to competitively source all equipment support requirements above the "organizational" level. The DSB report "Acquisition Workforce Sub-Panel of March 1998, covers this extensively. Such competitive sourcing can for new systems, take the form of extended warranties that strongly incentivize suppliers to provide equipment with growing reliability and declining support requirements. For fielded equipment, such competitive sourcing, including public/private competitions, will create continued downward pressure on support needs.

Competitively contracting for support that has historically been provided by government personnel demands improved DOD contracting sophistication and skills if potential benefits are to be fully realized. Dedicated training, development and publishing of "lessons learned," developing model contracts, and extensive dialogue with industry -to achieve the fostering of a healthy integrated partnership with industry – are required.

Demand Reduction -- Recommendations

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1998 Summer Study

- Equipment:: make PMs responsible for total ownership cost
  - **Make demand reduction significant objective of JROC/PPBS**
  - **Invest to reduce life cycle costs (set ROI of 3-5:1)**
    - Improve reliability, maintainability
    - Decrease fuel/ammo/power consumption
  - **Reduce weight, crew size**
- Competitively source weapon systems and equipment support above organization level; save $7 B over 10 yrs

A Major Commercial Focus

LPD-17 Example
20% ($4B) TOC Reduction

Army IETMs can save $1.8B over 10yrs on 24 W/S

Operational Support accounts for 60% of LCC

Slide 31 — Illustrative Actions for Demand Reduction

The key sustainment demands have been identified, (and to a lesser degree for initial deployment). Significant reductions in demand for each can be realized. A series of seemingly "evolutionary" changes can have over time an impact to force projection needs that is revolutionary. Illustrative actions for each of the "classes of demand" listed have been identified. "Real" technologies, with potential for improvements, were reviewed.

Fuel

Significant progress can and should be made in the fuel area. The significant increase in fuel efficiency of the US automobile fleet over the last 25 years (about 50 percent) is indicative of the scope of improvement possible given the appropriate focus and incentives. Fuel cell use and the replacement of current ground platform engines with hybrid-electric power trains featuring direct electric drive have the potential to increase the "gas mileage" of the ground fleet by 50percent or more, even for a force structure that contains a large number of legacy platforms. This is an opportunity that must not be missed. Considerable work will take place in the commercial market in these areas, that DOD can apply to its systems. Efforts to reduce platform weight (through new types of armor appliques, etc.) will also reduce fuel use, but are important in-and-of themselves, because of their implications on lift.

Ammunition

Previous DSB and other studies have identified revolutionary decreases in total ammunition weight that are enabled by new technologies. The substitution of smart weapons for conventional weapons permit order-of-magnitude reductions in the number of rounds needed to accomplish an effect. The use of super-precision long-range fire support rather than local conventional artillery should permit similar weight reductions, as well as significant operational benefits, In the time period under consideration, the use of directed energy for some fire missions – for example, ground-based anti-rocket, anti-artillery, and point defense of key assets – is highly likely to be feasible, and the weight and cost of directed energy "ammunition" per kill is another one or two order-of-magnitude class benefit.

Reliable, Durable, Maintainable Spares

The use of more reliable and longer-lasting spares will significantly reduce total demand for spares. An example in the commercial field is band tracks as replacements for conventional segmented link tracks on ground vehicles. The commercial world has built 250 ton vehicles that can go 60 miles per hour using band tracks, and expects that the life-cycle cost/maintenance requirement for these tracks will be reduced by roughly one-order-of-magnitude for this action alone.

Platform Based IT

Additionally the use of the platform-based information technology described earlier in the briefing will enable condition-based maintenance (that is, fix it when prognostics say that it might fail soon, rather than based on miles, hours, or the calendar). Analysis for both the commercial and military domains shows that condition-based maintenance will provide significant decreases in many areas. These include maintenance actions, improved operational availability of the fleet, significant decreases in the number of maintainers required, decreases in the time to determine the problem with a platform, and decreases in the total weight and quantity of spare parts required.

Demand Reduction -- Recommendation

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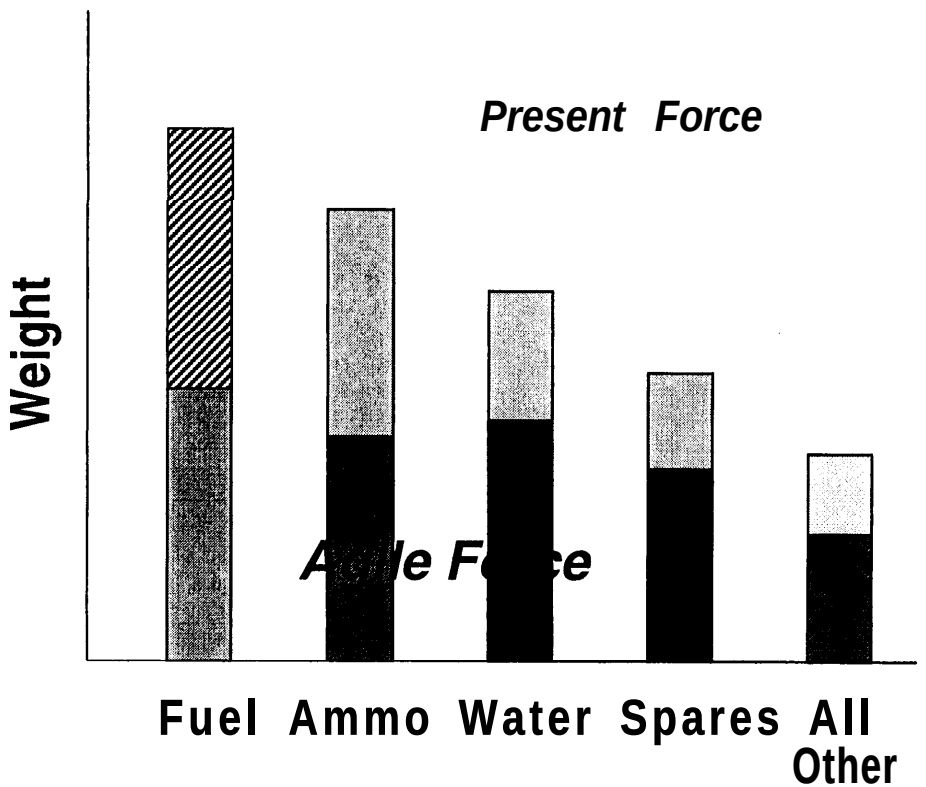
Notional Logistics Support Demand



Illustrative Actions

Fuel:

- Increase fuel efficiency
- Move to fuel cells
- R&D focus on power sources

Ammo:

- Substitute smart for dumb weapons
- Long range fire support
- More missile, less artillery

Water:

