Special Feature

Oil is the lifeblood of war in our times. Without it a nation cannot fight. It is the basic munition. There is nothing else the deprivation of which would have so damaging an effect upon a country's prospect of achieving victory. The loss of it would mean, indeed, the certainty of defeat. However great the reserve of manpower and machine-power, however ample the armaments that have been amassed, a nation could not hope for victory if it lacked the oil-power without which its men, its machines, and armaments would be immobilized and powerless.

—James Molony Spaight, C.B., C.B.E., *The War of Oil*

Thinking about logistics

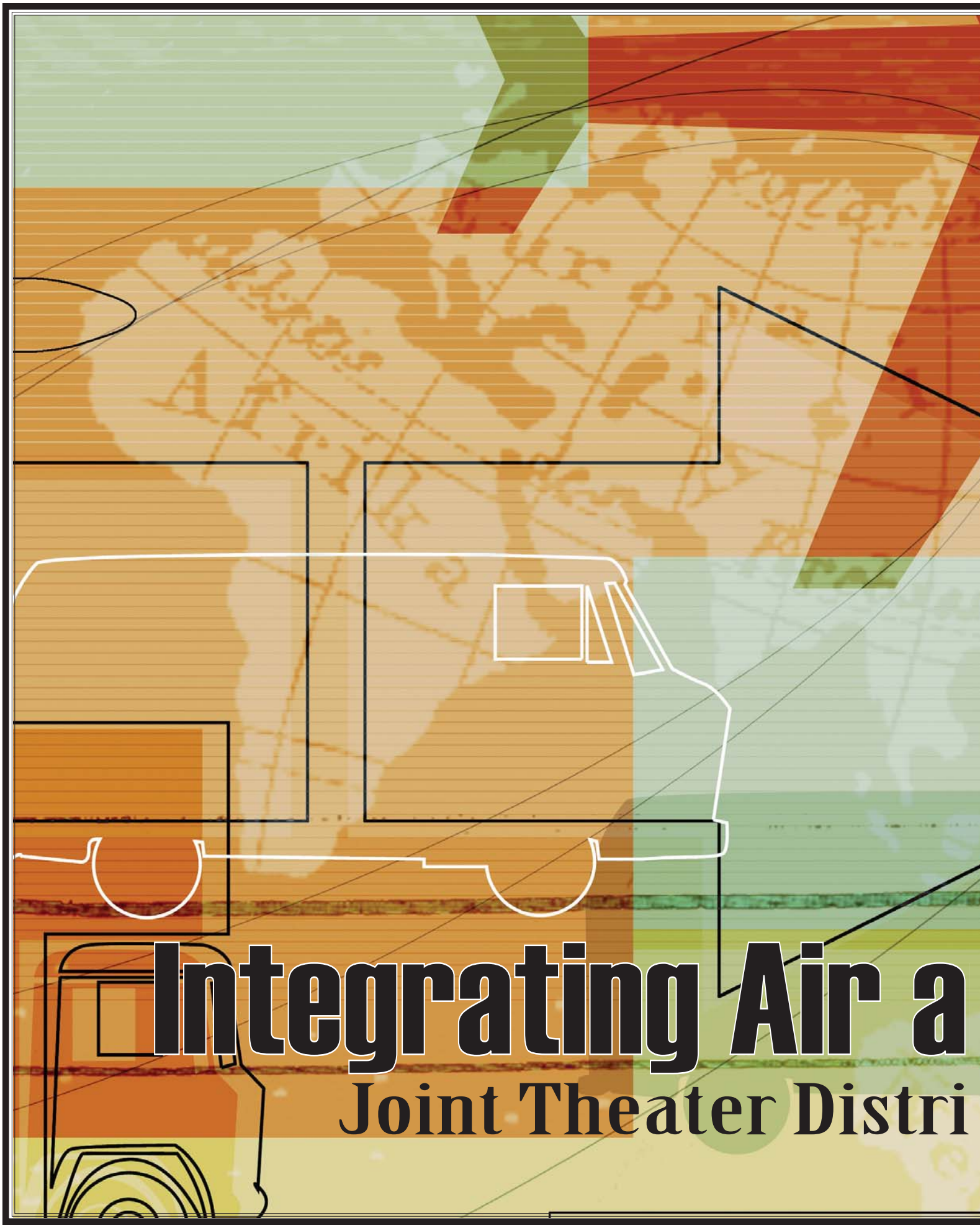
Air Force Munitions ISO Management: Logistics Enterprise for Containers
Strategic Energy Lessons: A Historical Perspective Applied to America's Source Issues
Integrating Air and Ground: Joint Theater Distribution System

This speial double edition of the Journal presents three featured articles: "Air Force Munitions ISO Management: Logistics Enterprise for Containers," "Strategic Energy Lessons: A Historical Perspective Applied to America's Source Issues," and "Integrating Air and Ground: Joint Theater Distribution System."

In "Air Force Munitions ISO Management: Logistics Enterprise for Containers," the author presents the results of an Air Force Logistics Management Agency (AFLMA) analysis comparing the use of the common commercial ISO (International Organization for Standardization) pool to total ownership of ISO containers to meet Air Force contingency munitions needs. This article documents the relevant background information, problem, objectives, methodology, research, and findings associated with this effort.

The second featured article investigates a past coal-to-liquids program (German efforts during WWII) to determine whether there are strategic lessons for the United States that can be applied to today's energy situation, seen particularly from the perspective of national security.

In the concluding article the authors make the case that a single command structure responsible for the movement control of the theater could better utilize available assets to meet mission requirements by selecting the mode that would be most effective for the mission.



