Army Strategic Logistics Plan

Enabling Strategic Responsiveness Through a Revolution in Military Logistics

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11 MAY 2000

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: The Army Strategic Logistics Plan (ASLP)

1. I am very pleased to forward to you the updated ASLP. I greatly appreciate the time and effort your staff devoted to reviewing the plan. Thanks to their valuable feedback, we have a plan the Army can use to focus our efforts in the months and years ahead.

2. The logistics community, like the rest of the Army, is in a very exciting and dynamic transition, working hard to develop the details of the Army's transformation strategy in support of the Army's vision. In this regard, the ASLP is very much a work in progress. The ASLP captures the conceptual and intellectual underpinning of our Revolution in Military Logistics (RML) and contains the general framework of the Combat Service Support (CSS) transformation. It is my intent to make the ASLP the single comprehensive implementation plan for the logistics transformation.

3. The revised ASLP with its transformation and modernization strategy is consistent with the Army's Vision. The success of integrating and synchronizing our transformation process depends on the full support and participation of senior logisticians and functional subject matter experts who are responsible for ASLP initiatives.

4. Since the ASLP is a "living document" and we anticipate changes in the Army's transformation strategy this summer, we will update this document in order to remain synchronized with the Army transformation strategy. Periodic updates will be published (at least once each year) to keep us focused, synchronized, and on track with the rest of the Army and the Joint community.

Encl

CHARLES C. CANNON, JR.
Major General, GS
Acting Deputy Chief of
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Preface

The Secretary of the Army (SA) and the Chief of Staff, United States Army (CSA), have established the Army's vision for the 21st Century Army: ***"Soldiers on point for the nation transforming this, the most respected Army in the world, into a strategically responsive force that is dominant across the full spectrum of operations."***

The Army Vision states that the operational spectrum requires a need for land forces in joint, combined, and multinational formations for a variety of missions extending from humanitarian assistance disaster relief to peacekeeping and peacemaking to major theater wars, including conflicts involving the potential use of weapons of mass destruction.

The Army Vision establishes that the Army will be capable of putting combat force anywhere in the world within 96 hours after liftoff—in brigade combat teams for both stability and support operations and for warfighting. That capability will be built into a momentum that generates a warfighting division on the ground within 120 hours and five divisions in 30 days. Organizational structures will be designed which will generate formations which can dominate at any point on the spectrum of operations. These organizations will be trained and equipped for effectiveness in any of the missions the Army must perform.

Today's light force deployability will be retained, while providing it the lethality and mobility for decisive outcomes that our heavy forces currently enjoy. Heavy force lethality through combat overmatch will be retained, while enjoying better deployability and employability in areas currently accessible only by light forces. As technology allows, distinctions between heavy and light forces will be erased.

In terms of sustainability, the replenishment demand logistics footprint will be reduced. For this to occur, the numbers of vehicles deployed must be controlled, reach-back capabilities leveraged, weapons and equipment designed in a systems approach, and projection and sustainment processes revolutionized. Moreover, we must have a logistics system that provides the warfighting CINC confidence and trust that it can deliver what he needs, when he needs it.

This transition effort begins immediately and will be jumpstarted by investments to today's off-the-shelf technology to stimulate the development of doctrine, organizational design, and leader training.

A key requirement for achieving the Army's vision of strategic responsiveness and the dramatic deployment timelines discussed above is an acceleration of the Army's Revolution in Military Logistics, or RML. This document—the *Army Strategic Logistics Plan (ASLP)*—is the modernization strategy for Army Logistics and the implementation process to achieve the RML.

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Section 1

Introduction and Purpose

Section I - Introduction and Purpose

Executive Summary

The Army Strategic Logistics Plan (ASLP) is the Army Logistics community's strategy to achieve the DCSLOG's Logistics Vision—the Revolution in Military Logistics (RML). The ASLP will achieve the goals of that vision by transforming Army logistics from a system based predominately on redundancy of mass, to one based on velocity, mobility, and information. It will be supported by a single logistics system employing shared situational awareness to facilitate real-time logistics control extending from the tactical level of operations in a theater to the strategic, or sustaining base - from the factory to the foxhole.

The RML will support an Army that will be strategically responsive along the entire mission continuum. To do so requires a streamlining of Army logistics to achieve the Army's deployment timelines and reduced footprint goals. This streamlining process began over two years ago when the RML was institutionalized, and it focused on exploiting information and communications technologies. Revolutionary changes to materiel systems were deferred to the far-term. The new Army vision accelerates the transformation process by pulling the modernization of materiel systems and force structure into the near-term, so that the processes of acquiring physical agility and mental agility are conducted concurrently, rather than sequentially.

The ASLP consolidates the full spectrum of logistics modernization in a single, executable plan. It includes, for example, logistics efficiencies and best commercial practices being pursued consistent with Sections 347 and 912 of the FY 98 Defense Authorization Act. It reflects the importance of developing the civilian workforce, as cited in the Defense Reform Initiative. The theater distribution and sustainment programs are outlined in the Total Distribution Program at Appendix D. The ASLP groups the initiatives in the six investment categories of automation and communications, business process change, organizational redesign, tactical and strategic mobility improvements, and technology insertion. The ASLP effectively brings all of these programs under a comprehensive plan to ensure that modernization efforts are fully synchronized and integrated.

The ASLP's transformation path is fully compatible and synchronized with the Army's goal of attaining strategic responsiveness with a highly lethal, medium-weight force capability. It is this synchronization and integration effort that will make possible a realization of the RML's ultimate objective, which is to project and sustain the operational force in accordance with the necessarily ambitious objectives of the Army's warfighting vision.

INTRODUCTION

Changing the "How" Logistics is Performed

While the Revolution in Military Logistics outlines a fundamental transformation of Army Logistics, the RML is firmly rooted in unalterable reality¾while the postulated world and warfare is uncertain, the basic principles and functions of logistics remain invariant. The defeat of Hannibal by the Romans in 202 BC was the culmination of strategic preparation, force projection, and force sustainment that, proportionally, was at least as ambitious as any conducted by modern Western Nations. Logisticians for Sun Tzu and for Operation Desert Storm both had requirements to arm, fuel, fix, maintain, and sustain the force across an operational continuum. The difference—and this is what the RML is about—is how those functions are being performed differently today, and how technology will change the "how" even more dramatically in the future.

A Changing Strategic Framework

The end of the Cold War and the growth of free markets around the globe launched the world into a period of remarkable change. Economic integration and political fragmentation — two powerful, yet conflicting global forces — will continue to evolve, further influencing the geostrategic landscape of the 21st century. These forces will inevitably foster uncertainty and instability in the emerging multi-polar world. U.S. strategy, including a supporting military strategy, will continue to change accordingly. The U.S. will not stand idly by as an adversary develops military capabilities which can only be countered with massive conventional forces. Strategic preclusion strives to prevent the emergence of any such threat, while preparing to respond to any range of threats quickly, and with massive lethal force—through *strategic responsiveness* — if necessary.

Support to the National Military Strategy

As the National Military Strategy changes to accommodate the realities of a changing world, the Army's logistics strategy must, and is, changing accordingly. While the Army is transforming its current operational force to contend with future requirements, the logistics community is actively developing and migrating to future mobility and sustainment concepts which will more effectively move a force to a theater and support it. The logistics system must support the emerging national military strategy with the flexibility and adaptability to project and sustain the force throughout the full spectrum of operations.

The New Operational Mandate

The principal operational challenge facing United States military forces in the next century will be the capability for *early, then continuous*, application of strategic responsiveness across the full spectrum of conflict, even under highly unfavorable conditions. ***The Army vision calls for a capability to put combat force anywhere in the world in 96 hours after liftoff—in brigade combat teams for both stability and support operations and for warfighting—and a building of that capability into a momentum that generates a warfighting division on the ground within 120 hours, and five divisions within 30 days.*** *For this to occur, the Army must change deployment and sustainment methods and equipment.* The Army must improve its ability to deploy to undeveloped areas. Today, only very light forces are deployable in days. Significant land-based combat power depends on the availability of properly configured prepositioned equipment and stocks and sea lift. Limited capability of over the shore and primitive port techniques and equipment are a major limitation and risk. We have come a long way in improving the flexibility and speed of deployment planning systems, and through initiatives such as TAV, data accuracy and timeliness have improved. When the deployment community's decision-making process was determined to be insufficiently responsive in the face of new demands, the Joint Forces Command was assigned ownership of the deployment process in 1999 to redress the shortcomings of an unnecessarily fragmented process. What is now needed is a unified movement system that influences transportation systems acquisition.

A True Logistics Transformation is Required

Today's logistics is moving to improve the synergy between logistics and operations, and the reliance on redundancy in resource mass. The Army must reconfigure logistics by leveraging information and communication technologies to minimize uncertainty and improve transportation responsiveness. Many initiatives are underway to modernize and streamline logistics. A systematic approach will reduce fragmentation and result in a true logistics transformation providing the real-time logistics responsiveness across the mission spectrum.

The measure of success for the RML will be evaluated in force readiness and the ability to support the deployability and sustainability goals established by the Army. The ultimate goal for the Army of the 21st century is an appropriately configured¾*and highly responsive*¾logistics team, which sustains operational tempo without operational pause, and has the CINC's complete confidence. The RML will serve to *integrate* logistics capabilities to provide more effective and responsive support to the Joint warfighting team; and to *consolidate* logistics capabilities to realize the efficiencies of the "Revolution in Business Affairs" (RBA), DOD's business process engineering initiative.

The logistics system of tomorrow must support rapid closure, permit a smaller footprint, be more agile, responsive, and survivable — even in the most austere theater. It must fully integrate business processes and information systems, link directly to industry, and be significantly less expensive. Decreasing logistics demand is a major element of cutting cost and improving flexibility. New force structure, targeting, tactics, and weapon systems and equipment must cite reduced consumption and increased deployability in key design parameters. When this is accomplished, the Army will realize big payoffs in faster combat force deployment, smaller theater footprint, and more agile, sustainable forces.

The logistics community requires an executable plan to guide logistics transformation both within an overall business and information systems architecture, to achieve logistics efficiencies; and within a Joint warfighting architecture, to provide responsive support to the theater force. The resultant logistics system must capture best commercial practices to support military needs using functional specifications, metrics, and warfighting requirements.

Logistics transformation through the Revolution in Military Logistics (RML) is not an option; it's essential.

Purpose

The purpose of the Army Strategic Logistics Plan is to synchronize and integrate logistics modernization and transformation efforts of multiple organizations and agencies. This document represents a comprehensive update to the existing ASLP. *It is distinct from earlier versions in at least four respects.*

- It links directly to the Army's vision of strategic responsiveness;
- It extends the planning horizon beyond 2010, and expands the number of key programs supporting the Army Vision;
- It exploits advanced relational databases and visual information management tools to better determine the relationships and linkages among the programs in the Plan; and
- It more effectively captures logistics efficiencies underway in business process reengineering and commercial best practices.

The time periods used to describe near, mid, and far-term coincide with those used in AR 11-32, the Army Strategic Planning Process (ASPP). This permits synchronization with The Army Plan (TAP), which includes the Army Strategic Planning Guidance (ASPG) and associated programming guidance; and the Army Modernization Plan.

The ASLP's purpose is to address what is required to achieve a *true* transformation. *Transformation* is defined for purposes of the ASLP as a marked change in the nature and form of the structure and processes that equip, deploy, and sustain military operations. This process of transformation encompasses specific programs in information systems, distribution platforms, organizational redesign, new distribution concepts, business process changes, and technology insertion which affect how Army Logistics will change between now and the future. While we use the term "revolutionary" in describing our approach to logistics modernization, *Army logistics change will unfold in an evolutionary sense, but the collective effect will yield a revolutionary effect*.

Like other DOD and Army strategic plans, the ASLP will achieve its synchronization goals by meeting the requirements of the Government Performance Results Act (Appendix A), which stipulates the management and strategic frameworks to be used in change management. The ASLP is also consistent with logistics modernization goals outlined in the DOD Strategic Logistics Plan and the J-4's Focused Logistics concept, (Appendix B). Progress will be measured in accordance with the sets of performance metrics to be established by those charges with management oversight of their respective areas of responsibility. (See Measuring Progress, page 39).

"...Army logistics change will unfold in an evolutionary sense, but the collective effect will yield a revolutionary effect."

Supporting Plans

- The Total Distribution Program
- Army Strategic Mobility Program
- Army Science and Technology Master Plan

Vision

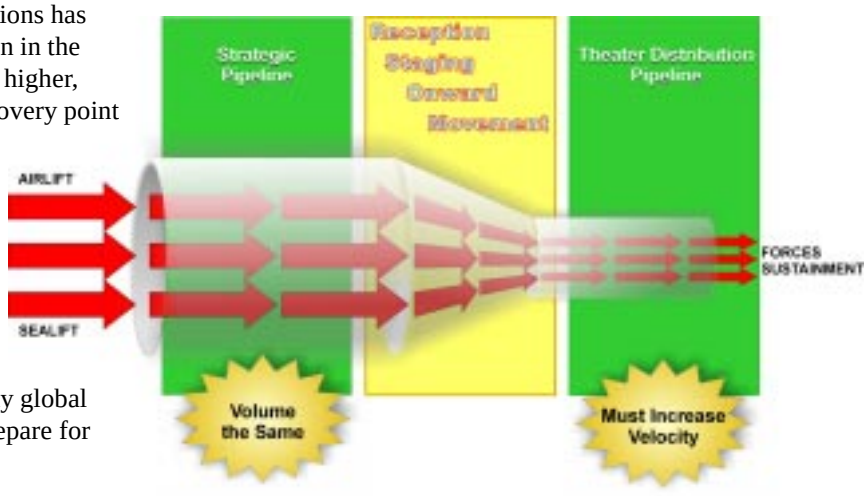
A Revolution In Military Logistics

The Revolution in Military Logistics represents a transformation to the concept of *distribution-based logistics*. This dynamic approach to logistics will be managed through an evolving seamless logistics system—communications connectivity linking organizations and processes—that synchronizes all components of the logistics community into one network of shared situational awareness and unified action. These changes in turn will help the Army modernize its equipment, not only to support the Army's strategic responsiveness goals, but also to be more effective, efficient, and responsive. Organizations will evolve *and new organizations will be created* that will be tailored to managing distribution-based logistics. The result will be a power projection and sustainment capability unlike anything the world has ever seen—a revolution in military logistics.

The 1998 Defense Science Board (DSB) Summer Study stated that "DOD must recognize that logistics transformation is in fact a "big deal…a v*ery* big deal." The DSB further pointed out that "Continuing to regard logistics as the secondary tail to warfighting doctrine, training and armament will have unacceptable consequences in the 21st century battlespace, resulting in decreased ability to achieve national security objectives…." HQ TRADOC's FY99 Army After Next (AAN) Spring War Game (SWG) validated this statement during the play of the scenario. This study also cited the critical importance of developing *people*—the key to the planning, development and execution of the transformation.

Since the Army returned from Desert Storm and began its restructuring in response to the shift to a smaller, CONUS-based, power projection force, it has been working to find a way to reduce the logistical tail, e.g., the "footprint." Most of the approaches have been based on continuing to accomplish all functions that have been previously defined. That is to say, a large infrastructure will have to be created in any area of operations. Approaches have been explored to split operations and perform selected functions in CONUS. The basic ratio between combat and non-combat elements has remained essentially static.

HQ TRADOC's wargame experimentation process has for almost three years provided insights concerning the operational tempo of any future conflict to the asymmetry of the actions that opposing and friendly forces will take. A larger area of operations has been postulated than we have seen in the past. OPTEMPO is significantly higher, with few pauses between one recovery point and the next contact. Moreover, insights from this process suggest that we must be prepared to deploy directly from CONUS into *strategic* meeting engagements with little notice. The common thread is to be able to move immediately into contact from any global location, prevail, recover, and prepare for movement to the next contact.



In the context of the above, most accepted concepts of support must be challenged or reviewed. The following captures some of the key issues dominating the Army Logistics community's approach to structuring a logistics system for the future. Each is directly linked to meeting the challenges associated with building a logistics system that meets the requirements for strategic responsiveness:

- Without the traditional Theater Army level of support, can the combat force rearm, reequip, and refuel (R3) in protracted operations?
- Can the combat force wait for maintenance, or will all maintenance have to be either organic or replacement?
- Can Power Projection (P2) be accomplished without requiring large existent infrastructrue?
- Can P2 assets be developed that will allow P2 lodgments to be created on the fly in less time than it takes the adversary to come up with a targeting solution?
- Can P2 lodgments and R3 lodgments be protected with organic assets or can they depend upon area defenses?
- Can we make the logistics Command, Control, Communications and Intelligence (C3I) agile enough to integrate the R3 and P2 functions using a robust commercial infrastructure?

The answer to each of the questions in the above chart is "yes," by developing and implementing the logistics initiatives required to achieve the end-state envisioned in the RML . A detailed description of the RML is given at Appendix C.

Goals

The RML categorizes initiatives in terms of six tenets, which are expressed as goals within the ASLP. The specifics of these tenets and goals can be expected to evolve as technology affords additional opportunities for innovation. These six are summarized below and discussed in more detail in the subsequent paragraphs.

- Create a single information and decision support system, more commonly referred to as the single log system, or SLS.
- Transform the current logistics system into a distribution-based logistics system (DBLS).
- Maintain an agile infrastructure.
- Fully field Total Asset Visibility (TAV).
- Achieve a rapid projection capability.
- Maintain an adequate logistics footprint.

❑ ***Create A Seamless Single Logistics System.*** The RML relies on precision logistics command and control. Precision logistics relies on modern information systems and the networks that connect them. The demands of fast-paced information age warfare, combined with the realities of an emerging, global, information-based economy, make it essential that the RML seamless logistics system achieve unprecedented levels of interconnectivity and interoperability.

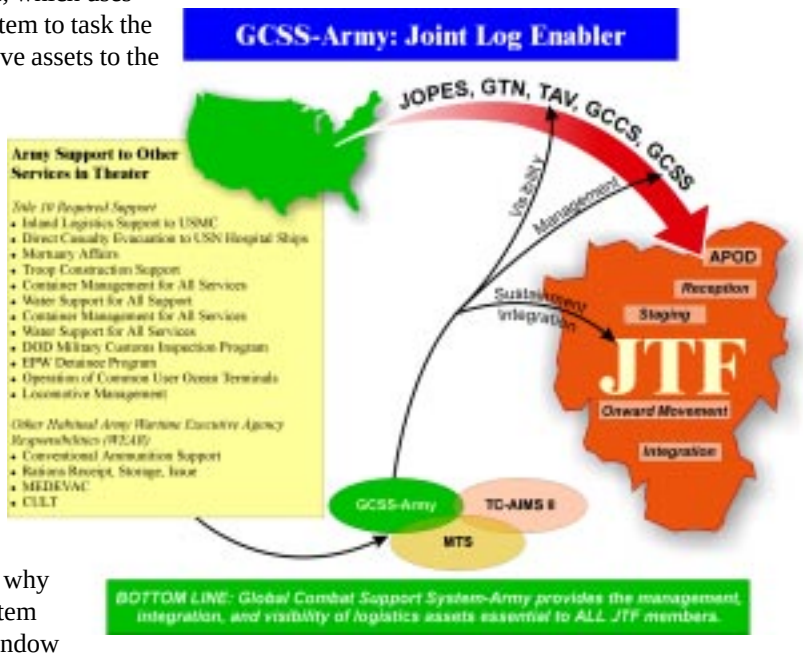
This interconnectivity and interoperability extends well beyond Army-owned tactical and administrative portions of the information chain. Of necessity, it encompasses joint, combined, and commercial systems. The seamless logistics system obviously must interface with military command and control systems, from which it derives current and projected requirements and priorities. It must also connect with digitized weapon systems to pull in and use the data available from those systems' sensors and onboard prognostics. It must reach in lateral and rear directions to interface seamlessly with the logistics and financial systems throughout DOD. It must connect to the global network of electronic commerce. This latter capability will enable industry partners to track and support Army forces in the field, and allow Army logisticians to locate suppliers expeditiously. The Army must change its focus from one of managing supplies to managing suppliers. This refocus is consistent with the Product Support Reengineering effort of Section 912 of the 1998 Defense Authorization Act.

Connectivity

- Digitized weapon systems
- Data from sensors and onboard prognostics
- Total connectivity including the global network of electronic commerce

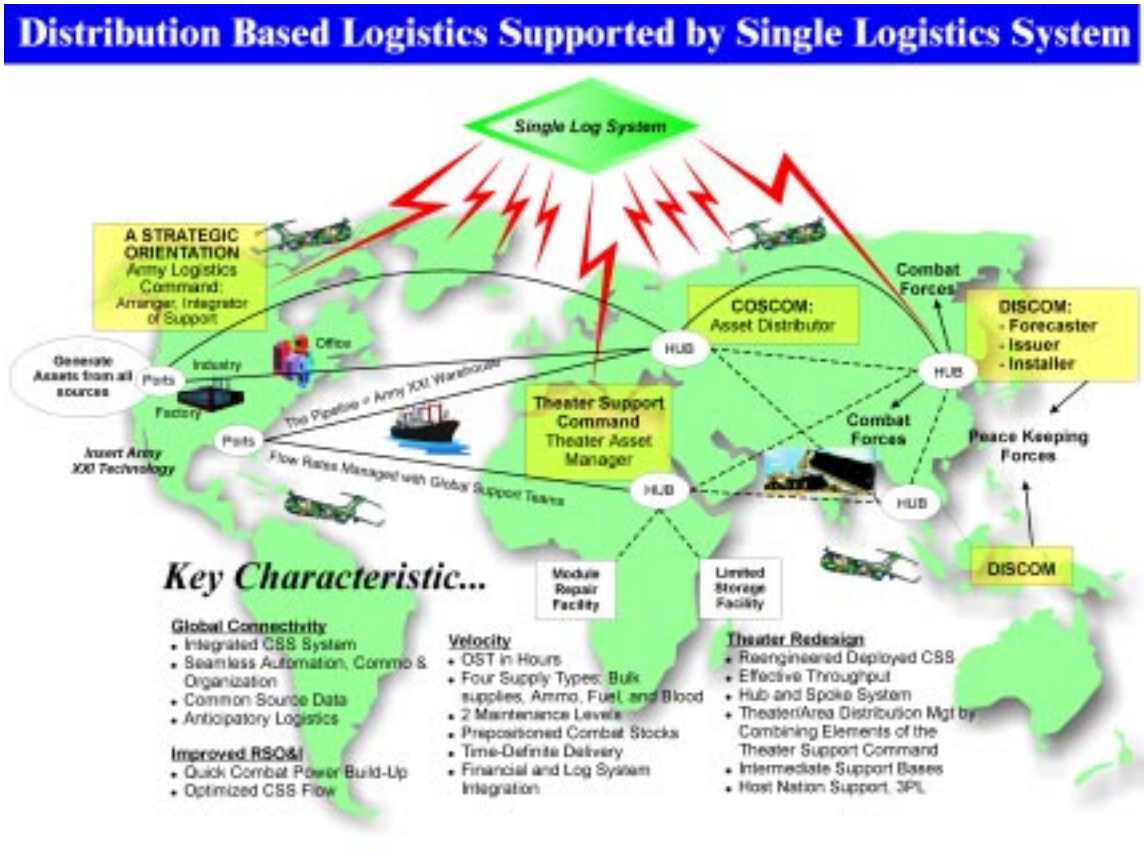
The seamless logistics system is much more than a new information system — it's really a new way of doing business. It has a crucial role in making Focused Logistics and distribution-based logistics a reality. The key processes of the seamless logistics system are:

- *Readiness management*, which requires skilled logisticians to track and integrate warfighting plans with prognostics feeds from systems in the field to forecast unit status and determine how to provide best support so they can better accomplish the mission.
- *Logistics interventions* are packages of materiel, labor, equipment, and skills that produce a specific improvement in readiness for a specific unit. Short deployment timelines have a direct impact on acceptable levels of readiness. With the requirement to lift 5 divisions anywhere in 30 days, logistics interventions will become an increasingly important means of bring units up to deployability standards. They are bundled and linked to allow efficient use and reuse of both supplies and platforms in the distribution-based logistics network;
- *Distribution management*, which uses the seamless logistics system to task the distribution system to move assets to the point of need.
- *Asset management*, which matches available assets with needs, identifies shortfalls of assets, and then interfaces with government and industry suppliers to acquire additional assets. All aspects of the acquisition cycle need to be supported — from requirements determination through property disposal. This is why the seamless logistics system needs to be a seamless window to commercial electronic commerce.



The Global Combat Service Support System (GCSS), and its Army component, GCSS-A, represent the first steps toward achieving a seamless logistics system for tomorrow's Army.

❑ ***Transform to Distribution-based logistics***. *Distribution-based logistics* involves much more than the increased use of transportation in the supply chain, or incremental improvements in the chain's velocity. Distribution-based logistics represents a whole new way of doing business. Velocity offsets mass, as echelons of inventory are replaced by managed flows of materiel. The key is timely and accurate information on the inventory that is in motion. The distribution pipeline effectively becomes the RML warehouse.



All along the distribution-based supply chain, there will be small temporary inventories of fast-moving supply lines and in-transit materiel. But the size of those inventories will be determined by the mission, *not mandated by historical demand*, and their locations will reflect operational realities, priorities, and available lift resources. Faster and more plentiful lift will allow fewer and smaller in-transit holding inventories. Occasionally, the Army will still want to exploit the economic advantages of shipping larger quantities and temporarily establish supply activities to safeguard those commodity holdings.

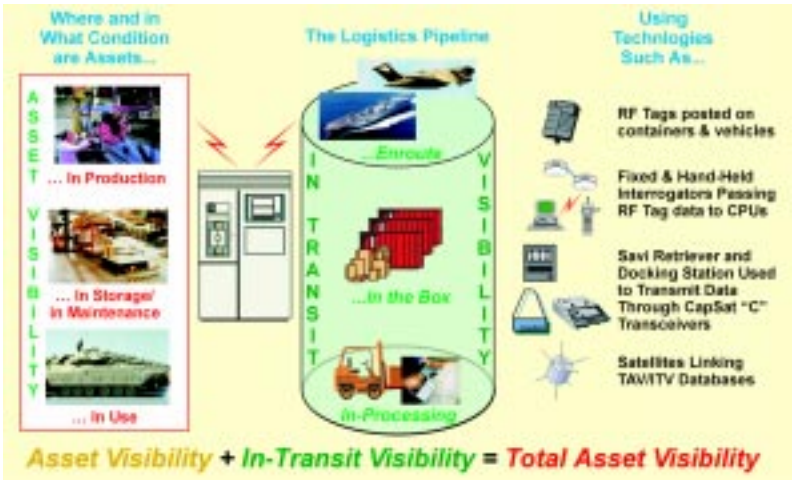
Distribution-based logistics creates an environment where the inventory quantity, as well as demands, are extremely dynamic. The RML materiel manager needs to be able to anticipate demand, judge the arrival of assets, and direct appropriate adjustments to the supply system in real time. There are two time lines that will bound the manager's flexibility. Surface transportation moves at 20-25 miles per hour. Air transportation moves at speeds between 100 to 400 miles per hour. Since the fastest lift will still be cargo jets and helicopters, this anticipation of supply demand must extend out to 24 to 48 hours. To get this level of anticipation, materiel managers will rely on prognostic data from digitized weapon systems, real-time situational awareness of current and planned operations from both the Global Command and Control System (GCCS) and Global Combat Support System (GCSS), and close and continuous coordination with the operational planners they are supporting.

❑ ***Maintain an Agile Infrastructure***. The RML requires agility in a number of dimensions. Army logistics will have to become more agile—structurally, physically, and mentally—in order to cope with the demands of dynamic RML support to the agile and mobile forces ushering in a Revolution in Military Affairs, or RMA.

Structural agility refers to total integration of all Army components, as well as incorporation of support teams from other services, allies, and the Army's partners in industry for specific missions. Integrated, task-organized government and contractor logistical support planning staffs are key RMA skills that apply especially to RML support forces. These integrated logistics task forces and staffs need to be able to scale up and down in size, as well as in technical expertise. Personnel, teams, and units from all components need to be capable of deploying and moving independently to an in-theater rendezvous location. Contractors must be prepared to move with them to provided dedicated, continued support throughout the deployment, sustainment, and redeployment process. Active and reserve component units must be ready to accept, employ, and support Department of Defense civilian augmentation, and contractor personnel with their equipment. All must be prepared to integrate with allied and host nation support organizations. There are many issues associated with Contractors and DA civilians on the battlefield which must be addressed and resolved in order to realize their full potential.