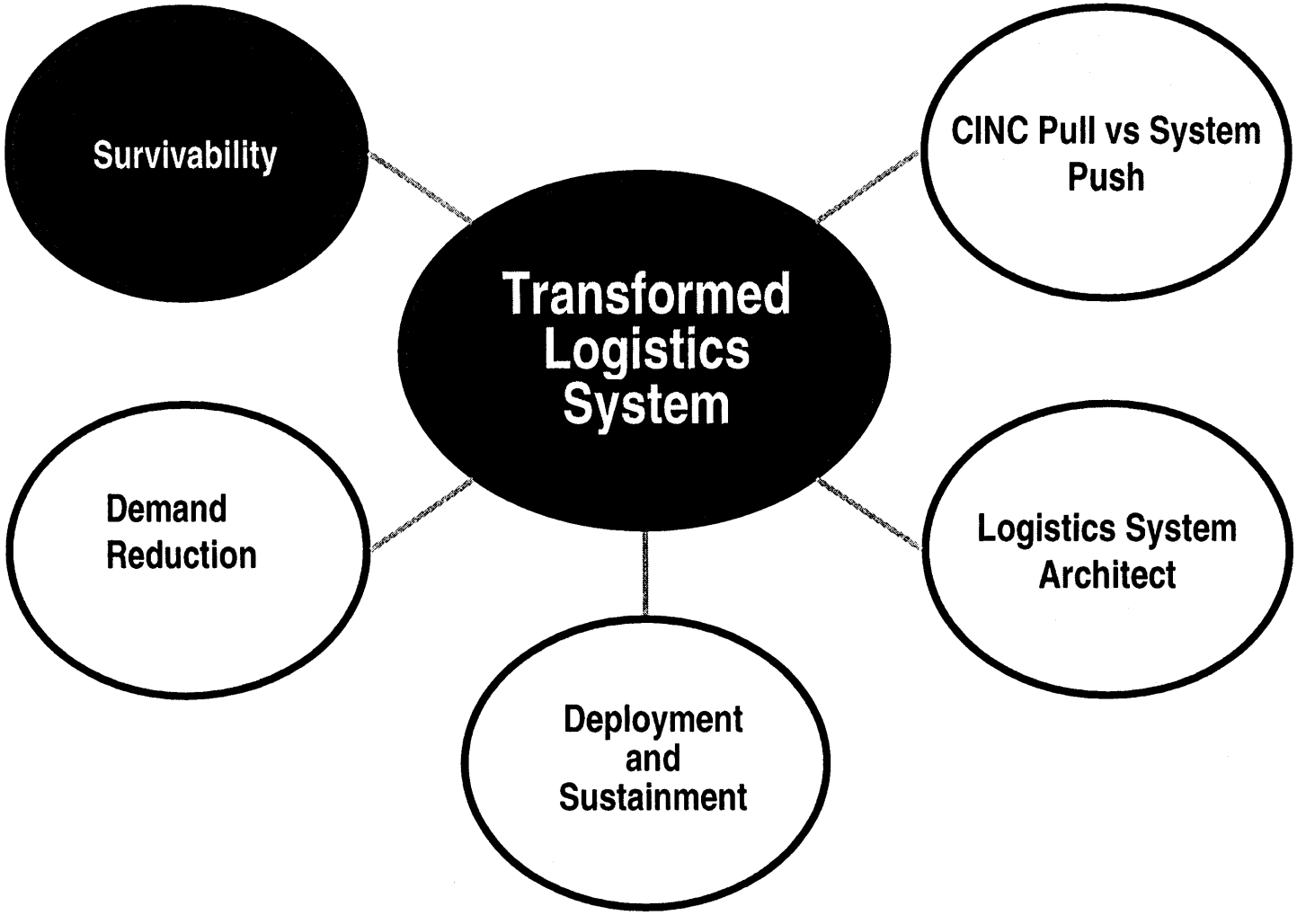
- New purification technology
- Host country arrangement

- **Spares:**
  - * More reliable/durable
  - Design for ease of repair
  - Platform-based IT for condition-based maintenance

SLIDE 32 — Survivability

Summary of Issues

Defense Science Board
1998 Summer Study



Slide 33 — Survivability – Findings

Even though the nature and proliferation of specific threats to logistics are changing, they still fall into two categories: adversary / intentional actions; and, environmental conditions. Adversary and intentional actions include traditional threats (such as opposed delivery and port disruption) but have also expanded to include new menaces (IW and CBW). The only effective defense against these adversary threats is prevention or mitigation; the reaction is assured response. Environmental threats are the same as those faced in the past: here planning and preparation is the best measure.

Considerable past attention has been paid logistics vulnerabilities, however this attention has focused mostly on conventional threats. These threats are concentrated and can be protected against at sea and air ports, depots and storage areas, although serious vulnerabilities to SOF-like attack remain. The proliferation of chemical and biological weapons, however, raises new threats to logistics that can be devastating and more difficult to cope with.

Survivability -- Findings

- **The spectrum of threats is very broad and includes:**

Adversary Actions	Environment
IW/EW against log system	High seas, winds
Chem/bio attack on log nodes	Undeveloped ports, airfields
Opposed delivery (e.g., mines, subs)	Civil disruption(e.g., refugees)
Disruption of ports, airfields	Natural disasters)

- **Considerable attention has been given to logistics vulnerability since 1990.**
- **Most conventional attacks have limited impact if planning anticipates**
  - **Most vulnerable points are takeoffs and landings of airlift, disruption of PREPO in deployment, and civilian infrastructure during sustainment**
  - **Serious vulnerabilities remain against concerted SOF type attack (PREPO afloat, DLA centers, supporting civilian industry and infrastructure)**
- **Sophisticated IW/CBW attacks could be devastating to logistics**

Slide 34 — The Strength is Redundancy

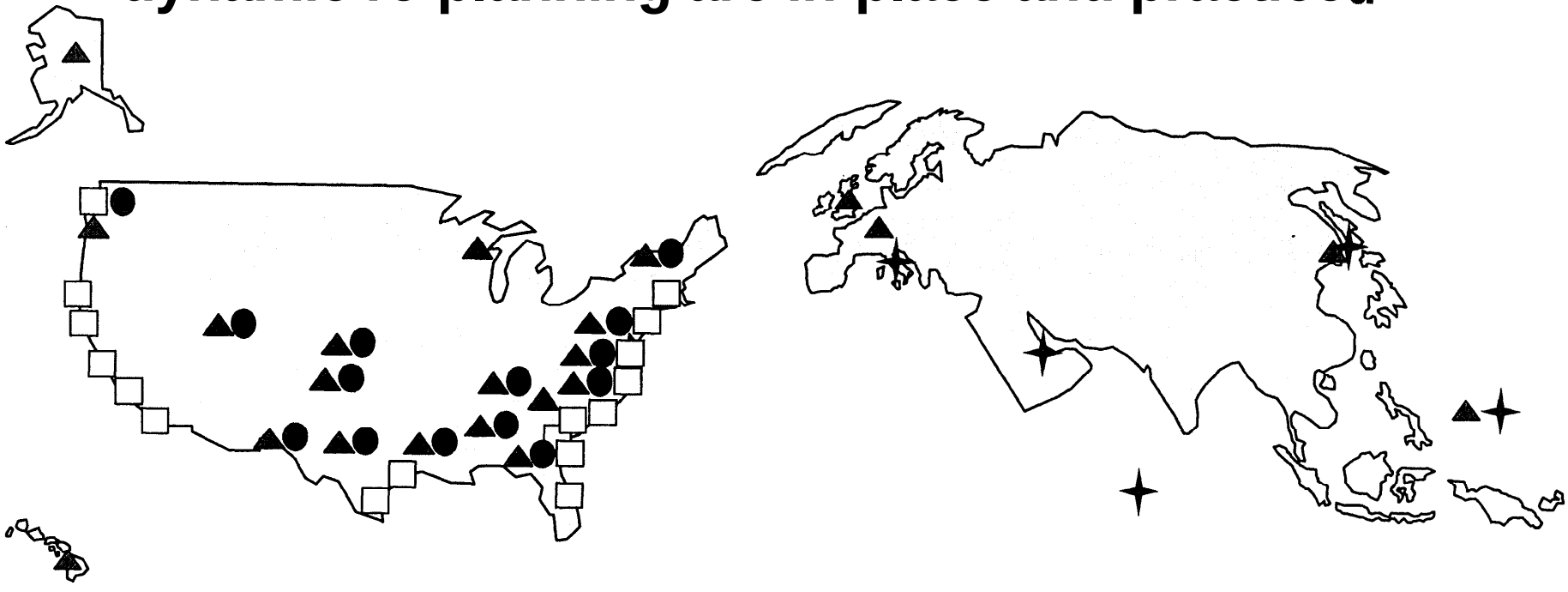
The strength of the U.S. logistics system in the Continental United States (CONUS) is its redundancy. There are many debarkation sea and air pots; disabling one or a few will have little long term effect.