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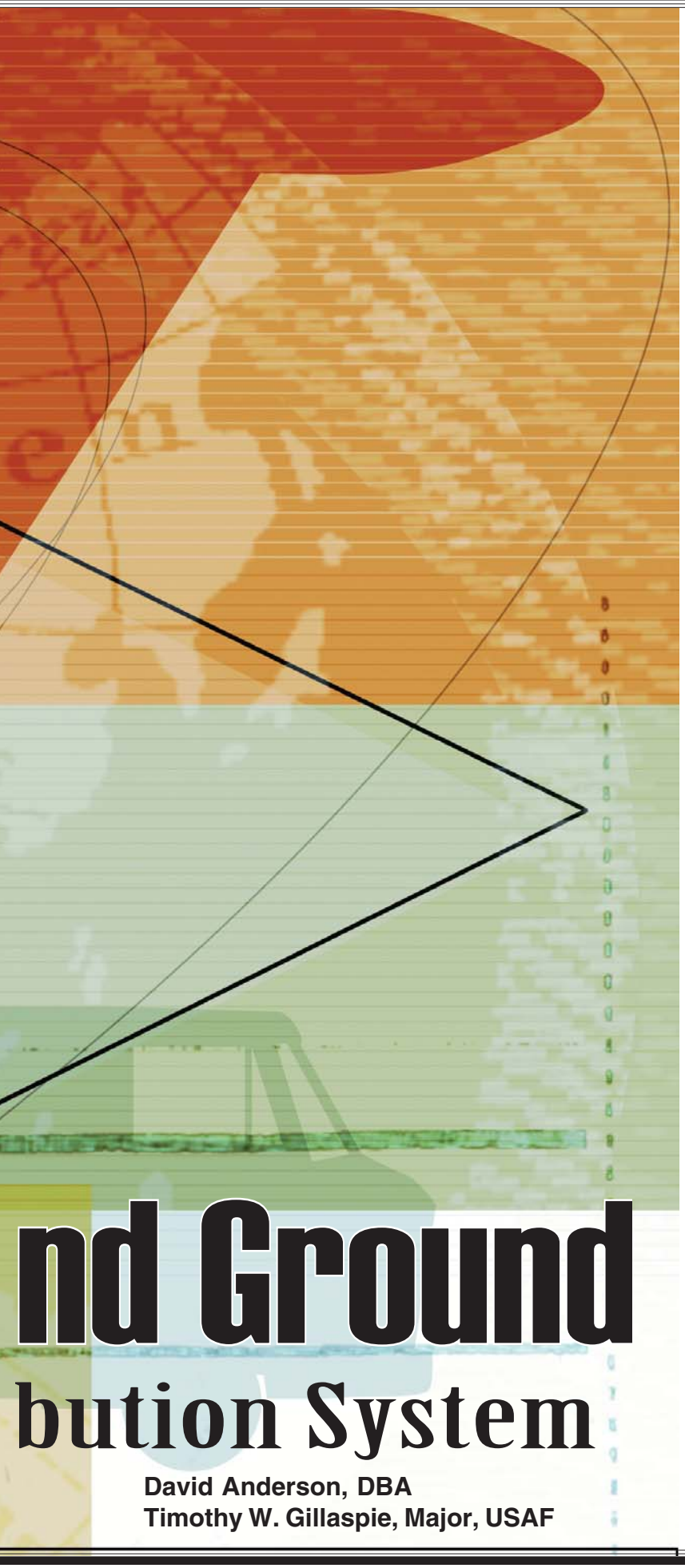

nd Ground
bution System

David Anderson, DBA
Timothy W. Gillaspie, Major, USAF

Introduction

Logistics is the lifeblood of all combat operations.

Lt Gen Henaidy, Royal Saudi Air Force

Special Feature

During the early phases of Operation Iraqi Freedom and Operation Enduring Freedom, the establishment of a multimodal distribution network was fraught with problems. The organizations required to establish the Joint theater distribution network did not exist or function as required in the case of the Joint Movement Center. Each Service established a portion of the network, but by itself did not establish the entire network. This division of labor caused seams in the Joint theater distribution network. These seams caused dramatic delays and variability in cargo and personnel delivery. V Corps had so many problems with transportation assets that the deputy commander personally approved the allocation of trucks daily. The origin of the delays was doctrine and organization centric: "Current logistics doctrine and systems do not support offensive operations across the distributed battle space."[1] Some doctrinal changes occurred in the following years, such as the creation of the Joint deployment distribution operations center (JDDOC); however, current theater organizations, information systems, and doctrine do not meet the requirements for a seamless Joint theater distribution system.

Our exhaustive research, which included a thorough review of existing distribution literature, multiple interviews, and analysis of air and ground movement data, highlight the magnitude of the problem. The reviewed literature identified a multitude of gaps in doctrine, organizations, and command and control between the Joint community and Services concerning management and execution of the distribution system, to include responsible parties and tasks. Interviews with individuals of varying ranks (captain through major general) who are engaged with theater distribution systems in multiple theaters also identified the seams created by organizations and doctrine. Their experience, coupled with analysis of movement data between locations with aerial ports in the Iraq theater of operations, further support the concept of a single command and control structure for the management of the distribution system.

Furthermore, the JDDOC, supported by Joint movement control battalions (MCB), should become the centerpiece for the management of the distribution system. The Services should retain execution responsibilities for their areas of expertise, but should make every effort to remove the need for ad hoc organizations. The ad hoc organizations typically have inadequate staffing as well as inadequate planning and assessment processes.[2]

The creation of a JDDOC for every combatant commander addresses the issue of coordinating

Article Highlights

Strategic airlift, now and for the foreseeable future, provides critical capabilities vital to our national interests. It is, therefore, incumbent upon the Air Force, and specifically Air Mobility Command, to work toward minimizing the amount of time our C-5s and C-17s remain broken within the airlift system.

A single command structure responsible for the movement control of the theater could better utilize available assets to meet mission requirements by selecting the mode that would be most effective for the mission. The data analysis indicated that a single Joint theater distribution, operating with true unity of effort in the management of the system, could meet the objectives of the Joint force commander—in this case, the reduction of the number of convoys conducted. For example, minimum requirements for the use of a C-130 prevent organizations from submitting cargo for air transportation, but a single organization responsible for mode selection could make decisions based on availability of all assets above echelon to use a C-130 for the movement of less than the normal requirement for use of a C-130. The single organization could also reroute cargo to an Army sherpa designated for above echelon support to meet the requirement. These decisions made by a single organization would require changes to the processes for management of the system.

Changes to the processes currently used for the management of the Joint theater distribution system need to occur. Analysis of the interviews concluded that a single or integrated information intertheater and intratheater movement; however, this organization does not address all of the issues associated with the distribution delays identified in after action reports and RAND research.[3] Current research has shown that gaps still exist between air and land components of the Joint theater distribution system. These gaps are not only organizational, but also technological. The information systems that exist today do not meet the needs of the Joint theater distribution system. We propose a plausible way ahead in closing the gaps and seams that exist in the information network and physical network of the Joint theater distribution system between air and land components.