Acquisition agility is an Army RML goal. In order to keep pace with the fast-changing demands of RMA warfare and RML support, the acquisition system must support rapid and flexible access to a wide range of commercial sources of supply. Agile acquisition will be crucial to designing, building, fielding, and supporting the advanced systems and modernization packages that will make the Army Vision a reality. Spiral Development is a holistic way of identifying and synchronizing weapon system applications with considerable potential functionality for testing and assessments based on actual soldier usage. Its value has been demonstrated in the current program to field a digitized division by December of 2000, followed by a digitized corps in 2004. The Warfighter Rapid Acquisition Program (WRAP) is a process designed to reduce acquisition lead time and begin development within one year using all available reform initiatives. Similar reductions of development cycles will be required to provide state of the art technology to our forces in the field at a price the nation will be willing to pay. Life Cycle Management ensures that the highest quality materiel is fielded at lowest possible life-cycle cost, and Life Cycle support establishes the responsibilities among AMC, MACOMs, and the PMs they support to resolve any issues identified early in the materiel acquisition process. Information dominance requirements demand that the capability to collect, process, and disseminate an uninterrupted flow of information be embedded in all future and product improved systems.

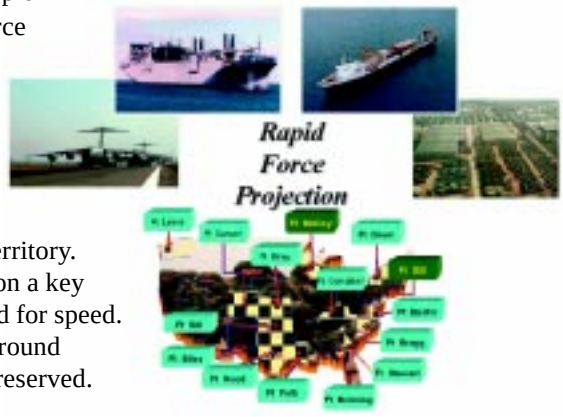
Physical agility refers to the need to deploy and maneuver the operational infrastructure of the distribution-based logistics system. Distribution-based logistics depends on an integrated network of information systems, distribution platforms, and automated materials-handling equipment. To keep pace with fast-moving committed forces, and to stay one jump ahead of an opponent's long-range weapons, to include Weapons of Mass Destruction, the logistics units and personnel operating this network must be able to maneuver the component systems and control the movement of the distribution platforms without degrading the throughput of sustainment to the fighting forces.



Mental agility is defined by the Army as both situational awareness and command and control. Mental agility can also refer to attitude. RML logistics is *fast* logistics. Many of the initiatives in the Revolution in Business Affairs that streamline and improve logistics, acquisition, and financial processes contribute to this new sense of agility.

❑ ***Fully Field Total Asset Visibility***. Total Asset Visibility and availability is absolutely essential to precision-focused distribution-based logistics. The Army must be able to have the visibility of assets in the pipeline as well as to be able to move those assets where threats and priorities dictate. TAV tracks sensor feeds and key events in the document flow to tell logistics managers the location and status of a particular requisition in the supply chain. When the automated infrastructure components of distribution-based logistics become a reality, TAV data also can support decisions by materiel and transportation managers to redirect shipments and transportation assets, to redistribute unclaimed assets, and to keep up with changing unit locations and requirements. The current TAV capability needs to be fielded completely; it must be enhanced to support the needs of a dynamic, integrated supply chain for locating asserts with real-time precision, and it must become web-based by 2004. Furthermore, real-time control needs to be coupled with TAV and the RML distribution platforms and infrastructure components, and all must be put under the control of the Seamless Logistics System evolving out of GCSS-A.

❑ ***Achieve a Rapid Force Projection Capability***. RML rapid force projection has three key components: (1) Strategic force projection of initial early entry forces; (2) Strategic projection of follow-on forces; and, (3) Operational and tactical intra-theater mobility of units and forces. All three are essential to fighting and winning. Early entry presence at crisis locations is key to controlling that crisis. US forces may have to meet opposing forces on their terrain, or stop further incursion into a third country's territory. Or the US forces may need only to be present in a region or on a key border to deter further aggression. Either way, there is a need for speed. In the future, this robust and unique capability to introduce ground forces rapidly anywhere in the world must be nurtured and preserved.



Just as there are two ranges of speed for support of the forces, there are two ranges of speed for the deployment of forces. The challenge is to integrate the arrival of forces using both sea and air lift assets. The US enjoys an unrivaled capability to project ground forces globally.

Currently, the fleet of Large, Medium-Speed, Roll-on, roll-off (LMSR) ships is being built and filled with battle-ready unit sets of heavy force equipment. This capability must be deployed as planned, and it then must be nurtured with maintenance of both the ships and the unit packages they carry. Army sponsored research is looking into even more advanced sealift capabilities. Adaptation of commercial high speed ship technology, modernization of existing assets, as well as more advanced ideas such as massive hydrofoil ships, are all options under review.

Rapid movement on future battlefields also is crucial. Here the picture is not so bright. The Army now relies on aging fleets of Army CH-47D helicopters and C-130H transports. Even with the proposed enhancement of C-130J series aircraft, this still is essentially a 50-year old aviation technology. To deliver 21st century combat power, the Army will need 21st century aviation technology. This is possibly the most severe shortfall as Army planners look to the future. Joint Transport Rotorcraft (JTR) is an air vehicle with potential to address joint Service applications. The JTR is expected to support air movement of logistics loads in the forward area, provide rapid supply without air fields, support prepositioning of assets, provide enhanced air mobility with reduced weight and increased lift capability and provide rapid response for high speed medical evacuation.

Finally, projection of forces is of little value if those forces cannot be sustained at a high level of battle OPTEMPO. In addition to modern transportation platforms, deployable infrastructure for an integrated, intermodal distribution system is needed to ensure rapid and efficient sustainment of our deployed forces. Materiel operational requirements documents must include requirements for highly reliable, easily sustainable systems with imbedded sensors and prognostics.

❑ ***Maintain an Adequate Logistics Footprint***. Efficiency is more than frugality. Efficiency means getting the most out of resources available. Effectiveness is the concerted application of those resources to yield the greatest possible combat power. Army logistics has risen to this challenge and responded with a concept and plan that will provide unprecedented efficiency and economy while simultaneously enhancing responsiveness.

Maintaining an adequate logistics footprint primarily refers to logistics presence in the theater of operations. In today's complex world, there is always a significant tradeoff between capability and force protection. CINCs are understandably reluctant to have any more soldiers and civilians placed in harm's way than absolutely necessary. When the theater force must be limited and exposure of personnel reduced, cutting support forces is an attractive option. But there always will be a limit on how small the logistics system can get without sacrificing support to the combat units. Logisticians must inform the operational planners of the minimum sustainment force level required to support the deployed force, and these requirements need to be considered when force packages are being designed.

Operational logistics infrastructure also takes on a new dimension in the RML. *There is a need for a strategic level logistics organization that can manage the totality of strategic logistics resources available to the Army. This notional command is depicted in the graphic below.* The Army envisions creation of an Operations Support Command (OSC) so the RML logistics support for a supported CINC will be operationally, not geographically, focused. This means that the Army's logistician—the OSC commander—will direct forces, agency offices, and contractor operations on a global basis, all focused on the supported CINC's operations. This will give the OSC commander great flexibility. In this concept, logistics units would remain under command of CINCs through the Army Component Command (ACC), and would continue to be sourced to OPLANs, mobilized and deployed in the same manner as other Army units.

Section II

The Army Logistics Transformation Strategy

Section II - The Army Logistics Transformation Strategy

Key Drivers of the Strategy

- Army Transformation Strategy - Sets Initial, Intermediate, Objective Force Phasing Objectives
- New deployment timelines - Globally project one BCT in 96 hours, 5 divisions in 30 days
- Reduced CS and CSS demand on lift - Improves force projectability
- Requirement for reduced footprint - Enhances force sustainability
- Support to Joint Warfighting through supported CINCs - Integrates capabilities to improve responsiveness (effectiveness)
- Support to DOD Logistics Strategic Plan, Joint Focused Logistics Modernization - Consolidates capabilities to achieve efficiencies

Required Results From Logistics Transformation

- Single National Logistics Provider, supported by a single information and decision support system
- Improved strategic mobility for early closure of combat capability
- Optimization for early, decisive operations — "The First 30 Days"
- Ability to operate without access to fixed forward bases
- Capable of fast-paced, distributed, decentralized, non-contiguous operations
- Tactically mobile equipment for operations in all terrain and environments
- High degree of operational reliability
- Real-time visibility and control of the supply chain
- Agile, smaller in-theater logistics footprint
- Survivability
- Daily unit readiness status in peace; daily unit (task force) status in all operations
- Customer wait time measured in part "sets" (job order) versus part "eaches"
- Responsive to CINC warfighting requirements
- Logistics responsiveness at best value
- Improved RSO&I and port-opening capabilities
- Improved automated deployment planning tools
- Improved maintenance procedures through electronic and Interactive Electronic Tech Manuals (IETM)
- Embedded diagnostics, sensors, and on-board prognostics
- On-board platform (weapon system) sensors, diagnostics and prognostics linked directly to information and decision support systems. "Sentinels" inform soldiers when human intervention is required
- "Ultra-Reliable" equipment and multi-capable mechanics
- Streamlined deployment business practices

Summary Chart

***The objective logistics system* that must evolve for support to strategic responsiveness can be summarized in the chart below:**

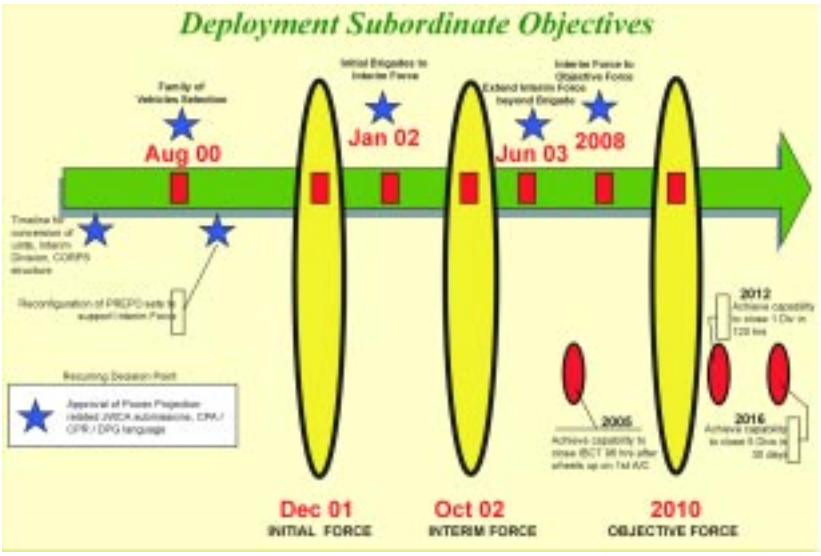
	Yesterday	Today	Future
Logistics System	Fragmented, stovepiped, limited knowledge, hierarchical, heavy demands on strategic lift	GCSS-A program forms the baseline for migration to a single, integrated logistics system	Integrated with visibility across supply chain. Able to manage and use real time. Predictive, anticipatory.
Deployment Process	Heavy forces in weeks, light forces in days	TCAIMS, Army prepositioned equipment, infrastructure upgrades promote faster deployment	On the ground, ready to fight in 96 hours
	Slow inflexible planning based on inaccurate data	TCAIMS-II forms basis for integrated automated deployment planning process	Planning process rapid and flexible
	Well developed for sea state 1 or 2 over the shore		Bypass ports with over the shore capability at least sea state 3
Logistics Footprint	Large and fixed	Battlefield distribution enhanced through organizational redesign (Theater Support Command), improved platforms (Palletized Loading System), Movement Tracking System, Combat Service Support Control System	Small, dispersed, mobile
Logistics Integration	Inefficient stovepipes	GCSS-A integrates many of the existing STAMIS' into a single integrated system, ultimately achieving joint interoperability	Fully integrated, seamless, efficient over the full life cycle
Products Support Reengineering	❑ Managing Supplies ❑ Heavily Organic Support ❑ Unique DOD Practice ❑ DOD Supply System	Extensive changes to acquisition process, increased use of electronic commerce, increased outsourcing, flexible contracting	❑ Managing Suppliers ❑ Competitive Sourcing ❑ Best Commercial Practice ❑ Expand Prime Vendor (PV) Virtual PV

Operational Overview — The Phasing Objectives

The Army Vision is clearly articulated. It establishes a requirement for a quantum leap in strategic responsiveness. The Army intends to project lethal survivable medium-weight Brigade Combat Teams (BCTs) to any point on the globe, with the capability to dissuade or defeat any adversary. The goal is to put one BCT on the ground within 96 hours, one division within 120 hours, and five divisions within 30 days. The Army's transformation objective is to create "a force that is strategically responsive and dominant at every point on the spectrum of operations." This force must not only arrive in time to be strategically decisive, but must also overwhelmingly dominate the situation from time of arrival through successful conclusion of the mission.

The Army Vision:
"Soldiers on point for the Nation, transforming the most respected Army in the world into a strategically responsive force that is dominant across the full spectrum of operations."

The Army's transformation strategy is "conditioned-based." That is, the force transformation will proceed in accordance with a series of decisions based on three stated objectives, and the fulfillment of the conditions associated with those objectives. Those objectives, which define the principal phasing for the force transformation, are the creation and fielding of the first units of the Initial Force, the Interim Force, and the Objective Force.



The Initial Force consists of the two Initial BCTs stood up from off-the shelf and borrowed equipment in December 2001, which is the Initial Phasing Objective. The Initial BCTs will be tested and evaluated to establish the conditions for the Interim Force.

The Interim Force is a transition force. It commences with the introduction of the first set of Interim BCTs in October 2002, which is the Intermediate Phasing Objective. In addition to the Interim BCTs, the interim force will consist of the digitized corps (by 2004), and the remaining legacy forces which have not been converted to the interim design. Because of its varied and changing composition, the Interim Force will prove to be a challenge to train, to fight, and to support. However, the Army finds itself in a strategic window where prudent innovation may be conducted with only modest and acceptable risk.

The Objective Force achieves the transformation objective through a common design applied to the entire Army. Both the interim BCTs and the legacy forces will have been converted to the objective design. The transition to the Objective Force commences with the introduction of a set of Objective BCTs circa 2010, which is the Objective Phasing Objective.

Logistics Overview — Two Tracks, Four Phases

To achieve the degree of strategic reach and overmatch envisioned by the Army requires a true Revolution in Military Logistics. The Army Vision presents first and foremost a logistics challenge of unprecedented magnitude. RML envisions a continuous and dynamic process of transformation which is institutionalized and synchronized through the Army's logistics transformation strategy. This is a flexible strategy which is even now being revised to conform with the emerging Army Transformation Strategy, driven by a far more aggressive Army Vision.

The meaning of the RML and ASLP term "phases" must be changed to accommodate the new strategy and terminology associated with the new Army Vision. What was formerly a sequential Phase I followed by Phase II strategy is renamed to become Track I and Track II, respectively. Since both tracks will be conducted concurrently, there is no phasing of these two. "Phasing" in this document refers to the phases defined in the Army vision and its associated transformation strategy. These represent the key milestones on which all logistics programs and initiatives, for both Tracks, will necessarily orient. For those not familiar with RML and the earlier versions of the ASLP, this is clarified in the subsequent paragraphs.

The previous version of the RML and the ASLP was a two-phased transformation strategy. This strategy was tied to the former Army transformation strategy that was described in terms of two sequential processes. The first was the FORCE XXI process, which concentrated on leveraging information and communications technology to give the legacy forces near real-time situational awareness and greatly enhanced command and control, that is, "mental agility." Capitalization programs would ensure that Army legacy systems maintained overmatch capability against any foreseen foe.

The RML transformation strategy supporting the FORCE XXI process was called Phase I. It would leverage information and communications technology to transform the Army logistics system into a Distribution-Based Logistics System (DBLS) that relied on distribution velocity and precision rather than supply mass. Phase I concentrated on logistics *process*. The logistics functional processes would be reengineered, visibility would be provided through initiatives such as TAV and ITV, all linked within a single information and decision support system through assured communications, under the aegis of a single Army logistics provider.

The Army After Next (AAN) process was to follow FORCE XXI. AAN would provide the Army weapon systems with revolutionary new capabilities to replace the aging legacy systems and enable it to maintain combat overmatch against the probable emergence of a credible threat. The Army called this "physical agility."

The RML transformation strategy supporting the AAN process was called Phase II. It anticipated that new material technologies would result in lighter, more lethal, yet more projectable and sustainable force. Phase II concentrated on the *requirements* associated with a capabilities-based force.

The new Army Vision has changed that by accelerating AAN - and with it, Phase II of the RML - into the near and mid-term. Both phases must now be conducted and completed concurrently. Consequently, the ASLP will now refer to these as Track I, which is process oriented; and Track II, which is requirements focused.

Track I is focused on logistics *processes,* encompassing modernization initiatives in automation, platforms, business process change, organizations, strategic mobility, and technology insertion. It continues efforts to migrate Army Logistics to a "*distribution-based logistics system*" (DBLS) by the Objective Phasing Objective circa 2010. This requires a comprehensive reengineering and integration of logistics functional processes using best business practices, from the strategic to the tactical levels. These processes will be linked through a single logistics information and decision support system (GCSS-A) by reliable communications. All national logistics processes and information/decision support systems will come under the authority and responsibility of the single, seamless Army logistics provider (Army Readiness Command).

Track II represents what formerly was a long-range effort to support the Army After Next (AAN). The new Army Vision pushes that focus into the near future, with many of the objectives necessarily completed in time for the introduction of the Objective Force in 2010. Fundamental to the track is a *capabilities-based* approach to logistics, focusing on platforms (soldier, weapon system, or unit) linked through the operational level to the strategic level of logistics by an overarching integrated information architecture. Track II also includes that aspect of the Army capitalization program which addresses technology insertions into the legacy force. This integrated view will encompass the totality of logistics, letting us focus on the overarching challenge of the next century—gaining access (deployability) to a theater, quickly establishing control in that theater, and providing for an enduring level of sustainment within that theater.

Additionally, the milestones associated with the logistics transformation strategy is being reoriented on the three Army phasing objectives, corresponding to the standing up of the Initial Force, the Interim Force, and the Objective Force. For the sake of a consistent nomenclature, the three transition periods which lead to the standing up of these Forces will be called, respectively, the Initial Transition Phase, the Interim Transition Phase, and the Objective Transition Phase. These will be followed by a fourth phase, which we will call, for want of a better term, the Standardization Phase. This last phase represents the conversion of the total Army force from a mixture of Interim BCTs, the digitized corps, and all remaining legacy forces to a standard Army design.

Initial Transition Phase (present - December 2001). The initial transition phase, which runs until the two initial Brigade Combat Teams (BCTs) are activated in December 2001, has been a period of intense, highly focused activity. The Army established the Combat Support/Combat Service Support (CS/CSS) Transformation Task Force as one of 10 Task Forces created to implement the Army Vision. It was charged with identifying ways to deploy forces more quickly and sustain them more efficiently. To date, it has identified or validated requirements for a single Army-wide logistics provider, improved battlefield distribution, split-based and reachback operations, total asset visibility, and assured communications. It also identified requirements for improved strategic mobility directly supporting deployment and sustainment requirements associated with the initial brigade prototype development effort underway at Fort Lewis, Washington.

The Training and Doctrine Command (TRADOC) and the Combined Arms Support Command (CASCOM) are heavily involved in the requirements determination process associated with the BCT. These include the BCT Organizational and Operational (O&O) Concept, to include the Brigade Support Battalion, a support concept for the future corps, and the TOEs required to create the new force structure. The initial phase will terminate at the Initial Phasing Objective with the activation of the two Initial BCTs in Dec 01. These BCTs constitute the Initial Force.

Interim Transition Phase (January 2001 - October 2002). The interim transition phase runs for approximately two years, until a specified number of Interim Brigade Combat Teams (BCTs) can be activated to form the core of the Interim Force at the Interim Phasing Objective. The initial part of this phase will be characterized by intensive test and evaluation of the initial BCTs to determine the full range of DTLOMS requirements associated with this medium brigade. Additionally, the Army is adhering to its previous schedule to field the first digitized division in December 2000, and continuing its efforts to digitize one Army corps.

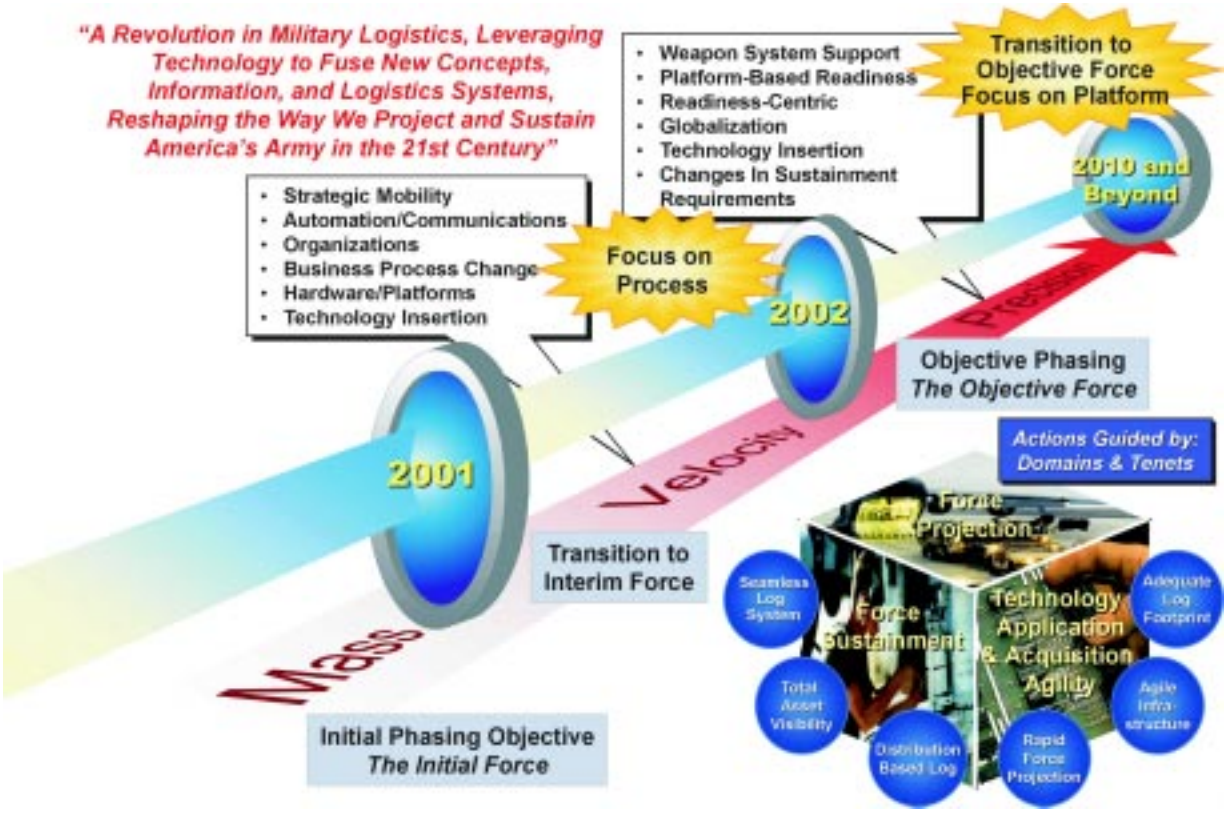
Above the tactical level, by the Interim Phasing Objective, Tier 1 of GCSS-A should be fielded, and the fielded organizational redesigns will include the tactical logistics organizations required to support the BCT, such as the Brigade Combat Battalion; the operational logistics organizations such as the Theater Support Command (TSC), and some theater elements of strategic logistics organizations such as the AMC Field Support Center (AFSC).

Objective Transition Phase (November 2002 - 2010). The objective transition phase runs for approximately eight years. Around 2010, a division-sized number of Objective Brigade Combat Teams (BCTs) will be activated to form the initial core of the Objective Force at the Objective Phasing Objective. The early part of this phase will be characterized by intensive efforts to identify and target technology with potential military application, in order to satisfy the decision conditions necessary to proceed with the development and

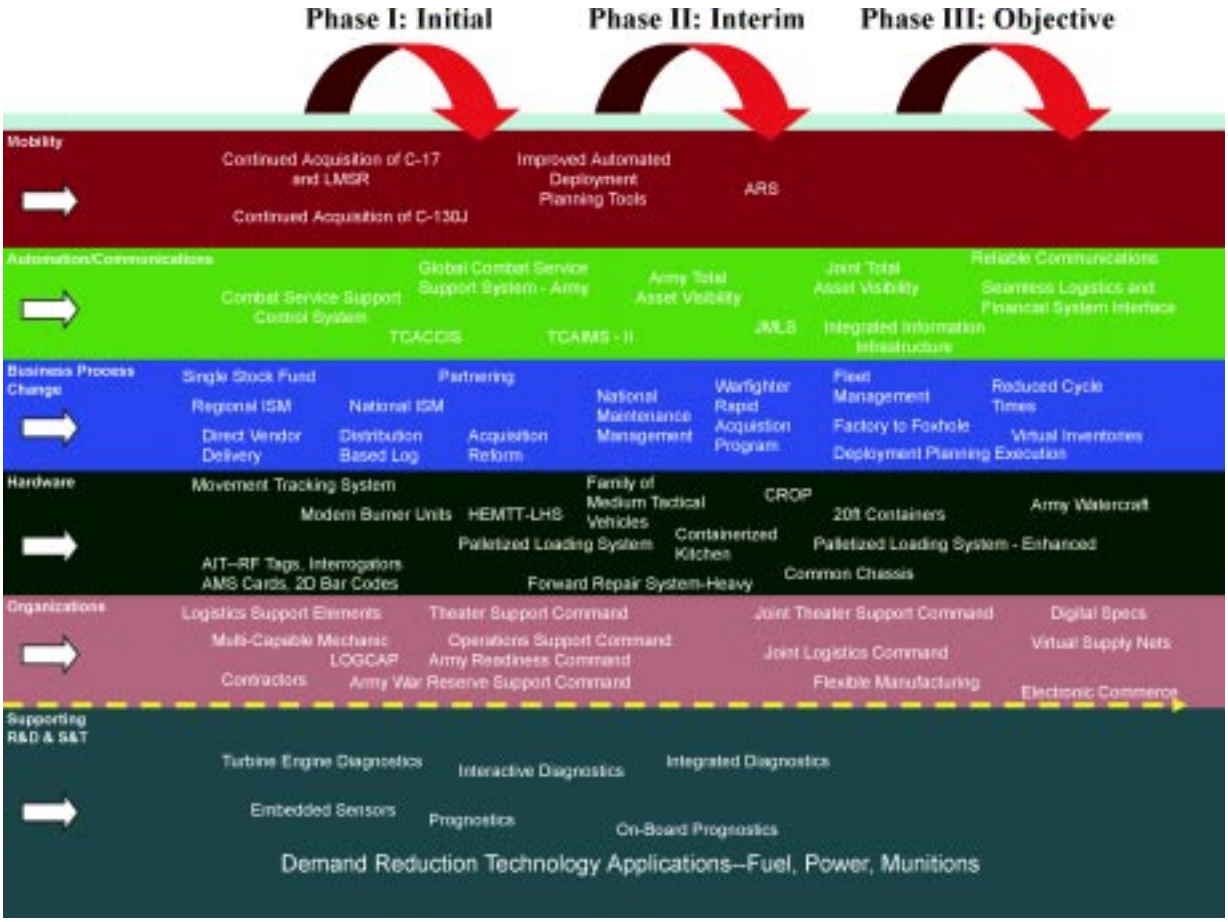
acquisition of the Objective Force. During this period, the Army will continue its digitization of the heavy force, completing the digitization of the corps in 2004. During the Objective Transition Phase, the Army will comprise an increasingly varied array of force structure. It will comprise a melange of the two initial brigades, the interim brigades, the heavy digitized corps, non-digitized heavy forces, and a complex admixture of the remaining legacy forces.