In contrast, there are few receiving points for theater supply; each is a critical element of the logistics system. For Instance, during Desert Shield/Desert. Storm, 5.6 percent of our lift traffic went by air, and 94.4 percent by sea. Seventy-eight percent of the air traffic went through five aerial ports of debarkation (APOD), and 96 percent of sea traffic went through 2 sea ports of debarkation (SPOD). Had any of the APODs or SPODs been compromised by hostile action, the effect would have been very detrimental.

The Strength Is the Redundancy

Defense Science Board
1998 Summer Study

Only if detailed planning and control and dynamic re-planning are in-place and practiced



But ...
In Gulf, 78% of air went through 5 APOD and 96% of sea through 2 SPOD

Slide 35 — IW Against Logistics

Information is the key technology in logistics transformation, yet today's information system is very open to attack. It functions well when unperturbed, but any significant disruption (power interruption, IW penetration, common node failure) can have drastic and far reaching effects. The system is heavily reliant on a commercial infrastructure (depots, posts, communication systems, power) that is seldom as hardened as their military counterpart.

The Time Phased Force Deployment List (TPFDL) provides coordinated directions for materiel and equipment shipment. Insertion of false data into the TPFDL in coordination with another logistics attack (for instance disruption of a critical railway link) can produce confusion and chaos throughout the logistics system.

In more subtle attack, all of a commodity (i.e., medical supplies) could be diverted to a single shipment (port) or storage point, and then rendered unusable (for instance by CB attack), severely impacting all operations. Unfortunately, commodity concentrations sometimes occur in today's operations with no sinister intent, providing the opportunity easy attack.

Subterfuge, and long term infiltration are a part of the most sophisticated IW attacks. Hostile insiders with access to protected information systems and networks can wreck havoc on a global scale. These can be the most devastating threats to logistics, but require long times to set up and considerable support and infrastructure.

IW Against Logistics

Defense Science Board
1998 Summer Study

- Crude attacks
  - System penetration, data overload/interrupt
  - Coordinated with physical/CBW attack
- Competent hacker
  - More subtle forms of "overload" such as false data
  - Divert military flow into physical attack, deny replanning
- Pro attacker (sophisticated attacks)
  - Target a critical commodity (e.G., Medical)
  - Monitor and alter industrial distribution
  - Deny specific capability, manipulate replanning, couple to other forms of disruption

Slide 36 — CBW Against Logistics

Chemical and biological weapons can be more damaging when used against logistics sites then, when used against conventional military targets. In part, this is due to high numbers of unprepared civilians and contractors present logistics sites

The psychological impact of a credible CBW threat to a large materiel marshalling or prepo area sufficient to require military personnel to enter MOPP 4 on civilians who lack protective gear and vaccinations can be severe. Once they realize their vulnerability, few civilians and contractors will remain on the job, jeopardizing the flow of materiel through the area.

The CBW threat is pervasive and attacks require less sophistication than previously thought. While sarin and VX are frightening, ammonia and chorine are just as deadly and much more available Even phosgene, used as a war gas in World War I, is readily available as an industrial chemical, shipped in bulk quantities in all industrialized countries. Obtaining large quantities of chemical agents through theft is relatively easy.

Many U.S. logistics facilities rely heavily on local civilian contract personnel. These people are a soft entry point into the system, also an excellent target for coercion and psychological operations.

No effective way of decontaminating large areas now exists. Logistics areas are particularly susceptible.

CBW Against Logistics

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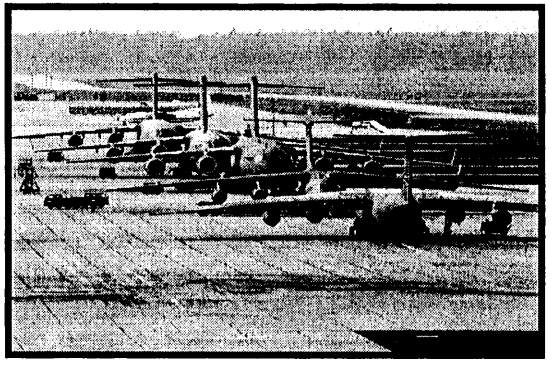
Postulated Attacks



SPOD Attack

- Helo spray cholera by air
- Anthrax spores in ground holding areas
- Random poisoning food in civilian community

Civilian Personnel: 2000
Military Personnel: 1000
Tons of Cargo (per day):10,000

APOD Attack

- Mustard deployed by truck when CRAF on ground
- Contaminate adjacent civilian personnel cafeteria

Civilian Personnel: 300
Military Personnel: 100
Tons of Cargo (per day): 1000

DLA Center Attack

- "Virtual Attack"
- Provide credible threat of anthrax attack
- Trigger any BW detectors with simulants

Civilian Personnel: 2470
Military Personnel: 12
Line Items (per day): 23000

Slide 37 — Survivability Questions

Substantial questions remain to be answered about U.S. military logistics vulnerability. The study group devised a short list of actions that would hamper deployment – the Joint Special Operations Command (JSOC) can devise many more possibilities. It is not clear how well threats to DOD's logistics systems have been studied.

Survivability Questions That Should Be Asked

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- **How well thought out/documented: threat/response for Conventional attacks?**
- **How would JSOC undertake this attack, estimate probability Of success?**
- **Some attacks to consider:**
  - Sink MSC tankers and cargo carriers in US ports
  - Derail, close rail lines in key segments of track
  - Destroy POL farm in Saudi
  - Seize PREPO ships in Diego Garcia, scuttle in harbor mouth
  - Destroy major parts or all of Susquehana DLA center
  - Destroying much of Kuwait PREPO before it deploys
  - Drop key bridges in CONUS

Slide 38 — Survivability - Recommendations

The Chairman, Joint Chiefs of Staff should direct the J4, in concert with the J34, to comprehensively review and validate logistics and prepositioned equipment vulnerability assessments, and response / contingency plans. They should provide an initial report in four months and detailed results to the SECDEF with in 9 months.

Logistics issues and problems are not part of wargames and simulation exercises because they are seen as hard to simulate or disruptive because they "mess up the game." Since logistics is the heart of the U.S. capability, it must be exercised and taught to the leadership as a limiting factor in planning and operations. Red team assaults against the logistics infrastructure should be a part of every wargame and simulation exercise undertaken by the Department, both Joint and service.

The information warfare protection developed and implemented for C3I system must be applied to logistics systems.

The CJCS should direct J4 action to assure that logistics-unique threats from CBW be included in planning operations. APOD and SPOD vulnerability to CBW attack should receive special scrutiny.

