



**The United States Army
Concept Capability Plan for**

Logistics Command and Control

**for the
Future Modular Force**

2015-2024

Version 1.0

23 March 2009



Foreword

From the Director U.S. Army Capabilities Integration Center

“Command and Control (C2) is first and foremost a human endeavor. It is leader centric and network enabled, reflecting the commanders’ decision making ability and staff recommendations. While materiel solutions, processes, and engineering can enable decision making, command and control is not synonymous with network operations or the employment of advanced technology, rather it maintains the ability to exploit both.”

GEN J.N. Mattis, Commander, USJFCOM

Evolving joint and Army concepts indicate that the future Modular Force will operate as part of a joint or coalition force. Future forces will operate across the spectrum of conflict on a global battlefield involving simultaneous regionally focused operations. Agile and adaptive forces that may deploy rapidly, often from strategic distances, to austere locations, will prosecute these operations. Once deployed, they may be required to commence operations immediately upon arrival. Such dynamic and complex operations present challenges for those required to sustain the future Modular Force. Providing effective distribution operations in support of the future Modular Force will be a key challenge.

The TRADOC Pamphlet (Pam) 525-7-18, *U.S. Army Concept Capability Plan for Logistics Command and Control for the Future Modular Force* outlines logistics command and control (C2) operations in support of the future Modular Force. TRADOC Pam 525-7-18 identifies the capabilities required to support Army logistics C2 during the 2015-2024 timeframe. This concept capability plan (CCP) describes how Army logistic forces will leverage and synchronize current and emerging Service, joint, interagency, commercial, and multinational capabilities to provide rapid and precise logistics C2 to the point of need. The capabilities identified in the CCP provide a coherent means of examining potential doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) solutions. This CCP will serve as the basis for a comprehensive capabilities based assessment involving many different proponents.

In examining the future logistics C2 requirements and capabilities of the Army, the CCP describes the joint operational environment and the potential enemy threat. This CCP describes how the Army will position itself to realize the maximum benefit from partner capabilities; it identifies emerging technologies that offer potential benefits to C2. It also explains the need for improved C2 networks. It recognizes the criticality of collaborative planning and monitoring between supported and supporting organizations and the need for agile and adaptive forces. This will ensure that the intent of the joint force commander is met and the needs of units satisfied in a timely manner. The CCP acknowledges that logistics C2 has a substantial joint dimension and therefore draws from the relevant joint concepts. This CCP has applicability to many joint and Army functional areas and I recommend it to you when engaging other Services, joint organizations, and other proponents.


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Executive Summary

Introduction

TRADOC Pam 525-7-18 defines the capabilities and provides the required detail to initiate a logistics C2 -focused capabilities based assessment (CBA), if necessary, within the Joint Capabilities Integration and Development System. A logistics C2 CBA will identify DOTMLPF solutions or solution sets for a concept focused on the strategic, operational, and tactical application of integrated logistics C2 capabilities required to conduct full spectrum operations during the 2015-2024 timeframe. Logistics C2 is not a unique requirement, but rather an integral part of the Army's overall battle command domain. This CCP is derived from approved and draft documents addressing the Army's future Modular Force, and also addresses requirements specified in the Army Future Combat Systems Operational and Organizational Plan, the Army's LandWarNet Concept of Operations, and emerging joint and Army concepts relevant to Department of Defense (DOD) and Army transformation.

Purpose

TRADOC Pam 525-7-18 concentrates on the growing importance and dependence of Army operations on logistics systems. This includes logistics C2 functions, processes, and information. Logistics C2 is an integral part of the overall Army battle command system of the future. As such, it must interoperate seamlessly with the other functions of this overall system. This CCP is intended to focus the Army efforts to exploit the advances in information technology. It describes the required logistics C2 enabled capabilities needed to realize the objectives of joint and Army concepts. TRADOC Pam 525-7-18 presents capabilities that enable the effective application of logistics C2 assets. It depicts these capabilities across the full spectrum of conflict in an interdependent, joint, interagency, intergovernmental and multinational (JIIM) environment. It describes how Army forces integrate JIIM logistics resources and assets. This CCP is not an end unto itself but rather the foundation for change. In addition, Logistics C2 capabilities will enable preparation for and conduct of testing and training functions essential to the readiness of the future Modular Force.