The effective and efficient mobilization, deployment, and sustainment of such a variety of forces, across any of 7 mission areas, will be made possible only through the changes brought by the RML and the logistics transformation. By the end of this transition phase, all Army logistics initiatives, on both tracks, *and* at the tactical, operational, and strategic levels, will have been completed. Track I process initiatives will be complete. The Army logistics system will have been transformed into a Distribution-Based Logistics System (DBLS), with a Single Army Logistics Provider, supported by a single Army logistics information and decision support system. Track II capabilities will be fielded and implemented in the Objective BCTs as each is activated. The embedded prognostics and sensors of the Objective Combat Vehicle in its various configurations, will link directly to the logistics systems, to predict and schedule logistics support without the need for soldier intervention. The soldier's time and talent no longer is needed to relay information from one system to another.

Standardization Phase (2010 and beyond). Starting with the introduction of the Objective BCTs, the Army becomes an increasingly standardized force. With the conversion of interim and legacy forces to the standardized design each subsequent year, the Army becomes the lethal, survivable, mobile force envisioned today, one which is easy to project, fight and sustain. Both the operational and logistics revolutions will have been realized.



A composite, overarching view of the RML's overarching modernization strategy is represented in the graphic below. All logistics initiatives and programs must be complete by 2010 to support the introduction of the Objective Force.

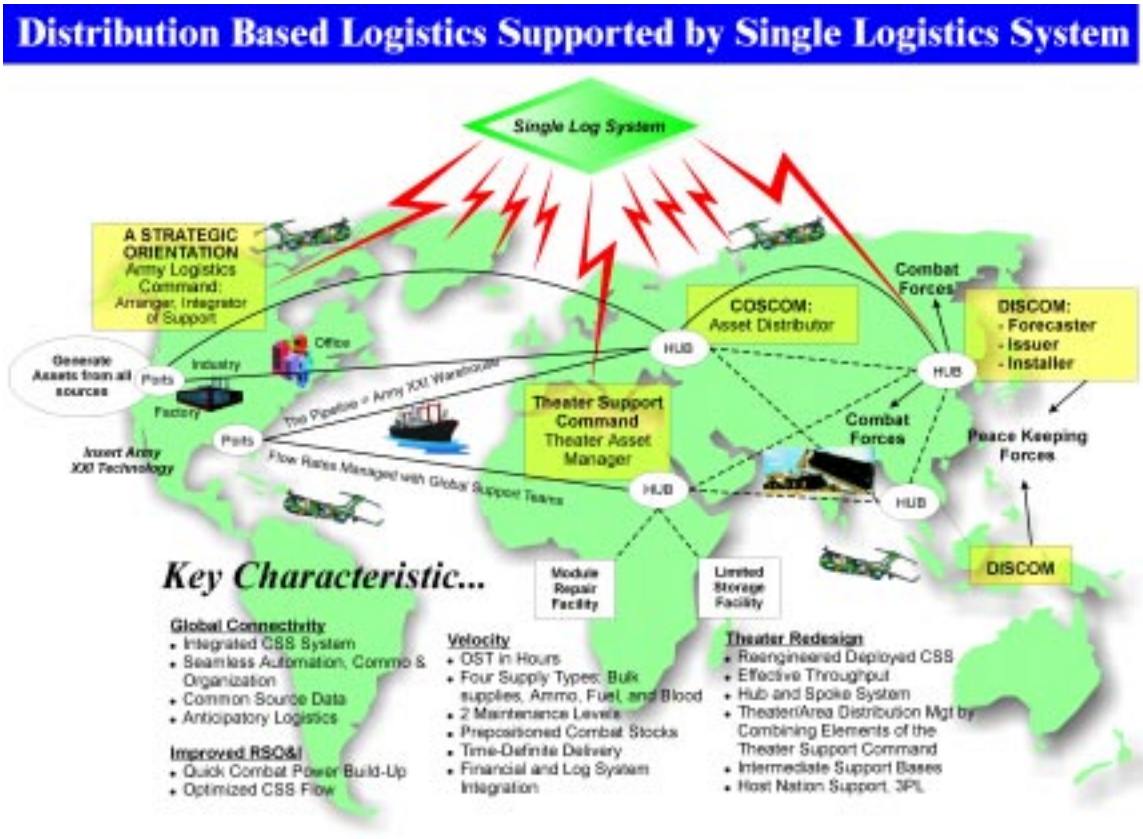


Track I — Transforming the Processes

Overview

Track I of the RML focuses largely on modernization of current systems and process reengineering—exploiting improvements in automation, communications, business practices, organizations, improved hardware (platforms, particularly), and improved lift, as well as reshaping command and control relationships to provide better unity of command. The primary target this phase has focused on is the first digitized division and the first digitized corps. We are building to a capability based on:

- Achieving a capability to anticipate battlefield requirements: Knowing what the warfighter needs before he requests it.
- Capitalizing on technologies such as smart diagnostics, prognostics, and the latest information technologies to help reshape products and practices.
- Gaining and maintaining information dominance by knowing and acting on what the force requires
- Continuing development and fielding of equipment that optimizes the Army's force projection capability
- Fielding those systems required to support the first digitized division in year 2000, and the first digitized corps in 2004
- Following the Army's overall modernization strategy of making investments that let us field those systems that enable information dominance; maintain combat overmatch in critical capabilities and functions; allow us to fund science and technology to identify and develop technologies that guard against an uncertain future; and recapitalize aging systems.



Focus of Track I — The Distribution-Based Logistics System (DBLS)

The focus of Track I can be examined in the context of transforming the Army logistics system to a Distribution-Based Logistics System, supported by a single information and decision support system, having near real-time visibility, all under a single Army logistics provider.

Key capabilities and programs embedded in Track I of the RML are presented below in terms of five of the six ASLP Investment Categories. Technology is addressed separately in considerable detail.

STRATEGIC MOBILITY	
Strategic Deployment	Support to Army and Navy programs for acquisition of C-17 and Large Medium-Speed Roll-on/Roll-Off platforms
Deployment Outfloat	Construction, procurement of critical home-station deployment upgrades to enhance rapid force projection capability
Logistics Over the Shore	Enhances LOTS capability and strategic deployment, training in support of rapid force projection; critical to RSOI
Prepo Equipment	Prepositioning of equipment, supplies aboard prepositioned ships; operation of land-based prepo facilities in support of force projection
Power Projection C4I Infrastructure (PPC4I)	Improvements and modernization of backbone telecommunications infrastructure at CONUS and OCONUS installations
Transportation Coordination's Automated Information for Movements System – II	Automates mobility and deployment operations; connects deploying unit with strategic lift and Reception, Staging, Onward Movement,
Automated Airload Planning System	Each system is OSD-directed migration system to support Total Asset Visibility and Rapid Force Projection
ORGANIZATIONS	
Army Readiness Command	Establishes a single logistics command at the national level
Theater Support Command	Streamlines theater support through distribution, organizational, platform, and improved RSOI changes
Battlefield Distribution	HQ CASCOM program to significantly change arm, fuel, fix, man, maintain, sustain elements of Combat Service Support
AUTOMATION/COMMUNICATIONS	
Global Combat Support System–Army	Business/tactical automation enabler for Combat Service Support. ***Baseline for development of SINGLE LOGISTICS SYSTEM***
Combat Service Support Control System	Commander's Logistics C2 system; critical to decision support, asset visibility, planning for theater and tactical
Warfighter Info Network–Terrestrial Transport	
Force XXI Battle Command, Brigade & Below	Sub-element, key component of Army Battle Command System, forms basis for real-time info sharing at Brigade and below
Total Distribution Program	Structured program for reliable communications, asset visibility, automatic identification technologies
Automatic Identification Technologies	Data capturing devices designed to provide rapid and accurate acquisition, retention, and retrieval of source data
Total Asset Visibility	Gather information from DoD systems on the identification, quantity, condition, location, movement, and status of materiel, units, personnel, equipment, and supplies anywhere in the logistics system at any time
BUSINESS PROCESS CHANGES	
Single Stock Fund	Merges wholesale and retail levels of logistics
Velocity Management	Reduces Order Ship Time
Direct Vendor Delivery, Prime Vendor Support	Exploits outsourcing and commercial best practices of industry
National Maintenance Management	Consolidates, streamlines, centralizes maintenance
Acquisition Reform	Moves Army Logistics to commercial standards from "fleet to ramp"
Electronic Commerce	Enhances logistics ability to exchange information throughout Army, industry, other DoD, and allies; aligns Army with industry practices
Logistics Process Development and Prototyping	Development, use of modern simulation techniques to conduct business process reengineering; supports situational awareness concepts
Joint Computer-Aided Acquisition and Logistics	Provides infrastructure for integration of digitized technical data, digitized weapon systems information, and logistics information
Logistics Technology Insertion and Integration	Supports identification, development, testing, transition of immediate high-payback potential for Army Logistics Community
Urban Warfare Logistics	Develops doctrinal framework for logistics support to urban warfare
Intelligent Agents/Natural Language Processing	Application of intelligent agents and natural language processing technologies to logistics processes
Host Nation Support	Exploits potential of Host Nation Support, Third Party Logistics, and off-shore providers to reduce logistics footprint in theater
HARDWARE/PLATFORMS/SYSTEMS	
Diagnostics and Prognostics	Improved fault isolation and repair; lays foundation for prognostic capability which will provide an anticipatory logistics capability
Test Measurement and Diagnostic Equip	Enhanced diagnostic capability
Prognostics (Turbine Engine Diagnostics)	Evolve diagnostic capability to a prognostic capability through use of Artificial Neural Network
Interactive Electronic Technical Manuals	
Electronic Tech Manual Reader Hardware	Critical to digitization of technical manuals; ruggedized notebook PCs
Movement Tracking System	Provides Global Positioning System and 2-way comms capability for tactical vehicles; provides increased in-transit visibility
Palletized Loading System (PLS)	Truck and trailer-combo with flatrack containers, self-/auto-loading rapid deployment and movement of supplies to forward positions
Electronic Repair Shelter/Test Program Sets	Enables field-level circuit-card repair; screens, fault isolates, diagnoses; Reduces repair cycle time; fully integrates COTS and NDI
Forward Repair System	Forward-repair of battle-damaged vehicles; reduces cycle time
Army Water Modernization	DoD mandate – Army is Land-Based Water Resources Executive Agent; improved water purification, storage, distribution, cooling
Advanced Aviation Forward Area Refuel Sys	AAFARS is air-lifted to forward battle area; allows "hot" refueling of helicopters; reduces time and distance; simultaneously refuels 6 helos
HEMTT Tanker Aviation Refueling System	Allows HEMTT tanker to simultaneously refuel four aircraft; reduced ground time and increased air time; fastest method of refueling
CH-47D Improved Cargo Helicopter	Provides heavy lift; extended endurance, greater reliability; the primary RML heavy lift, rapid-distribution enabler
All-Terrain Lifter, Army System (ATLAS)	10K, variable-reach, air transportable, rough terrain forklift
Container Handling Equipment (CHE	Lifts, moves, stacks ISO containers; key to fort-to-port deployment
Army Watercraft	

The Total Distribution Action Plan II (TDAP II)

The Department of the Army, Deputy Chief of Staff for Logistics (DA DCSLOG) initiated the Total Distribution Program (TDP) in response to a tasking from the Vice Chief of Staff, Army (VCSA). Its original purpose was to comprehensively identify and correct the deficiencies that impacted distribution responsiveness and efficiency in Desert Storm. The VCSA approved the Total Distribution Action Plan (TDAP) for implementation in 1992. Since 1992 the TDP has redressed many logistics shortcomings resulting in enhanced logistics responsiveness. In February 1997, the TDP General Officer Steering Committee (GOSC) directed that the TDAP be rebaselined. The committee's guidance was to build on the program's success and incorporate the tenets of Joint Theater Distribution, an important outgrowth of the Army's Battlefield Distribution (BD) Concept. TDAP II thus looks to the future to acquire the distribution capabilities necessary to support Army XXI as well as incorporate essential open issues from the original TDAP. Thus, the TDAP II becomes the action plan to create the Distribution-Based Logistics System (DBLS) — the heart of the Revolution In Military Logistics (RML). The latest draft of TDAP II is at Appendix D.

TDAP II addresses areas of concern that emerged from several rounds of studies chartered by the Army Science Board, TRADOC's Army After Next study group, and TRADOC 1998-1999 wargaming activities. TDAP II directly supports the Army Strategic Logistics Plan (ASLP), and its success is dependent of many RML Enablers. TDAP II is not constrained to just Army Logistics issues, it also recognizes that distribution of materiel to the battlefield required a joint effort involving other service and DoD activities

TDAP II was developed in consonance with the Army's patterns of operations as described in TRADOC's Black Book Land Combat in the 21st Century. These patterns of operations are: Projecting the Force, Shaping the Environment, Protecting the Force, Information Dominance, Decisive Operations and Sustaining the Force. The implications for future combat support in the period 2010 and beyond required a new focus and surfaced new issues. The CSS franchise report, which was an appendix to the 1998 Army After Next Report to the CSA captured the principal issues and called them CSS Pillars. These Pillars were Power and Energy, Ultrareliability, Combat Service Support Command and Control, National and Strategic Processes, Global Precision Delivery, and Soldier Support.

The actions to address these pillars, along with other issues that relate to them are outlined in Chapter 3 of TDAP II. The format followed is a description of the task based on the CSS pillars, with a concept of approach. The subtasks under the major tasks are defined, along with milestones, deliverables, measures of effectiveness, open issues, recommendations on follow up actions, coordination and key points of contact. The intent of TDAP II is to focus future work efforts by the Logistics community on the issues that need to be solved for the Army 2010 and beyond.

Track II — Capabilities-Based, Requirements Focused

Overview

Track II of the RML focuses on global strategic logistics operations, requirements, platforms, weapon systems support, and integrated readiness management. It will maximize emerging technologies to lighten support requirements, project our forces faster, and change sustainment requirements. Technological breakthroughs in propulsion, lightweight armor, power supplies, information distribution, and other disciplines will feed this phase. Throughout this phase we will continue to exploit information dominance and use new technologies that provide real-time logistics control and support at all echelons. Army forces must be able to rapidly deploy with sufficient capability to quickly contain, stabilize or terminate a crisis. This requires the integration of the single logistics system into a totally integrated information infrastructure. Organizations will be redesigned to promote global logistics management. Digitization will support the integration of decision support systems with the weapon systems through embedded sensors and prognostics, and leading to further joint and commercial integration. The concept of velocity versus mass will be implemented throughout, focusing on achieving real-time logistics asset visibility and positive control. A shared view of logistics will emerge. Critical technologies to this effort include sensors, diagnostics and prognostics, source data automation, micro-miniaturization, robotics, intelligent agents, natural language processors, and voice activated automation. These technologies will provide the potential to change sustainment requirements and increase efficiency in power and fuel, energy, ammunition, soldier sustainment, system sustainment, mobility and distribution, and communications. Digitization will tie these efficiencies together in an integrated fashion.

Army Focused R&D and S&T

- Propulsion
- Light-weight armor
- Power Supplies
- Information Distribution
- Advanced Sensors, Prognostics

Requirements

Platform-Based, Readiness Centric Logistics. Major weapons systems can be automated to provide data in real-time on their operational condition and stores status. Such source data automation can provide a revolutionary operational benefit. Source data automation can reduce time taken to communicate supply status and operational status, and dramatically improve the logistics planning process at all levels. The combination of platform source data with supply status 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 real time will greatly facilitate course of action analysis. Integration of source data automation with operational situational awareness 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, other supply vehicles and air lines of support), and better coordinate the rendezvous of resupply vehicles. A system incorporating source data automation also permits operations planners and logisticians to relocate programmed materiel (such as fuel and munitions) and redirect shipments as operational needs and priorities change—all with predictable impact on operations results. Building warfighter confidence through platform-based, user-friendly information technologies and process changes is an integral part of Track II of the RML. Collectively, this approach to logistics will be significantly more reliable, more responsive, require less materiel, inventory, and can be made less vulnerable than today's system with its massive redundancy of inventory, force structure, and resources.

Modernization/Recapitalization

Modernization of the Army throughout transformation cannot be restricted to new unit types. The Army's recapitalization effort, replacing aging equipment and introducing improved capabilities as available, will be vital to near-term sustainability and readiness. The core, legacy forces must be modernized and recapitalized to ensure effective warfighting readiness until our transformation is complete. The Army will carefully prioritize selected modernizations that maximize the enhanced lethality of our light forces and continued overmatch of our heavy forces until their ultimate transition to the Objective force. The capabilities of current systems will also be enhanced through extended service programs, technology insertions through preplanned product improvements, depot rebuild, or technology insertion. Sustainment recapitalization, for example, focuses on a zero time/zero mile overhaul, providing predictable reliability and useful life. It can be achieved through public-private partnerships, allowing reductions in repair cycle time, and reduces the O&S cost of legacy systems.

The Technology Imperative —— Transform Track I Processes & Track II Capabilities To Achieve the Objective Force

Putting A Logistics Focus to Technology

Tomorrow as today, our strategic reaction time depends largely upon the ability of the US to project decisive force to the crisis area. Through forward-focused initiatives such as those contained in the Army Strategic Mobility Program (ASMP), the Army continues to make major improvements in its force projection infrastructure. Also, under the ASMP, we are moving forward with the development of more advanced airlift and sealift projection platforms, like the C-17 strategic lift aircraft and the Large Medium Speed Roll-on/Roll-off ships (LMSR). The results to date are reflected in a substantial improvement in our force projection capabilities from CONUS. Moreover, the Army War Reserve (AWR) prepositioning program, including the afloat brigade, has dramatically increased our strategic responsiveness from forward-deployed locations.

Notwithstanding these improvements in our ability to project power, geographical and political constraints will still present formidable challenges to force deployment and sustainment in many areas of the world. To meet these challenges, the Army has focused on investing in technology and research that will radically reduce the appetite for logistics support. Leap-ahead advances in power, fuels and materials will help narrow the capability gap between light and heavy forces, while open information systems architectures and supporting automatic identification technologies (AIT) will provide a built-in capability to upgrade and modernize. The Army will focus on those technologies which will reduce logistics demand, while simultaneously improving force deployability, lethality and survivability. In the area of R&D, we are developing improved concepts and processes to help us determine what technologies we should invest in to realize our RML goals. For example, in the next graphic, we have depicted the considerations that are part of analyzing how to reduce our logistics footprint—a key RML goal.

Relationship to Operational Capabilities

The Logistics community must rely on advanced technologies to offset personnel and equipment reductions. The operational construct for postulated future forces poses tremendous challenges to the logistics community. Advanced warfighting concepts such as highly decentralized operations, extremely high tempo, and operational reach will be dependent on similarly major advances in force projection and sustainment capabilities. In fact, it appears that the revolutionary capabilities projected for the 2010 and beyond timeframe will not be achieved unless, and until, there is a corresponding revolution in military logistics capabilities. *Moreover, the single most important improvement necessary to achieve this RML is … a radical reduction in sustainment requirements.*

Strategy

"...the old paradigm of reacting to demands for logistics has to change to one of predicting demands."

The old paradigm of *reacting* to demands for logistics services or pushing massive quantities of supplies forward to the theater of operation without a definitive requirement must change if we are to attain the responsiveness described in the Army Vision. We must advance to a proactive mentality and a process of *predicting* demands. This is now possible given today's current and emerging technologies that allow us access to predictive real-time information and comprehensive situational awareness. However, we will only be able to achieve very marginal improvements until we commit ourselves to more fundamental and radical changes in our systems and equipment. For the most part, the Army Transformation objectives will only occur when new combat systems design in and legacy systems incorporate technology enhancements such as:

- ultra-reliable components;
- on-board, real-time, self-reporting prognostics;
- advanced armor materials that weigh a fraction of today's armor;
- propulsion systems that achieve at least a two-fold decrease in fuel demand;
- automated and self-reporting inventories, deploying and deployed supplies;
- access to a command and control system that will convey the required data and knowledge.

The Army Transformation Strategy (in draft) and our emerging Combat Service Support (CSS) Transformation Campaign Plan are predicated on the ability of the logistics community to influence the design of future combat systems currently being developed. At best, there are limited R&D funds controlled by logistics to fullfill this modernization, but we must redouble our efforts in this area. The big payoff over the long- term will be realized by smart, focused and robust investments in R&D. To facilitate the R&D process, there must be a more comprehensive synchronization and integration of our most crucial programs and projects. As we are coming to realize in this fast-moving and dynamic environment, the logistics community depends upon other functional areas (such as aviation, mounted forces, C4, soldier systems etc.) that either have or control Army R&D funds. These other functional areas must routinely and automatically embed logistics R&D requirements and capabilities in their programs or systems. This issue goes far beyond the legacy "ILS" assessments of the development processes of the past. Logistics requirements become even more important in the research, design and acquisition of new and upgrade of existing combat systems.

Logistics also influences the basic research conducted by the Army. The recent Board on Army Science and Technology (BAST) indicated that demand reduction is achievable if we insert many new and emerging technologies, as well as adapting existing commercial technologies, into the business of logistics. This whole process is not simply about logistics; it's about readiness, responsiveness, and our ability to conduct Full Spectrum Operations properly.

If we are going to do this technology assessment and insertion development correctly, then the criteria for weapon system upgrade and development should include "LOGISTICS DEMAND REDUCTION," e.g. fuel and weight reduction, reliability, predictability, etc.

To project and sustain the force in support of the Army Vision, the Army must identify, invest in and leverage existing and emerging technological solutions to optimize our operational and logistical processes and systems. Indeed, with the proper mix and application of these new technologies, communications capabilities and automated systems, our logistics forces will be able to support with much greater agility, versatility, survivability and sustainability, even in the face of ongoing and projected force reductions.

Many of these technologies are currently under development through ATDs and TDs from other mission areas. In order to portray a more comprehensive picture of Army Logistics, as influenced by these other initiatives, *Appendix E provides a comprehensive assessment of technologies that support the RML. Tables in the Appendix show a direct and significant relationship between these technology initiatives and our logistics efficiency, operational concepts, the costs of logistics functions, and life cycle resource reductions.* The tables detail initiatives, mission areas, the supported vision and potential benefits to Army Logistics.

To pinpoint the technologies with the biggest payoff to our transformation, the Logistics Integration Agency (LIA) continuously reviews all technologies listed in the Army Science and Technology Management Information System. LIA also reviews other Defense-Technology related documentation, to determine where the "potentially best investments" for logistics and combat readiness might be. Although the details of our "investment strategy" are still being developed in response to the Army Vision, LIA, working with the entire logistics community, will complete a comprehensive implementation strategy, which will identify the most promising technologies with the best potential to reduce logistics demand. The Army Vision and the RML goals will guide the development of the "investment strategy" and it will be incorporated into the revised ASLP in the months ahead.

Our RML goals, or tenets, have been cross-referenced with the Future Operational Capabilities (FOCs) (from TRADOC), which are used to serve as the basis for research within the RDECs and laboratories for Program 6.2 and 6.3 funding. Basic research areas are evaluated by topic and cross referenced to technologies related to the goals. This enables a complete evaluation of a technology area to be accomplished down to the individual work package within the laboratory or research center. This analysis is a continuous process and provides a source of recommendations for investments in research for logistics demand reduction.

Integrating Future Requirements — Transitioning the Operational Force With the Institutional Army

The Army Transformation Plan contains fourteen (14) Lines of Operation. Line of Operation (LO) 9, *Deploy and Sustain*, is central to our CSS Transformation Campaign Plan. Although the details of LO 9 and its linkage with the other LOs are still being developed, listed below are the kinds of requirements that must be analyzed and validated to Project and Sustain the Objective Force of tomorrow.

To *Project the Force,* the logistics community needs:

- Key information technologies that rapidly and automatically identify and track assets.
- Access to and use of theater entry technologies such as battlefield visualization and situational awareness.
- Advanced thermodynamic material for unattended, tamper-proof, climatically controlled "smart" containers
- Access to and use of theater command and control technologies.
- Advanced material handling equipment.
- Sea state (function of wind speed and wave height) mitigating technologies
- Advanced lighterage for port operations
- Novel advanced carriers and mobile operations platforms
- Modernization through spares
- Sustainment recapitalization

To *Sustain the Force*, the logistics community needs "smart" combat systems that have:

- Autonomous, automatic rapid weapon system resupply and rearm
- Ultra-reliability built into them during manufacture.
- Built-in self-prognostics that report future failures automatically.
- Self-healing subsystems that provide the capability to delay repairs and continue to prosecute the battle.
- Alternative propulsion systems and fuels.
- "Smart" materials that self-heal and change to the demands of the battlefield.
- Biomimetic materials that provide quantum increases in strength and are non-corrosive and non-erosive.
- Sensors and Artificial Intelligence (AI) that will enable resupply and repair movements about the battlefield with a high degree of impunity.
- Battlefield situational awareness.
- Nanotechnology applications for battlefield manufacture of supplies as well as the maintenance and repair of combat equipment.
- Robotic and exoskeleton assists for human replacement

Environment

The postulated environment in 2010 and beyond will pose significant challenges to the United States in terms of how it protects its global interests worldwide. Opponents will counter our asymmetric deployment requirements and will begin disruption at CONUS ports and transportation nodes. Cyber disruption will be a weapon of choice for adversaries, along with terrorist attacks and the use of low-cost missiles. The future threat will strike quickly then assume a general defensive posture that includes an aggressive anti-access strategy. Adversaries will attempt to delay, disrupt, and deny our access to the theater through political, informational, and physical means. Disruption will begin in the United States. Their major objectives will include denial of overflight and landing rights, instilling distrust unreliability in host nation workers, and making our assumptions concerning accessibility to aerial and sea ports of debarkation untenable. Those fixed theater installations and commercial air and seaports, which are available to us, will become primary military targets. Asymmetric methods are likely to include striking at critical infrastructure in the United States. This is the nature of the future threat we must address.

Geopolitical

The 2010 and beyond environment will be dynamic and rapidly changing. The U.S. will remain actively engaged internationally, retaining its leadership in multinational defense arrangements and in promoting democratic values, free markets and human rights. The future, however, will be even more complex, uncertain and challenging than today.

Shifts in regional balances of power will be reflected in the formation of fluid regional alliances with ad-hoc security structures, some not well-aligned with U.S. interests. It is assessed as likely that this will result in the emergence of a number of credible regional military competitors, but the emergence of a global peer competitor is not on the horizon. The world will experience intensified ethnic, cultural, economic, resource, and religious rivalries. Transnational threats— crime syndicates, terrorist networks, drug cartels, and in some cases, transnational corporations—will become increasingly significant factors. Maintaining international stability will require frequent intervention by the International Community. The Army's role in Civil Support missions (operations in support of civil authorities) will become more prominent, with domestic contingencies expected to grow in significance and frequency, resulting in further consolidation of Federal authority.

Future Conflict

Major competitors are not likely to challenge U.S. capabilities across the board; instead, they will develop asymmetric strategies and employ niche capabilities. Why? To avoid U.S. strengths and capitalize on U.S. vulnerabilities. Proliferation of advanced technologies poses great risk. These include, but are not limited to, precision fires with extended lethality at extended ranges; weapons and technologies capable of mass effects; and highly accurate medium/long-rang cruise and ballistic missiles. Strategic responsiveness will be dependent on our ability to project early and decisive combat capability force to a crisis area. Short wars will not be guaranteed; consequently, our military strategy must be prepared for either "short" or "long" wars.

National Military Strategy (NMS) and Civil Support

The core elements of the NMS are (1) shape, (2) respond, and (3) prepare. A fourth element of the NMS may emerge—Civil Support. Civil Support will represent a first priority asymmetric challenge. Future enemies

will be expected to devote large resources to attacks on the U.S. homeland—attempting to affect U.S. public opinion and our political will. Civil Support *raises serious questions over:* relationships with other government offices; control of the National Guard, when not under Federal control; cooperation with commercial and private sectors; effective integration of participating agencies; and common situational awareness over the entire extent of US territory. Civil Support will bear little resemblance to traditional military operations. And by extension, logistics support to Civil Support will pose formidable challenges.