Survivability -- Recommendations

Defense Science Board
1998 Summer Study

- CJCS direct J4 (in concert with J34) to comprehensively review and validate existing logistics/prepo vulnerability assessments and response/contingency plans
  - Provide initial report in 4 months, and detailed results to SECDEF within 9 months
- Include red team assaults against logistics in every wargame and simulation exercise, joint and service (CJCS)
- Apply same IW standards to logistics as being used for other portions of the C^3I system (process owner)
- CJCS direct J4 action to ensure that logistics-unique aspects of CBW are included in planning for operations and logistics

Slide 39 — Logistics System transformation

Summary and Conclusion follow:

Logistics System Transformation

Defense Science Board
1998 Summer Study

Summary
And
Concluding comments

SLIDE — 40 Transformed Logistics System: Summary

As a definition of "transformation in military logistics", the Task Force concluded that transformation could not be achieved without a "marked change in the nature and form of the structure and processes that equip, deploy and sustain military operations". While the Task Force did not find any magical silver bullets to achieve the desired transformed logistics system, implementation of the Task Force's recommendations will be transformational.

Transformed Logistics System: Summary

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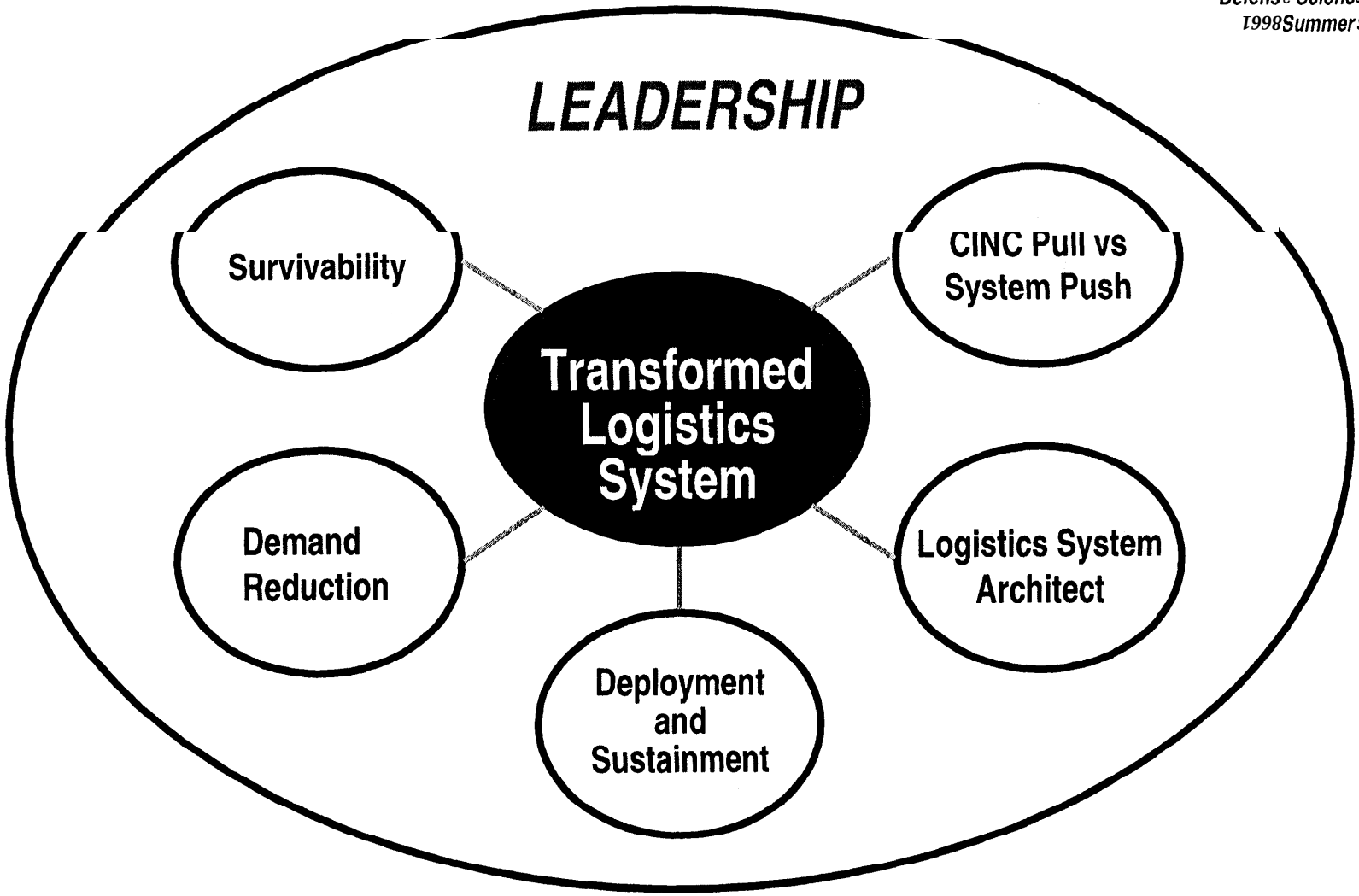

No silver bullets -- but combination of actions will be transformational

SLIDE 41 — Logistics System Requires Transformation (Not Marginal Improvements)

Building off Slide 6 which compared today's logistics system capabilities with "transformation" requirements, this slide summarizes and relates the Task Force's specific "transformation" recommendations to the specific requirements needed in the transformed logistics system.

21 st Century Logistics System Requires Transformation, Not Marginal Improvements

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Area of Focus	Transformation Requirements	Transformation Recommendations
LOGISTICS SYSTEM	Needed knowledge. Integrated with excellent visibility across supply chain - able to manage and use real time. System Architect in charge.	Appoint a System Architect Modernize logistics business processes and IS Establish and monitor performance of logistics system transformation'plan
CINC PULL VS. SERVICE PUSH	CINC enabled to "pull" logistics to meet needs, operations tempo	Provide CINC logistics command Provide reliable information system CINC tailor force, munitions, sustainment packages Provide real-time monitoring
DEPLOYMENT AND SUSTAINMENT		
Combat Force Deployment	Entry in 24 hours, sustainability in 7 days	Encourage commercial transportation R&D efforts to include military requirements
	Planning process is rapid and flexible	Implement policies and fund systems to achieve a flexible dynamic planning process
	Improve and reduce costs of present transportation business process	Assign CINCTRANS related transportation business prcess ownership
Sea Port Requirements	Bypass ports with over-the-shore capability - at least sea state 3	Fully fund JLOTS
DEMAND		
Footprint (in-theater)	Small, dispersed, mobile	Reduce force Size, weight, people
Weapon Systems	Built for high reliability/commercial repair	Invest to reduce life-cycle costs
		Competitively source all support above org level
SURVIVABILITY	Robust with good detection and mitigation methods	Radically increase high level attention to vulnerabilities in logistics for conventional. IW. CBW attacks
LEADERSHIP		
Executive Leaders	*Persistent vision, comprehensive plan, resource trades*	*Implement logistics transformation*
Acquisition/Operations/Logistics Integration	*Fully integrated: seamless: efficient over the full life-cycle*	*Implement logistics transformation*
Cost Reduction	*Minimized while meeting warigh ter n eeds: TOC visibility/management*	*Make investment in true logistics transformation*

SLIDE 42 — Logistics Transformation — Financial Implications

The costs of implementing the Task Force's recommendations are estimated at about $1 billion a year. These incremental costs assume continued DOD support of ongoing improvements in logistics system processes and capabilities.