Scope

Logistics C2 capabilities support all Army organizations in the conduct of full spectrum operations as a key part of overall Army battle command. When directed, logistics C2 capabilities may also support other Services, joint, and nonmilitary organizations. The Army recognizes the fact that joint interdependence is essential for the conduct of all Army logistics operations. This interdependence and complexity extends beyond the traditional DOD capabilities to include organizations such as the Department of State, the Department of Homeland Security, host nations, and multinational partners. It is critical that the subject matter expertise, roles, and unique capabilities that each Service, agency, and nation provides be leveraged in the conduct of future Modular Force operations.

Military Problem

a. This CCP addresses the lack of timely, accurate information that enables the maneuver and logistics commands to synchronize decision cycles. Complicating this problem is the Army's inability to provide total visibility of assets and logistics requirements to feed situational awareness and understanding that enables effective C2. The demands of the future Modular Force will significantly increase the reliance of the Army on members of the joint supply chain as well as traditional tactical and operational supporting echelons. This will drive the Army to create a unified, fully integrated logistics C2 capability among the DOD, Army, and joint C2 systems. Add to this the complexity of Executive Agency coordination between interdependent services, interagency, multinational partners, host nation support, and the high operational tempo and agility required of the future Modular Force and the issues become apparent. These requirements, when matched to current DOTMLPF capabilities, reveal a gap. This gap inhibits C2 of logistics assets and produces a sub-optimal logistics C2 capability that is not integrated with the decision and execution cycles of the maneuver commanders at the operational and tactical levels.

b. The current modular force logistics systems are not able to contribute actionable information synchronized within the decision cycle of the maneuver commander as demonstrated by current operations in Operation Iraqi Freedom and Operation Enduring Freedom. Complicating this is interagency and multinational coordination. Further, the current modular force does not possess the information systems, sensor technologies, staff structure, and tactics, techniques, and procedures that enable it to support the operational tempo of future operations. In 2015, a unified and integrated logistics C2 capability, aided with advanced communications, data warehouse tool suites, and decision support tools, will enable the Army service component command to close the gap between decision, deployment, employment, and support of forces in the joint operations area (JOA). This will enable accurate distribution operations and other logistics functions to ensure that the right location receives the right capabilities and the correct quantity in time to ensure the greatest agility to operations.

Solution Synopsis and Key Ideas

a. TRADOC 525-7-18 is intended to describe how the logistics force of the future will operate and the objective capabilities necessary to enhance the effectiveness of the logistics decision cycle across the full spectrum of Army and joint operations. These capabilities are required in order to synchronize the logistics decision cycle with the decision cycle of the maneuver commander; ensure unity of command in Army logistics to support the priorities and intent of the maneuver commander; and ensure unity of effort to maximize logistics capabilities and enable synchronization of logistics decision cycle to support the maneuver commander.

b. Central to achieving these requirements is the need for network-enabled decision support tools that will enhance logistics staffs situational understanding (SU) at operational and tactical levels. These decision support tools will draw near real time information on intelligence, operations, and logistics data from the future enhanced common operating picture and rapidly fuse this information to enable improved SU and subsequently an enhanced logistics decisionmaking process. The common operating picture will rely on the services and

applications provided by LandWarNet and the embedded advanced data mining, analysis, modeling and simulation tools in the future C2 capability. These capabilities will expedite the military decisionmaking process by enabling the rapid transition from situational awareness to SU, a more robust course of action development and analysis, and the execution of operations. This logistics C2 capability includes the personnel (leadership and training), facilities, and organizational structures required, from the operational level to the individual Soldier operating at the lowest tactical level, to ensure the utmost effectiveness of this future capability. This CCP illustrates the integration and synchronization of logistics C2-enabled capabilities by describing an operational level vignette of an element of the future Modular Force engaged in full spectrum operations.