The Future Battlespace

The future battlespace will be far more deadly because of the proliferation of advanced technologies. There will be no fixed lines, tied-in flanks, secure rear areas, echeloned formations, deliberately-phased operations, or direct-fire engagements executed by large maneuvering formations. There will be few or no sanctuaries. Forces will be vulnerable to a blend of conventional/unconventional attack by air, missiles, information warfare, Special Forces operations, and even space-based weapons. Mass and shock will be achieved by massing and integrating effects of variable range fires from variety of air, ground, sea-based platforms.

Non line of sight systems will exert influence on battlefield outcomes far greater than that of direct-fire systems. The battlespace will be characterized by widely separated forces and non-contiguous areas of operations. The enemy will be engaged within battlespace, employing integrated mix of joint fires and rapid maneuver. Distributed operations will be decentralized in execution, but carried out IAW fully integrated joint plan. Tactical objectives will be achieved in short bursts of time. A rapid succession of tactical successes will lead to the operational disintegration of the enemy. Urban warfare has been the focus of much attention in recent TRADOC and Joint Wargames. U.S. forces are ill-prepared to engage an enemy inside a "mega city" of 20 million, where combat is likely to occur in sewers, subways, and high-rises. As with Civil Support, urban warfare poses difficult challenges for the logistics community.

Notional Force Structure

The Army long-term futures community continues to experiment with a notional force structure design for 2010 and beyond. Typically, this force structure includes "tip-of-the-spear" technologically-enabled early-entry forces, follow-on heavier forces, as well as special operations and Civil Support forces. This force structure will be employed as part of a Joint Expeditionary Force in execution of the Joint concept of advanced Full Spectrum Operations through strategic maneuver, strategic fires, and strategic interdiction. Each component of this notional force requires a unique type of sustainment support.

Impact for Patterns of Operation

There are six Army patterns of operation. As described in TRADOC's Land Combat in the 21st Century, they provide a comprehensive and coherent construct for exploring the character of future military operations across the spectrum of conflict. They are mutually supportive and non-sequential, and are conducted simultaneously and continuously through all phases of conflict. They provide an analytical framework for examining operational insights based on our view of the future. The patterns of operation are: *Project the Force; Protect the Force; Gain Information Dominance; Shape the Environment and Set Conditions for Success; Conduct Decisive Operations; and Sustain the Force.* For purposes of logistics modernization, this Plan examines the implications of the future for *Project the Force* and *Sustain the Force.*

Project the Force

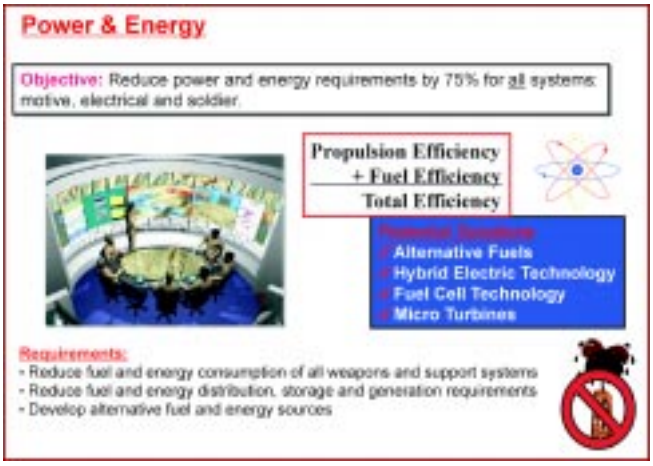
Strategic maneuver in the 2010 and beyond era will depend on development of advanced deployment platforms—ultra-heavy airlift and high-speed ships. Some forces will need limited capability for self-deployment by means of organic lift, to include perhaps a Super-Short Take-Off and Landing (SSTOL) aircraft. This would reduce the burden on strategic deployment platforms, expand the number of approaches into a theater and provide operational flexibility.

Lightening the force will expedite throughput and provide operational agility. Critical areas for lightening the force are: reduction in size of units; weight reduction for ground combat platforms; reduction of support processes and structures; and reductions in log requirements, particularly fuel and ammo.

Advanced C4ISR capabilities will be required for *en route* planning, analysis, simulation, mission rehearsal. Forward-stationing and prepositioning will remain steadfast requirements. Contingency forces must be accompanied by early projection or sustainment and Information Operation (IO) dominance capabilities.

Sustain the Force

Concepts such as decentralized operations, high Optempo, operational reach—are dependent on radical advances in sustainment capabilities. In fact, the evolutionary capabilities of 2010 and beyond are not achievable without a corresponding RML. ***The most important improvement to achieve RML is a radical reduction in combat sustainment requirements for the future force.***



Reducing requirements. Power and Energy poses core limitations on operational and support decisions. Fuel and ammunition historically have constituted the bulk of sustainment supplies. The imperative exists to reduce dependence on bulk hydrocarbon fuels and to develop alternative fuels or power sources for the Army Beyond 2010 forces. Solar and nuclear appear to be best near-term alternatives. Advances in precision munitions (one round/one hit/one kill) offer the potential to reduce munitions requirements.

Ultra-Reliability. Maintenance is a major driver of sustainment. To reduce maintenance and thus sustainment requirements, ultra-reliability must be *designed–in* all future systems and equipment. Ultra-reliability is absolutely essential to maximize the operational concepts envisioned for the 2010 Objective Force and beyond.

There are three core requirements to achieve ultra-reliability: (1) incorporate ultra-reliability holistically into systems, components, integrated assemblies; (2) exploit capabilities for anticipatory maintenance—self-

diagnostics, programmable sensors, failure warning; (3) ensure that Objective Force battle crews have the training, know-how and on-board spares needed to repair most failures using embedded technical instructions and modular replacements. Ultra-reliability complements diagnostics and prognostics, all of which must be included in requirements packages for new equipment and considered in modernization programs.

Other-than-Military (OTM) Logistics Support: Emerging insights from TRADOC's series of wargames focused on 2010 and beyond reaffirm current trends toward an increased reliance by U.S. ground forces on OTM logistics support. This support will include host-nation, as well as civilian commercial sector sources. On the surface, shifting this support to host-nation or private sector sources may have merit, particularly in reducing requirements for organic transportation and supply/delivery assets. However, the element of risk is undetermined, and this requires further analysis.

Improvements in CSS C2 and Core Sustainment. Real-time status of systems, unit postures and total asset visibility (TAV) are essential. Combining logistics situational awareness with advanced delivery systems will expedite and streamline logistics flow. Advanced communications systems will allow full integration of CSS in operational networks, letting us communicate across all support levels. These C2 advances—if coupled with reductions in sustainment requirements—will enhance integration of logistics and operations planning. Interoperable C2 will help create a seamless operational concept and a single battle rhythm. Not only will logistics support be enhanced, but there will be a corresponding and substantial reduction of the logistics footprint in the theater of operation.

Interagency and Multinational Operations. A culture and infrastructure for integration of interagency operations must be created. The k*ey obstacle to be overcome is the absence of common view, common doctrine, and common terminology on how to work together.* Multinational operations are constricted by a lack of operational coherence and system interoperability. Differing degrees of technological advancement in multinational log capabilities will pose a difficult challenge for the US, which must build a "low-tech" bridge to work with even the more sophisticated allies.

HQ TRADOC CSS User Needs

The Technology Materiel Game (TMG) conducted in July 1999 focused on user needs in the 2010 and beyond timeframe. Needs were developed by TRADOC schools for lethality/mobility/survivability, CSS, and C4ISR. These needs were further reviewed by HQ TRADOC and DCSCD. They were vetted and approved by the respective Technology Focus Groups (Lethality/Mobility/Survivability (LMS), CSS, and C4ISR). These needs were subsequently accepted and validated by the TMG's Integration and Adjudication Team. User needs developed for the TMG and validated during the game are the recommended Army 2014 and Beyond capabilities (under preparation by the HQ TRADOC DCSCD). *Needs and their goals are provided at Appendix F.*

Management and Integration Framework

Management

The ASLP is the Army's single comprehensive implementation plan for logistics transformation and modernization. The next revision of the ASLP will be published next fall and will address the plan to integrate and synchronize our logistics requirements, initiatives and enablers to better support the Army's major transformation objectives—the Initial Force, the Interim Force and the Objective Force. The Plan will also include a timeline with milestones and metrics to track, measure and better manage our transformation process.

- Executive oversight and management of the Plan will be the responsibility of the LIA.
- The Plan will be maintained by LIA, and updates will be done electronically through access to LIA's website.
- A standard template will be used for all modernization initiatives.

The framework for management will include three panels or working groups, each chaired by an Army Colonel. The three panels are:

- Project the Force
- Sustain the Force
- Acquisition Reform and Technology Application

Each panel will meet semi-annually, or at a frequency determined by the Panel Chair. Panel Chairs will be responsible for managing those modernization initiatives that fall under that panel's domain. Panel chairs are as follows:

- Project the Force—HQDA, DCSLOG (DALO-TSM)*
- Sustain the Force—HQDA, DCSLOG (DALO-SM_)
- Acquisition and Technology Application—HQDA, LIA (LOIA-IT)

*Also chairs the Army Strategic Mobility Program (ASMP) & the Defense Science Board Power Project panels.

Project the Force	Sustain the Force	Acquisition & Technology Application
HQDA, DALO-TSM	HQDA, DALO-SM	LIA (LOIA-IT)

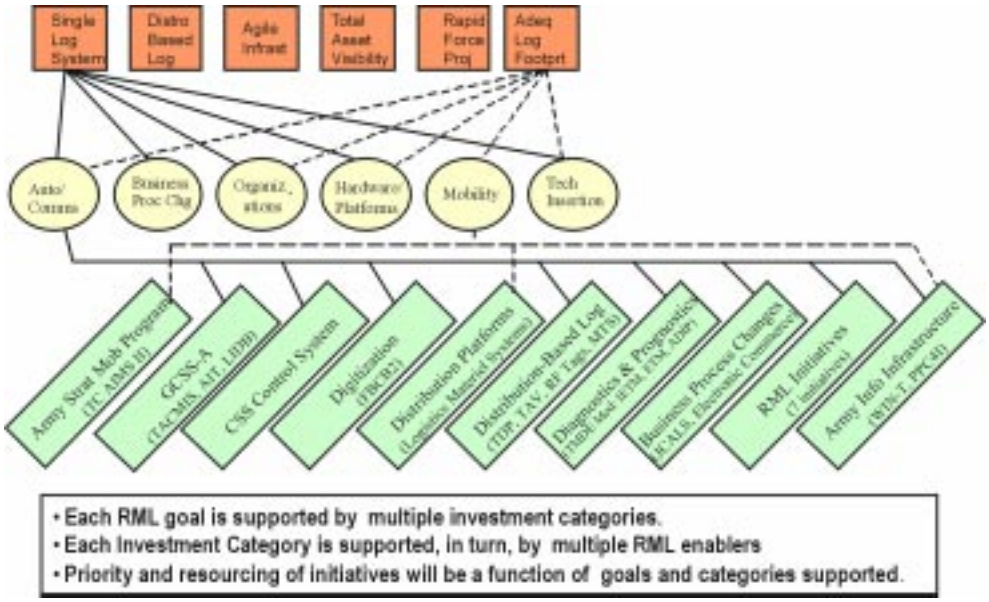
The key reporting requirements for the ASLP are:

- Quarterly updates provided to the Army Logistics Triad (or similar executive working group) comprised of the DCSLOG, CG CASCOM, and DCG, AMC;
- Quarterly Updates to the Assistant Secretary of the Army for Acquisition, Logistics, and Technology.

Updates will be prepared and delivered by the respective panel chairs. LIA will be responsible for *integrating* the updates of all three panels and preparing a high-level interpretation that captures progress being made within the construct of the overall Plan. This will be accomplished in part through the use of advanced relational databases and visual information display and management tools. These tools provide a capability not available previously; they will provide the Plan's managers with the ability to effectively link key data between the various programs and help further define the functional, technical, and operational architecture that must exist if the Plan is to be successful.

Integration

Integration and synchronization of initiatives embedded in the ASLP will be structured in a process as depicted in the chart titled "Synchronization—Goals, Investment Categories, and Initiatives." As the chart depicts, for each RML goal there are required investments in one or more of six investment categories: (1) automation and communications; (2) business process reengineering; (3) organizational change; (4) hardware and platforms; (5) mobility (strategic and theater); and (6) technology insertion. By extension, there are specific modernization initiatives that fall within each of these investment categories that lead to achievement of a specific goal.



Transformation and Modernization Initiatives

The logistics transformation and modernization initiatives in the ASLP are those programs that make logistics transformation to the Objective Force possible and in line with the Army Transformation Strategy and the associated CSS Transformation Campaign Plan, which will be incorporated into the next revision of the ASLP. These CSS modernization programs come from many sources**.** These sources include as a minimum:

- Commercial best practices identified under reporting requirements associated with Section 347 of the FY 98 Defense Authorization Bill;
- Logistics management initiatives identified under Section 912 of the FY 98 Defense Authorization Bill;
- Total Distribution Program initiatives;
- Army Strategic Mobility Program initiatives;
- Army Strategic Management Plan short- and long-term objectives; and
- Current ASLP initiatives

Each modernization initiative links to a specific goal identified earlier in this Plan. Each initiative has a specific set of actions, which make possible the achievement of the goal. Linkage of specific initiatives to specific RML goals can be logically extended to establish a linkage to both DOD and Joint logistics modernization goals and objectives.

Goal	Initiatives (To be completed) (All must link to a goal)
Single Logistics System	• Global Combat Support System-Army • Single Stock Fund • National Maintenance Manager • Integrated Sustainment Maintenance • Information Access
Distribution-Based Logistics	• Battlefield Distribution Concept • Integrated Sustainment Maintenance • Palletized Loading System-Enhanced • Platform-Based Readiness-Centric Logistics
Agile Infrastructure	• Contractor Logistics Support • Prime Vendor • Direct Prime Vendor • Modernization Through Spares • AMC Forward Support Center (AFSC) • Integrated Supply Chain • Streamlined Business Processes • Paperless Contracting • Defense Procurement & Acquisition System • Best Value Products and Services • Commercial Practices and Core Functions
Rapid Force Projection Capability Note: Sea State describes conditions in terms of wave height and wind velocity. For example, Sea State 3 (SS3) describes conditions with wave heights 3.5-5 feet and wind speed 13.68-16.35 KTs	• Transportation Coordinator's Automated Information for Movements System II (TCAIMS-II) • Prepositioned Equipment • Deployment Infrastructure Improvements • Water Craft Modernization Sea State 3 (SS3): Joint Modular Lighterage System (JMLS), SS3 Crane, and Rapidly Installed Breakwater System (RIBS)
Total Asset Visibility	• Army TAV, Automated Identification Technology (AIT), In Transit Visibility (ITV), Movement Tracking System (MTS)
Adequate Logistics Footprint	• Demand Reduction Technologies

Measuring Progress

The Army is developing the metrics or performance measures required to assess whether the Army Transformation Strategy is occurring in a fashion that fully supports The Army Vision. Those responsible for management oversight of individual ASLP goals will also be responsible for developing performance metrics for their respective goals and for assessing progress against a baseline standard. The resultant metrics, both quantitative and qualitative, must be integrated into a "well-ordered" set to ensure coherence among the welter of metrics associated with the supporting investment categories and RML initiatives (see Synchronization chart on page 9). There will be instances in which one metric may work at cross-purposes with another. For example, the objective "reduce transportation costs" innately conflicts with that of "reduce OST." The higher-order objective "achieve unit readiness standards" establishes coherence and determines the optimum balance of cost and time savings in terms of overall readiness. This simple example represents the far more complex challenge confronting program managers, but it is one of the most important. The metrics selected will both guide the execution of the ASLP, and ultimately, determine its success.

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Appendices

Appendix A - Government Performance Results Act (GRPA)

Like other DOD and Army Strategic plans, the ASLP will achieve its synchronization goals by meeting the requirements of the Government Performance Results Act, which stipulates that management frameworks and strategic frameworks for change must do the following:

- Establish broad general initiative goals and objectives and tie them to an overall strategy that recognizes the interrelationship of initiatives
- Link those goals, or describe how those goals, link to overall Army and DOD goals and objectives
- Examine how collectively those goals will impact the system-wide logistics pipeline
- Establish quantifiable performance measures to assess whether the initiatives are achieving desired results
- Define levels of accountability and responsibility for implementing the initiatives and identify the resources required to achieve goals
- Establish milestones necessary to measure progress toward full implementation
- Define an evaluation plan to periodically compare actual results to established goals and objectives

Consistent, therefore, with the GPRA requirements, the ASLP does the following:

- Provide tools for developing and fielding new capabilities
- Identify resourcing requirements
- Synchronize near-, mid-, and long-term goals
- Manage the strategic direction of Army logistics
- Track logistics initiatives against established milestones
- Devise alternative solutions
- Identify and generate requirements
- Identify and develop investment strategies

Serve as a functional plan in support of The Army Modernization Plan

Appendix B - DOD and Joint Logistics Modernization

The ASLP embraces a broad perspective of logistics. These include design and development, acquisition, storage, distribution, maintenance and disposition of materiel, movement, evacuation and hospitalization of personnel, acquisition or construction, maintenance, operation, and disposition of facilities, and acquisition or furnishing of services. The ASLP is consistent with the objectives of *DOD's Logistics Strategic Plan*, which lists as its objectives:

- optimized support to the warfighter;
- improved strategic mobility to meet warfighter requirements;
- implementation of customer wait time as DOD's logistics metric;
- full implementation of total asset visibility;
- reengineering and modernization of applicable logistics processes and systems;
- a reduction in logistics costs while still meeting warfighter requirements.

It is also consistent with *DOD's integrated plan to reengineer product support processes* and implement best commercial practices. DOD's transformation to a reengineered product support approach addresses these three objectives:

- A weapon system approach to logistics;
- Competitive sourcing of source product support
- Integrating the logistics chain

Lastly, it is in close alignment with the Joint Staff's Focused Logistics concept, and that concept's vision of joint warfighting and joint logistics.

Appendix C - RML — Precursor to RMA

Contemporary futurists, technologists and military analysts generally agree that a Revolution in Military Affairs is at hand. This revolution, the RMA for short, will be the tangible result of a convergence of technologies stemming from or made possible by the advent of the Information Age. Direct application of information technology will allow future war fighters to peer through much of the fog of war and fairly clearly see the nature, disposition and condition of their own and the opponent's forces and fighting systems. Moreover, future war fighters will be able to act on this knowledge using plentiful and relatively inexpensive precision weapon systems to target the opposing forces and systems. This promises the opportunity to prosecute a military campaign with near-perfect economy of force, applying the right systems to the right targets at the right times. Since the United States is currently leading the world in these new technologies, it has a historically rare opportunity to adopt RMA war fighting techniques before potential opponents progress technically and economically to a position of parity. The RMA theory contends that this window of opportunity will provide the United States with the means to maintain military dominance, and hence super power status well into the 21st Century, at a significantly lower cost than was required to achieve Cold War era dominance.

The key enabler of the RMA is an accompanying Revolution in Military Logistics, an "RML". RMA war fighters, in addition to enjoying this near perfect ability to see and target the enemy, will also have the opportunity to achieve a previously unknown freedom of movement by drastically reducing combat system dependence on logistical support. The theory here is that military forces, particularly armies, have been constrained in their operations by the need to carry, gather, or have brought to them the material means for fighting. This is especially so with Industrial Age mechanized warfare, to include air and naval warfare. The RML offers forces the opportunity to break loose of these bonds. The RML is seen as a prerequisite of the RMA. By applying technology to both the demand and supply sides of the logistical equation, the RML will allow forces to move quickly to distant battlefields, conduct decisive combat, and safely return to fight again. Demand is targeted for reduction through designing into new weapons systems enhanced resource efficiency, transportability, and supportability. At the same time, supply is enhanced through near perfect logistical situational awareness, real time visibility and control over logistical assets and operations and more efficient physical delivery of required supplies and services. Thus the RMA will be *empowered* by the RML, rather than being somehow liberated from all the material and physical constraints that logistics mitigates.

Commercial Best Practices and Globalization

Serving as a backdrop to all of these potential changes in the ways militaries prosecute warfare is the revolution underway in global communication and commerce. Technical advances such as satellite communications, wireless telephone systems, widespread installation and integration of wire and optical cable networks, widespread access to and adoption of the Internet and its World Wide Web, and deregulation and the subsequent globalization of banking, transportation, and telecommunications have all converged in the 1990s to radically transform global commerce, industry and management. A pattern has emerged, which shows no immediate signs of slowing down, where investment fuels new technology, which in turn opens new lines of business, fueling new investment. The result is turbulent but rapid growth of industry and commerce across a broad front. Entities such as transnational corporations and "virtual" enterprises are adding to the complexity of national geopolitical strategy and policy. The explosion of new commercial technologies also provides new sources of solutions to military requirements. These provide the US and its allies the opportunity to acquire and field new technology to their armed forces more quickly and less expensively then in the recent past. But it also adds the risk that these global commercial technologies will also be readily available to potential adversaries, who will now be able to afford them, and who may choose to adopt them before these technologies are accepted by the established leading armies of the world. Globalization of interests and the ready availability of advanced

technologies are both key opportunities and key risk areas that need to be considered in future military and geopolitical planning.

RML Means Revolutionary Differences From Today's Logistics System

Military logistics today is essentially a reactive approach to readiness and sustainment. Generally, forces in the field wait for a requirement then address that requirement through supply, maintenance, and transportation actions. To support responsive reaction to readiness shortfalls, military forces or their logistical organizations typically maintain large inventories of spares, repair parts, and myriad consumable supplies, all to support sustained operations or training to remain prepared to conduct operations. Historical demand is traditionally used as the basis for determining the size and content of these inventories. The dynamic and changing nature of post-Cold War demands on units, and subsequently on the logistics systems, has eroded the mathematical underpinnings of historical demand models, resulting in patterns of shortages and excesses that impact on readiness and financial efficiency. Moreover, the large inventories that must be maintained to practice today's "just in case" logistics tie up scarce resources that could otherwise be applied to modernization of forces, while frustrating nimble management of logistics operations through their sheer size. Thus today's logistics systems not only struggle to provide the level of support required by the war-fighter, they also impede his or her ability to acquire the very RMA and RML technologies that promise lasting improvement. Additionally, current operations are slowed by the need to build up sufficient resources in the theater of war before decisive operations against an enemy can be started. However, current and future crises requiring military intervention no longer allow this buildup period.

RML and 2025 Operation

To understand both the challenge inherent in crafting a Revolution in Military Logistics and the RML logistical techniques proposed to date to respond to these challenges, one needs to visualize what RMA warfare will look like. This includes understanding the kinds of operations and tactics envisioned for RMA warfare as well as the expected future battle space environment.

RMA-style combat operations in the early 21st century vary markedly from the mechanized and even the air-land battle concepts of the 20th Century, yet in many ways are simply a further evolution of military campaign strategy. The constants include the need to decisively engage large opposing military forces, to take the battle to the enemy, and therefore fight on the enemy's home terrain, and to secure a lasting victory by seizing and positively controlling the opponent's forces, resources, and/or territory. What changes is greatly enhanced knowledge of enemy disposition, the critical importance of speed and timing, and the ability to move and sustain large forces of one's own on a global basis. In short, RMA combat is typified by the ability to see clearly and act decisively, on a grand scale. Implications of RMA technology include enhanced target acquisition, fire control, and near certain lethality if hit.

RMA technology is also essential to support highly distributed operations, whether at the warrior or platform level with "sensor-shooter" weapons systems or at the campaign level with "split operations" headquarters and support elements.

"Jointness", the conduct of operations by a team from more then one military service, is virtually implicit in the ability to match sensor-shooter pairs against a specific target. Jointness at a very low level of organization is also implicit in the increased effective ranges of RMA weapons and forces, and the need to coordinate a shared battle space among a number of units performing a number of highly synchronized missions. Allied forces, in "combined" operations, will also be typically operating in the shared battle space, further complicating the coordination challenge for RMA commanders.

A very key aspect of RMA war fighting is it's transient and dynamic nature. Time and timing are critical elements of RMA war fighting. This in turn implies a need to change today's understanding of Joint, combined, and task organized forces from a more formal "order of battle" approach to a more flexible tasking and teaming approach. This conclusion stems from the RMA capability to organize and coordinate "on the fly", empowered by plentiful global communications, and the RMA need to do so implicit in the ad hoc pairing of sensors and shooters into virtual weapons systems. RMA warfare is very much dynamic, requiring intensive management of OPTEMPO, time and space.

It will require fundamental changes in logistics support. The Army has had logistical planners and strategists studying the implications of RMA warfare for over three years. The resulting body of work is summed up in a concise Army vision statement for future Army logistics—The *Revolution in Military Logistics.*

Domains

The RML spans three domains, or core competencies*: technology application and acquisition agility*, *force projection*, and *force sustainment*. These domains are interdependent and mutually supporting. For example, technology enhancements aimed at reducing the weight and consumption of weapon systems enhances the ability to project forces as well as enhance the ability to sustain those forces. Enhanced sustainment, in turn, may reduce the size of logistical forces required in the battle zone, and by moving the location of support out of the immediate area, allow the use of commercial technologies and local acquisition of required supplies. More importantly, it also integrates these three domains to produce a truly revolutionary result.

The key support concepts for each RML domain are explained in detail below. However, to better convey the dependence of most RML support concepts on technological innovations, Technology Application will be addressed first and independently, while the second half of this domain, Acquisition Agility will be addressed in the section on Sustainment.

Technology Application

Exploitation of advanced technologies permeates the RML, as it does the RMA war fighting concepts. The RML, however, has extended its consideration of the "art of the possible" beyond the immediate combat capabilities that can be built into new weapons to propose that enhanced deployability and supportability should also be built in. New technology also supports new and better ways to provide logistics. RML technology application extends to all technologies and all application areas—propulsion, materials, information, manufacturing, optics, electronics, biotechnology, etc. A unifying theme carries through all technology application areas, which is the goal to reduce dependence on logistics support. This is too often confused with doing away with the need for logistics support, or "unencumbering" the war fighter. This goal was early on identified as impossible, at least for the first few decades of the next century. But a general goal of reducing support requirements has proved extremely useful in identifying technologies that advance the RML while enabling the RMA.

One key subordinate goal that has endured from early in the RML effort is the criticality of reducing system size and weight. This is especially applicable to future weapons systems, but applies across the board to systems, units, and supplies that must be moved to and around a distant theater of war. "Smaller" and "lighter" systems directly reduce fuel transportation for unit displacement (to get directly from point A to point B), but also energy-intense operational maneuver to get there under combat conditions. Fuel will remain the primary bulk supply requirement for RMA forces. Moreover, reductions in fuel requirements translate into reduced requirements for fuel transporters, handling equipment, storage containers, and the fuel infrastructure. Of course, lighter systems mean that available lift platforms can deploy more combat forces more quickly to any point on the globe, in order to more effectively execute the Army's strategy of strategic preclusion.

A second key goal is enhanced weapons range, lethality and reaction time. Beyond the immediate benefits of decisive engagements won by RMA warriors, out-reaching the opponent with deadly fire is a key way to enhance survivability without adding extra weight. The goal here is highly responsive "one shot-one kill" weapons systems. Combined with range overmatch, one shot-one kill munitions allow friendly forces to quickly vanquish opposing weapons systems while avoiding losses to friendly systems. Responsive, very-long range precision systems can be fired and maintained in more secure rear areas, further unencumbering the tactical commanders. From a logistics support standpoint, such capabilities are great supply and structure reducers. They not only reduce ammunition requirements, but also trim the need for repair parts, repair teams, transportation requirements, and replacement systems. Long-range, precise, lethal munitions, though expensive, are extraordinarily cost-effective.

Another key area is advanced materials. These promise to reduce system weight throughout by replacing heavier traditional structural materials, while not only lowering weight but also enhancing survivability by providing the material for better vehicle armor systems. Other vehicle related technologies being targeted for advancement include propulsion systems and suspension systems. The goal here is to increase cross-country, highway, and dash speed while enhancing fuel efficiency. These compliment weight reductions in a two-prong attack to reduce fuel consumption, and hence reduce the scale of the liquid logistics task.

These basically military technologies can be combined with an even wider range of commercial technology advances to enhance logistical support directly. Force projection platforms and battlefield logistics systems can benefit directly from the same advanced materials, power plants and information systems that will be used for RMA combat vehicles. These military systems and the wider range of non-tactical logistics systems supporting the battle from afar can be further enhanced with a number of commercial off the self (COTS) technologies. Manufacturing equipment and techniques, as well as material handling and transportation equipment built by and for private industry can be applied successfully to military industrial operations. Commercial enterprise and supply chain management software similarly can be applied to military logistical management needs.