Detailing the Problem

The literature addressing Joint theater distribution is extensive. It includes works on the establishment and processes of a distribution system, Joint and Service doctrine, research articles, after action reports, briefings on the shortfalls of the current execution of the Joint distribution system, the command, and control of Joint theater logistics, and optimization of a specific portion of the theater distribution system. Major works from organizations and authors such as RAND, the Government Accountability Office (GAO), Colonel Fontenot, in *On Point*, *V Corps as Multi-National Corps – Iraq,* and the Joint Chiefs of Staff in their *Joint Distribution Deployment Enterprise* concept paper; all identify problems with the distribution system. Of the many problems identified, several deal with the air and ground interaction. In-theater experiences and observations identified the largest seams in the theater distribution systems. The seams highlighted in the interviews were the air and surface theater boundary, lack of common systems for managing requirements and capabilities, managing of modes separately, the point of interaction between aerial ports and the movement control team (MCT) and arrival/departure airfield control group (A/DACG), and finally, the managing of priorities for movement. While the creation of the JDDOC addressed some of these problems, several other problems require attention. In *Mending a Seam: Joint Theater Logistics,* several historical examples outline the continuing problems with Joint theater distribution and the capability to get large quantities of material to the theater of operations, but an inability to move that material forward.[4] In 2003, the GAO issued a report describing Department of Defense (DoD) distribution in Operation Iraqi Freedom as inefficient and ineffective.[5] Of the multitude of problems identified in the report, United States Central Command (USCENTCOM), United States Transportation Command (USTRANSCOM), and Defense Logistics Agency could only provide fixes to a few, such as cargo arriving in-theater and requiring repackaging for forward movement. Pure pallets reduced repackaging by shipping complete pallets from the depot to the end user.[6] The GAO also identified the problems that DoD—and specifically USTRANSCOM—encountered with obtaining information systems that communicate with each other to provide intransit visibility (ITV) and asset visibility.[7]

Several authors address the systematic problem the DoD has continued to experience since the Korean War: the transition from intertheater lift to intratheater movement.[8] Inability to smoothly transition from intertheater to intratheater movement creates backlogs at ports and delays the arrival of badly needed

resources to frontline units. To improve some of these areas, the Joint community is working to update Joint distribution doctrine. The doctrine requires updating to capture the considerable changes to the Joint distribution system since early 2003. The draft update to Joint Publication 4-09, *Global Distribution*, incorporates changes such as the JDDOCs, located on the combatant commander's staff to replace the function of the Joint Movement Center. The capstone logistics doctrine, Joint Publication 4-0, update will reflect several of the changes as well.

Doctrine presents several ways for the geographic combatant commander (GCC) to support theater distribution. One way to support theater distribution would be for the GCC to direct the most capable Service to provide the required capabilities and assets.[9] Under this arrangement, the GCC usually delegates operational control (OPCON) of other Service assets to the most capable Service.[10] Joint Publication 4-01.3, *Joint Tactics, Techniques, and Procedures for Joint Theater Distribution,* identifies two positive aspects of the most capable Service concept as "it satisfies requirements at the lowest level possible, and it frees the geographic combatant commander to focus on theater-wide critical issues."[11] Unfortunately, using the most-capable-Service concept does not support a seamless distribution system. The arrangement creates disconnects between air and surface movement because the most capable Services are different. The Air Force provides the most capability to command and control airlift and the Army provides the most capability to command and control ground lift. In very few circumstances would this division not be the case. To create an integrated distribution system, Joint Publication 4-01.3 recommends assigning responsibility to the Joint Movement Center, recently replaced by the JDDOC.[12] The selection of the best method for supporting the Joint team is also difficult because the Services have different concepts of support.

The Services have major differences in concepts of support and the command and control of the support forces, which include the Air Force's concept of agile combat support, the Navy's Sea Based Logistics, and the Army's Modular Force Logistics Concept. These different concepts of support, infrastructure, and force structure that the Services have developed to support them ensure that any solution to distribution problems must address these organizational structures. For example, the design of brigade support battalions (BSB) and logistics readiness squadrons (LRS) supports only their assigned brigade or wing. The BSB or LRS requires significant increases in resources if a Joint force commander (JFC) plans to increase these units' responsibility for supporting other forces. Additionally, the brigade and wing commanders have trained and planned with OPCON of the BSB or LRS, so command and control of these units at the brigade and wing levels must remain intact to ensure effective combat operations.

According to Joint doctrine, the geographic combatant commander (GCC), Service component staffs, and Service component operational units are required to run the theater distribution system and must link together for the system to work.[13] The Air Force was designated the lead Service for common user airlift and the Army was designated the lead Service for common user ground transportation, but no Service has responsibility for integration of the two modes. The designation of USTRANSCOM as the distribution process owner (DPO) and the creation of the JDDOC were a starting point; however, an organization with command and control authority is needed to bridge the gap. The JDDOC derives its authority from the JFC as a part of his Joint

Article Highlights

technology system for the management of the distribution system, as a single process for requesting movement and monitoring available capability, would dramatically improve an integrated organization's capability to manage the distribution system. The ability to compare all available capabilities and all requirements immediately is key to making good mode decisions in the distribution system.

Distribution system management should occur under a single manager, when possible, to reduce the impact of the natural seams caused by switching between modes.

Article Acronyms

A/DACG – Arrival/Departure Airfield Control Group
AMD – Air Mobility Division
APOD – Aerial Port of Debarkation
BCS3 – Battle Command Sustainment Support System
BSB – Brigade Support Battalion
CJTF – Commander Joint Task Force
CTC – Cargo Transfer Company
DPO – Distribution Process Owner
ESC – Expeditionary Support Command
FWD – Forward
GAO – Government Accountability Office
GCC – Geographic Combatant Commander
IT – Information Technology
ITARS – Intratheater Airlift Request System
ITV – Intransit Visibility
JDDOC – Joint Deployment Distribution Operations Center
JFC – Joint Force Commander
JFSCC – Joint Force Support Component Commander
JOPES – Joint Operational Planning and Execution System
JTF – Joint Task Force
JTF-PO – Joint Task Force-Port Opening
MCB – Movement Control Battalion
MCT – Movement Control Team
TSC – Theater Sustainment Command
USA – United States Army
USCENTCOM – United States Central Command
USJFCOM – United States Joint Forces Command
USMC – United States Marine Corps
USPACOM – United States Pacific Command
USTRANSCOM United States Transportation Command

Logistics Directorate but does not have command authority over any forces. The Joint community created Joint Task Force-Port Opening (JTF-PO) to solve the initial short-term problem of opening a Joint theater distribution network. However, JTF-PO does not support beyond 60 days for the sustainment of the Joint theater distribution network.[14]

The most recent draft Joint publication on global distribution calls for an end-to-end distribution system run as a Joint enterprise with sufficient authority to control the flow of materiel and personnel through the distribution pipeline.[15] Currently, only portions of the distribution pipeline run as Joint enterprises. These sections are the ones controlled by USTRANSCOM. In a theater of operations below the Joint task force (JTF) staff level, there are no Joint organizations to reduce the seams in the theater distribution system. So even though the GCC has the authority to control the flow of materiel and personnel through the distribution system, the lack of operational coordination between air and surface components and integration of Service tactical distribution units hampers the GCC's ability to seamlessly control the flow.