c. TRADOC 525-7-18 states key ideas and required capability statements directly from the text of the joint and Army concepts. This CCP refines these broad capability statements into logistics C2 enabled capability statements that provide detailed descriptions of the capabilities required by the future Modular Force. Additionally, the CCP identifies the logistics C2 or supporting infrastructure in the current, mid-, and far-terms. Although many of these capabilities are yet to be realized, they represent the bridge between the current Modular Force and the future Modular Force. This listing of required capabilities should be interpreted as optimum for the 2015-2024 timeframe. Some of the key capabilities outlined in the CCP include the following.

- Centralized management of joint, interagency, and multinational logistics under a single integrated system.
- Situational awareness and SU enabled by near real time information resulting from an integrated network hosting advanced data mining tools that enable a near real time, detailed common operating picture.
- The capability to access logistics data, sustainment requirements, and information from platform to supplier (or some range of information) integrated with operational and maneuver information permitting continuous development and refinement of courses of action.
- Comprehensive, operational planning provides in-depth analysis across the diplomatic, information, military, and economic elements of national power.

d. The approach of this CCP should support any number of future capability based assessments. The combat power generated from enhanced logistics C2 capabilities will significantly improve the freedom of maneuver of the future Modular Force.

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Fort Monroe, Virginia 23651-1046

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Military Operations

THE U.S. ARMY CONCEPT CAPABILITY PLAN FOR LOGISTICS COMMAND AND CONTROL FOR THE FUTURE MODULAR FORCE 2015-2024

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History. This pamphlet (pam) is a new U.S. Army Training and Doctrine Command (TRADOC) concept capability plan (CCP) developed as part of the Army Concept Strategy for the future Modular Force and as part of the capabilities based assessment process.

Summary. TRADOC Pam 525-7-18 defines capabilities and provides the required detail to initiate logistics command and control (C2) focused capabilities based assessment (CBA), if necessary, within the Joint Capabilities Integration and Development System (JCIDS). A logistics C2 CBA will identify doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) solutions or solution sets for a concept focused on the strategic, operational, and tactical application of integrated logistics C2 capabilities required to conduct full spectrum operations during the 2015-2024 timeframe. This CCP is derived from approved documents addressing the Army's future Modular Force, which includes Army service component commands, corps, divisions, and brigade combat teams. It also addresses requirements specified in the Army Future Combat Systems Operational and Organizational Plan, the Army's LandWarNet Concept of Operation, and emerging joint and Army concepts relevant to Department of Defense and Army transformation.

Applicability. This CCP applies to all TRADOC and non-TRADOC Army proponents, and Department of the Army activities that identify and develop DOTMLPF solutions to field

required logistics C2 capabilities. Active Army, Army National Guard, Army Reserve operating forces, and Army Materiel Command may use this CCP to identify future logistics C2 trends in the Army. This CCP may also serve as a reference document for agencies within the joint community that are planning or are otherwise concerned with Army logistics C2 initiatives.

Proponent and supplementation authority. The proponent of this pamphlet is TRADOC Headquarters, Director, Army Capabilities Integration Center (ARCIC). The proponent has the authority to approve exceptions or waivers to this pamphlet that are consistent with controlling law and regulations. Do not supplement this pamphlet without prior approval from Director, ARCIC (ATFC-ED), 33 Ingalls Road, Fort Monroe, VA 23651-1061.

Suggested improvements. Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to Director, ARCIC (ATFC-ED), 33 Ingalls Road, Fort Monroe, VA 23651-1061. Suggested improvements may also be submitted using DA Form 1045 (Army Ideas for Excellence Program Proposal).