Key to all of this and to the management of RML precision logistics is advanced information technology. Consider that modern rapid research and development is utterly dependent on high-speed computation and data management. Information technology is vital in key functions such as computational fluid dynamics (for designing aircraft, combustion engines, armor, and munitions), modeling and simulation, CAD-CAM and digitally controlled machines (for designing and producing mechanical, optical, and electronic components), microprocessors, and management information systems (key to command and control systems, enterprise resource planning, supply chain management, and electronic commerce).

Paralleling this rapid advance in information technology is the rapid growth and interconnectivity of global communications. As connectivity to the global telecommunications grid becomes trivial and bandwidth becomes cheap and plentiful, economic opportunities open up across traditional national borders. Everyday more individuals gain access to the global Internet. Similarly, news coverage of world events is rapid and widely available to global audiences. The next wave of progress will likely come from satellite wireless services. When the major low earth orbit constellations come fully online, competition should drive costs down, further expanding a seamless global network of electronic commerce and information exchange. All of these communications technologies can be adapted to enhance the conduct of military operations, while at the same time they fundamentally alter the environment in which military operations are conducted.

Another information area is information warfare and information-based counter measures. War in cyberspace is already a reality. Other information applications to weapons systems include targeting and hit avoidance suites. Moore's Law projects out at least ten more years, probably longer, offering order of magnitude increases in power accompanied by similar levels of reduction in cost, size and power requirements. This implies a real opportunity to develop and deploy electronic countermeasures to a wide range of combat systems, increasing survivability beyond what advanced armor offers against advanced munitions, without the weight penalty. These "hit avoidance" technologies may offer the best hope of achieving RML goals for weight reduction while meeting RMA goals for survivability.

The emerging field of biotechnology also promises to revolutionize many aspects of chemistry, health care, performance enhancement, and possibly even information processing. Potential RMA and RML applications include improved fuels, sensitive and reactive materials and actuators, better chemical and biological weapon detection and defense, and improved sensors.

Finally, Technology Application is the direct source of advancements in the transportation platforms that enable force projection. Faster ships, larger airplanes, and novel movers such as air ships, mobile offshore bases, and trans-atmospheric vehicles all come principally from America's research and development technology base.

Force Projection

RML seeks to enhance force projection in three ways. Transportation platforms and related infrastructure will be improved with new technologies integrated into a well-designed force projection system. The RML is currently not specific as to the nature and mix of these platforms, recognizing the ongoing efforts and studies to define these requirements currently underway in several Army Staff and TRADOC organizations, the Logistics Management Institute (LMI), and the Army Science Board's *Strategic Maneuver* study.

The RML does call for the units and equipment comprising the forces to be designed to expedite their deployment directly into combat operations. And the RML expects that the management of the deployment process will be made more precise and responsive through improved command, control, planning, and communications systems.

Additionally, while RML Distribution Based Logistics (DBL) is primarily conceived to distribute millions of small shipments globally, it will also distribute complete weapons systems. The RML strategists note that DBL could also distribute special teams and even entire units. This later capability goes beyond current transportation community concepts for force deployment, but stems from a logical consideration of the implications of waves of smaller RMA forces cycling through and moving around a distant battle space. The current paradigm of force flow breaks down in this environment, but this RMA movement control challenge seems very similar to the airline route management model being used to flesh out the Distribution Based Logistics concepts.

Force Sustainment

The key measure of effectiveness of 21st Century RML sustainment of RMA operations will be the ability to reliably predict and then assure *achievable* readiness levels. This does not equate to assuring *desired* readiness at all times and under every condition. But tracking the readiness condition of the forces throughout a mission scenario will allow both war-fighters and logisticians to manage risk and avoid surprises. This seamless system of support will be orchestrated by a streamlined infrastructure of command and control, anticipating needs through real-time situational awareness. Leveraging commercial best practices with regard to fiscal, business process, and technological systems, RML support will be fundamentally different and will be more agile and efficient than the reactive support of today.

Current initiatives such as the Single Stock Fund (SSF), Integrated Sustainment Maintenance (ISM), and National Maintenance Management are critical first steps toward achieving the RML. Additionally, the Global Combat Support System-Army (GCSS-A), once fully deployed, will integrate all of the Army's legacy logistics information systems, laying the foundation for a "seamless" logistics management system from a user perspective. These fundamental first steps position the Army to develop and adopt a new way of providing support to military operations—the RML.

The RML sustainment process focuses on readiness. Readiness here will be considered the ability of specific units and forces to perform specific assigned missions. It thus considers the mechanical condition of

unit equipment, consumable supplies available to the unit, unit manning and level of training. All components must be in balance to achieve a particular degree of readiness, and overall readiness is limited by the lowest level of any one readiness component. This total system approach to readiness will ensure that the highest levels of effectiveness and efficiency are obtained from any given level of resources. All logistics functions need to support the readiness goal, including the development and acquisition of new technology that meets the capability and readiness requirements of the future, the replacement of difficult-to-support systems, reduction of the logistics footprint, and attaining net savings in operational expenses.

The RML foresees and exploits enhanced opportunities to track and forecast readiness achievable in the near future. Today's technology and the rapid development of future technology provide us an unprecedented opportunity to monitor the near real-time condition of our soldiers, systems, units, and forces. This level of visibility will allow RML logisticians to accurately forecast the future condition and requirements of systems, units and forces, and to do so for different strategic and tactical scenarios. Modern information technologies can and will allow greater coordination and collaborative planning between operations and logistics—*OPS-LOG planning.* This new opportunity to predict system health and compare it to future usage will make possible an era of truly *Anticipatory Logistics*

System health can be predicted using either embedded, sensor-based, prognostics or through data warehousing and data mining. The sensor-based approach would use embedded, appliqued, or remote sensors to collect system diagnostic sensors to feed small information processors that produce prognostic information. This prognostic information can then be automatically relayed to users and the support infrastructure, either directly via satellite or through use of the logistics command and control system. The data-driven approach would use the technology of data warehousing and data mining to collect, store and analyze large quantities of detailed system level usage and performance data. Data from all vehicles in the fleet would be collected and organized over time to build a data base that could then be used to predict very specific future trends likely to impact specific systems or groups of systems. In practice, the approaches are complementary and would most likely be used together to produce comprehensive and reliable system health forecasts. These "raw" heath forecasts could easily be "rolled up" to produce readiness projections for units and forces. Today, the computational power and software packages to do this have risen in capability and fallen in price dramatically, effectively removing economic barriers to widespread use of this information throughout the Army.

Knowing the expected system response to future usage demands does not equate to knowing future readiness. OPS/LOG planning—coordinating and prioritizing readiness goals versus mission requirements gives the system health forecasts focus and meaning. The intended or contingency use of the systems would be considered with respect to the projected health profiles in order to judge if a given system, unit, or force will likely remain capable of performing all required and implied mission or operation tasks, throughout the duration of the mission. The source of this projected usage can be either operational plans or training schedules. Working backward from the required component tasks will identify the expected usage required of each key piece of equipment. Once again, the recent availability of affordable distributed information technology makes this problem seem tractable as well.

Effective use of system and unit health data and usage profiles requires new logistics readiness management tools and processes at both the strategic and operational levels. RML readiness management will focus on tracking the predicted versus the required readiness of systems and units. The expected readiness throughout the mission must then be carefully coordinated with the operational (or training) planners to ensure agreement that the proposed mission is technically viable and that the projected readiness levels are acceptable to the war fighters. Any shortfalls need to be identified for correction either by a specific level of improvement or by a change in mission plans.

These specific readiness improvement actions need to be planned, packaged and tracked as *Logistics Interventions*. Logistics interventions are specific *packages* of supplies and services that correct specific readiness shortfalls. The logistics intervention process will use the decision support and analysis capabilities of the future Single Logistics System to determine the root cause of a readiness shortfall and then determine one or

more courses of action that will correct the problem or problems. Each course of action, which constitutes a specific logistics intervention, can be broken out into a list of materials, skills, equipment and actions that correct a problem. Each logistics intervention should be assembled and maintained in the logistics management system intact, in the form of a new data structure also called a "logistics intervention".

The logistics intervention is the result of determining the overall course of corrective action and the components of that course of action that will likely involve interaction with a team of technical experts both near the system location and as well as those accessible though an information network. However achieved, the result is a high-confidence course of action to restore system health to an acceptable level. By intentionally and publicly identifying alternative courses of action, the entire logistics infrastructure can confidently work on achieving each course of action through system-wide resource allocation. Two or more alternative logistics "fixes" can be active concurrently in the global logistics system and managed intensively to ensure that customer readiness is restored. Reusable resources are released back into the distribution system when the target logistics intervention is accomplished or canceled, so that distribution managers can readily apply them to new requirements. The advantages of managing focused packages of support include time-definite coordinated readiness enhancements, ability to work alternative solutions and the ability to release assets and resources as a package.

The Single Logistics System will support a supply-chain wide effort to coordinate and manage the convergence of all supplies and services required to accomplish a logistics intervention at specific point and time of delivery. A primary focus of the logistics interventionist is to track the status of package components and monitor the predicted delivery time of the logistics intervention, adjusting as needed to get the intervention back on track. This function will ensure a high confidence in the user that a complete and effective solution to a readiness shortfall will be delivered at the specified time. Without time definite results, the user will have no confidence in the support system, and refuse to step away from today's practice of ineffective and redundant ownership of assets and capabilities at each level of command.

The RML calls for a *Distribution-Based Logistics* (DBL) system to accomplish this time definite delivery of logistics interventions. RML *Distribution Managers* are responsible for making this happen. Distribution management comprises two distinct functions—matching assets and resources to needs (from log interventions) and managing the distribution infrastructure. Commercial supply-chain solutions apply to the first function of matching assets to requirements. Commercial off-the-shelf (COTS) systems, referred to as Supply-Chain Management (SCM) Solutions or Advanced Planning Systems (APS), are used in industry to schedule production and distribution as well as to support the management decision to accept an order. This capability to identify that a multi-part end product is "Available To Promise" (ATP) — finished items from repair and external suppliers, or "Capable To Promise" (CTP)* — work in progress that will be finished or can be expedited in time to meet needs, is directly applicable to the logistics intervention component distribution problem. The availability of such COTS systems is a fundamental and unexpected boon to achieving the Revolution in Military Logistics (RML), and deserves a detailed re-evaluation of defense logistics processes and information system architectures. The key function of SCM systems is two-fold: identify all required components and then determine if the components can be allocated. The first action, called the "explode" phase, breaks out a proposed order into required and ancillary components by accessing enterprise information resources to chain together parts lists and packaging lists into one comprehensive bill of materials (BOM). The second action, known as the "implode" phase, uses constraint programming or optimization to assign specific resources against the BOM and thereby conclude if the end product can be assembled or is infeasible (or undesirable, based on priorities or economic considerations). In practice, these COTS SCM systems interface seamlessly with order-entry and inventory tracking systems to return an answer in time to support on-line, real-time transactional processing. In the case of RML distribution-based logistics, the output of this resource allocation analysis would take the form of a list of taskings to the transportation system(s) and a list of unsourced requirements to be addressed by inventory or "asset" managers and maintenance managers.

Distribution Based Logistics will rely heavily on Total Asset Visibility (TAV). The Army fielded Army TAV (ATAV) worldwide in 1996 and it continues to mature. ATAV is a comprehensive U.S. Army initiative which furnishes managers with information on the location, quantity, condition, and movement of assets. ATAV retrieves worldwide asset information from existing and emerging automated information systems. Current capability includes visibility of more than three million NSNs for Army and DoD managers.

ATAV is being used to support the OSD-mandated lateral redistribution/procurement offset effort. Based upon mutually agreed to business rules, strategic item managers throughout DOD can access ATAV to fill backordered requisitions from existing redistributable stock prior to making a buy.

Distribution Based Logistics envisions providing a capability by using TAV (or successor) network to *control* the movements of shipments en route, in addition to providing asset visibility in process, in storage and intransit. This *"Total Asset Visibility plus Control"* (TAV+C) capability will allow Distribution Managers to manage inventory in motion during real time. Materiel can be re-routed to changed or new delivery locations, reconfiguring the shipment contents to quickly respond to RMA task reorganizations of military units, and focus the materiel flow to keep pace with the dynamic, evolving operations. This last opportunity envisions filling the distribution pipeline with supplies anticipated for near-future operations, as forecast on an aggregate, force-wide basis. The forecast can be made with a high degree of certainty based on the campaign plan, without the specific delivery locations known until closer to the time of need. Distribution managers can then send the required materiel toward a generally correct regional location.

All of these actions can be automated and integrated directly into the transportation platforms and material-handling equipment required to physically move the items. Any cancelled requirements could be rerouted on the fly to fill new requirements. Along this same line, an intentional amount of overfill could also be introduced in the distribution network to further enhance the ability of distribution managers to respond to short notice requirements. By getting a head start on filling future requirements, cost-effective use can be made of all modes of transportation. Slower modes, such as ships, could even become preferred modes, allowing distribution managers to temporarily "park" inventory in slower moving ships, while ending up with substantial tonnage near the point of delivery at the eventual time of need. Anticipation, Distribution Based Logistics, and Total Asset Visibility plus Control would combine to make possible this radically different way of delivering responsive logistical support.

The other task of distribution management is the assembly, projection, and maneuvering of the distribution system itself, all performed under load (that is, while providing at least minimal distribution throughput). Transportation assets may or may not be under the operational control of the distribution managers, but, as a minimum, must be responsive to distribution managers' taskings. A large part of the global distribution chain will be provided by commercial carriers and scheduled services, which means that a large part of the distribution infrastructure management task will be a coordination function rather than a line control function.

Overall, the key distribution management focus needs to be on knowing where things are and where they need to be, at specific times, and issuing appropriate corrective orders to keep the delivery on track.

The actual delivery of supplies and services is made as directly as possible to the end user. Simple deliveries of consumable supplies could be made with little requirement for direct logistical manpower if transports, unmanned air and ground delivery vehicles, and precision airdrop pallets were integrated into the overall total asset visibility plus control (TAV+C) network. Packages bearing radio frequency (RF) or optical "automatic identification technology" (AIT) tags would be automatically routed through sort hubs and cross-docks to a series of transportation platforms. Near the battlefield end of the supply chain, packages end up on military transport aircraft, trucks, unmanned aerial vehicles (UAV) or unmanned ground vehicles (UGV). At the last sort location packages may be assembled into precision airdrop bundles. This technology consists of a steerable airfoil or parafoil guided by control inputs from a Global Positioning System (GPS) receiver, programmed to land the entire pallet within a few meters of the designated delivery point. With accuracy of less than 10 meters, precision delivery to small units would be reliable under a range of combat conditions. For

example, a platoon surrounded and under attack could be reliably resupplied with ammunition via coordination with the OPS-LOG control cell at their supporting headquarters resulting in a rapid reaction precision airdrop. Such emergency supplies could be "parked" at high altitudes in logistics UAVs to provide even faster emergency delivery reaction. Overall control of the system could be as follows. The AIT tags would identify the item or shipment itself. The Single Logistics System (SLS) would track that item as part of a logistics intervention. Automated commands would be sent to the various sort hubs along the supply chain to route the components to one or more points of convergence. Near the end of the supply chain, all parts (or major parts) of the logistics invention come together into one or a few physical packages. These packages perpetuate the AIT trail and the link to SLS control. The consolidated AIT tags also interface with the delivery platform navigation and guidance system, establishing "drop points" which serve as waypoints in the delivery route. If precision airdrop pallets are used, the AIT interfaces with the pallet guidance set as well as the carrier guidance system. Thus the pallet impact point could be reprogrammed on the fly to keep up with developments at the point of delivery, while the carrier itself could be reprogrammed to adjust the route and aerial release point of the pallet. In cases where the carrier itself makes the actual delivery, a similar process would update the route and rendezvous point of the carrier and the end users. Conceivably, deliveries could be reliably made to a cache location, where the end users would pick up the items at a later time. Currently, however, RML planners generally agree that the risks to security and reliable delivery of supplies are too great in the RMA battle space to make caches a viable option.

For deliveries that require on-site technical expertise, such as equipment repairs, special military logistical teams, called *Log Pulses* would be employed. The log pulse concept is an extension of today's *contact team* support technique. A log pulse team would be assembled at some "launch" location. This could be an Intermediate Staging Base (ISB) or some other location, such as a repair shop, factory, military installation, or port. The location could be near or far from the delivery point, but would typically be close to but not in the battle area. The log pulse team would initially meet with other logistics support personnel at this launch location. The other support personnel would be technicians and other specialists that would help the log pulse team prepare for the mission. Such preparation may include readying the supplies or repair kits for quick use at the delivery point (which would typically be on the "hot" battlefield). It may also entail specialty training or technical advice, or simply additional labor to load and assemble the support package. Special tools and equipment could also link up with the log pulse team at the launch location. When ready, and timed closely to meet the logistics intervention delivery target, the log pulse would be inserted into the battle space using tactical transport (air, typically, but possibly ground or airborne) at or very near the designated delivery point. There the log pulse would meet up with the supported end user and the logistics intervention would be delivered or installed as rapidly as possible. Once the logistics intervention was confirmed to solve the problem, the log pulse team would be extracted from the battle space and the end user would return to the tactical mission at hand. This confirmation could be accomplished using the system prognostics to alert the Single Logistics System of a system readiness update (in this case an improvement), which would in turn prompt the logistics intervention process to release the log pulse team. Routing the confirmation through the SLS in this manner would better ensure that all elements of the globally distributed logistics team are notified that a particular logistics intervention is complete, and that any alternative logistics interventions underway can be cancelled and their resources reallocated. Advantages of log pulse support include fewer personnel permanently assigned to the immediate battle area, fewer personnel exposed to battle hazards for shorter periods of time, less infrastructure to deploy to the battle area, more opportunities to use highly skilled government civilian and contractor technicians, and the ability to utilize support personnel efficiently on an "as required" basis, rather than on today's "just in case" basis.

Technical skills for the log pulses would be modeled on current commercial on-site repair services. This implies that maintainability and reparability would be carefully built into RMA systems. Office equipment, in particular, provides a good model for this. By using standardized indicators, fasteners, mountings and interfaces (mechanical, electrical, optical, hydraulic, etc), on-site technicians can be trained with a relative few technical skills. Detailed knowledge of the internal workings of modules is not required. This is why the log pulse generalists may need assistance and advice from technical specialists at the launch site. But such a wide and general skill set will allow the Army to train the log pulse team expeditiously, and recruit the teams from a fairly wide employment pool. Additionally, the physical demands on log pulse teams entering and operating on an

RMA battlefield are expected to be sufficiently high to require team members to possess higher than average fitness levels and skills. Teams will also require time to maintain these high fitness levels and advanced battlefield skills. These requirements further drive the need for a small group of generalists who can deliver most any type of support required, directly onto the RMA battlefield.

Design of RMA systems that can be repaired in combat by log pulse teams should include consideration of modular design incorporating line replaceable units (LRUs), standardized fasteners and interfaces, and a maintenance doctrine of battlefield replacement. The technical teams at the launch areas can repair the LRUs, or the LRUs could be back-hauled in the distribution system to repair locations anywhere in the world. Most likely both techniques would be used, based on the requirements and economics of the LRU and the repairs required. Commercial techniques such as "Smart Simple Design" could be applied to automate the system design simplification process. Smart Simple Design is essential a set of software programs that analyze engineering technical specifications (drawings, parts lists, etc.) and identify opportunities to standardize on particular sizes and types of fasteners or replace multiple parts with one part. Appliance and automotive manufacturers have used this technology successfully for a number of years.

Filling the Distribution System—Asset Management, Maintenance Workload Balancing, and Agile Acquisition. Since the distribution system will have "promised" and "available" assets in it, asset managers need to carefully track status versus requirements and add serviceable assets as needed. They may also do "strategic" redistribution from one region to another. COTS SCM solutions also apply to this asset sourcing task—both in identifying ATP and CTP assets. The asset management SCM will be implicitly working with any SCM system used by distribution managers, as well as with a number of SCMs owned by the suppliers. Integrating these SCMs would be a logical and beneficial enhancement to overall system performance. New serviceable assets come from four sources: repair, redistribution of global inventory, delivery orders to standing contracts, and new acquisitions (in that order). Repair of unserviceable assets needs to leverage all available sources of repair, trading off time, cost, and readiness deadlines. A further goal should be to maximize the productivity of essentially "fixed" maintenance capacity as reflected in budget years staffing and infrastructure investments in depots, ISM centers of excellence, special repair activities (SRA), original equipment manufacture (OEM) and support contractor funded maintenance, and active and reserve component maintenance force structure and manning. Note that all of these areas have subtle interplay between "sunk" costs in the near term (budget years) and mandated levels of infrastructure support. Hence, the optimal tasking of these resources needs to be closely linked with the annual budget, the near term program years, and current infrastructure mandates. This implies that specific maintenance tasking policy needs to be developed as part of a given year's overall budget and support strategy. The focus of the asset manager, and supporting maintenance and acquisition managers, is to fill open requirements from the "best" available source according to current objectives and within current constraints. Specific priorities can be expressed as dynamic policies embedded in the logistics information systems or available to asset managers on-line to choose the "best" source at any given time.

The driving principle behind the proposed RML approach to force sustainment is that the Army will be able to adopt and benefit from the successful commercial concept of a *Value Chain*. This *Value Chain* concept, explained in detail in James Martin's *The Great Transition*, focuses all members of an enterprise on the fundamental goals of that enterprise. For the US Army, the fundamental goal remains the capability to deter and, if necessary, fight and win wars. To do this, forces and the units and systems that comprise them require a total Army focus on tracking, maintaining and improving readiness. By following the process outlined above, from prognosis and anticipatory logistics, integrated OPS-LOG planning, and management of logistical interventions delivered via distribution based logistics fed by asset management and agile acquisition, Army logistics can achieve a cross-functional and cross-organizational focus on supporting the war fighter. The RML calls for this process to be implemented in a real time, fully integrated, logistical management information system called "the Single Logistics System". This system would replace (or evolve out of) the Global Combat Support System—Army (GCSS-A) currently being developed to integrate the various functional logistical management systems used today for field logistics management together and then further integrate them with a modernized wholesale logistics management system.

The RML further calls for an organizational realignment to support the RML sustainment process. The RML envisions a national level logistics command that is primarily a management organization. This is in line with the DOD *Revolution in Business Affairs* (RBA) mandate to "manage suppliers rather than supplies". The national logistics command would have several subordinate commands. Some of these focus on the management of the actual acquisition and delivery of sustainment. Another set of commands provides the responsive customer interface to the war fighting CINCs. These are called "Operational Support Commands" (OPSCOM for short), and serve as a third party logistician ("3PL") for the supported CINC. The "Operational" reference in the name is key, implying a change from today's geographical, regional approach to support management to a focus on the *operation* at hand. AAN operations are by nature global or at least inter-continental in reach. The RML hopes to sidestep a number of current coordination and hand-off problems by focusing the sustainment management organization on the needs of a particular operation, rather than on meeting the needs of an arbitrary geographical area. This becomes a key plus when executing the so-called *split-based* support operations that are the Current US Army concepts for early (c.2020) RMA forces envision a hybrid force made up of a smaller proportion (20% +/-) of RMA ultra-modern systems and units augmenting a much larger set of forces that have evolved from today's mechanized and contingency forces, such as the Army XXI Conservative Heavy Division template. The implication for future military logistics is that the high tech RMA forces fighting RMA-style campaigns will have to be supported simultaneously with what we consider today to be "conventional" forces. These evolved conventional forces, or at least the mechanized forces, will retain their huge demands for fuel and possibly ammunitions. The dynamic distribution based approach of the RML probably will not be able to deliver the vast amounts of fuel necessary, at least not in the same way other supplies would be delivered. Moreover, there are currently no identified technology enablers that promise to enhance the ability to move large amounts of fuel inland in support of a large mechanized land power force. RML does however, include a concept to meet this interim requirement. Army XXI mechanized forces will still be employed as part of a multi-division Corps-sized fighting force. The future Corps will retain the Corps Support Command (COSCOM) as its logistics provider. RML envisions evolving this COSCOM into high capacity overland distribution provider. Thus most of required supplies and services will be delivered using standard RML distribution based logistics techniques, while the organic COSCOM concentrates on maintaining a high-tonnage lifeline connecting the Army XXI style Divisions with their sources of fuel and other high tonnage materiel.

The RML proposes a strategy for an anticipatory, customer-focused, readiness-driven, distribution-based logistics system. Key enablers include technology insertion to enhance deployability and sustainability of systems, a seamless enterprise-wide logistics management system, an integrated and portable inter-modal distribution system of systems, telecommunications coverage and bandwidth sufficient to support these systems, and an enterprise-wide focus on readiness as our global performance measure. But primarily a tremendous cultural change must occur within the Army logistics community, transforming the way that community thinks about, plans for, and executes logistics. Strong, visionary, and committed leadership at all levels will be required to make the Revolution in Military Logistics a reality, and thereby make possible a Revolution in Military Affairs.

Appendix D - Total Distribution Action Plan

Foreward

Land combat in the 21st Century will be vastly different in a variety of ways. It will be sudden, unexpected, short lived, conducted against a backdrop of sophisticated technology applied not only by major competitors but by small imaginative adversaries. Rapid reaction, swift power projection, and quick conclusions to conflict will challenge both the Combat Force, and the logistics system.

The intent of the Total Distribution Action Plan II is to focus on the efforts necessary to transform the logistics structure of the United States Army, its policies, and procedures to meet the requirements of Land combat in the 21st Century.

With the able support of the Training and Doctrine Command, the Combined Arms Support Command, TDAPII incorporates the requirements for Doctrine, Training, Organizational Redesign, Leader Development, Materiel Systems and Soldiers Support.

While the focus of TDAPII is centered on Army Logistics issues, the plan recognizes that the Army will operate in the future, as it has in the past, as part of a joint service effort. Therefore, the changes that take place as a result of resolution of the issues in this plan will be done so in the context of joint operations.

Chapter I - Introduction

Current Environment for Global Military Operations – 2010 and beyond

The Geo-political environment will continue to affect the way we see warfare and conflict occurring in the future. The United States will continue to have its vital national interest balancing between those of other nations who's socio-economic interest parallel our own and those who may become major competitors, economically and militarily. The future of national relationships is multipolar. There will be shifting balances within major regions of the world, with the interlocking security system that the major nations have in place remaining fairly well intact in 2010 and beyond. The expectations are that other security agreement will arise as "developing" situations dictate, ad hoc security.

The recent history of conflict in the Balkans set a tone for the types of ethnic rivalries, and religion-based antagonism, that lead to the open combat. The pervasive and entrenched crime cartels and international terrorist organizations widen the scope and potential for combat on the part of U.S. Forces in even more disparate settings-urban centers to jungles and deserts.\

The Nature of Future Conflict

As one of the Generals in the U.S. Civil War remarked, "I got there firsts with the most and I won." This statement fairly sums up the fact that fundamentally, what combat boils down to is, acting with speed and mass before your adversary can respond, and concluding events on your terms. Combat in 2010 and beyond, will be essentially as it is today, taking place within the territories of nation-states, with the added dimension of space and electronic-cyberspace. The range of operations from Support to the Nations, Disaster Relief, Humanitarian Operations, Peacekeeping, Peace Enforcement, Strike-Raid, Major Theater War, General and Nuclear War is the projection for 2010 and beyond. No peer competitor for the U.S. is expected to appear, but in all probability one will likely emerge in the next 15-20 years.

The most likely scenario is the U.S. will be faced with asymmetric strategies – attacks on its vulnerabilities rather than attempts to meet force with force. An example is in the great reliance being placed on electronics, computers, chips, information systems and fossil fuel energy needs. All of which represent vulnerabilities, to include the intertwining of financial centers, whose greatest vulnerability is electronics/information technology sabotage. Industrial espionage is focused on U.S. technologies that are being incorporated in weapons capabilities. The proliferation of these technologies extends a potential adversary's reach well beyond his borders. This fact is of significant to us, particularly as it regards the amount of time we will have to respond to that threat. Strategic response, situational awareness, and rapid deployment all are time driven events, any delay may result in the adversary achieving his strategic goals and puts us at a decided disadvantage in bringing the crisis to a close in terms that are in our strategic interest. We can expect to have small windows of time to respond and conduct short decisive campaigns.