Many of the problems with Joint theater logistics stems from the ad hoc nature of the organizations identified to coordinate and control Joint theater logistics.[16] Army and Joint doctrine recognize that ad hoc organizations are required for logistics to operate in a theater of operations. These ad hoc organizations operate at the operational and tactical levels. In Afghanistan, an ad hoc Joint logistics command managed logistics for forces in country.[17] Throughout the USCENTCOM area of responsibility, A/DACGs operate as ad hoc organizations according to Field Manual Interim 4-93.2.[18] There are multiple ad hoc organizations in the USCENTCOM area of operations. Besides the A/DACG, forces in Afghanistan operated with a Joint logistics command and Joint movement control battalion. In Iraq, a Joint distribution center managed the distribution processes. These ad hoc organizations suggest the requirement for standing Joint units to meet the ongoing and future requirements. The Joint force support component commander (JFSCC) concept attempts to address this ad hoc nature of organizations at the operational level.

US Joint Forces Command (USJFCOM) in their Joint Experiment Distribution system covers the Joint Force Support Component Command (JFSCC) and other organizational options. USJFCOM identified that a major push for strategic and operational commands occurred because of the Services' failure to address seams in the distribution system, but an equal push to address the seams at the tactical level has not occurred.[19] Additionally, the creation of the JFSCC does not resolve the central problem—lack of visibility of capabilities and requirements. Only changes to processes and information technology can correct these deficiencies completely.

The processes that are central to distribution occur in the multiple organizations. In general terms, the organizations can be described as execution units and management units. The execution units handle personnel and cargo as they move through the Joint theater distribution system. Most of these units participate in terminal or port operations, or are the airlift squadrons or truck companies executing the movement. Joint Publication 4-01.5 outlines terminal processes as follows:

> Terminal operations involve receiving, processing, and staging passengers. It also includes receiving, loading, transferring between modes, and discharging unit and nonunit equipment and cargo. The main activities executed at terminals are loading and unloading modes of transport, marshalling, manifesting, stow planning, and documenting movement through the terminal.[20]

The MCB and JDDOC are management units that integrate the actions of the execution units to smooth the flow of personnel and materiel in the theater distribution system. The processes that they execute are movement control and distribution management.

In the air to surface interface of the distribution system, terminals are the key nodes.[21] These key nodes, when linked by transportation modes with the right personnel, material-handling equipment, and ITV systems, are the transportation structure in the distribution system.[22] Changes in the mode of transportation create the most visible seams. Every time a passenger or cargo passes between modes of transportation, there is a seam in the transportation system.

The Service organizations create seams in the system at their intersection because of different chains of command. Besides the natural seams between Services, the relationship between organizations in the system creates seams. The interviews raised concerns about the separation between the modes of transportation and the division of responsibilities of the theater distribution system between Services. The command and control relationships that exist according to doctrine for the theater distribution system are different from the command and control relationships executed in the United States Pacific Command (USPACOM) and USCENTCOM.

USPACOM and USCENTCOM do not have any theater ground capability integrated into the JDDOC. All the responsibilities for the ground movement are located in the Army component command. Without the capability to execute complete movement control through all modes of transportation, the JDDOC's effectiveness is hampered with regard to management of the complete theater distribution system. For example, in USCENTCOM the Theater Sustainment Command (TSC) sets and executes the priorities for ground movement and the CENTCOM Deployment Distribution Operations Center sets and executes the priorities for air movement. While the JFC has overarching priorities, the day-to-day execution of these priorities is not linked through unity of command and effort due to the seam created by the division of organizational responsibilities for management of the theater distribution system. This division highlights the problem of using the most capable Service to manage only portions of the Joint theater distribution system.

Service organizations create seams as cargo or passengers pass between organizations from different Services. At the operational level, validated requirements pass between the Services and the JFC, and then back to the Services for execution of the requirement. Seams have developed because of different processes and systems being used for managing requirements and capabilities for a mode. A large seam occurs during the transfer between JTF-PO and the Service organizations that must execute the long-term mission. The limited period for the JTF-PO to provide support at the deployed location creates a problem for the GCC for operations that last longer than the JTF-PO deployment period. The follow-on organizations do not fall under the same chain of command as the JTF-PO and are not

integrated into a single organization with a single command. For example the command and control for the Joint aerial port complex, which under JTF-PO has a single commander, reverts to a two-command system, as highlighted in Joint doctrine. The divided command and control for an aerial port of embarkation starts with the Air Force component having responsibility for the ready line and loading ramp area, the Air Force and United States Marine Corps (USMC) or United States Army (USA) components sharing responsibility for the call forward area, and the USMC or USA components operating the alert holding area and marshalling areas.[23] For an aerial port of debarkation (APOD), the Air Force operates the off-loading ramp area. The holding area responsibilities are split between Air Force forces and USMC or USA forces. The USMC and USA forces control the marshalling area. Doctrine acknowledges the difficulty of operating in this two-command system in a single process.[24] The USMC and USA further complicate the process by making one of the key organizations, the A/DACG, an ad hoc organization. Army doctrine, while highlighting the ad hoc nature of the A/DACG organization, does state that the organization should be composed of cargo transfer company personnel.[25]

To bridge the natural seams that exist in any distribution system, the Joint community and Services developed several organizations. The multitude of organizations created overlaps the command and control issues. For the Joint theater distribution to meet the objectives of the JFC, the organizations that manage and execute the system must provide the capability to coordinate and synchronize the multiple facets of the system with unity of effort. Most of the overlaps in capabilities exist so each Service does not have to depend on another Service to provide the common user logistics capability. The overlaps between the various organizations with the capability to provide common user support indicate areas where possible integration of units may exist. The integration could be in the form of training, organization, operating instructions, or doctrine. The TSC and JDDOC have overlap in roles and responsibilities as defined by their concepts. The major area of overlap is the capability to coordinate with USTRANSCOM representatives and integrate distribution across the modes of transportation. The overlap of responsibilities has created different documents for requesting transportation support.

The current processes reflected in the transportation request process and command and control are not conducive to supporting the principles of theater distribution—specifically, centralized management and continuous, seamless, two-way flow of resources. There are multiple systems used to identify movement requirements with the Services using multiple processes to identify the movement requirements. The Air Movement Request, Transportation Movement Request, and Joint Movement Request are one set of processes for supporting the identification of requirements. In addition to using multiple systems to identify movement requirements, the Services and Joint community use multiple systems to identify the movement capabilities available. These multiple systems create a lack of integration in the management of movement requests as identified in our interviews. In general, the idea of combining the multiple forms into a single process received positive responses from the interviewees. To highlight the utility of the single requirements system, the interview responses reflected a desire for a single ticket process for the shipper. The single ticket process allows cargo or passengers to receive end-to-end scheduling of transportation without the need for additional transportation requests as modes of transportation change. The capability for intermodal management was a primary reason identified for combining the forms. Additionally, the interviewees agreed that the capability to receive a requirement and centrally manage the best mode for that movement was highly beneficial. However, most felt that without the single process owner merging the request forms, they would be ineffective because of the lack of command and control for the requirements.