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Chapter 1 Purpose

1-1. Purpose

a. TRADOC Pam 525-7-18, the *United States (U.S.) Army Logistics Command and Control Concept Capability Plan for the Future Modular Force 2015-2024* promotes the development of logistics command and control (C2) capabilities for agile, decisive, and integrated force employment across the full spectrum operations (FSO). This is achieved in collaboration with joint, interagency, intergovernmental and multinational (JIIM) partners. This concept capability plan (CCP) describes how Army logistics C2 will operate in support of a geographic combatant commander (GCC) or joint force commander (JFC) in 2015 and beyond.

b. Joint Publication 1-02, defines C2 as "...the exercise of authority and direction by a properly designated commander over assigned and attached forces in the accomplishment of the mission." While the CCP uses a current definition of C2 to describe capabilities 8 to 20 years into the future, it is recognized that a wide range of research is ongoing in the C2 area, to include Department of Defense (DOD) Command and Control Research Program. According to the program's research findings, "...the world of C2 is in the midst of a paradigm shift," acknowledging that C2 approaches are the fulcrum of the information age and understanding it is among the most important and urgent tasks that the DOD has. C2 functions are performed through an arrangement of personnel, equipment, communications, facilities, and procedures. The commander employs these functions as part of planning, directing, commanding, and controlling forces and operations, to accomplish the mission. This CCP is based on the hypothesis that a unified logistics C2 capability, enabled by information technology advancements and improved logistics systems and processes, is required to manage dynamic and complex operations. These operations may be distributed over large distances, in austere environments, and in the short timeframes required to support the high tempo that characterizes future Modular Force operations.

c. Logistics C2 is not a separate entity, but rather a key component in the overall JFC C2 process. Future logistics C2 functions need to operate in an expedited *observe, orient, decide, and act* (OODA) loop not only inside the decision cycle of the enemy, but also synchronized with the decision cycle of all commanders at both the tactical and operational levels, to include the Joint Force Commander(s). This will support his requirements with timely and accurate logistics information relevant to course of action (COA) development. As such, this CCP supports rigorous assessment and analysis of capability gaps and redundancies through a capabilities based assessment (CBA) process. Finally, this plan will serve to inform and shape science and technology investments, and bridge the development of the Modular Force to the future Modular Force. Additionally, it will be used as an analytical framework to develop next-generation (post 2015) logistics domain information technology (IT) automation capabilities. The term logistics C2 is used only as it implies to battle command and does not imply non-logistics functions are logistics tasks.

1-2. Why This CCP is Needed

a. The Army requires greatly increased and more effective integration of the decisionmaking process and actions between the maneuver commander and logisticians to enable the future Modular Force. Currently, there is no Army concept or plan that addresses both this requirement and the need to employ a holistic view in the development of a solution. This CCP describes the collective dependence on required logistics C2 capabilities for the future Modular Force. It provides a basis for the systematic, integrated, and prioritized development of the logistics C2 capabilities needed to enable the future Modular Force. The CCP is also needed to establish a linkage to net-enabled command capability (NECC) and battle command systems development and to establish logistics automation requirements.

b. TRADOC Pam 525-7-18 describes Army future Modular Force requirements for logistics C2 capabilities. The expected increase in new technologies across all warfighting functions will place heavy demands on logistics C2 capabilities. Operations will be consistently conducted in joint and coalition environments that will increase the complexity of information sharing and collaboration. This CCP will serve as the foundation for a thorough review of logistics C2-related doctrine, organizations, training, leadership and education, personnel, and facilities (DOTMLPF) requirements and capabilities. The use of an illustrative vignette will illustrate the application of elements of joint and Army concepts to selected mission, enemy, terrain, troops, time available and civilian consideration factors, focusing on conditions specific to logistics C2 missions or functions in support of FSO. The CCP will provide architecture data and details sufficient to initiate, if needed, a CBA within the Joint Concepts Integration Development System (JCIDS) process.

c. TRADOC Pam 525-7-18 uses approved documents such as, those in the Army Concept Strategy; current approved capability documents; and emerging joint and Army concepts relevant to DOD and Army transformation.