These projected savings, however, MUST NOT be calculated in the Department's budget bottom line. These savings reflect a budget transfer from the disproportionately high cost of today's logistics system into a woefully under-resourced force modernization account.

Logistics Transformation -- Implications

Defense Science Board
1998 Summer Study

Issue *Addressed 1996 SS	End-State Cost Savings	Investment	Impact
1. *Strengthen CINC Pull**	Significant inventory reduction $1-2 B	Planning tools, prognostics, etc $150M per year	Greatly enhanced theater log support, and responsiveness; reduced footprint
2. Designate USD(L) as the Logistics Architect Develop an integrated process and system *	Potential for: 1 O-1 5% direct labor; 1530% indirect ($3-$6B); 5-l 5% non-labor ($1-3B)	Studies, focused systems, tools, etc--$140 M; Execute systems modernization within current systems $1.8 B budget	Ability to achieve "focused logistics"; true JTF supportability; Platform for continuous modernization; "Truly a national asset"
3. Corn mercial Lift Capabilities	Avoid future military lift investment	$100 M/year	Greatly increased lift and reduced need for military lift assets
4. Demand Reduction'	$1-2 B /Year	R&D, reliability enhancements $500 M /year	Faster deployment of cornbat capability, smaller footprint, more flexibility, less maintenance; reduced lift burden, and military lift investment
5. Vulnerability	Opportunity Cost	$100 M /year	Avoid casualties and loss of assets: reduced risk to military support

Slide 43 – Logistics transformation – Savings Goal

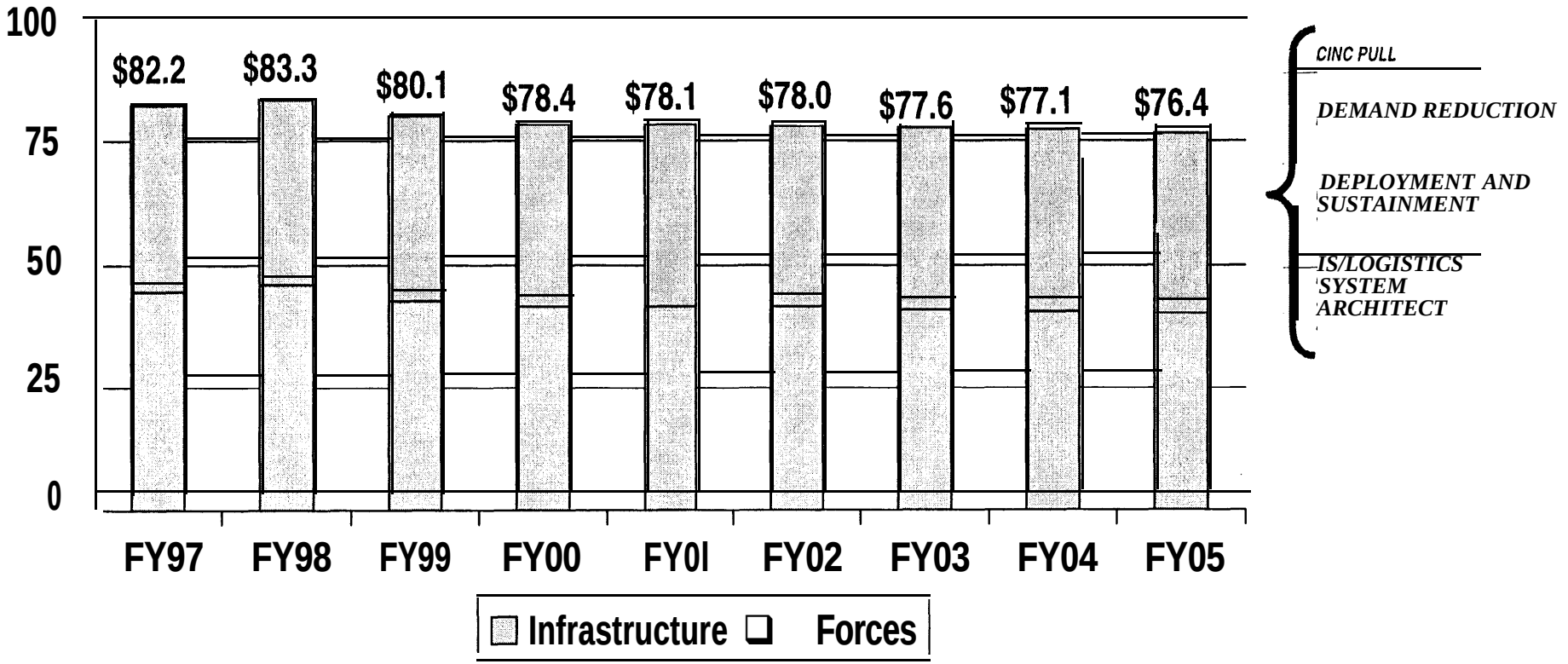
When Caterpillar "transformed" its logistics system, its inventory went down by one half and its costs were reduced by one third. The question is can the DOD achieve similar success.

The current FYDP already assumes an 8-9 percent reduction in logistics costs. Through implementation of the Task Force's recommendations plus those recommendations made in the 1996 DSB logistics study, an overall target reduction of 20percent in the cost of the logistics system is readily achievable. The key to achieving these savings is to make the logistics system "customer driven" and the appointment of a Logistics System Architect.

$6B in Savings by FY 05 Needed Just to Live Within FYDP

Defense Science Board
1998 Summer Study

FYDP Plans On 8-9% Decrease (FY97 Constant Dollars -- Billions)



Added Saving Could be Used for Modernization

SLIDE 44 — Achieving Logistics Transformation

The need to transform todays logistics system to meet the needs of the 21st century is critical and compelling. It represents a major challenge to the Department, but also an incredible opportunity. Achieving such transformation is more than anything else a process and leadership issue. As with all leadership issues, the transformation of the military logistics system is an issue of: IF NOT YOU, WHO?

Over the next five years, DOD's logistics system will consume over $400 million and annually absorb nearly one half of DOD's entire military and civilian personnel. The military logistics system is immensely complex, comprises a very large and cumbersome business, and its transformation is urgently required. As it is configured today, it constrains military operations, cannot adapt to the requirements of the 21st century, and its excessive cost is unnecessarily precluding vitally needed force modernization. While inseparable from the requirements, acquisition and operational processes it must support, the logistics system today is managed and sub-optimized due to poor linkages to the critical functions to which it is connected.

Corporate experience has proven that very large, complex business processes can be improved with savings in excess of 3 percent per year as a normal achievement. With a system as large as the DOD logistics system (greater than $80 billion/year), even a 3 percent savings per year will net over $12 billion per year after 5 years of improvements.

By leading its transformation as part of overall improvements across DOD's business and operational processes, even greater savings should be achieved. The overall goal for the Department must be on achieving maximum sustainable military capabilities within the resources available before the Department can assess the adequacy of this nation's current spending on its national defense.

Transforming the DOD logistics system is an undertaking larger than any of its major weapon systems projects. While the logistics system can be, and has been most effective, it relies on the inefficient and tactically limiting mass of vast, forward area supply depots to achieve that effectiveness. Such a system is not sustainable, affordable, or effective in the future military environment of the 21st century.