All ten of the general officers and colonels interviewed supported the management of requirements by one theater organization. They felt consolidation was a positive development for the theater distribution, which, given the proper information technology (IT) capability and a well-defined command and control structure, could be successful. The major concerns expressed were as follows.

- Maintaining the capability of the tactical commander to weigh efforts for lift assets above the echelon supporting his unit
- Lack of IT to make the organization successful
- The ability of Services to maintain assets for their internal support

Data analysis confirmed that the creation of a single structure for the management of requirements, combined with a reduction in the multiple processes and information systems (which hamper the effective and efficient use of the distribution system) could greatly improve the performance of the Joint theater distribution system.

The data analysis further supports that a single organization, given the correct responsibilities and tools, can improve the management of the theater distribution system to meet mission requirements. A comparison of movement data for city pairs during the first 20 days in August 2006 and August 2007 gave a basic picture of a change the MCB made with the handling of cargo for movement between locations in Iraq. A city pair was a match between a mode originating location and a mode destination. Changes made between 2006 and 2007 created a more integrated system to take advantage of space available on aircraft moving between locations in Iraq. One notable change included air marshalling yards controlled by MCTs for cargo that had a long lead time for its required delivery data, and could move via air or ground.[26] This change allowed the MCTs to pick the best way to move the cargo based on requirement, threat, and available assets. While not an entirely Joint approach, the MCTs could not have started this process without the support of the Air Force aerial ports. This change in the handling of cargo played a role in the reduction of air and ground missions in Iraq 1 year later. The reduction occurred even with an increase in the number of combat troops by at least 21,000 in 2007 over 2006,[27] and the number of locations with air missions increasing from 20 locations in 2006 to 23 locations in 2007.

The management of the different modes of transportation in the distribution system by different organizations, tied with the lack of a common IT system to gather and share requirements and capabilities, proved to be the largest seams in the distribution system. In addition to the divided management of requirements

and capabilities, the interviews raised concerns about divided execution at the seams between Service organizations such as the aerial port and A/DACG. The interview responses showed concern with the integration of the distribution system between modes and organizations. They felt the entire system lacked personnel with the required training so prioritization within the system was a problem. The lack of training and poor visibility of the requirements and capabilities in the system also prevented the echeloning of capability to allow for a prioritization and tasking at lower levels. Additionally, the interviewee felt that the lack of training for personnel executing the distribution created a large negative impact on the system and the modes of the distribution system. The individuals were unable to execute the system effectively and efficiently because they did not have the knowledge required to do so.

The following conclusions and recommendations were derived from literature review, interviews, and data analysis. They provide one path to improved performance of the distribution system. One item of interest from the responses received is the lack of a common understanding of what comprises the theater distribution system. This problem highlights the need for increased Joint training on the operation of the Joint theater distribution system starting at the lowest levels.

Conclusions

The normal seams that one would expect to find were identified by the literature review and the interview analysis. These traditional seams included locations where cargo or personnel change modes of transportation, and at the organizations that operate these nodes in the distribution system. The interviews and literature also identified additional seams at areas where information systems do not exchange data. Finally, the exchange between intertheater and intratheater transportation management and execution created the most significant seam in the distribution system because of cargo and personnel change modes, information systems, and organizational management. Doctrine provided additional insights into the Joint theater distribution system.

Doctrine provides a wide range of views on the organization and management of the Joint theater distribution system. Joint doctrine provides an overarching view of the strategic, GCC, and the JTF levels of command and management for the Joint theater distribution system. However, portions of the operational, and most of the tactical, levels of the theater distribution system are divided by Service doctrine. The division inhibits the capability of the system to operate seamlessly by creating gaps between tactical and operational level distribution perception and operation. This is especially troublesome when a Service makes assumptions about the capability of another Service to support a multimodal location such as an aerial port. Movement control doctrine in general does not address how the various forces work together to bridge the seams.

After action reports, RAND, doctrine, and interviews provided detailed insight into the organizations of the current distribution system. These sources identified that the integration of the organizations in the theater distribution system must occur. Additionally, they provided multiple views on how the integration should occur at the operational level of logistics, ranging from a single JFSCC to executing doctrine as written for the JDDOC. At the tactical level, these same sources suggest integration of the organizations that operate multimodal hubs at the Joint aerial port complex and Joint Theater Distribution Center. Some authors suggested an increase in Joint training of the current organizations that operate in those environments and the merging of the Service organizations into Joint organizations to decrease the size of the seam that occurs between air and ground at these points in the distribution system. The Services have integrated their internal distribution systems, whether it is the TSC Distribution Management Center, the Air Force's LRS or Global Logistics Support Center, or USMC's Marine Logistics Group. The strength of these units to respond and provide logistics support for both their own Services and a common user logistics environment show the strength of integrated logistics. Our analysis showed the Joint community beyond the DPO has failed to integrate Joint theater distribution under a single commander or organization. The distribution system management should occur under a single manager, when possible, to reduce the impact of the natural seams caused by switching between modes.

A single command structure responsible for the movement control of the theater could better utilize available assets to meet mission requirements by selecting the mode that would be most effective for the mission. The data analysis indicated that a single Joint theater distribution, operating with true unity of effort in the management of the system, could meet the objectives of the JFC—in this case, the reduction of the number of convoys conducted. For example, minimum requirements for the use of a C-130 prevent organizations from submitting cargo for air transportation, but a single organization responsible for mode selection could make decisions based on availability of all assets above echelon to use a C-130 for the movement of less than the normal requirement for use of a C-130. The single organization could also reroute cargo to an Army sherpa designated for above echelon support to meet the requirement. These decisions made by a single organization would require changes to the processes for management of the system.

Changes to the processes currently used for the management of the Joint theater distribution system need to occur. Analysis of the interviews concluded that a single or integrated IT system for the management of the distribution system, as a single process for requesting movement and monitoring available capability, would dramatically improve an integrated organization's capability to manage the distribution system. The ability to compare all available capabilities and all requirements immediately is key to making good mode decisions in the distribution system. The work USTRANSCOM is conducting on information systems, if supported by the Services, could quickly fix the asset visibility problems.

Recommendations

A single organization responsible for consolidating requirements and committing the Services' capabilities in accordance with Joint doctrine organizations (such as the Joint movement control center) would increase the flexibility of the GCC and JTF commanders to meet movement requirements with the best mode of transportation. The JDDOC provides the capability to execute this organization, if Army personnel dealing with ground

transportation requirements are assigned to the surface cell of the JDDOC. The requirement for a forward JDDOC element stationed with the JTF could meet the need for an organization familiar with local requirements to validate, prioritize, and forward requirements to the Service for execution. The forward element would coordinate all intratheater movement requirements, with the main JDDOC responsible for integration of intertheater movement within the theater distribution system.