National Military Strategy in Army 2010 and beyond

The principal aspects of the National Military Strategy for the next 20 years is shaping the international security environment favorable to U.S. national interest-strategic-military and economic partnering, being prepared to meet threats with overwhelming decisive forces, configuring our forces to respond across a wide spectrum of possible scenarios. The fact that the force must be able to respond across a wide set of scenarios including some within the Continental United States, Homeland defense – dictates joint operations. All U.S. Military capabilities will be applied to counter whatever threat emerges. We are an interdependent military structure; as such redundancy is anathema to efficiencies and small budgets. The traditional boundaries will cease to exist in the military structure of 2010 and beyond; as pressure of budgets, multi-mission tasking heats up in the next several years.

Military Operations in Army 2010 and beyond

No where is the statement "The future ain't what it used to be" more applicable than to the future of the Army in military operations in 2010 and beyond. Based on what we know about the impacts of technology, asymmetrical threat strategies, and the small windows of opportunities to respond to crises from urban to jungle/ desert terrain, multiple and simultaneous deployments will complicate military operations more so than ever in the future. Ground space-based sensors, coupled with optical and telecommunications capabilities will provide the situational awareness required to execute operations in multi-dimensions, horizontally and vertically. Information technology supports our own need for intelligence about our forces and adversaries, a "living Internet" forms part of the backbone of the communications, computer, intelligence, surveillance, and reconnaissance system that allows for the fusion of information products to create real time pictures of the battle space.

The future indicates mass as a principal will occur as a result of decisive fires from vertical and horizontal spaces, separated forces, maneuvering at the decisive moment with great speed and mobility – logistically self supporting.

Character of the Army 2010 and beyond

The Army of 2010 and beyond is described as a hybrid force, consisting of a range of force structures, equipment and technologies that span the 1970's to the late 1990's. An Army that is capable of meeting a wide range of missions. The current Army vision will force a change in the Army structurally to meet the missions that will persist in to 2010 and beyond. The force has to be more rapidly deployable, lighter in every respect, logistically supportable with a greatly reduced logistics footprint.

The three main elements projected for 2010 and beyond are contingency forces consisting of light, medium (Brigade Combat Teams), and mechanized forces. (The Chief of Staff of the Army has directed the design and employment of medium divisions, beginning with a medium brigade in 12 months. The employment period for this unit is not yet determined.) Contingency forces operate as part of a Joint Expeditionary Force, include ground, tailored air, sea, land, and Special Operations Forces. Missions extend from deep strike to engaging forces in fortified complex terrain including cities. The Brigade Combat Team is a medium-weight force, equipped with evolutionary capabilities, smaller, lighter with a reduced logistics footprint and rapidly deployable. It is ideal for early entry and shaping operations. Campaign Forces are the product-improved forces of today. They represent the heavy contingent, and provide the staying power for stability operations and decisive achievement of a favorable theater decision. Homeland defense forces consist mainly of RC units. A central focus of their missions, along with State, Local, and Federal authorities is support to the nation, disaster relief, humanitarian operations, Domestic or international terrorist acts perpetrated in the United States. Special Operations Forces provide the capability now and in the future to respond to low-end contingencies with a joint force mix, as well as provide a broad set of capabilities across the spectrum of all military operations.

Patterns of Operation

There are six patterns of operations described in the TRADOC pamphlet titled Land Combat in the 21st Century. They are: Project the Force, Protect the Force, Gain Information Dominance, Shape the Environment, Conduct Decisive Operations and Sustain the Force. Briefly Projecting Force requires the ability to move it rapidly and on short notice to Shape the Environment and set conditions for success. By extension deployment includes the ability to throughput forces, supplies, and equipment through ports and airfields. Self-deployment to a certain degree is an absolute requirement to reduce the strategic deployment resource requirement. A lighter force is a more deployable force. A smaller force is more deployable and requires less logistics to sustain it. The means to gain Information dominance are at hand. The technologies include microchips, telecommunications, ground and air borne sensors/surveillance platforms that provide an exceptional array of information and data for decision making. But the advantage may erode with a proliferation of these

technologies around the world. Protection of the force is essential; it's achieved by lethal fires, dispersion, situational awareness, and preparation and procedural operations where weapons of mass destruction are likely to be employed.

The conduct of **Decisive Operations** is contingent on all of the aforementioned patterns of operations – a balanced force with complementary capabilities, with innovative techniques and operational concepts that leave the adversary, "One decision cycle too late." Sustaining the force is achieved by an agile logistics system. There are logistics implications in each of these patterns of operations, however the focus of TDAPII is on those areas that have the most logistics concerns or issues that require resolution, Projecting the Force, Command, control, information, and intelligence for logistics.

Chapter 2 - Combat Service Support (CSS) in Army 2010 and Beyond

Projecting the Force – Patterns of Operations

Force projection is a joint integrated effort. It is more than deployment. Mission analysis is essentially the first step in force projection, building the forces – tailoring it to the mission requirement which will in the future, as now, is driven by METT-T. Automated systems, mission training by simulation enables the planning process and effective mission execution upon arrival. Early entry forces, such as Brigade Combat Teams, will be medium-weight, with a smaller, lighter contingent, processing a reduced logistics structure, deploying rapidly by air.

Advanced Deployment Platforms

The DoD Mobility Requirements Study (MRS) represents the cornerstone document that set the tone for major investments in strategic mobility platforms, principally in sealift with the development and acquisition of light-medium speed roll-on and roll-off shipping. These ships will be used well into the next millennium, but they represent requirements developed for a far different scenario than the most likely ones for 2010 and beyond. The LMSR were intended for heavy force support, now called Campaign Forces. While the shipping issue is being addressed, war gaming has focused on what happens when the ports and facilities required to land heavy forces are interdicted or denied by national sovereignty. Force projection becomes problematic and creates a crisis within the crisis management process for the United States Military.

The critical issues for analysis are the techniques, strategies, technologies and mobility platforms that must be applied to limit or mitigate the impact of portals of entry denial.

The AAN Special Studies project produced a technology long list for strategic maneuver. The list included high-speed ships capable of over-the-shore or unimproved port throughput, ultra-heavy airlift and information capabilities to provide enroute planning, analysis, and intelligence preparation of the battle space (IPB) training and rehearsal. In addition to the technology long list, the AAN Study advances the fact that the strategic mobility of the United States will continue to be enhanced by pre-position stocks afloat and in nations who are our strategic partners. The issue to be addressed as we move to 2010 and beyond is the evaluation of those pre-positioned stocks to determine if they match the equipment and missions envisioned for new force mixtures.

The reason for developing these capabilities and reviewing the pre-positioned stocks is to determine if a point-to-point approach versus a port-to-port strategy should be the followed for future force projection operations.

Additionally, a fiscally feasible super heavy short take-off and landing aircraft is suggested as a means to provide strike forces with a self-deployment for early forced entry missions.

Lightening Army Forces

Throughput of Army Forces and the attendant operational agility is significantly improved if actions in the next several years focus on unit size reduction and reduction in the weight of their basic equipment. Also greatly reducing the number of CS and CSS units required to support combat forces, which are in turn driven by the significant tonnage associated with bulk fuel and ammunition, used by the combat force and just as significantly, the fuel consumed by the supporting units, will lighten the force.

Advanced C⁴ISR

As in TDPI, the focus is on the command, control, communication computing, and intelligence capabilities that must be present in CSS units in order for them to provide the responsive support the combat force leader requires. The CSS units must have enroute planning, analysis, simulation-based training and mission rehearsal capabilities commensurate with that of the force supported, which integrates with the combat C⁴ISR systems to see the same battlefield picture while feeding the combat force commander his Logistics Situational Awareness. A smaller logistics front print might make the investment more than feasible.

AAN CSS Franchise Report

Introduction

The CSS Franchise Report, Appendix 1, Army After Next 1998 Report to the Chief of Staff Army detailed the significant discoveries made during the Ft. Leavenworth tactical war game. The issues identified in that war game and issues raised as a result of the 99 war games are the focus of efforts in the version of TDAPII Plan. The CSS community efforts will be focused on working these issues to resolution as the Revolution in Military Logistics continues with the goals of providing a CSS capability that effectively and efficiently supports the Army in 2010 and beyond. Discoveries and issues are summarized in the following sections. Chapter 2 outlines the approaches to dealing with the CSS issues for the Army 2010 and Beyond.

AAN Combat Service Support Pillars

The CSS pillars are critical elements in changing current operations and processes to support advance AAN warfighting concepts, provide focus for current research and are tied to the key Revolution in Military Logistics elements.

National and Strategic Processes

The AAN CSS Franchise report addresses the future support to AAN Forces in terms of national and strategic processes that must be in place. The report introduces a term other than military logistics support (OTM), which is another way of stating what we have always done, placed reliance on outside support to provide the resources for combat support. There is one clear distinction between what we have always done, and what we will do in the future for Army 2010 and beyond. Globalization of resources and possible Geopolitical changes introduce a high level of risk that a global contractor or host nations will provide the immediate and effective support required for a Battle or Strike Force in a replacement cycle. Therefore, self-contained logistics support is a necessity.

Other national and strategic processes that will change the way AAN operations will be supported, may include the introduction of a “National Provider” of logistics services, coupled with distribution deployment services provided by the United States Transportation Command, whose operational reach extends into the area of operations.

CSS Franchise Issues Summary for TDAPII

Power and Energy

- Define which combat systems are most conducive to alternatives source fueling.
- Leveraging industry for the most promising technologies.
- Establish both near and long term goals and standards.
- Lightening the forces

- Reduction in the size and number of units.
- Weight and cube reduction for ground combat vehicles.
- Reduction in other supply and maintenance requirements.
- Support Structure and processes reduction.

Ultrareliability

- Build in systems themselves
- Anticipatory maintenance - prognostics and diagnostics – programmable sensors.
- Crew responsibilities extended – training.

CSS C^2

- Logistics Situational Awareness
- Planning tools
- Integration planning AC/RC
- Logistics cycle time for Brigade Combat Team Support
- Above Brigade Combat Team organizational structure for support.

National and Strategic Processes

- National provider
- Other than Military Logistics Support
- Industrial/Global contractor Geopolitical implications

Global Precision Delivery

- Holistic global delivery
- Optimizing throughput
- Use of strategic assets for tactical operations
- Deployment and force closure
- US TRANSCOM AOR
- CONUS as the line of departure for deploying units.

Soldier Support

- Training and proficiency with information technology.
- Decision making responsibilities in a rapidly developing environment
- Joint education and experience
- Greater specialization
- Integration of individual and collective training.
- Simulation – based training

CHAPTER 3 - TDAP II ACTION PLAN

TASK 1. Power and Energy

Background

A review of current TDAPII issues does not reflect any consideration of power and energy issues, which is why the work of the CSS Franchise team is so important. The power and energy requirements of the current and future force will remain significant enough so as to impair combat agility, mobility, and responsiveness, if not addressed in the current time period before 2010. The CSS Franchise reports states that the first critical step is setting Army goals for fuel reduction. Power generation and batteries need to be added to the goals for reduction as well. Even in the face of plentiful sources/availability of fuel, distribution of that fuel at the right place and time will be problematic in some tactical scenarios. Every category of equipment needs to have a baseline established from which the goals should be measured with an agreed to schedule for achievement of those goals. As indicated, there are technologies that need to be pursued as well that focus on alternative fuels, increasing energy effectiveness of existing engines, energy storage systems, rechargeable sources of power. Solar and nuclear power sources are applications that may be applied to solve the Army's 2010 and beyond needs, however near term actions are required.

TASK Statement

The Army's logistics community in coordination with the combat and materiel developers of tactical systems, the science and technology community will identify those combat systems most conducive to alternative source fueling with the objective of reducing requirement for fossil's fuels in the 2010 and beyond force.

Concept of the Plan

The current force and the designed future force will require an enormous amount of fuel and a concurrent large and complex distribution structure to support fuel operations from deployment through redeployment. The Army needs to address and take actions to reduce substantially the quantities of fuel required, the structure associated with fuel operations well before the Hybrid Force of 2010 and beyond is expected to be employed. Other power and energy areas require the same emphasis. This plan focuses on the evaluation and decision making which will require Army-wide participation, including the scientific and technology communities to be followed by implementation.

Sub Tasks

1. (An assumed subtask is for participating agencies to provide the DCSLOG with resources requirements to execute planned sub-tasks.)
2. Establish both near and long term goals and standards for power and energy reduction.
3. Define baselines for each major class of power and energy user, e.g., combat, combat support, combat service support, power generation equipment and communication/electric/battery power.
4. Identification of and leveraging the most promising industrial techniques and technologies.
5. Plan the evolution of the systems.
6. Prioritize requirements.
7. Develop Army-wide standards.
8. Identify and defend resources for Power and Energy programs.

9. Define any constraints.
10. Describe the Army's end state for power and energy usage.

Milestones

FY 00 – Baseline and short-term goal identifications.

FY 00 – Refine Baseline and identification of long term goals.

FY 00 – Technology identifications and incorporations in ASTMP (Army Science and Technology Master Plan).

FY 01 – Resource Identifications for most promising technology and systems most conducive to alternative source fueling.

FY 01 – Submit Draft Evolutionary Plan to Decision Authority.

FY 01 – Submit Army-wide Standards to Decision Authority.

FY 01 – War Game Standards.

FY 02 – Review war gaming results, refine plan.

FY 02 – Brief Decision Authority on Draft Evolutionary Plan refinement.

FY 02 – Produce Draft Army's End State document for Decision Authority review

Deliverables

1. Statement of the objectives of the Army's Power and Energy Program.
2. Baseline for Power and Energy.
3. Statements of Goals, short and long term, for the Army.
4. Resource requirement for S&T investigators.
5. Decision briefs to Decision Authorities.
6. Evolutionary Plan for Power and Energy in the Army.
7. War gaming results.
8. Army-wide standard for Power and Energy.
9. Technical report on the most conducive systems for alternative fuel usage
10. Schedule of implementations.

Measures of Effectiveness

1. Approval of the baseline for Power and Energy by DCSLOG and DCSOPS.
2. Approval of the goals, short and long terms, for the Army by the Secretary, Army or Under
3. Secretary of the Army, Acquisition, Technologies, and Logistics.
4. Approval of the Evolutionary Plan for Power and Energy in the Army by the Under Secretary of the Army, Acquisition, Technologies, and Logistics.
5. Approval of the Resource Plan for Power and Energy in the Army by the DCSLOG, DCSOPS, and VCSA.
6. Contracts awarded to support modernization of the power and energy requirement of tactical units
7. Force structure reductions in the area of fuel distribution.
8. A lighter, more deployable force as a test bed as a result of fuel and energy changes.

Open Issues

Determine how fuel requirements, consumption, and distribution can be reduced by 75% in the next 25 years.

1. Determine how the need to carry fossil fuels can be eliminated in the future.
2. Determine if fuel as a class of supply will be maintained in the future.
3. Determine the options presented to the force in the future as fuel is reduced as a principal logistics concern.

Recommended Follow-up Actions

1. Coordinate with U.S. TRANSCOM and other services, DLA
2. Plan refinement on an annual basis.
3. Remain cognizant of technology.

Coordination

Plan must be coordinated with and executed with assistance from the following: HQDA: DCSOPS, ASA (ALT), STF/ADO, PEO, MACOMs, AMC, FORSCOM, DLA, TRADOC, CASCOM, CAC, Centers and Schools, Battlelabs.

Key Points of Contact

HQDA, DCSOPS, HQ TRADOC, CASCOM, USACAC.

TASK 2. Ultrareliability

Background

One of the key structure drivers in the logistics footprint is the number and variety of supply and maintenance units that support all units in the force. It is a redundant structure driven by the failure rate of parts and systems within every operating system that the Army owns or uses. While advances have been made in improving the meantime between failure, the real advances will take place when the parts, sub assemblies, or major systems provide prognostics and diagnostic information through built-in sensors to the crew or the maintainer/supplier – who may not be located within a 1000 miles of the system itself. As indicated in the AAN CSS Franchise report, the technology and the scope of changes that must take place for this level of ultrareliability to be achieved requires a significant cultural, policy, and, procedural change in the existing acquisition process. The expense of R&D and acquisition and the expansive equipment base are significant challenges.

Task Statement

The Army with AMC, ASA(ALT), DISC[4] as its technical leads will research, develop and introduce ultrareliability technologies that provide on-board systems diagnostics and prognostics with the objective of reducing failures, operations and sustainment cost, extensive maintenance and maintenance force structure.

Concept of the Plan

Building on the current Army Diagnostic Improvement Program, which is focused on existing Army current and mid term systems, ultrareliability focuses on future systems, technologies, integration of total systems diagnostics and fault isolations, communications and logistics systems response time. This plan is based on the

recognition that there are vision documents from the PM, Test, Measurement, and Diagnostics Equipment, TRADOC's Ordinance Center and School, an Army Program ADIP and Industrial programs in place as well as their R & D efforts that all deal with the areas of issues. The Pace of change for Army Diagnostic and prognostics must be increased to meet the requirements of the future force.

Sub Tasks

(An assumed sub task is for participating agencies to provide the DCSLOG with resource requirements to execute planned sub tasks.)

1. Identification of all weapon systems that should have leap ahead technology for ultra-reliability applied. The Ordnance Center visions for Force XXI may be a baseline for this identification.
2. Identify test and measurement equipment that may be eliminated as a result of the applications of ultra-reliable applications to systems, leap ahead to reduce force structure requirement.
3. Speed up the development of Failure Analysis and Maintenance Planning Systems (FAMPS) in the near term and move to embedded diagnostics systems in the mid terms ADIP.
4. Identify the resources for EDS initiations in the mid term.
5. Update the ADIP Master Plan to reflect changes in program milestones.
6. Identify early test and experimentation opportunities for EDS.
7. Develop systems ORDS for EDS.

Milestones

FY 00 – Develop future ultrareliability strategy and approach in ADIP.

FY 00 – Present strategy to DCSLOG, DISC[4]

FY 00 – Coordinate draft strategy with MACOMs, scientific and technology communities.

FY 01 – Refine Strategy

FY 01 – Complete technical reviews of promising capabilities.

FY 01 – Requirements determination process completed (draft) ORDs.

FY 02 – Program update to DCSLOG

FY 02 – ASTMP Updates

FY 02 – Prioritize systems for application of leap ahead

Deliverables

1. Ultrareliability Strategy Plan for the Army.
2. Ultrareliability Technical Report of promising capabilities.
3. Ultrareliability System ORDs.
4. A Program Resource Plan.
5. Decision Authority briefings.
6. Prioritized System Applications Plan.

Measure of Effectiveness

1. Decision authorities approve the Strategy and Plan.

2. Decision authorities approve the ORDs for systems.
3. Decision authorities approve the Program Resource Plan.
4. Implementation of the Plan results in reduction of maintenance man-hours, extended time between repairs, a reduction in overall parts stockage and the attendant manpower for maintenance from the tactical unit, through the strategic level.

Open Issues

1. Program speed up and cost are unknown.
2. Change in program strategies will require Decision Authority approval.
3. Program risk are unknown
4. Determine the force structure changes training requirements for personnel and organizational designs that will result from ultrareliability.
5. Determine what will be the most critical weapon systems and parts in 2010 and beyond.
6. Determine the makeup of pre-positioned stocks for parts in 2010 and beyond.
7. Determine the sources of global parts support for the Army in 2010 and beyond.
8. Determine the instrumental process and roadmaps needed to obtain ultrareliability capabilities.

Recommended Follow up Actions

1. Ultrareliability is presented as a topic in the next triad for approval to proceed with a major effort developing a Strategic Plan for the Army.
2. Propose as a topic for the next Army Science Board review.
3. A cost/benefit Analysis is recommended prior to program startup.
4. Establish firm links with PM TMDE

Coordination

This Plan must be coordinated with and requires the assistance of ASA(ALT), AMC, TRADOC, HQDA DCSOPS and all effected PEO's/PMs, PM TMDE, DISC^4 ISR.

Key Points of Contact

HQDA: ASA(ALT), DCSOPS, ST/AOD, MACOMs: HQ TRADOC, TRADOC centers and schools, CASCOM – CAC Battlelabs, AMC, DLA

TASK 3 Combat Service Support Command and Control (CSS C^2)

Background

Maybe not "Cell" phones in every hand, but pretty close with an analytical computer included. Clearly the need for logistics situational awareness is to match the replenishment requirement cycles of the Battle force. It is enables the Logistics Support element, with precise knowledge, automated planning, and weapon system status information. The central issue for 2010 and beyond is ensuring that CSS C^2 requirements are stated in the Army's C^4 Modernization Strategy. The articulations of those requirements need to be expressed in terms of effectiveness of logistics planning and predictions, equipment readiness/status, Brigade Combat Team replenishment and precision logistics cycle time, and lightening the force.

Task Statement

CASCOM (lead) and HQ TRADOC DCSCD (assist), in coordination with DISC^{4}ISR and AMC will explore concepts and technologies that will provide logistics situational awareness, command, and control, integrated planning tools, simulation and training.

Concept of the Plan

The DISC^{4}ISR has developed the architecture for command, control, communication and computers in the Army-added to these are intelligence, surveillance, and reconnaissance. These capabilities are coupled to provide information dominance for the Army now and into to the 21st Century. As indicated in the previous AAN report, Knowledge and Speed, the capabilities of the Battle Force to conduct rapid decisive maneuver, was clearly aided by the technologies of C^{4}ISR. Similarly, these assumed capabilities were available to the logistics system that supported the Battle Force's agile maneuvers. The Army must realistically provide logistics units from the tactical to strategic level technologies which give those elements situational awareness, tools that support precision logistics enroute planning, simulation and command and control comparable to that of the battle forces.

Sub-tasks

(An assumed sub task is for participating agencies to provide HQDA DCSLOG with resource requirements to execute planned sub-tasks as they are reached).

1. Define Logistics Situational Awareness requirement and real-time status reporting in the context of Brigade Combat Team Battle Rhythm.
2. Define and describe logistics planning, tools, intelligent processing, computing and communication requirements.
3. Develop ORDs for logistics situational awareness, and precision planning tools.
4. Determine required interaction with DISC4ISR and PEO/PM to define, describe and develop operational requirement. Document for LOG CSS C^2 in the context of the C4ISR Architecture.
5. Determine in coordination with the DISC^{4}ISR available commercial applications (COTS) that may quickly satisfy logistics situational awareness real-time status reporting and intelligent planning tools.
6. Develop a logistics communication, command, control, computing, information and intelligence Strategic Plan for Army 2010 and beyond.

Milestones

FY 00 – Develop Logistics situational awareness. Battle Force support technical report.

FY 00 – Feb 00 – Submit Technical Report for comment to Logistics C^4 Community.

FY 00 – Brief Technical Report to Decision Authorities.

FY 00 – Begin Development of Logistics C^{4}ISR, Strategic Plan for Army 2010 and beyond.

FY 01 – Submit Draft for Comment

FY 01 – Revise Draft of C^{4}ISR Plan

FY 01 – Brief revised Draft to Decision Authority.

FY 02 – Begin Development of Final Plan

FY 02 – Begin Development of Log C^{4}ISR ORDs for capabilities described in Strategic Plan.

FY 02 – Identify Resource requirement for LOG C^{4}ISR.

FY 02 – Brief Decision Authorities on Program Progress.

FY 02 – Draft ORD/COTS Product Review

FY 03 – Publish Final Plan

FY 03 – Wargame capabilities

FY 03 – Program Review for Decision Authorities.

FY 03 – Finalize ORDs submitted for approval.

Deliverables

1. Technical Report Defining Logistics Situational Awareness, and required planning tools.
2. Logistics C^{4}ISR Strategic Plan
3. Logistics C^{4}ISR ORDs
4. Decision Authority Briefings
5. Logistics C^{4}ISR Resource Plan
6. Logistics C^{4}ISR COTS Technical Report

Measures of Effectiveness

1. Logistics CR^{4}ISR Strategic Plan is approved by Decision Authority.
2. Logistics C^{4}ISR Strategic Plan is resourced.
3. Logistics C^{4}ISR is wargamed to demonstrate its capability to conduct precision logistics operation for a Battle force.
4. Logistics C^{4}ISR becomes part of the Army's C^{4}ISR architecture.

Open Issues

1. Cost of implementations is not known and not programmed.
2. Requires an economic analysis.
3. Logistics C^{4}ISR must be recognized as part of the Army's C^{4}ISR architecture.
4. Logistics C^{4}ISR must be well developed as a concept to survive HQDA scrutiny.
5. Identify the critical information requirements for logistics and combat commanders in 2010 and beyond.
6. Examine and describe the required communications links between U.S. Military and commercial sources of support in Army 2010 and beyond. Determine how this interface will take place technically and operationally.

Recommended Follow-up Actions

1. Enlist early support of DISC^{4}ISR, PEO/PM's for concept development
2. Establish an IPT for this development/concept effort; include ADO.

Coordination

The logistics C^{4}ISR concept and strategic plan must be coordinated with, HQDA, DCSOPS, ASA(ALT), DISC^{4}ISR, affected PEO/PM, TRADOC, AMC.

Key Points of Contact

DISC^{4}ISR

ASA(ALT)

DCSOPS

TASK 4. Global Precision Delivery

Background

Precision delivery to a combat force that engaged is a worse case scenario, but for learning and as a goal that should be exactly what we plan for and build the capability to perform in 2010 and beyond. The approach begins with predictive planning tools, development of the techniques of distribution, pre-planned, push packages tailored to the force committed – visibility of the force and its assets and finally, development and acquisition of the delivery platforms to execute precision delivery. The United States Transportation Command is the right lead for this area of study.

Task Statement

U.S. TRANSCOM, in coordination with CASCOM, AMC and DLA will examine and explore concepts of global precision delivery that will provide the capability to support Brigade Combat Team, Campaign and Homeland Defense Forces.

Concept of the Plan

The Army must be able to, as part of the joint power projection force conduct strategic maneuvers on a global basis. These maneuvers are predicated on having land, sea, air, and space capabilities that allow the force to close rapidly before an adversary can react. Timelines for movement will be compressed and these movements will be from a variety of locations, CONUS garrisons, forward and intermediate staging bases. The Army, with U.S. TRANSCOM must focus its developing concepts, techniques, processes, and advanced deployment platforms that ensure our ability to project forces rapidly.

Sub-Tasks

(An assumed sub-task is for participating agencies to provide HQDA: DCSLOG with their resource requirements to execute planned sub-tasks as they are reached.)

1. Develop concept of a self-deployable air lifter for Battle, Strike and SOF forces. SSTOL technology
2. Develop concept of high-speed roll-on roll-off ships.
3. Identification of technologies that provide lighter materiels, speed handling of materiels, reduce fuel requirements or use alternative fuels; propulsion science.
4. Describe those technologies and techniques that provide enroute planning, analysis and intelligence preparation of the battlefield.
5. Define and describe systems that optimize throughput and are capable of operating in point-to-point environment – limited or no ports.
6. Describe ground vehicle systems that will reduce air and sealift requirements in 2025. UAV technology for logistics support as well as tactical operations composites science for weight reduction.
7. Develop concepts for integration of future commercial aircraft into the strategic maneuver scheme.
8. Develop lightening the force for mobility concept, techniques and technology.

Milestones

FY 00 – Establish a mobility IPT for Army 2010 and beyond.

FY 00 – Review the Army's Strategic Mobility Plan for updates focus 2025.

FY 00 – Report Review of ASMP with 2025 Recommendations.

FY 01 – Begin development of future air and sealift concepts, technologies, and systems technical report.

FY 01 – Staff report for comment

FY 01 – Brief Technical Report to decision authorities.

FY 02 – Develop for new concepts wargame strategy

FY 02 – Develop new concepts and mobility platforms with AAN mobility ITT. Commercial/other nation capabilities.

FY 02 – Program/Project Brief to decision authorities.

Deliverables

1. Mobility IPT charts with membership
2. ASMP Review
3. Future airlift, sealift, technical report
4. Decision authority briefings
5. Mobility concepts for 2025
6. Technical Report on lightening the force for mobility

Measures of Effectiveness

1. Decision authority approved of ASMP changes and updates
2. Development and approval by decision authorities of future mobility requirement.