1-3. Functional Area

TRADOC Pam 525-7-18 examines logistics C2 capabilities that will support Army operations during the 2015 to 2024 timeframe. This CCP incorporates key elements of battlespace awareness, C2, logistics and net-centric operations from the joint capability areas and is fully nested with current Army capstone, operating, and functional concepts.

Chapter 2 Scope

2-1. Logistics C2 Scope

a. Logistics C2 capabilities support all Army organizations in the conduct of FSO. When directed, logistics C2 capabilities may also support joint, other military service, and nonmilitary organizations. This CCP considers all aspects of logistics C2 capabilities supporting and coordinating with all organizations operating in the joint operations area (JOA) at all echelons across the enterprise during all phases of future Modular Force operations. It includes human

interaction, application interoperability with the network, and interoperability with joint, coalition, and commercial capabilities.

b. This CCP covers tactical and operational levels, all operational phases, including generating force (phase zero) requirements, and joint, coalition, interagency, and nongovernmental organization (NGO) interoperability.

c. This CCP considers required capabilities generated at the following multinational, joint and Army echelons. They include generating force (U.S. Army Forces Command and U.S. Joint Forces Command (USJFCOM)). They further include, geographic combatant command, and joint task force; Army service component command (ASCC); joint force land component command (JFLCC), Army forces; corps, division, brigade (such as, brigade combat team (BCT), support brigade, functional brigade, and others); battalion, special operations force, platform, company, platoon, squad, Soldier, allied and coalition forces.

2-2. Relation to the Joint Capability Areas (JCAs)

a. JCAs were first proposed in the 2003 Joint Defense Capabilities Study. The study called for dividing the DOD's capabilities into manageable capability categories as an essential early step to implementing a capabilities-based approach. The study recommended dividing capabilities along functional or operational lines and favored functional categories for several reasons. There are fewer functional categories; they are more enduring and less likely to change due to new technologies or emerging threats. Functional categories minimize redundancies in capability decomposition, provide clearer boundaries to assign weapon systems, and improve management ability to develop and implement capabilities planning. The study noted these functional categories are focused on warfighting needs, and other categories such as force management and infrastructure may be necessary to address the department's enterprise needs. The study further stated that whether organized along functional or operational lines, the categories adopted by the DOD must enable all Services, defense agencies, and combatant commands to orient their planning on capabilities, vice platforms, or units. The JCAs were vetted and then approved by the Joint Requirements Oversight Council.

b. Several of the JCAs relate directly to the required capabilities examined in the logistics C2 CCP. As part of the overall battle command function, logistics C2 most closely relates to the capabilities listed under the tier I capability of C2. Several other capabilities are still essential to developing a successful logistics C2 capability. The list of tier I and II JCAs that relate to logistics C2 include the following.

(1) C2 with the required functions to organize, understand, plan, decide, direct, and monitor.

(2) Battlespace awareness including intelligence, surveillance, and reconnaissance, and environment.

(3) Net-centric including information transport, enterprise services, network management, and information assurance.

(4) Building partnerships including communicating and shaping.

(5) Logistics including deployment and distribution, supply, maintaining, logistics services, and operational contract support.

(6) Force support including force management and preparation, installation support, human capital management, and health readiness.