Consolidation of cargo yards for ground and air distribution would allow maximum flexibility for transfer between modes and a single authority controlling mode selection ensures the most effective and efficient use of available transportation assets based on the priority of the JFC. Instead of cargo being placed in the aerial port marshalling yard, or in the ground marshalling yard, the cargo should be placed in a general marshalling yard until the mode is decided based on availability of resources, priority, threat, and timing, and then moved to the correct mode for final preparation and Joint inspection. These yards should be collocated for enhanced communication between mode operators.

Management, Organizational, and Process Changes

The organizational structure and division of responsibilities recommended below are in agreement with RAND's most recent publication dealing with the Joint multimodal distribution system.[28] The JDDOC provides the capability necessary to manage the theater distribution system, if properly staffed and resourced according to doctrine. The TSC must give up its capability to manage ground requirements to the JDDOC so that the management of all modes of transportation in the distribution system can be integrated across all Services and at all levels. To integrate across all levels, the JDDOC must utilize the JDDOC forward (FWD) capability to support JTFs for the GCC.

The JDDOC should also change from a center to a command organization for the management of the requirements in a theater distribution system. To provide capability to the lowest levels, MCBs should be assigned to the JDDOC. MCBs provide the management capability required to manage the theater distribution system if they become Joint organizations. Our research has shown that in the current conflict, many MCBs have Air Force liaison officers embedded within the organizations. Instead of making this organization an ad hoc organization, the MCBs should re-flag as Joint organizations and transfer from Army ownership to direct reporting units to the JDDOC at USTRANSCOM. The units should remain at their current home stations for training purposes and for development of the necessary relationships with Expeditionary Support Command (ESC) and sustainment brigades. Additionally, the command relationship with units deployed in an MCB's area of operations should be one of direct support, the same relationship that exists today. MCBs, when deployed, should receive operational command and control from the JDDOC FWD, providing theater management capability from top to the bottom. Each MCB should provide direct support to an ESC or sustainment brigade, depending on the size of the deployment. The MCT relationship should remain as it is today. This organizational structure provides an honest broker capability at all echelons of distribution. The MCBs can maintain their current structure with the addition of Joint personnel with specific Service capabilities for the management of the system. Figure 1 outlines the organizational relationship for the management and execution of the Joint theater distribution. There would be no change in the command relationships for Army organizations as identified in current doctrine and organizational relationships. This figure also represents the execution side of the theater distribution system with the TSC, ESC, and sustainment brigades. These organizations have the responsibility to execute the identified transportation requirements in coordination with the management portion of the theater distribution system.

The Air Force command relationships identified in Figure 1 show no change from current doctrine. The Air Force forces component has OPCON over all assigned Air Force forces and the Joint force air component commander (JFACC) has tactical control (TACON) over those forces provided. The air mobility division (AMD) as the JFACC's airlift controlling authority has a TACON relationship with the air terminal operations center through the layers of command. The Air Force command relationships are for the air execution portion of the distribution system.

The recommendations for changes in the Joint theater distribution system are to the management organizations and their command relationships with each other, and with the execution portion of the theater distribution system. The change of the MCB to a Joint organization assigned in an OPCON relationship with the JDDOC creates a single organization for the management of the theater distribution system at the operational and tactical levels of command. In addition to this change, the TSC and AMD should have direct support relationships with the JDDOC. The JDDOC, through the MCBs and MCTs, should have direct support relationships to the various levels of the execution portion of the distribution system. The direct support relationship of the TSC and AMD to the JDDOC allows the JDDOC to provide management of the execution of the movement requirements and priorities. The JDDOC, as a command organization, must reorganize its structure from a mode driven structure to an operational structure with a current and future operations cell. The manpower for the Joint manning document of the organization exists currently with the exception of the theater ground piece. These manpower billets currently reside in the TSC and ESC. The management portion of these billets (those that handle requirements, allocation, and commitment) should be moved to the JDDOC with the TSC and ESC retaining the billets to execute the ground transportation system. The JDDOC FWD provides the commander Joint task force (CJTF) a direct element into the Joint theater distribution system. The JDDOC FWD, while assigned to the JDDOC, provides direct support to the CJTF. The JDDOC FWD also has OPCON over MCBs assigned in its area of responsibility. The JDDOC retains its current alignment assigned to the GCC. Figure 1 outlines these command relationships.

The removal of the theater designation of what can and cannot move via air would give the flexibility to the movement control organization to use all the modes of transportation available to meet the JFC priorities. The processes necessary for the management of the movement control system at all levels include properly identifying requirements and providing visibility on modal decisions to all organizational levels.

An overarching description of the proposed request and execution systems provides insights into the streamlined nature