Open Issues

1. Examine the force projection and operational capabilities of joint and multinational force in a major theater of war that could threaten U.S. survival or its principal allies – port denials, over flights – infrastructure sabotage.
2. Examine the strategic/operational deployment, staging support sustainment of AAN Forces.
3. Examine the prioritization and employment of strategic assets.
4. Theater Distribution – what techniques, concepts, assets are required to address the issues raised in 98 and 99 war games.
5. Determine the extent to which reliance can be placed on APODs and SPODs.
6. Determine the segment of the commercial infrastructure, allies, and ours that Army Logistics is most dependent on, and represents a significant vulnerability.

Recommended Follow-up Actions

Establish POCs with U.S. TRANSCOM, Navel Surface Warfare Center for emerging technology and commercial capabilities with military applications.

Coordination

HQDA, DCSOPS, ASA(ALT), MACOMS-TRADOC, AMC, U.S. TRANSCOM, NARAD, NSWC.

Other – DOT

Point of Contacts

TBD

Appendix E - Technologies That Support the RML

Table # 1 Logistics Systems Capabilities

System System Upgrade Advanced Concept Function	Patterns of Operation						System System Upgrade Capability	Advanced Concept Capability
PROJECT	Project The Force	Protect the Force	Gain Information Dominance	Decisive Operations	Shape the Battlespace	Sustain the Force		
System Upgrade Aerial Delivery Advanced Cargo Airdrop Technologies	D	d		D	d	D	Reduced weight and bulk of cargo parachutes Lower ground impact velocities for cargo airdrop systems	
Advanced Concept Precision Roll-On Roll Off Air Delivery	D	D		D	D		Demonstrates Integrates Technologies for air Delivery of cargo II.O. New02p	
Forward Deployed Robotic Unit (FDRU)	D	D		D	D	d	Develops leap ahead Technology with Significant logistic Implications III.G	
Advanced Personnel Airdrop Technologies	d	D		D		D		Improved characteristics and enhanced safety of existing personnel parachutes
High Altitude, High Offset, Precision Airborne Insertion Into Restricted Terrain	D	D		D		D		Improved personnel parachute glide and maneuverability Ultra-accurate guidance for night and limited visibility airborne insertion of personnel Enhanced personnel paragraph reliability and maintainability and safety
Defense Finance Battlefield System (DFBS)						D		Rapidly deploy and maximize timeliness, accuracy, and accountability of all resource management and procurement transactions

D= Provides Significant Capability/d= Provides Some Capability

System System Upgrade Advanced Concept Function	Patterns of Operation						System System Upgrade Capability	Advanced Concept Capability
	Project The Force	Protect the Force	Gain Information Dominance	Decisive Operations	Shape the Battlespace	Sustain the Force		
Debarkation Capability Enhanced Coastal Trafficability And Sea State Mitigation	D	D		d	d	D	Minimizes construction time, logistics burdens, and reduces engineering equipment needed to conduct logistics operations over the shore	
Sustain System Upgrade Advanced Cargo Airdrop Technologies	D	D		D	d	D	Reduced weight and bulk of cargo parachutes Lower ground impact velocities for cargo airdrop systems	
Logistics Command and Control	D	D	D	D	D	D	Provides information dominance capability to project, protect, and sustain the force Ensures decisive Operation can be supported	
Wide Span Airbeam Shelter for logistics Applications	D	D				D	Provides rapidly deployable shelters that can provide the protection required for logistics functions such as rotary- and fixed – wing aircraft, maintenance, supply storage, and distribution	
Combat Ration Logistics for Future Warrior Architecture	D	D				D	Provides fresh-like tailored rations through an automated, real-time, sensor-based ration management system.	
Advanced Lightweight Portable	D					D	Provides light, highly mobile power sources capable of operating on multiple fuels	

System System Upgrade Advanced Concept Function	Patterns of Operation						System System Upgrade Capability	Advanced Concept Capability
	Project The Force	Protect the Force	Gain Information Dominance	Decisive Operations	Shape the Battlespace	Sustain the Force		
Advanced Tactical Fuels and Lubricants	D					D	Develops additives to adapt/improve fuels for Army use, to improve fuel efficiency, and to increase engine life. IV.F	
Embedded Ammunition Info Device	d	D	D	D	D	D	Improve ammunition readiness Inventory/Expenditure rate data for anticipatory logistics Real time munitions	
Self-Heated Meals for Small Group Feeding						D		Prepare food delivery contain which is self-heating III.N
Future Combat Vehicle Armament System Logistics	D	D		D	d	D		Provides rapid, integrated, seamless rearm and resupply for Future Combat Vehicle
Modular Unmanned Logistics Express	D	D		D	D	D		Supports automated logistics movement of modular payloads up to 10,000 pounds The aircraft will be vertical takeoff and landing, self-deployable and capable of all-weather operation
Aircraft System Self Healing	D	D	D	D	D	D		Demonstrate a self healing flight control system for rotorcraft that automatically compensates for the premature subsystems or component failure Robust fault detection and identification of critical failures through onboard expert system diagnostics, compensation strategies for damaged aircraft subsystems, and smart flight control component technology.

System System Upgrade Advanced Concept Function	Patterns of Operation						System System Upgrade Capability	Advanced Concept Capability
	Project The Force	Protect the Force	Gain Information Dominance	Decisive Operations	Shape the Battlespace	Sustain the Force		
Modular Unmanned Logistics Express	D	D		D	D	D		Supports automated logistics movement of modular payloads up to 10,000 pounds The aircraft will be vertical takeoff and landing, self-deployable and capable of all-weather operation
Aircraft System Self Healing	D	D	D	D	D	D		Demonstrate a self healing flight control system for rotorcraft that automatically compensates for the premature subsystems or component failure Robust fault detection and identification of critical failures through onboard expert system diagnostics, compensation strategies for damaged aircraft subsystems, and smart flight control component technology.
Precision Roll-On-Roll-Off Air Delivery	D	D		D	D		Demonstrated/ integrates technologies for air delivery of cargo IILO.New02p	
Forward Deployed Robotic Unit (FDRU)		D				D	Develops leap ahead technology with significant logistics implications IILG	
Water Purification Technology		D				D	Reduces logistics need 25%, provides individual and small unit water on site IV.F	
Power/Silent Energy Source Reforming Diesel Refuel Soldiers	D					D	Field kitchen is a logistical supply point that fuel both individual soldiers and their equipment	

System System Upgrade Advanced Concept Function	Patterns of Operation						System System Upgrade Capability	Advanced Concept Capability
	Project The Force	Protect the Force	Gain Information Dominance	Decisive Operations	Shape the Battlespace	Sustain the Force		
Modular Unmanned Logistics Express	D	D		D	D	D		Supports automated logistics movement of modular payloads up to 10,000 pounds The aircraft will be vertical takeoff and landing, self-deployable and capable of all-weather operation
Advanced Concept Petroleum Oil and Lubricants (POL) Quality Analyze and Sensors	D					D	Develops and demonstrates device(s) to diagnose mechanical problems and extend oil and lubricant life IV.F	

Table #2 Modernization Payoffs of Technologies for Logistics

Initiative	Vision Supported					Benefit of Initiative
	Joint Vision 2010 The Force	Army Vision	RML	Army After Next	DoD SROs	
	Project the Force					
Advanced Cargo Airdrop Technologies	D	D	D		D	Provide an improved cargo capability; achieve a 20% reduction in weight and bulk (log demand reduction); provides an all weather, rapid roll-on/roll-off airdrop capability for the future Army STO III.O.10
Advanced Personnel Airdrop Technologies	D	D		D	D	Provide improved performance characteristics and enhanced safety of existing personal parachute capabilities; 20% increase in maximum altitude and 25% increase in glide ratio; reduce system descent rates to values below 16ft/sec utilizing "pneumatic muscle" technologies STO IV.G.07.
Precision Roll-On-Roll-Off Air Delivery	D	D	D	D		Demonstrates/integrates technologies for air delivery of cargo III.O.New02p
Forward Deployed Robotic Unit (RDRU)	D	D	D	D	d	Develops leap ahead technology with significant logistics implications III.G
Enhanced Coastal Trafficability and Sea State Mitigation	D	D	D	D		Greatly increased logistics throughput
	Sustain The Force					
Advanced Cargo Airdrop Technologies	D	D	D	D		Provide an improved cargo capability; achieve a 20% reduction in weight and bulk (log demand reduction); provides an all weather, rapid roll-on/roll-off airdrop capability for the future Army STO III.O.10
Logistics Command and Control	D	D	D	D		Will revolutionize decision making process for Army logisticians; will attain real-time planning and situation data visualization.
Wide Span Airbeam Shelters for Logistics Applications			D			Improved maintenance capability in austere environment

Initiative	Vision Supported					Benefit of Initiative
	Joint Vision 2010 The Force	Army Vision	RML	Army After Next	DoD SROs	
	Sustain The Force					
Defense Finance Battlefield System	D	D	D	D	D	Rapidly deploy and maximize resource management and procurement transactions in the theater from C1
Combat Ration Logistics for Future Warrior Architecture	D	D	D	D	D	Provides fresh-like tailored rations through an automated, real-time, sensor-based ration manage system
Combat Rations for Enhanced Warfighter Logistics		D	D			Extends shelf-life, monitoring and acceptance of rations with improved packaging III.N
Petroleum Oil and Lubricants (POL) Quality Analyzer and Sensors			D			Develops and demonstrates device(s) to diagnose mechanical problems and extend oil and lubricant life IV.F
Advanced Tactical Fuels and Lubricants	D	D	D			Develops additives to adapt/improve fuels for Army use, to improve fuel efficiency, and to increase engine life IV.F.
Self Heated Meals for Small Group Feeding			D			Prepared food delivery container which is self-heating III.N.
Water Purification Technology	D	D	D			Reduces logistics 25%, provides individual and small unit water on site IV.F
Advanced Lightweight Portable Power	D	D	D	D	D	Power source capable of operating on multiple fuels.
Silent Energy Source for Tactical Applications	D	D	D	D	D	Lighter more energetic power than currently available; decrease logistics burden associated with current power sources.

Initiative	Vision Supported					Benefit of Initiative
	Joint Vision 2010 The Force	Army Vision	RML	Army After Next	DoD 5ROs	
	Sustain The Force					
Reforming Diesel to Refuel Soldiers	D	D	D	D	D	Provide a versatile fuel that turns the field kitchen into a logistics supply point that fuels both individual soldiers and their equipment.
Embedded Ammo Information Device	D	D	D	D	D	Enables anticipatory resupply, munitions' prognostics/diagnostics, anti-tamper protection and improved readiness. Part of RRAPIDS
Future Combat Vehicle Armament System Logistics	D	D	D	D	D	Provides rapid, autonomous rearm and resupply for Future Combat Vehicle. Part of FCV STO
Future Combat Vehicle Armament Technologies For AAN	D	D	D	D	D	Enables rapid, integrated, anticipatory rearm and resupply for future Combat Vehicle, improves munitions accuracy
Remote Readiness Asset Prognostics/Diagnostics System	D		D	D	D	Provides near-real-time-status of combat equipment STO IILN.NEW02p
Joint Logistics	D		D			Provides rapid integration logistics data to meet Army and Joint mission requirements
Battlespace Command and Control	D	D	D	D	D	Provides essential elements of information required for velocity management and battlefield distribution
Multifunctional On-The-Move Secure Adaptive Integrated Comm (MOSAIC)	D		D	D	D	Information to flow-wherever it exists, in any form, to wherever it is needed in any form
Rapid Terrain Visualization	D		D	D	D	Provides battlefield situational awareness required to plan and execute logistics missions

Initiative	Vision Supported					Benefit of Initiative
	Joint Vision 2010 The Force	Army Vision	RML	Army After Next	DoD SROs	
	Sustain The Force					
Advanced Combat Identification Architecture	D		D	D	D	Provides situational awareness to prevent fratricide – resupply, maintenance missions
Machine Visualization – Autonomous Unmanned Ground Vehicle	D	D	D		D	Provides capability to ensure resupply continues at the required level and timelines
Battlefield Ordnance Awareness	D	D	D	D		Provide a near- real-time ordnance reporting system using onboard processing with space sensors; provides the capability to identify by ordnance type blue force ordnance inventory requirements
Advanced command, Control, and Communications Modeling and Simulation	D	D	D	D		Provide modeling and simulation that accurately represent dissemination, processing, and transmission of information generated an collected on the battlefield
Advanced Battlefield Processing Technology	D	D	D	D	D	Enhance the command and control decision making
Helicopter Active Control Technology			D			Enables advance fault-tolerant systems to maintain reliability and simplify maintenance
Integration High-Performance Turbine Engine Technology	D		D	D	D	25% reduction in fuel consumption and a 60% increase in power-to-weight ratio.IV.C.02
Future Scout and Cavalry System			D			Provides advance lightweight material and electric drive to be supplied and maintained STO III.G.09ATD
Future Combat System Integrated Demonstration	D		D	D	D	Provides high-power electric technology critical to leap-ahead capabilities within combat vehicle; 40% reduced ground vehicle weight, 20% increase in fuel economy

Initiative	Vision Supported					Benefit of Initiative
	Joint Vision 2010 The Force	Army Vision	RML	Army After Next	DoD 5ROs	
	Sustain The Force					
Combat Hybrid Power Systems (CHPS)	D	D	D		D	Provides hybrid electric power systems that result in greatly improved fuel economy STO IV.F09
Ground Propulsion and Mobility	D		D			Provides critical engine, electronic drive, track and suspension, and storage devices.
Advanced Electronics Future Combat System	D		D	D	D	Advance concepts to resupply power and distribution system will need to be developed
Future Combat System Mobility	D		D			Provides an electric drive conditioning system; and active suspension
Variable Geometry Advanced Rotor Demonstration	D	D	D		D	Increases range 91% or payload 66%, reliability 20%; reduces operation and support cost 21% STO III.D.22
Modular Unmanned Logistics Express	D	D	D	D	D	Demonstrates an unmanned aerial vehicle configuration that support automated logistics movement of modular payload up to 10,000 pound; the aircraft will be vertical takeoff and loading, self-deployable and capable of all weather operation
Advanced Rotorcraft Transmission II		D	D		D	Provides 25% weight reduction, increase mean time between replacement; significantly reduces operation and support cost STO III.D.02
Rotary-Wing Structures Technology		D	D		D	Increases reliability 20%, maintainability 10%; reduces operation support 5% for utility type rotorcraft
Advanced Rotorcraft Aeromechanics Technologies		D	D		D	Reduces mean time between failure; increase reliability and maintainability; and reduces operation and support costs STOIII.D.10

Initiative	Vision Supported					Benefit of Initiative
	Joint Vision 2010 The Force	Army Vision	RML	Army After Next	DoD SROs	
	Sustain The Force					
Subsystem Technology for Affordability and Supportability		D	D		D	Overcomes technical barriers associated with advance digitized maintenance and real-time on-board diagnostics; reduced mean time to repair across all system by 15%, contributes to goal of 25% reduction in maintenance costs per flight hour, 10% improvement in maintenance, 20% increase in reliability
Intra-Vehicle Electronics Suite	D	D	D	D	D	Validates real-time performance requirements for Vetronics open systems architecture STO IILG.07
Concepts for 21st Century truck-Based Tactical Vehicles	D	D	D		D	Virtual prototyping design explorations of vehicles IV.F.New08p
Collaborative Simulation Throughout the Life Cycle & Engineering Analysis & Requirements Suite (EARS)	D	D	D		D	Develops design and virtual prototyping tools, employing
Perpetual Test (P-Test)	D	D	D			Integrates embedded testing software in combat vehicles to reduce software maintenance
Rotorcraft Open System Avionics (ROSA)	D	D	D	D	D	Defines opens systems architecture to reduce sots on maintaining avionics systems. Improves commonality IILD
Aircraft System Healing	D		D	D	D	Compensates for premature subsystem or component failure, changes repair concept
Survivable, Affordable, Repairable Airframe Program	D		D	D	D	New efficient and affordable diagnostics and repair concepts – 30% reduced repair times

Initiative	Vision Supported					Benefit of Initiative
	Joint Vision 2010 The Force	Army Vision	RML	Army After Next	DoD SROs	
	Sustain The Force					
Alternate Propulsion Sources	D		D	D	D	Explores advanced propulsion beyond air-breathing propulsion
Structure Crash dynamics (Modeling and Simulation)		D	D		D	Provides design and performance evaluation tool to be optimized for helicopter system STO IV.C.03
Subsystem Technology for Infrared Reductions		D	D		D	Repair and maintenance of advanced multispectral coating require specialized maintenance training
Military Operation in Urban Terrain	D	D	D	D		Open system architecture facilitates a large reduction in future integrated logistics support life-cycle costs; realistic scenarios need to include military operations in urban terrain resupply and other logistics functions
High-Energy, Cost-Effective Primary and Rechargeable Batteries	D	D	D	D	D	Energy content 20% greater than the existing nickel-metal hydride battery
Integrated Power Generation and Management Technologies	D	D	D	D	D	Common technologies to address critical power source, storage, distribution and consumption and issues on battlefield for equipment and systems IV.J
Conducting Nanocomposites and Nanofibers for Warrior Systems	D	D	D	D	D	Develops and produces leap ahead technology that provides land warrior lightweight power generating devices from new conducting polymers IV.G.NEW03P
Cognitive Engineering of the Digital Battlefield	D	D	D			Predictive models and performance metrics for assessing 'tactical Operations Center design; functional roadmap for guiding staff officer training
Collaboration Technology for the Warfighter	D	D	D			Contributes to logistics situational awareness, battlefield distribution, velocity management, and Interactive Electronic Technical Manuals (IETMS)

Initiative	Vision Supported					Benefit of Initiative
	Joint Vision 2010 The Force	Army Vision	RML	Army After Next	DoD SROs	
	Sustain The Force					
Fourth Generation Crew Station	D		D	D	D	Provides advance3D display technology transferable to telemaintenance
Armor Integration For Active Protection System	D	D	D		D	Optimized armor suite for combat vehicles reduces vehicle weight and size IV.F.
On-The-Move-Tactical Satellite communication Technology	D	D	D		D	Capability to communicate logistics essential data o the move
Battlespace Tactical Navigation (BTN)		D	D			Enhance the accuracy of location and tracking of all logistics assets
Low-Power Display Components		D	D		D	Reduces burden on the number of batteries that must be maintained for each unit
Cyber Command Post		D	D	D		30 to 50% reduction in the number of vehicles and equipment to be sustained and maintained
Advanced High-Energy and High-Power Electrochemical Capacitors	D	D	D	D	D	Battery/capacitor hybrid power sources, reduced weight
Lightweight Soldier		D	D			Reduced power requirement; log demand reduction STO IV.G.13
Collaboration Technology for the Warfighter	D	D	D			Contributes to logistics situational awareness, battlefield distribution, velocity management, and Interactive Electronic Technical Manuals (IETMS)

Initiative	Vision Supported					Benefit of Initiative
	Joint Vision 2010 The Force	Army Vision	RML	Army After Next	DoD SROs	
	Sustain The Force					
Precision Roll-On- Off Delivery	D	D	D	D		Demonstrates/integrate technologies for air delivery of cargo II.O. New02p.
Forward Deployed Robotic Unit (FDRU)	D	D	D	D	d	Develops leap ahead technology with significant logistics implications III.G

Table # 3 Potential Logistics Application of DOD SRO Technologies: "Opportunity" Research Representing About 30% of the Basic Research Funding

SRO	Nanotechnology	Smart Structures	Intelligent Systems	Biomimetics	Broad Band Communications	Compact Power Sources
	Changes Concept of manufacturing Do Anywhere	Vibration Damping and reduction via Embedded Sensors	Execution of Logistic System Task without Human Intervention Except When Desire	Medical Applications include Immediate Repair of Broken/crushed Bones and Combat Injured	Provide field users with flexible, mobile and easily deployable communications conduits	Significantly Reduce fuel and power storage and Distribution requirement
	Food Synthesis	Reduced Maintenance Requirement	Unmanned Ground/Air Vehicles Decrease Force Structure and Improve System Response Time	Repairs to Combat Damage Equipment	Untether Logistics Processes from fixed wire sites	Increased Operational Capability of the Solider as a System
	Sophisticated, extremely lightweight material	Reduced Resupply and Transportation Requirements	Robots to Handle Materiel that is Dangerous, Heavy, or Sensitive	Designer Vaccines and Drugs for Immediate Return to Healthy Status	Increased data pas capacity	Handle Power Requirement of Dismounted Solider ::Heating & Cooling Computer Use; communications Transmissions
	Quantum Computing at unimaginable speed	Improved Storage with Ambient Temperature	Decision Support System "Brains" to Monitor Individual Weapon Systems and Prevent Failure	Lightweight Structures and System components with Ultrareliability and Frictionless Surfaces	Reduced frequency of data reporting	Reduced Dependence on Fossil Fuels
	Prophylactics and Cures for Chem/Bio Agents	Secure System Containers for Critical Resources	Reduced Logistics Distribution Requirements by Accurately Assessing Potential Component	Impact Resistant Material that can be Grown in Combat Area	Integrate weapon system sensors reporting prognostic information a broad scale	Reduced Environment Issues associated Wither Batter Disposal
			Failures and Using Collective Knowledge of Entire Weapon System			Currently 3 times the purchase cost
	Ultra Strong Fibers	Reduced Damage to Material by Adjusting Containers and Structures for Various Shock and Impact Conditions	Improved Logistics Planning via Multi-Sensory Perception Development	Lightweight Armor Reduced Logistics Footprint Across the Board	Evaluate the "health: of entire groups of common weapon systems individually and independently	Required to Develop Containers with Micro Heat Pumps and Long Term Powers Capacity for Independent Operations
	Programmed Ultrareliability	Structures Respond to External Stimuli and Adapt Accordingly	Improved Exoskeletons to Reduce Force Structure for Material Handling Equipment Increased Lift capability	High Resolution Sensors Using Senses t Detect Imperfections and Troubleshooting	Improve timeliness of Logistics; Communications Support structure	Required to Develop Containers with Micro Heat Pumps and Long Term Powers Capacity for Independent Operations
	Reduced Logistics Demand	Retain history of Access and Denial/Automatic Inventory	Reduced Hazardous Exposure During Critical Item Operations and or Repair	Development of Super conductor Material Could Lead to Propulsion Without Motors or Gears as We Know Them		
	Environmentally Enhancing	Reduce Logistics Requirements for Chem/Bio Defense		Non-corrosive and Non-Erosive		

SBO	Nanotechnology	Smart Structures	Intelligent Systems	Biomimetics	Broad Band Communications	Compact Power Sources
		Improve Fuel Storage Capability				
		Biomedical Applications including in Vivo sensoring and control				
		Rapid nondestructive testing responses (less out of service time)				
		Immediate Battle Damage Failure Reporting				

Appendix F - HQ TRADOC CSS User Needs

The Technology Materiel Game conducted in July 1999 focused on user AAN needs. Needs were developed by the TRADOC schools for lethality/mobility/survivability, CSS, and C4ISR. These needs were further reviewed by HQ TRADOC and approved by the DCSCD. They were vetted and approved by the respective Technology Focus Groups (Lethality/Mobility/Survivability (LMS), CSS, and C4ISR). These needs were subsequently accepted and validated by the Game's Integration and Adjudication Team. User needs developed for the TMG and validated during the game are the recommended Army 2025 capabilities (under preparation by the TRADOC DCSCD). Needs and their goals are as follows:

LMS NEEDS	LMS GOALS
LMS #1-Lethality	Total Direct and Indirect Fire Lethality overmatch at Extended Ranges to Allow the Force to See the Enemy First, Respond First, and Neutralize Any Target on Command.
LMS #2-Survivability (Hit Avoidance)	Provide the Capability to Survive a First Engagement by Avoiding Being Detected, Acquired or Targeted.
LMS #3-Survivability (Protection)	Allow the Force or Crew to Survive, Given a Hit, and Continue to Complete the Mission.
LMS #4-Mobility/Countermobility	Significant Increase in Strategic and Tactical Mobility (Both Vertically and Horizontally). Reduce the Impact of Geography by providing a 200 Percent Increase in Tactical Battlefield Agility.
LMS #5-Sustainability	Reduce Force Operational Sustainment Requirements by up to 90 Percent Compared to FXXI Force. Force is Three Times as Effective but Requires 1/3 the Sustainment.
LMS #6-Training	Advanced Embedded (Stand-Alone) and Internetted Training Capability to Support Force-on-Force/Institutional Training and Permit Enroute and On-The-Ground Battle Rehearsals.
LMS #7-Non-Lethal	Capability to Incapacitate Personnel or Material, While Minimizing Fatalities, Permanent Injury to Personnel, and Undesired Damage to Property and Environment.

CSS NEEDS	CSS GOALS
CSS #1-Global Precision Delivery And Deployability	Operate a Seamless Distribution System From Origin to Final Destination (Force/Material at a Velocity
CSS #1-Global Precision Delivery and Deployability (Continued)	That Supports AAN Operations Providing a Force Capable of Being Projected Anywhere in the World Within 36-48 Hours That is Operational Effective (Can "Fight Off the Ramp").
CSS #2-Force Health Protection	Maintain the Health and Fitness of the Soldier under All Operational Conditions.

CSS NEEDS	CSS GOALS
CSS #3-Power and Energy	**Reduce Power and Energy Requirements by Seventy-five Percent for All Systems, Motive, Electrical and Soldier.**
CSS #4-Forward Resuscitation, Stabilization and Evacuation	Provide Lifesaving Diagnosis, Treatment, and Evacuation of Casualties during Military Operations.
CSS #5-Ultra-Reliability	Produce Equipment That Reduces Battlefield Maintenance Requirements to Only Battle Damage
CSS #6-Soldier Support	Create rapidly deployable, accurate systems to manage all PSS functions in theater; enable soldier self service actions; streamline and simplify business processes; unify human resource software systems.
CSS #7-Countermine	Conduct All Operations without Mobility or Survivability Impairment When in Environments Threatened by Landmines.
CSS #8-Global Health Support	Provide Interim Essential Diagnosis and Treatment of Patients Prior to Strategic Evacuation and Other Critical Health Care Support Services in a Theater of Operations.
CSS #9-Military Engineering	Provide the Warfighter with Significantly Enhanced Capabilities to Project, Protect, and Sustain the Force with AAN Technology.
CSS #10-Training, Leader Development and Soldier	Enable the Selection, Assignment, Training, and Development of Soldiers, Leaders, and Their Units to Rapidly Deploy and Effectively Perform the Mission Tasks Demanded by AAN Doctrine, Tactics, Materiel, and Organizations.
CSS #11-CSS C4ISR	Design CSS Force Structure and Information Systems that Support AAN Operations.

C4ISR CAPABILITIES	C4ISR GOALS
C4ISR #1-Tactical Global Communications	Enhanced Tactical Communications with the Capability to Provide the Warfighter with Unimpeded Global Access to Information When and Wherever Needed.
C4ISR #2-Advanced Processing, Analysis and Sharing Information	Maintain Information Superiority via the Development of a "Data Web" and by Analysts Wielding Advanced Analytical Workstations/Algorithms to Transform Sensor Data into Knowledge.
C4ISR #3-Network	A Centralized Automated, Self-Healing, Global Network Management Capability That Optimizes Commercial Technology and Operations and Provides for Information Assurance.
C4ISR #4-Advanced Sensors	To Ensure that the Power of the Sensor Web is its Integration of Sensors (Vice Stand-Alone Sensors) and to Allow the Development of a "Go Anywhere Sensor Tool Box.
C4ISR #5-Battlefield Visualization	To Develop an Immersed, Multidimensional, Tailored Picture of the Battlespace Designed to Provide the Commander Timely Decision-Making and Mission Planning Insight.