2-3. Relation to the Family of National Strategies

a. National level, DOD, and Department of the Army (DA) strategies provide broad guidance on how the future force will fight and win. These include the National Security Strategy, National Defense Strategy, National Military Strategy, Quadrennial Defense Review, and the Army Strategy. These strategies identify future global threats and outline broad guidance on military capabilities required to counter emerging threats. These emerging threats include transnational terrorist networks, rogue nations, and aggressive states that possess, or are working to gain, weapons of mass destruction and effect. There is a growing sense that U.S. forces will be engaging in counterinsurgency and stability operations to assist governments defeat those who would destabilize their country and potentially be able to threaten our interests and those of our friends, allies, and partners.

b. As cited in the Army Strategic Planning Guidance, due to emerging threats, the Army must be able to project and sustain forces and conduct network-centric operations. This can only be accomplished by investing in advanced capabilities. These capabilities will include improved capabilities for battle command and improved capabilities for joint logistics in order to defeat these future threats.

c. To ensure success on the battlefield of tomorrow, these national strategies prescribe common, required qualities and capabilities that are intended to shape the future force and concepts, such as logistics C2. This common qualities and capabilities include fully integration of joint forces; rapidly and immediately employable with minimal reception, staging, onward movement, and integration, supporting mobile, expeditionary operations; employing joint C2; improving battle command and situational awareness (SA); increasing logistics and maneuver flexibility; and, increasing network-centric operations.

2-4. Relation to the Family of Joint Concepts

a. The Capstone Concept for Joint Operations (CCJO) heads the family of joint operations concepts (JOCs) which includes Homeland Security, Strategic Deterrence, Stability Operations, and Major Combat Operations (MCO). These JOCs describe how joint forces are expected to operate across the FSO in 2015-2024. In addition to the JOCs, there are joint functional concepts which include Joint C2, Force Application, Focused Logistics, and Net-Centric Warfare. There are also joint integrating concepts (JICs) including C2, Joint Logistics (Distribution), and Joint Net-Centric Operational Environment. These joint concepts articulate how a future JFC will integrate related military tasks and joint capabilities to generate effects and achieve an objective across the FSO.

b. The CCJO provides strong underpinnings for a logistics C2 capability. The CCJO states, “The future joint force which will emphasize better decisions made faster throughout all levels of command. The fundamentals of this knowledge empowerment are experienced and empowered decision makers benefiting from an enhanced understanding of the environment, potential adversaries and cultures, as well as enhanced collaborative decisionmaking processes.” It lists the supporting ideas on how the future joint force will operate as concurrent management of multiple directions and domains; achieving integrated and interdependent actions; projecting and sustaining the force; acting directly upon key elements and processes; controlling tempo; transitioning quickly and smoothly; managing perceptions and expectations; and acting discriminately.

c. Also, numerous joint operational, functional, and integrating concepts reflect a common theme of requiring fast, agile, and robust forces to meet the adversarial threats of the future. These concepts include achieving real time, full spectrum C2 of the entire logistics system; implementing automatic planning and re-planning; monitoring execution; viewing the entire acquisition process; sharing SA and situational understanding (SU); conducting rapid collaborative planning and decisionmaking; synchronizing actions; achieving constructive interdependence; and achieving unity of effort with JIIM partners and NGOs.

2-5. Relation to the Family of Army Concepts

a. The Army capstone concept is the cornerstone for operational, tactical, and functional operations and identifies seven key ideas governing future force joint operations (figure 2-1). They include operational maneuver from strategic distance, shaping and entry operations, intratheater operational maneuver, decisive maneuver, concurrent and subsequent stability operations, distributed support and sustainment, and network-enabled battle command.