Transformation Leadership

In order to realize the tremendous benefits provided by the logistics transformation described, DOD must devote the same level of management attention to make it happen as it would to the largest weapon system development ever envisioned or to major shifts in operational concepts. Logistics transformation is a complex, multi-year business project which affects $400-$8008 and hundreds of logistics missions over the next 5 to 10 years. It involves changing practices in 4 services, 9 CINCs, over 20 logistics commands and numerous Defense agencies and business practices (e.g., finance and accounting, DISA, DISTA, DCMC, DLA, etc.).

Strong, persistent leadership is crucial to make the degree of changes that are necessary to effect logistics transformation. No commercial businesses are successful in transformations of this extent without two factors: focused, committed top level leadership support and, second, a "system architect" (see Task Force recommendations on this "system architect") to make it happen. This leadership requires strong agreement among a small group of the most senior leaders regarding a shared vision for the enterprise, the objectives, the resources required, the expected outcome, the priority of the effort with regard to other activities, and the management ("system architect") approach. Proper leadership also insists that a comprehensive plan exists in sufficient detail to ensure that key milestones are identified, appropriate resources are dedicated, tasks and responsibilities are defined, and accountabilities are understood.

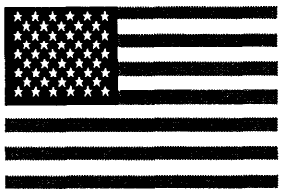
The Task Force also did not second guess all of the creative thinking and hard work that encompasses the "Focused Logistics" aspects of Joint Vision 2010. The challenge for DOD leadership is to get their arms around the many separate, but not yet sufficiently connected, initiatives ongoing to improve the military logistics system and manage them as a comprehensive whole within the additional recommendations made by this DSB study.

Progress reviews must be conducted in sufficient detail to assure schedule and budget performance and to address areas of poor performance. Since this transformation will take 5-10 years, it is important to implement a management approach and structure that will survive changes in personnel at executive levels (both uniformed and civilian).

This fundamental management approach is not new to DOD. The Department knows how to get things done whenever a very high level program or mission must be initiated and accomplished. The Task Force hopes that the Department will once again adopt such a management approach for logistics transformation. The future of force modernization and the success of future military operations are at stake.

For these reasons the Task Force believes serious consideration should be given to making a Logistics Transformation a Defense Reform Initiative, to be supported and tracked as the other initiatives are being done.

Achieving Logistics Transformation



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"DOD After Next"

Cold War Infrastructure

Critical Needs

- Top level leadership don't delegate
- Agreement at senior levels
- Comprehensive master plan
- Enforcement
- Staying power

Transformed Logistics System

System Architect Combined with Top-level Support

1998 DSB Logistics Transformation Summer Study Recommendations

Build from existing initiatives: JV2010, Revolution in Military Logistics (RML)

Key Fixes

- CINC Pull
- Redesigned, Integrated System
- Enhanced Deployment & Sustainment
- Reduce Demand
- Reduced Vulnerability

Make Logistics Transformation a Defense Reform Initiative

Defense Science Board
1998 Summer Study

Defense Science Board
Summer Study Task Force
LogisticsTransformation

The End

Co-chairs:

Phil Odeen Bill Howard

Logistics Transformation: Key to Full Spectrum Engagement

Appendix A – Terms of Reference

THE UNDER SECRETARY OF DEFENSE
30 10 DEFENSE PENTAGON
WASHINGTON. D.C. 20301-3010

ACQUISITION AND
TECHNOLOGY

24 MAR 1998

MEMORANDUM FOR THE CHAIRMAN, DEFENSE SCIENCE BOARD

Subject: Terms of Reference -- Defense Science Board 1998 Summer Study Task Force on DOD Logistics Transformation.

You are requested to form a Defense Science Board (DSB) Task Force to address the Transformation of Military Logistics. The Task Force should focus on providing the warfighter with responsive logistic support across the range of missions, threats, and environments DOD is likely to face in the 21st Century. Primary attention should be given to future challenges rather than current issues and the goal will be a true transformation-not marginal improvements-to the logistics systems.

The Task Force should address the following logistics tasks related to the support of Joint Vision 2010 and beyond forces:

- Funding and implementation plans for the Focused Logistics goal of full spectrum supportability.
- Employing information technology to fully and responsively link combat units with the logistic support system and PPBS including potential budget process adjustments such as lengthening the budget cycle or setting multiyear appropriations for greater program stability.
- Exploiting commercial best practice to provide dramatically improved logistic support.
- Developing innovative ways to operate with a very small logistic footprint given the proliferation of WMD and advanced weapons technology.
- Streamlining resupply and other support requirements to reduce the logistics demand and footprint.
- Feasibility of using, on a test basis, modern commercial concepts for ordering/delivering/stocking spares at operational bases.
- Creation of detailed logistics models and simulations that can produce effective and efficient logistics operational and infrastructure options.
- Outline means of assessing customer satisfaction, into the 2010 time frame and beyond - including measures of effectiveness and means of measurement-

In addition, the Task Force should address other logistics issues including.

- Assessing progress in implementing the 1996 DSB Task Force Reports on Logistics Modernization and Strategic Mobility
- Examining innovative commercial lift and velocity technology to enhance significantly our deployment and resupply capabilities.
- Maintaining our ability to conduct coalition operations and exploring ways to exploit third country support.
- Minimizing the vulnerability of logistics systems to information warfare and WMD in CONUS as well as in theater.
- Linking R&D technologies to future logistics systems enhancement in areas to include: components, robotics, prognostics, and on-board operational metric data transfer.
- Assessing the potential operational command level impacts/influences of the increasing presence of contractor and other civilian personnel in the battle space.
- Assess Activity Based Costing and Management vice other means of operational cost monitoring, tracking and reporting to the Congress.

This study will be jointly sponsored by the Chairman, Joint Chiefs of Staff and the Under Secretary of Defense (Acquisition and Technology). Mr. Philip Odeen and Mr. William Howard will serve as Co-Chairmen of the Task Force. Mr. Jeffrey Jones, Defense Logistics Agency, will serve as Executive Secretary. Major Wynne Waldron, USAF, will be the Defense Science Board Secretariat Representative.

The Task Force will operate in accordance with the provisions of P.L. 92-463, the "Federal Advisory Committee Act," and DOD Directive 5105.4, the "DOD Federal Advisory Committee Management Program." It is not anticipated that this Task Force will need to go into any "particular matters" within the meaning of Section 208 of Title 18, U.S. Code, nor will it cause any member to be placed in the position of acting as a procurement official.