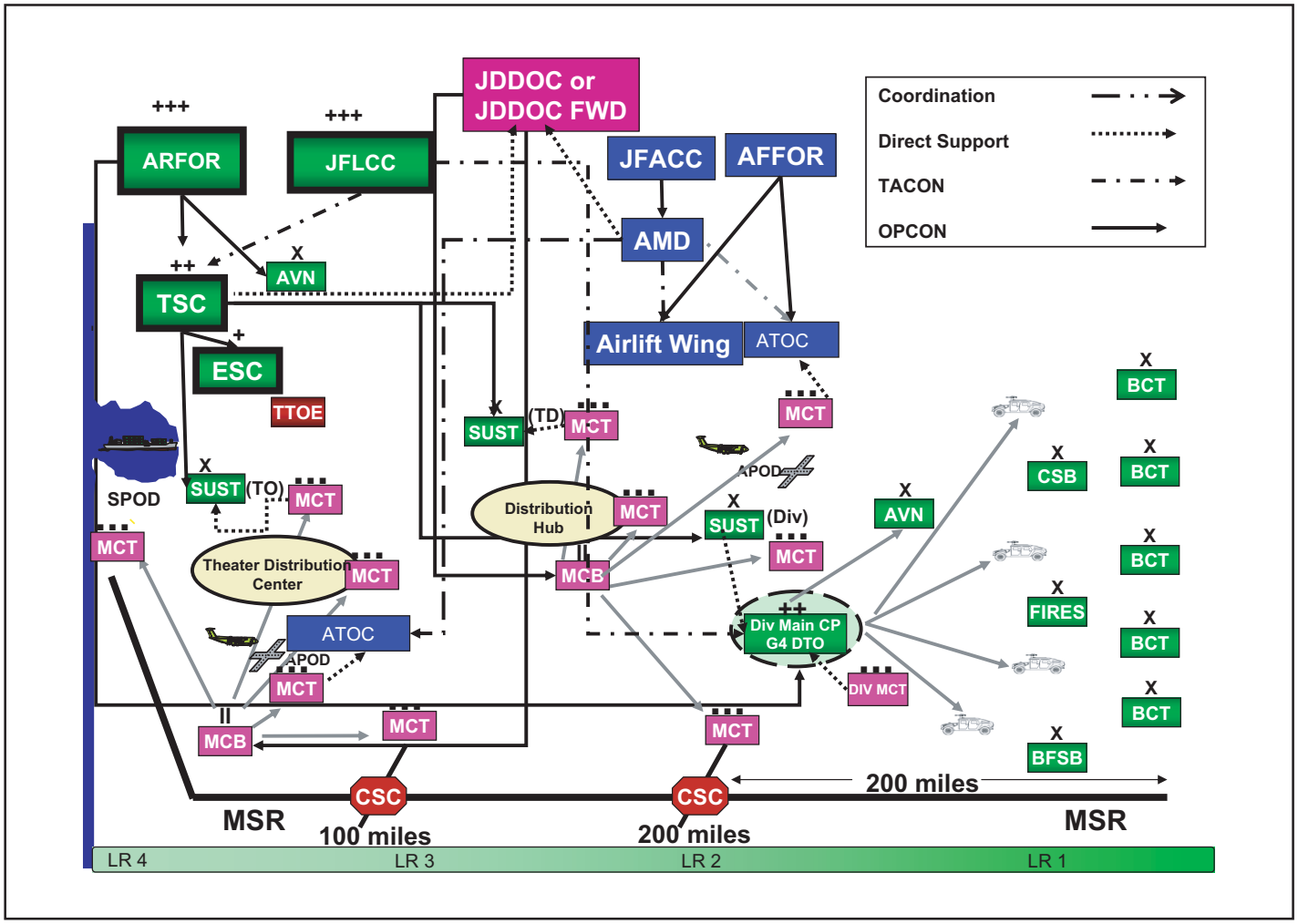

Figure 1. Recommended Organizational Relationships[29]

required to operate a Joint theater distribution system. Starting at the beginning with requirements definition outside of division capabilities (lower right of Figure 2), the division staff coordinates its movement requirements with the Corps Staff in the event that the division MCT does not have the assets available to it for commitment. The MCT forwards the request to the area MCT, normally collocated with a sustainment brigade, for support. The MCT with a support relationship to the sustainment brigade has the ability to commit its transportation assets and provide support to other MCTs in its area of operation. Requests for transportation that are above the MCT's capacity should be forwarded to the MCB for routing to other MCTs for support, or forwarded to the JDDOC FWD. At the division level, the aviation unit assigned to the division can identify assets for the division MCT to commit for movement requests. MCTs can also push cargo to Army aviation units for movement on previously scheduled airlift missions or regularly scheduled lift missions (channel missions) for space available movements. For successful use of channel missions, the MCTs require visibility over all cargo requiring movement at the aerial port so the Joint MCT can better prioritize all cargo for air movement—not just Army cargo.

One area not represented in the figure is the continuous coordination between MCTs. Movement requirements are not all met with formal movement requests, as shown in Figure 2. Some requirements are met by pushing smaller amounts of cargo to a port or terminal for movement on air channel missions or on a space available basis.

Above the division level, the Army Forces Component may designate some aviation assets to support the distribution system. The JDDOC FWD should have responsibility for managing these resources in the same manner as Air Force lift assets. If an MCB cannot support a request from one of its MCTs, the request moves to the JDDOC FWD. The JDDOC FWD reviews and validates the request and forwards the request to the appropriate mode for execution through either the AMD or the ESC. If the JDDOC FWD does not have the assets available for commitment, the request is forwarded to the JDDOC. If the JDDOC determines that ground movement will best support the requirement, the commitment is sent to the TSC. If it determines that airlift best supports the requirement, the commitment is sent to the AMD or to USTRANSCOM for support.

With the management of the request process conducted by a single command and control structure with Joint capabilities, the Services can concentrate on meeting the requirements given to them to execute. Additionally, the parochial concerns of the Services about the fairness of a system managed by one Service or another can be overcome. The changes also ensure that the tactical units are able to influence the Joint theater distribution system to the level they require to meet their requirements, as