Appendix G - Logistics Modernization Initiatives

Initiative Name	Program Goals and Objectives
TC AIMS II	Single DoD transp management system to control deployment, sustainment, redeployment of people, equipment, supplies
Global Transportation Network	Transportation/deployment/redeployment/ITV C2
Army Strategic Mobility Program	Covers total spectrum of deployment process. Air-, sea-lift, infrastructure upgrade, railcar, containers.
Modular Causeway System (MCS)	Rapid means of transporting rolling stock, container cargo from ship to shore where ports unavailable.
MCS, R0/R0 Disch Fac	Assembled, secured alongside RO/RO ship; provides interface between RO/RO ship and lighters.
MCS Sys Floating Causeway	17 sections form pier from shore to 1,500 feet out.
MCS Causeway Ferry	Self-propelled barge; Moves rolling, break bulk, and container cargo from ship directly to shore
Log Support Vessel (LSV)	273-foot ship; worldwide transport of cargo; ideal for tactical resupply in underdeveloped areas.
Barge Derrick	A floating crane. Can lift MBT. Supports ASMP.
Pusher Tug	Moves cargo barges and lighterage within a port, harbor, or LOTS anchorage. ASMP support.
Trans Coord Auto Info Move Sys	Aggregates services transport planning, transp functions
M Day Medical Readiness	Procure, main of med supplies for early deploying units;
Army War Reserves	Provides personnel, storage, reconstitution, vendor contracts, sys support, training for AWR medical progam
Strategic Configured Loads	Integrate SCLs into the munitions distribution system process as we adjust the base to support the Army's battlefield of the future.
DA Materiel Movement Mgmt Sys - Redesign	DAMMS-R will enhance planning, programming, coordination, and control of movements and transportation resources, and will support movements management, transportation operations, and common user transport asset control functions within any theater of operations.
Rough Terrain Container Handler (RTCH)	Procure DCSOPS RTCH requirement of 651 container handlers using POM funds in FY 99-05. A sub-objective is to procure an additional 150 USMC RTCH requirements off this same contract to capitalize on economic order quantity cost savings.
Trans. Coord. Automated Cmd and Control Info System	Automate transportation procedures involved with the deployment and redeployment of Army combat units.
Joint Modular Lighterage System (JMLS)	Sea State 3 capable rapid means of transporting rolling stock, container cargo from ship to shore where ports unavailable.
Authorized Stockage List (ASL) Mobility	Provide a standard mobility platform for combat ASL storage and supply automation operations. Modular containers enhance both strategic and tactical mobility.
Mobile Integrated Remains Collection System (MIRCS)	An integrated system to receive, process, and hold remains for a MA collection team. Reduces C17 requirements from 2.0 to 0.6 and enables C130 deployability.

Initiative Name	Program Goals and Objectives
Ldg Craft Utility, 2000 (LCU 2000)	174-foot self-deploy ship; can carry cargo from deep-draft ships to shore ports; intra-theater cargo carrier.
Integrated Family of Test Equipment	Reduce development costs and long-term life cycle support costs for Army automatic test equipment (ATE) by providing standard, general-purpose, automatic test equipment to support army combat and combat-support systems at all levels of maintenance instead of developing and propagating system-specific testers.
Interactive Electronic Technical Manual	Have true IETMs that reduce the maintenance burden on soldiers by providing fast and accurate maintenance procedures and by providing direct input into the supply and maintenance order/reporting systems.
Theater Excess Management	Provides theater level visibility and command emphasis on excess reduction through monthly reporting and quarterly in process reviews, and periodic inspections of special emphasis areas.
Army Total Asset Visibility (ATAV)	ATAV to provide asset data to Joint Total Asset Visibility and GTN
Integrated Sustainment Maintenance (ISM)	Maximize repair capabilities and optimize the use of available $
Logistics Integrated Data Base (LIDB)	Provide customer WW equipment serviceability for any level of FS &WS
Global Combat Support System- Army (GCSS-Army)	
Integrated Combat Service Support System	Automation enabler for Total Army in CSS; ties STAMIS's together; will become GCSS-A
Interactive Electronic Network	Diagnostic and prognostic tool for battlefield repair; provides accurate predictive capability and eliminates errors
Telemaintenance	Combines video, Internet, computers, prog/diag into single project to repair forward. Link back to SME's.
Telemedecine	Skeleton med force gets specialist spt from hospitals at sustaining base. Rqmnts for voice, imagery, video.
Distribution-Based Logistics	Integration of current/future initiatives to effect chg to move to seamless distro sys. (Part of SLP)
Total Distribution Program	Overarching init to address distro issues; TDP II re-baselines TDP. BD merges/ TDP. Distribution based logistics is goal
Battlefield Distribution	Improves distribution in theater. Delivery of supplies under positive control through highly visibility pipeline, hub and spoke.
Materiel Handling Equipment	Consists of 8 CASCOM initiatives to modernize and streamline capability to move equip and containers.
Container Handling Equipment	Container modernization and handling equipment.
Distribution Platforms	Umbrella for TWV, MHE, CHE, etc.
Medical Prime Vendor (Need paper)	Get from DLA or OSG or AMEDD
Aircraft System Self-Healing TD	Robust fault detection and ID of critical failures thru diagnostics. Self-healing flight control system.

Initiative Name	Program Goals and Objectives
Theater Support Command	More flex, adaptable structure for theater log spt; enhances RSO&I; reduces early entry footprint
Army Force Sustainment Command	PAMP 100-xx
Force Provider	Each 550 person module is designed to provide premier life support to deployed soldiers. When all 36 modules are set up, they can support 19,800 soldiers in 150, 275, or 550 person base camps.
Enhanced Containerized Batch Laundry	Replaces Medic/Special Operations M85 Laundry Systems
Laundry Advanced System	Replaces M85 in Field Services Companies. Reduces water consumption by 97%. 99% gray water reduction. 75% MOS 57E reduction and reduces laundry footprint (1 for 4 M85s)
Containerized self-service Laundry	Enables soldiers to do their own laundry. Commercial equipment in a container.
Integrated Hygiene System	Future concept to replace the 12 head shower that is containerized and includes both showers and latrines.
Small Unit Shower Light	Small Unit Shower. Light-weight, portable, can be carried in a vehicle and requires no more space than a duffel bag. CTA.
Containerized Shower	Composed of 12 fiberglass stalls mounted inside an 8x8x20 ISO. Will be in place in Operational Project Stock.
Family of Space Heaters (FSH)	Current tent heaters cause many injuries. FSP program includes three new self-powered heaters.
Field Latrines	3 different latrine systems for theater ops. Need improved capability to dispose of human waste. includes a containerized latrine system called the Follow On Latrine.
Modular General Purpose Tent	Incorporates latest tentage technologies and material; protection despite different climatic extremes
Clothing and Individual Equipment (CIE)	Tech makes clothing longer-lasting, low-maintenance
Army Field Feeding System--Future	Provides personnel equipment, rations and doctrine to support 3 quality meals per day. 1 "A" ration and 2 from the other operational rations (MRE and UGR-Heat and Serve). METT-T dependent.
Containerized Kitchen	8x8x20 3:1 expandable ISO container that can provide 3 meals a day for a minimum of 550 personnel.
Unitized Group Ration	Part of AFFS-F. A 3 box module that feeds 50 personnel. UGR-H&S meal components ordered w/1 NSN, UGR-A requires 2 NSNs due to one of the 3 boxes being perishable.
Modern Burner Unit	Safer, more reliable, less maintenance intensive and more efficient replacement for the M2 Burner. Uses JP-8.
Kitchen Company Level Field Feeding -Enhanced	Provides capability for 2 cooks to go forward and prepare UGR-A or H&S rations.
Advanced Food Sanitation Center (AFSC)	A P3I upgrade to the Food Sanitation Center incorporating commercial items. Reduces the number of burners from 3 to 1 by using a low pressure steam generator.
Multi-Temperature Refrigerated Container.	A distribution refrigerated container that allows perishable subsistence platoons to move both perishable and semi-perishable subsistence on the same vehicle.
Tray Ration Heater System	This USMC equipment is being evaluated during the JCFAWE to examine it as a field feeding enabler for light and potentially IBCT maneuver units. Allows rations to be heated while the vehicle is moving between sites.

Initiative Name	Program Goals and Objectives
Battlefield Kitchen (BK)	This future system will be a 1 for 1 replacement for those units that have single or odd numbered MKTs. Will incorporate the latest in heating, refrigeration and sanitation technology. Will feed 300.
Lightweight Water Purifier	Means of providing water to forces away from standard water supplies; ideal for SOW, MOOTW.
PLS/LHS Water Tankrack	Provides a distribution capability for purified water. 2,000 gallon capacity that can be used for both wholesale and retail.
Water POD	Replacement for the current water buffalo. Pods will be 450 gallons and have the capability to be interconnected.
3K Water Purification System	Replacement for current field 3K ROWPUS
Water Tankers	Looking at FMTV and HEMTT hardwall tankers to accomplish distribution mission throughout theater.
Hand-Held Water Purifier	SOF support. 1 liter in 5 min. even from contaminated water
1500 Tactical Water Purification System	Next generation ROWPU. Reduced manning. 5 x division. Two for one replacement for 600 GPU POWPU
T Service Chemical Agent Water Mon	Detects chemical agents in drinking water
AAFARS	Modular, 4-man portable fueling sys; refuels 4 helos simultaneously; minimizes ground time, max'es air time
PLS POL Flat Racks	Distribution capability that will supplement current fielded POL tankers.
Modular Fuel Farms	PLS bulk tank racks and a pump and filter separator tankrack that provide for quick set up and evacuation. Replaces Fuel System Supply point in some units.
Tactical Bulk POL Automation	Provides management and reporting tool for use with petroleum pipelines and tank farms.
Petroleum Quality Assurance System	Rapid analysis, testing of mobility fuels. Enhances maneuver unit's momentum and maneuver capability.
Air Drop System, 60K Pound Capacity	Increases airdrop capacity from 35K to 60K
Enhanced Container Delivery System	Improves capacity, handling and accuracy of current container aerial delivery system.
Family of Low-Cost Aerial Delivery Systems	Creates a family of low-cost aerial delivery systems for one-time use missions, including humanitarian and disaster relief operations.
Family of Precision Aerial Delivery Systems	Creates a family of precision aerial delivery systems used when delivery aircraft must fly high and away from drop zone.
Helicopter External Lift Enhancer	Improves sling-load capability of helicopters. Allows several sling-loads to be carried and delivered to different units.
500 Foot Low-Velocity Aerial Delivery System	Drops heavy airdrop from 1200 feet to 500 feet which is below anti-aircraft weapons. Allows cargo and trailing parachutist to be dropped from lowest possible altitude.
Roll on and Roll off Airdrop System	Reduces impact velocity, reduces rigging and derigging requirement and time, and reduces time personnel are exposed to hostile fire while derigging.
Driver Vision Enhancer (DVE)	Veh mounted IR imaging device. See thru smoke, dust

Initiative Name	Program Goals and Objectives
TWV Enhancement, DVE	Veh mounted IR imaging device.
HEMTT Loading Handling System	Standard HEMTT chassis equipped with load handling system capable of loading/unloading flatracks.
HMMWV Expanded Capacity Veh	Expanded capacity (2,300 lbs vs 1,250). Larger eng.
Five Ton Remanufacture Progr	Similar to 2.5 Ton program. Reducing O&S costs.
Small Package Sort Facility	Use of commercial practices to rapidly receive, sort, distribute, retrograde critical small packages.
Containerized Maint Facility (CMF)	Intermediate support maint for watercraft in theater.
Ldg Craft Mech (LCM 8) Mod 2	Afloat C2 capability to direct and monitor cargo acty.
Large Tug 100 Feet ESP	100' tug to berth/unberth large oceangoing ships.
Contact Maintenance Truck	HMMWV-mounted. Multi-capable repair sys; mobile
Family of Med Tac Vehicles Wrecker	Evac & recovery of light veh and equip. Improved.
Battlefield Damage Assess and Rep	Austere environment designed. Kits provide on-site, temp repair capab; hydraulic, elec, metal, cooling system.
Diag and Prog Onboard Comp	Monitors M1 operating functions; detects pending fail.
Continuous On-Board Oil Analy	Continuously monitors oil quality; detects problems
Driver Minder (Part of TIGER)	Common in industry. Monitors driver, designated veh components, detects pending catastrophic fail.
Pocket Unit Maint Aid (PUMA,TIGER)	A PDA for the mechanic. Comprehensive digital elect maint assistant to diag weapon sys, etc.
Preventive Maintenance Minder	Uses monitors, veh tags, readers, software to monitor maintenance ops and activities.
IFTE Cont Test Set, Port On-Sys Rep	Identifies LRU probs. Automatic Test Equipment.
IFTE Electro Optical Test Facility	Automatically tests, diagnoses, and verifies correct operation of EO LRU's, SRU's, assemb/subassemblies
IFTE Electronic Repair Shelter	State-of-the-art elec repair equip in environmentally controlled shelter; primarily for circuit card repair.
Turbine Engine Diagnostics (TED)	Computer diag expert system for M1 tank power rack
IFTE, Base Shop Test Facility	General Purpose automatic testing at DS & GS levels
Mobile Ordn Disrupt Sys (MODS)	Uses directed energy laser to neutralize UXO.
Remote Ordn Neutralization Sys	Robotically-controlled UXO. Full-up comms capable
Space Heater, 120,000 BTU Army	Elect powered; replaces gas powered versions which were log unsupportable, dangerous, expensive
Ammunition Solar Cover (ASC)	Modular solar cover to protect ammo in hot climates
Cargo Bed Covers (CBC)	Low-cost, general purpose, rigid top covers for cargo being transported on tac wheeled vehicles.
Standard Computer (STACOMP)	NDI comp systems supporting STAMIS requirements; displaces current sys; 34K systems; 80-125 per div
Comb Serv Sup Control Sys (CSSCS)	CSS node of ATCCS; provides log, med, finance, and personnel C2 info. Links to STAMIS's, but not replace.
Computer Set, Digital, DAMMS-R)	Automation spt for transp staff and org in tac theater and CONUS. Link in ITV for units, people, and materiel.
Computer Set, Digital, SAAS	Munitions mgt from theater down to ammo supply; procedures for receipt, issue, stock status reports

Initiative Name	Program Goals and Objectives
Computer Set, Digital, (SAMS)	Automated processing of DS/GS maint shop production, maint control, key supply functions; automatic requisitions
Computer Set, Digital, (SARSS)	Multi-echelon supply mgt and stock control system for tactical and garrison environments.
Computer Set, Digital, (SPBSR)	On-line mgt info and automated reporting for Property Book Officer; produces updated company-level receipts
Computer Set, Digital, (ULLS)	Provides tactical line companies and supporting CSS capability to automate log. ULLS-Air, ULLS Ground, ULLS S-4
Combat Support Medical	Modernization, sutainment of deployable medical systems; maintainable, relocatable, modular, air-transportable
Combat Support Life Saver	Acq, sustainment of medical equip required by div & above
Med Evac Sys(UH-60Q Helo)	Replaces UH-1. #1 med modernization initiative for Army
Armored Treat and Transprt Veh	Replaces tracked ambulance. Single armed veh for evac of casualties or tac emergency medical treatment
Chem and Bio Protected Shelter	Mobile, contamination-free, environ controlled work area for medical treatment units, battalion through corps
Med Comm for Cbt Cas Care (MC4)	Real-time medical sit awareness and enhanced casualty care; audio, video, digital tech; far-forward medicine
Prognostics	Evolve diag capability of TED to prognostic capability thru application of ANN sys. Extend to all major wpn systems
Logistics in Chemical Warfare Environ	Explore emerging tech and alternative operational processes to enable continued log ops in chem environ
Urban Warfare Logistics	Explore changes in log doctrine and procedures for MOUT
Class I Operations (Alternatives)	Examine alternative methods for subsistence in AAN era
POW Logistics Operations	Explore alternative methods for log spt to POW ops in AAN
Abrams Electronic Reference Sensor (EMRS)	Reduce/eliminate radioactive licensed commodities from the U.S. Army inventory.
Reserve Component-IOC Depot Affiliation	Complete coordination with FORSCOM. Prepare SOWs for each type of unit
Central Certified Data Base-SDS	Reach a seamless logistics system which will ring wholesale, industrial and retail systems together that comply with DOD data and software standards, provide a platform for continuous technology infusion, and establishes standard network communication protocols.
Defense Medical Logistics Standard Support	The DMLSS AIS is a DOD system providing integrated medical logistics support to all services from the wholesale system to the unit level.
Enhanced Logistics Intratheater Support Tool	A theater transportation feasibility planning and analysis system for deployments into and within a theater of operations.
Integrated Logistics Assessment Program	Provide interim support capability for logistics analysis
Velocity Management Initiative	To have a single source for assistance for all VM related initiatives
Movement Tracking System (MTS)	Satellite-based tracking/comm sys; mobile unit in vehicle and base unit controlled by movement control.

Initiative Name	Program Goals and Objectives
Family of Med Tac Veh (FMTV)	Medium trucks (2.5 ton & 5-ton) w/common design and common components. 85% commonality.
TWV, Heavy Equip Transporter (HET)	Tractor and semi-trailer. 70-ton M-1 capable.
Container Handling Device	Increases flexibility of PLS. Reduces transshipping.
Crew Protection Kit	For tac wheeled veh. Protec from ballistic/mine threat
Container Roll In/Roll Out Platform	Reduces transshipping cargo times. All classes cap.
Palletized Load System (PLS)	Key distro platform in transport, FA, and Ordnance.
Radio Frequency Equipment	RF tag is elect equivalent to bar code label. Combo of computer, database, controller,2-way comm device
Port Control and Comm Center	Watercraft control center. Coord of all watercraft and shipping in unit area of operations.
MHE, All-Terr Lifter, Army Sys	10K Lb, variable reach, air transportable, rough terrain forklift, key MHE in avn, engineer, med, ord, transp units
MHE, Rough Terrain Contain Hand	20K commercial rough terrain wheel loader for 20-40 foot long commercial containers
MHE, (4K LB Rough Terrain Forklift)	Primary function is stuff and unstuff pallets from ground mounted containers. Load/unload 20-foot containers.
MHE, (6K LB Front/Side Load Forklift)	Commercially-modified 6K forklift for handling MLRS, Patriot, and TACMS pods in ammo magazines & igloos.
MHE, 6K LB Variable Reach Forklift	Loads and unloads palletized ammo from resupply vehicle in COMMZ, Corps, Div, and Brigade rear areas
MHE, Container Cargo Retriever	Solves problem of how to safely and quickly remove pallets from 40 foot containers
Containers (Equip Deploy Stor Sys)	Standardized, all-weather, multipurpose, unit-owned container sys for better lift and storage
MHE, 40-Ton Rough Terr Crane	Transfers 20, 35, and 40-foot containers and other cargo from one mode of transport to another
RML Assured Communications	Explore alternatives to acquiring assured comms for log
Communications/Data Security	Explore solutions for security of log comm/databases
Anticipatory Logistics	Incorporate dynamic replanning, improve data, and increase flexibility. Integrate predictive concept in log business
Combat Service Support-Training Simulation System	CSSTSS 1.5 is an exercise driver used to stimulate exercise play for the collective training of AC and RC commanders and staff personnel in command, control and coordination.
TWV Enhancements	Future distro concept w/tac wheeled veh with 2-way comm, and TAV using MTS and DVE. Re-routing.
Tactical Wheeled Veh (TWV) (PLS)	Truck, trailer, demountable flatracks on truck and trailer. Loads/unloads in 5 minutes thru load hand sys
Test for Dehumidification of Combat Vehicles	Concept is to demonstrate the benefits and cost savings of controlling humidity inside our armor vehicles
Paperless Procurement Work Directive (PWD) System	Reduce ALT by eliminating the printing of paper PWD & distro
Virtual Integrated Materiel Management Center (VIMMC)	

Initiative Name	Program Goals and Objectives
Wholesale Logistics Modernization Program (WLMP)	Mod Army wholesale log to meet current and future military requirement
Single Stock Fund (SSF)	Create efficient & effective log. and fin. process by streamlining operations
Lateral Redistribution	Reduce inventory improve readiness while effectively redistr assets
Tech/Progr Approach for SLS	ID info sys solutions used in commercial sector, assess relevance to Army; overlay to Army if appropriate
AI Application in Single Logistics Systems	Thru AI, develop predictive, semi-autonomous capability in SLS to capture, retrieve, fuse data.
Logistics Integrated Data Base	
Mobility-Enhancing Ration Comp	Nutrients for enhanced performance on/off battlefield
Integr High-Perf Engine Tech TD	Doubling of propulsion sys capability, 40% reduction in fuel consumption. Structures, materials, reliability.
Alternate Propulsion Sources TD	Advanced propulsion concepts beyond air-breather. Solar, flywheel, hybrid, hi-powered microwave
Electrical Power Generation STO	
On-Board Integr Diag Sys TD	Showcase platform to demonstrate advanced diagnostics and prognostics. Maintenance interface key.
Joint Logistics ACTD (Need)	
Real-Time Log Control ACTD	Technology applied to Focused Logistics concepts
Advanced Logistics Program TD	
Battlespace C2 ATD	C2 visualization; forecasting, planning, resource allocation; info transfer from low to higher echelons.
Trans Operational Pers Prop Std Sys	TOPS will automate and standardize manual, labor intensive, processes associated with the preparation distribution, maintenance and control of all documents related to personal property movement actions with emphasis on service, economy, and readiness.
Digital Battlefield Comm ATD	Exploit emerging commercial comms tech to spt multi-media comms in dynamic battlefield environment.
Rapid Battlefield Visualization TD	Generation, dissem, exploit of high-res digital terrain databases to provide 3D battlefield visualization
Future Combat Sys Integr Tech Demo TD	Integration of tank technologies. Electric and hybrid guns, electric armor, active suspension, protection.
Universal Transaction Comm TD	Ability to move info from anywhere in any form to wherever needed in whatever form needed.
Intra-Vehicle Electronics Suite TD	Electronic technologies for FSCS. User-friendly crew stations; soldier-machine interface.
Military Ops on Urban Terrain TD	Review of small-unit capabilities in MOUT. Survivability, engagement, modeling/simulation. Urban war.
Extended Service Progr, 2.5 Ton	Remanufacture of 2.5 ton cargo trucks with tech insertion of new components--less cost, longer life.
Heavy Equip Recov Cbt Util Lift Evac Sys	Formerly M88 IRV. Recovery of M1's--lift, tow, winch

Initiative Name	Program Goals and Objectives
Forward Repair System (Heavy)	PLS-chassis. On-site spt. Hand, power tools, TMDE, welding, cutting, generator, crane, air compressor
Improv Tox Agent Protect Suit (ITAP)	State-of-art integrated support sys to provide protect conducting chem ops...replaces 40-year-old system
Lightweight Disposable De-armer	Lightweight one-shot device to neutralize UXO
Auto Arms Room Sys (AARS)	Property accountability. 2-D bar codes on weapons
Defense Finance Battlefield Sys (DFBS)	Deployable finance/accounting support for tac ops/OOTW
Multi-Tech Auto Reader Card (MARC)	ID card device--electronic ID key and data carrier
Med NBC Def Acquisition Program	Chem antidotes, treatments, antiematics, radio-protectants, decontaminable litters, and other NBC-related products
Tech/Program Approach to SLS	ID industry solutions used in industry to solve info system rqmnts; assess for Army use, and current Army aprch
Log Process Dev and Prototyping	Provides log community capab to model log business processes in a virtual environment
Log Community Mgr - Army	Paralleling DoD log Community Mgr, act as conduit to provide Army data to Joint arena & implement SHADE in Army
Electronic Commerce	Demonstrate application of EC processes in Army logistics processes and coord Army EC efforts for integration
Outsourcing and Privatization	Develop strategy, processes, enablers to accommodate expanded use of O&P in SLS envisioned in RML
12 to 4 Distribution Pipelines	Explore ways to consolidate, streamline distro processes to support sustainment, reduced log footprint in A21/AAN
Global Objective Logistics Doctrine	Dev log doctrine incorporating tenets of distro-based, integrated SLS & inclusive of opnl levels and log areas
Integrated Logistics Policy	Establish centralized COE for integrated log policy develop
Global Privately-Owned Vehicle (POV) Contract	Improving quality of life for service members while supporting readiness by using ocean carriers participating in DoD Voluntary Intermodal Sealift Agreement (VISA)
Logistics Optimized Government Support (LOGS)	Achieve 30% reduction in personnel/organizational cost and a 20% increase in organ productivity. PM oversight of product support and DA QDR/PBG reduction
Re-engineering Personal Property Pilot Program	Obtain superior personal property services for our military service members' quality of life. Reduce admin. Burden on govern and industry adopt world class practices.
M109 Family of Vehicles (POV) Fleet Management	Establish the fleet manager as the single focal point for support to the fleet while maintaining greater than 90% operational readiness. Reduce order ship time to 24 hours for mission critical items.
Flexible Long Term Contracting	Reduce ALT and PLT. Serves a vehicle to enable tech insertion mod of spares
Golden Cargo 99	To redistribute munitions from BRAC location to Tier I facilities.
Golden Kastle 99	Provide training to Reserve Units and complete the applicable ASMP
ISM HET/ HEMTT Engine Conversion	We lowered unit conversion cost through competitive solicitation between the ISM

Initiative Name	Program Goals and Objectives
Innovative Logistics Decision Support Solution (ILDSS)	Improve efficiency and effectiveness of Logistics Manager through the insertion of technology which enhances the information environment, shortens the acquisition
Interservice Material Accounting and Control System	Goal of IMACS is to provide on-line access to DMISA information, including visibility of principal-owned assets while in the repair cycle. Objectives are increase asset visibility, minimize manual workload increase DMISA visibility.
Joint Ammunition Management Standard System	Will standardize logistics processes across the services utilizing process re-engineering and best practices
Lead Time Reduction	Reduce safety level and reorder cycle inventory by reducing lead times
Lithium Manganese Dioxide Pouch Batteries	Develop the production technologies needed to make pouch batteries cost eff.
Modernization Through Spares	Improve system sustainability, performance, and reduce ownership cost by inserting current, available technology
Shared Data Environment with Industry	
SMCA Business Process Improvement Initiative	Develop a system to provide and integrated automated environment to collect, retrieve, view and analyze data that resides in existing legacy and oracle database application necessary in the pricing, production, item management.
Value Concepts	
Dry Ice Shipment of Perishables Concept	Provides capability to operate Class I warehouse without leasing costly refrigerated vans for perishables. Provides for unit distribution of perishables to base camps/units.
Industrial Base Strategy (Mid Term Start)	Conduct sector/subsector studies to determine the effects of the Defense drawdown, budget cuts and reduced materiel requirements on the 12 critical industrial base sectors.
Network Encryption System (NES)	Provide cryptographic separation of classified from unclassified data, which allows for the unclassified CSS STAMIS to access the Secret High Tactical Packet Network (TPN).
Virtual Proving Ground	Allow for early testing through modeling and simulation. Significantly shorten and streamline the materiel acquisition/development process.
Army Global Command Control System	Army component of GCSS and ABCS. Complements, interfaces w/corps-and-below. Folds in CSSCS.
Global Combat Support System	End-to-end info interoperability across and between Cbt Spt functions and C2 functions of warfighter
Logistics Support Element Automated Planning Model	Provide LSE planner with responsive and flexible automated planning capability, leveraging knowledge based technology, in support of Joint and Army analysis
Rechargeable Batteries	Promote field use and acceptance of rechargeables by providing batteries through "free issue" and normal sale. Realize saving for field units and reduce on lithium.
Direct Vendor Delivery of Repair Parts Concept	An effort to reduce TM 10/20 maintenance costs during inactivations/other large volume maintenance actions through purchase of parts directly from vendors.

Initiative Name	Program Goals and Objectives
Logistics Civil Augmentation Program	Preplanned contractor support for CINC and MACOM commanders. To provide MACOM/CINCs with additional logistics options to meet engineering and logistic augmentation needs.
Measures and Standards of Performance	Provide an automated capability which captures the status of the current and cumulative Equipment Serviceability component of unit readiness in near-real time over the course of the 30-day reporting period.
Consolidated Life Cycle Support (LCCS)	
Integrated Booking System	Provide a single, worldwide, automated booking system to support the peacetime and wartime movement of unit and sustainment cargo in an efficient and timely manner and to support the new MTMC business practices associated with automated booking.
Integrated Computerized Deployment System	Demonstrate the applicability of distributed cooperative computing methodologies to logistics planning and, ship stows planning.
Distribution-Transportation-Based Log	Develop, prototype, implement supply & financial process required to achieve distro-transportation-based log sys
RF Tag (AIT)	Provide Inside the Box visibility within a distance of 300 feet. Enhance In-Transit visibility timeliness and accuracy reporting. Simplify supply receipt and issue procedures.