J. S. Gansler

Appendix B – Members and Advisors

Co-Chairs

Mr. Philip Odeen* Dr. William Howard*

Executive Secretary

Mr. Jeffrey Jones

Members

Mr. Edwin Biggers
VADM Bill Bowes, USN (Ret)
LT Gen James Brabham, USMC (Ret)
Dr. Delores Etter
Gen Al Gray, USMC (Ret)*
Gen Alfred Hansen, USAF (Ret)
Mr. David Heebner*
Dr. George Heilmeier*
Dr. Keith Helferich
Mr. Michael Hopmeier
VADM Michael Kalleres, USN (Ret)
Mr. Larry Lynn
Mr. Peter Marino
Dr. Milt Minneman
Ms. Susan Livingstone
Mr. Robert Mylott
Mr. Ron Naventi
Mr. Gene Porter
Gen "Randy" Randolph, USAF (Ret)*
Dr. Neil Siegel
Mr. Maurice Shriber
Mr. John Stewart*
Mr. Frank Sullivan
Gen William Tuttle, USA (Ret)*
Gen John Vessey, USA (Ret)*

*** DSB Member**

Advisors

OSD
- Mr. Lou Chaker, ADUSD/L
- Dr. Delores Etter, DDR&E
- Mr. Zack Goldstein, ODUSD/L
- Mr. Jim Johnson, PA&E
- Mr. Roger Kallock, DUSD/L
- Mr. Don Tison, PA&E
- Mr. Dan Winegrad, ADUSDIAT

JCS
- LTG Mike McDuffie, USA, J4
- CAPT Dave Shanahan, USN

Army
- Mr. Mark O'Konski
- COL Sam Chappell, USA
- LTC George Topic, USA
- Mr. Tom Sweeney, ODCSLOG/AWC
- Ms. Debra Pollard, ODCSLOG/LIA

Navy
- Mr. Larry Glasco
- RADM John Scudi, USN
- Mr. Jeffery Omer, NAVSEA
- CDR Matt Lawless, USN

DAB	Defense Acquisition Board
DARPA	Defense Advance Research Projects Agency
DCMC	Defense Contract management Command
DFD	Direct-to-Foxhole Delivery
DISA	Defense information Security Agency
DIV	Division
DLA	Defense Logistics Agency
DMC	Defense Management Council
DOD	Department of Defense
DRIDs	Defense Reform Initiative Documents
DSB	Defense science Board
DTS	Defense Transportation System
E	
EDI	Electronic Data Interchange
ERP	Enterprise Resource Planning
EW	Electronic Warfare
F	
FEBA	Forward Edge of the Battle Area
FMS	Foreign Military Sales
FY	Fiscal year
G	
GATM	Global Air traffic Management
GCCS	Global Command and Control System
GCSS	Global Combat Support System
GTE	General Telephone
GTN	Global Transportation Network
H	
HNS	Host Nation Support
I	
IAW	In Accordance With
IS	Information Systems
IT	Information Technology
ITV	In-Transit Visibility
IW	Information Warfare
J	
J4	Director for Logistics, Joint Staff
JCS	Joint Chiefs of Staff
JFACC	Joint Forces Air Component Commander
JFRG	Joint Force Requirements Generator
JLOTS	Joint Logistics Over the Shore
JOPES	Joint Operational Planning and Execution System
JRSOI	Joint Reception Staging Onward Movement and Integration
JSF	Joint Strike Fighter
JSOC	Joint Special Operations Command

JTAV	Joint Total Asset Visibility
JTF	Joint Task Force
JV2010	Joint Vision 2010
JROC	Joint Requirements Oversight Committee
L	
LCC	Life Cycle Cost
LMI	Logistics Management Institute
LOG	Logistics
LOTS	Logistics Over The Shore
LPD-17	Landing Platform Docking
M	
M	Million
MA	Marshalling Area
MBTF	Mean-Time Before Failure
MHE	Material Handling Equipment
MILSPEC	Military Specifications
MOBS	Mobile Off-Shore Basing
MSC	Military sealift Command
MRC	Major Regional Conflict
MTM/D	Million Ton Miles/Day
MTW	Major Theater War
N	
NDP	National Defense Panel
NLT	No Later Than
NM	Nautical Mile
0	
OCONUS	Outside Continental United states
O&M	Operations and Maintenance
OEM	Original Equipment Manufacturer
OOTW	Operations Other Than War
OPS	Operations
OSD	Office of the Secretary of Defense
P	
PACOM	U.S. Pacific Command
POD	Port of Debarkation
POE	Port of Embarkation
POM	Program Office Memorandum
PM	Program Manager
PREP0	Preposition
R	
R&D	Research and Development
RIBS	Rapid Installed Breakwater System
RORO	Roll-On, Roll-Off
RMA	Revolution in Military Affairs
RML	Revolution in Military Logistics

PPBS	Planning, Programming, Budgeting System
RSOI	Reception Staging Onward Movement and Integration
S	
SA	Staging Area
SC21	
SECDEF	Secretary, Department of Defense
SOCOM	U.S. Special Operations Command
SPOD	Sea Port of Debarkation
SS3	Sea State Three
ST	Short Tons
STAMIS	
STOL	Short take Off and Landing
T	
T	Tons
TAA	Tactical Assembly Area
TAV	Total Asset Visibility
TC-AIMS II	Transportation Coordinators-Automated Information Management System II
TCC	TRANSCOM Component Command
TOA	Transfer of Authority
TOC	Total Ownership Cost
TOR	Terms of Reference
TPFDD	Time-Phased Force Deployment Data
TPFDL	Time-Phased Force Deployment List
TRANSCOM	U.S. Transportation Command
TY	Then Year
U	
USACOM	U.S. Atlantic Command
USCENTCOM	U.S. Central Command
USD(A&T)	Under Secretary of Defense (Acquisition and Technology)
USEUCOM	U.S. European Command
USFK	U.S. Forces Korea
USMC	U.S. Marine Corp
USPACOM	US. Pacific Command
USPS	U.S. Postal Service
USSOCOM	U.S. Special Operations Command
USSOUTHCOM	U.S. Southern Command
USSTRATCOM	U.S. Strategic Command
USTRANSCOM	U.S. Transportation Command
W	
WW I	World War I
WW II	World war II
WMD	Weapons of Mass Destruction

Appendix D – Briefings Received by the Summer Study

The DSB Summer Study on DOD Logistics Transformation, received briefing, both to the entire study group, and the four individual sub-panels. The table below lists the briefings received. They are listed alphabetically, by date, and to which group or groups received the briefing.

Date	Title	Organization	Briefer	Panel #
4/16/98	A Pathway to the Future Implementing Joint Vision 2010	JV2010	MG Close	#1-4
4/16/98	DOD Logistics Transformation	US Atlantic Command	CAPT Jeff Wagner	#1-4
4/16/98	General Counsel Briefing	JCS	Mr. David Ream	#1-4
4/16/98	JC2010 Focused Logistics, Logistics Directorate (J-4) the Joint Staff	J-4	CAPT Dave Shanahan	#1-4
4/16/98	Joint Vision 2010 - Focused Logistics Initiatives	US European Command	COL Henderson	#1-4
4/16/98	Logistics Transformation	US Southern Command	COL Neil Hartenstein	#1-4
4/16/98	Logistics Transformation - The Way Ahead for U.S. Logistics in Korea	U.S. Forces Korea	COL Ronald Rollison	#1-4
4/16/98	PACOM Logistics	US Pacific Command	COL Thomas	#1-4
4/16/98	Quiet Professionals	Special Operation Command	COL Donald Betts	#1-4
4/16/98	US Central Command	US Central Command	Col Chris Kauffmann	#1-4
4/17/98	Brief to the DSB - Summer Study Task Force	Defense Logistics Agency	RADM Dave Keller	#1-4
4/17/98	DOD Logistics Transformation	USN N-41	CAPT Bill Bristow	#1-4
4/17/98	DOD Logistics Transformation	TRANSCOM	Mr. Dan McMillin	#1-4
4/17/98	DOD Logistics Transformation JV 2010/USSTRATCOM Uniqueness /Requirements	US Strategic Command	Col Lynn Willadsen	#1-4
4/17/98	Logistics and the 21st Century	US Marine Corp	Col Jim Strock	#1-4
4/17/98	Power Projection Logistics	US Army - ADCSLOG	MG Charles Cannon, JR.	#1-4
4/17/98	The Revolution in Military Logistics	US Army - ADCSLOG		#1-4