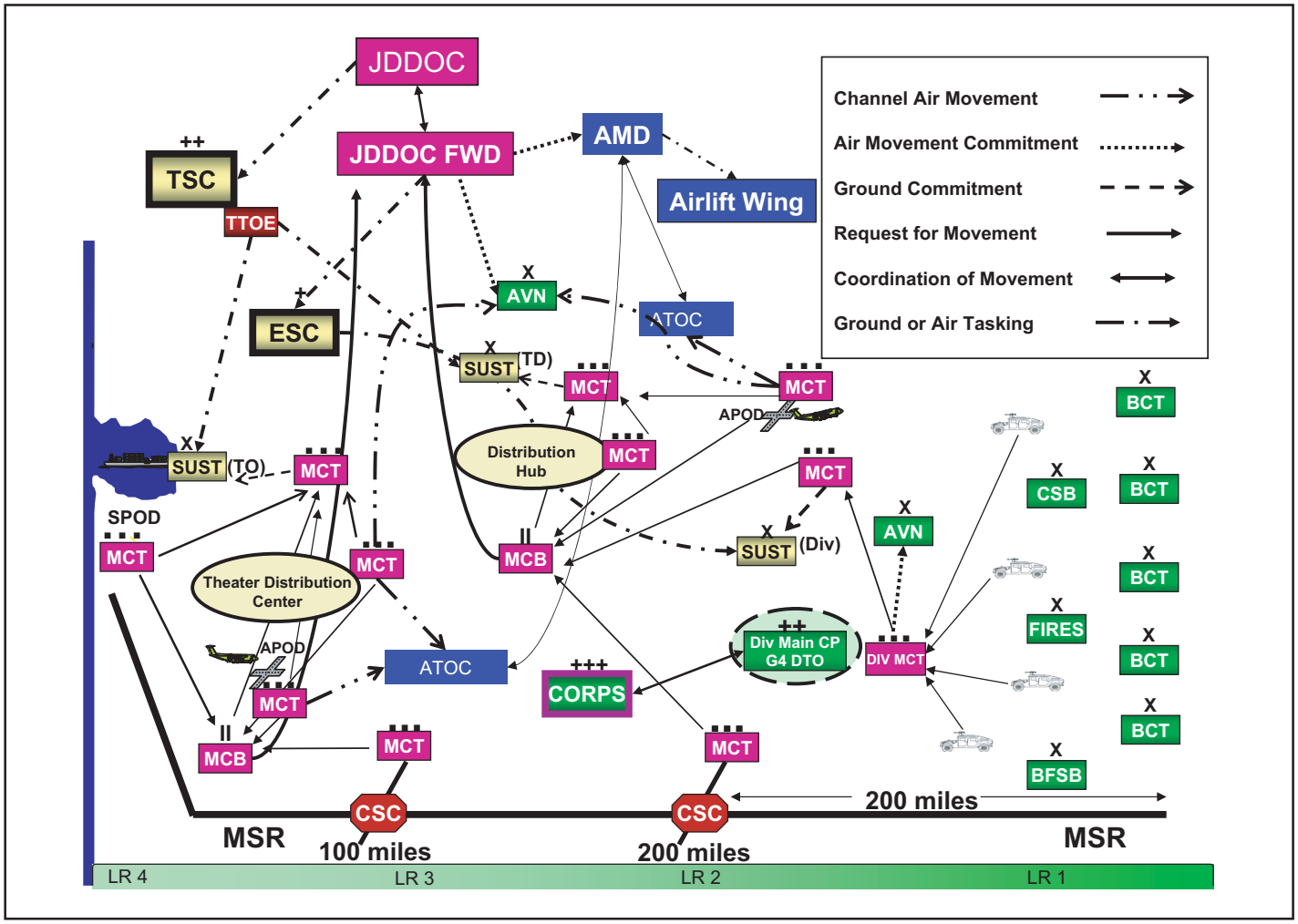

Figure 2. Recommended Joint Movement Request Process[30]

well as the GCC and JTF priorities. The current system's failure to address the tactical commander's concern for airlift due to GCC imposed priorities and limited tactical level system management capabilities creates friction between tactical and operational objectives. Placing management of the system under a single chain of command for unity of effort—with well-defined support relationships of that management system—addresses these concerns.

Execution, Organization, and Process Change

The execution organizations from the Services require little change, with the exception of the Joint aerial port complex. To improve the flow of cargo through the Joint aerial port complex, the A/DACG must cease to be an ad hoc organization. The Army must assign this responsibility to one of the cargo transfer company's platoons or entire cargo transfer companies (CTC), as necessary. To improve execution of the system, these CTCs should be collocated and teamed with Air Force units for training purposes at locations such as McChord Air Force Base and Ft Lewis, Washington. In addition, the Joint movement control teams should be further integrated into the training of the Joint aerial port complex so a single set of instructions can be developed for the execution of aerial port activities and reduce the seam created by personnel in an ad hoc organization unfamiliar with the aerial port system.

The Joint community should seek to link existing aerial port squadrons and logistics readiness squadrons with existing movement control battalions and cargo transfer companies for training and experience exchange, especially at locations with collocated Army and Air Force units. This enhanced training would greatly increase the capability of units to function as a team in-theater when they move to replace JTF-PO for sustainment operations at the APOD or intratheater terminals and increase the number of units capable of providing JTF-PO type functions. If Services are unwilling to integrate training and positioning of forces as ready tailored teams to meet the needs of the GCC, the Air Force should explore training the Air Force Traffic Management career field personnel to carry out the MCT port clearing duties. The training of traffic management airmen to execute these responsibilities would create a team capable of meeting the need to integrate theater ground and air within a single tactical organization at the aerial port.

Information Technology Systems

USTRANSCOM's Theater Enterprise Deployment Distribution project identifies the gaps in IT systems. This USTRANSCOM project must be successful at providing one-stop shopping for the planner to see all requirements and all capabilities including ITV to allow for dynamic rerouting of theater capabilities and requirements. The effort should consolidate the Intratheater Airlift Request System (ITARS), Global Air Transportation

Execution System (GATES), Cargo Movement Operations System (CMOS), Transportation Coordinator's Automated Information for Movement System II, Battle Command Sustainment Support System (BCS3), and Transportation Logistics (TRANSLOG) Web data to provide complete requirements to the distribution planner and user. While not discussed in detail in this article (because it often involves intertheater movement), the data for movement requirements from the Joint Operational Planning and Execution System (JOPES) should be incorporated into the system, because the deployment and redeployment of forces places large requirements on theater distribution. The combined system should also pull the data from JOPES for deployment and redeployment requirements. Additionally, ITV systems for ground (MCT, BCS3) and air must be incorporated into the structure. In the short term, the combining of ITARS and TRANSLOG Web to create a single system for requesting lift would increase visibility of all requirements and aid in the management of the current organizational structures.

The ad hoc nature of the processes and organizations in current doctrine and theater distribution—mainly along Service lines—creates a less than seamless theater distribution system. The result of failing to improve the theater distribution processes is the continued poor effectiveness and efficiency experienced during Operation Enduring Freedom and Operation Iraqi Freedom. The Services must overcome their parochialism toward Service capabilities and integrate these capabilities through information systems and integrated management of the system.

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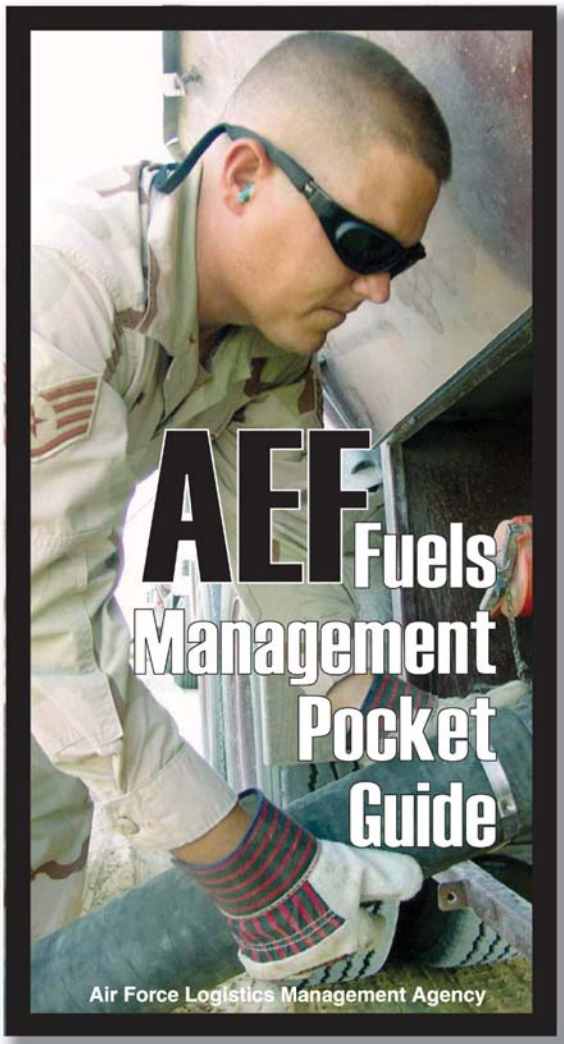

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