5/18/98	Changing Logistics	DLA	Mr. Jeff Jones	#1-4
5/18/98	Concepts and Technologies for the ARMY After ARMY 2010		Dr. Joe Braddock	#1-4
5/18/98	Logistics Vision and Requirements for "True Transformation"	Panel One	Ms. Susan Livingstone	#1-4
5/19/98	About Bechtel	Bechtel	Mr. Futcher	#1-4
5/19/98	Joint Total Asset Visibility	JTAV	Ms. Nancy Johnson	#1-4
5/19/98	Notional Deployment CONUS View	LMI	Mr. Ron Frola	#1-4
5/19/98	OSD Transportation Initiatives	OSD	Ms. Mary Lou McHugh	#1-4
5/19/98	Qualcom Story	Qualcom	Mr. Stephen Snow	#1-4
5/19/98	The Caterpillar Road to Re-inventing Logistics	Caterpillar	Mr. Bob Mylott	#1-4
6/9/98	Advanced Logistics Project	DARPA	Mr. Todd Carrico	#1-4
6/9/98	DOD Logistics Transformation	SeaLand	Mr. Louis Lambremont	#1-4
6/9/98	GCCS / GCSS Update	DISA	Mr. Bill Leary	#1-4
6/9/98	Global Transportation Network	TRANSCOM	Ms. Donna Lance	#1-4
6/9/98	Logistics Transformation	AF/IL	Mr. Grover Dunn	#1-4
6/9/98	Long Range Plan	USSPACECOM	LtCol Don Alston	#1-4
6/9/98	NAVAIR Affordable Readiness – Reducing Total Ownership Cost (TOC)	NAVAIR	RADM John Chenevey	#1-4
6/9/98	Transportation Coordinators' – Automated Information for Movement System II (TC-AIMS II)	TC-AIMS	LtCol Walt Munyer	#1-4
6/10/98	ARMY Distribution Based	CASCOM	LTC Julienne Powel	#3

6/10/98	Assessment of the Impact of Chemical and Biological Weapons on Joint Operations in 2010	Chem/bio	Ms. Aime Hoeber	#4
6/10/98	Assessment of the Impact of Chemical and Biological Weapons on Joint Operations in 2010 - Summary Report	Chem/bio	Ms. Aime Hoeber	#4
6/10/98	Assessment of the Impact of Chemical and Biological Weapons on Joint Operations in 2010 - VIGNETTES	Chem/bio	Ms. Aime Hoeber	#4
6/10/98	C-130 Floatplane Program Review	Lockheed Martin	Mr. Andy Swick	#2
6/10/98	Contracting Out Contingency Response	AFCAP	Mr. Dwight Clark	#3
6/10/98	Fast Ship Review	OPNAV / NSWC	Mr. Colen Kennell CDR Steve Lehr	#2/4
6/10/98	JLOTS Overview for DSB	Joint Staff, J-4	LTC Chris Barbour	#2
6/10/98	Joint Deployment Process Improvement (JDPI)	Joint Staff, J-5	COL Jerry Kennealy	#2
6/10/98	Joint Medical Logistics 2010 - New Concepts in Medical Readiness	ASD/HA	LTC Don Wideman	#4
6/10/98	Managing Mail Surge	USPS	Mr. Gary Thuro	#4
6/10/98	Mobile Subscriber Equipment	CECOM	Ms. Joanne Iorio	#3
6/10/98	Munitions Distribution - CONUS Initiatives	IOC	Mr. Daniel Stackwick	#3
6/10/98	Ultra-light Aerocraft	Lockheed Martin	Mr. Ed Glascow	#2/4
6/11/98	How Does Joint Vision 2010 Affect Global Projection?	Lockheed Martin	Mr. Andrew Bennett	#2
6/11/98	On Load / Off Load	TRANSCOM		#2
6/11/98	Sea-Based Aircraft Development – Revolutionary Capability for the 21st Century	Lockheed Martin	Mr. Andy Swick	#2
6/11/98	Strategic Air Mobility En Route Infrastructure Update	TRANSCOM		#2
6/11/98	US Transportation Command –Cargo Prioritization	TRANSCOM		#2

6/30/98	Center for the Commercial Deployment of Transportation Technologies (CCDoTT) High Speed Sealift / Agile Port Program	TRANSCOM	LCDR John G. Meier III	#2
6/30/98	Improving the Deployment Process	TRANSCOM	Mr. Phil Boyer	#2
6/30/98	Joint Deployment Training Center (JDTC)	TRANSCOM	Ms. Julie Frisby	#2
6/30/98	Organizational Structure – An information Brief for The DSB	TRANSCOM	Mr. Frank Weber	#2
6/30/98	Transportation Working Capital Fund – TWCF Rates TWCF Cost Drivers TWCF and Budget Process	TRANSCOM	CAPT Michael T. Rader	#2
6/30/98	Transportation Modeling & Simulation for the DTS	TRANSCOM	Mr. Bill Key	#2
6/30/98	US Transportation Command – Defense Transportation The Keystone of American's Defense Strategy	TRANSCOM	Mr. Jerry Walker	#2
7/13/98	Amy After Next Insights	Army Training	Col Bourgoine	#4
7/13/98	High Speed Sealift / Agile Port Program	CCDoTT	Mr. Keith Seaman	#4
7/13/98	Quiet Professionals	SOCOM	LTC Mike Roesner	#4
7/14/98	Autonomic Logistics Briefing	JSF	Col Russ Currer & Dr. William Scheuren	#4
7/14/98	Boeing Integrated logistics	Boeing	Mr. Bill Delaney	#3
7/14/98	F-22 Transforming Support	F-22 Program Office & Lockheed	LtCol Mike Carpenter & Mr. Tom May	#3
7/14/98	Fast Economic Sealift	Vehicle Research Corp.	Handouts Only	#4
7/14/98	Fast Ship Review	Fastship Inc.	Mr. David Giles	#2
7/14/98	Fixed Site Decontamination	DECON	Major Joe Kiple (handout)	#4
7/14/98	High Speed Sea Lift	Research Corp.	Dr. Scott Rethorst	#2
7/14/98	Improved Logistics for the 21st Century	DARPA	Dr. David Whelan	#4

7/14/98	Naval Expeditionary logistics Support Force	COMNAVELSF	Capt Ed Horres	#3
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7/14/98	Optimized Equipment Asset Management via Condition-Based Maintenance	Penn State APL	Mr. Bill Nickerson	#3
7/14/98	Panel 1 Logistics Vision and Requirements for "True Transformation"	DSB	Ms. Susan Livingstone	#1-4
7/14/98	Procurement Process At Northrop Grumman	Northrop Grumman	Mr. Carrier / G. Braga	#2
7/14/98	Regionalization of the Mid-Atlantic Region	Norfolk, VA	RADM Zeemier	#2
7/14/98	Small Unit Logistics (SUL) ACTD Proposal	1FSSG	Col Willie Williams	#4
7/14/98	Tactics and Technology for 21st Century Military Superiority	DSB	Mr. Don Latham	#1-4
8/4/98	21st Century Global Mobility Concepts	Boeing	Mr. Gerald Janicki	#1-4
8/4/98	Concepts and Technologies for the Army Beyond 2010	ASB	Dr. Joe Braddock	#1-4
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