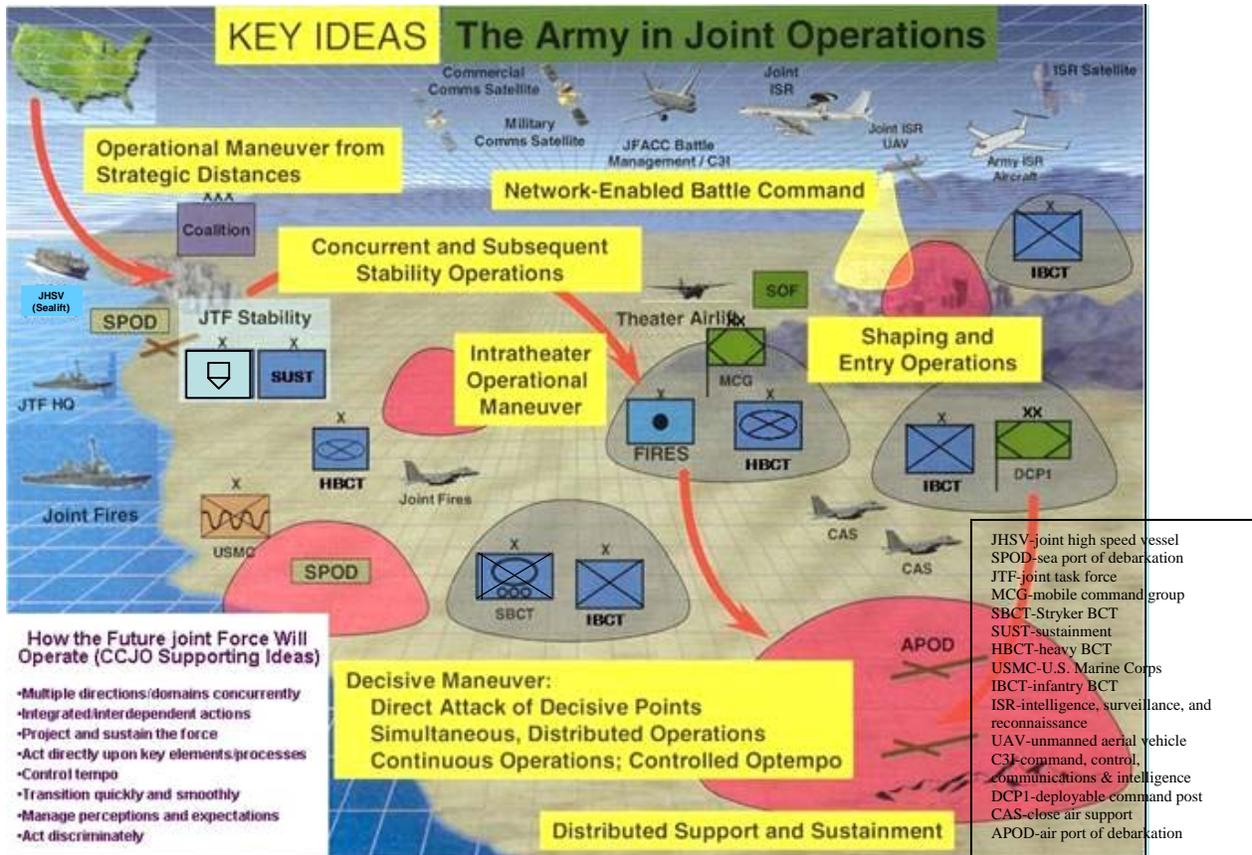


Figure 2-1. Army Capstone Concept Operational View

b. The linkages between national and strategic strategies, joint concepts, Army concepts, and the logistics C2 enabling themes are depicted in figure 2-2 below. Several common themes and capabilities are required for the future Modular Force to operate with an expeditionary mindset and can be effectively enabled through logistics C2. These include centrality of the commander, mission command, self-synchronizing forces, collaborative planning, accelerated military decisionmaking process (MDMP); decision superiority; central, critical role of high SU and the common operational picture (COP); and continuous battle assessment; incremental adjustments to operations during execution. In this document, MDMP and the term decision cycle are synonymous. These also include adaptive C2 process and structures; single, integrated Joint battle command system, joint capable to lower levels; net-centric operations; horizontal and vertical fusion; integration and interoperability with JIIM assets from strategic to tactical level; and ubiquitous, redundant, and continuous command operations.

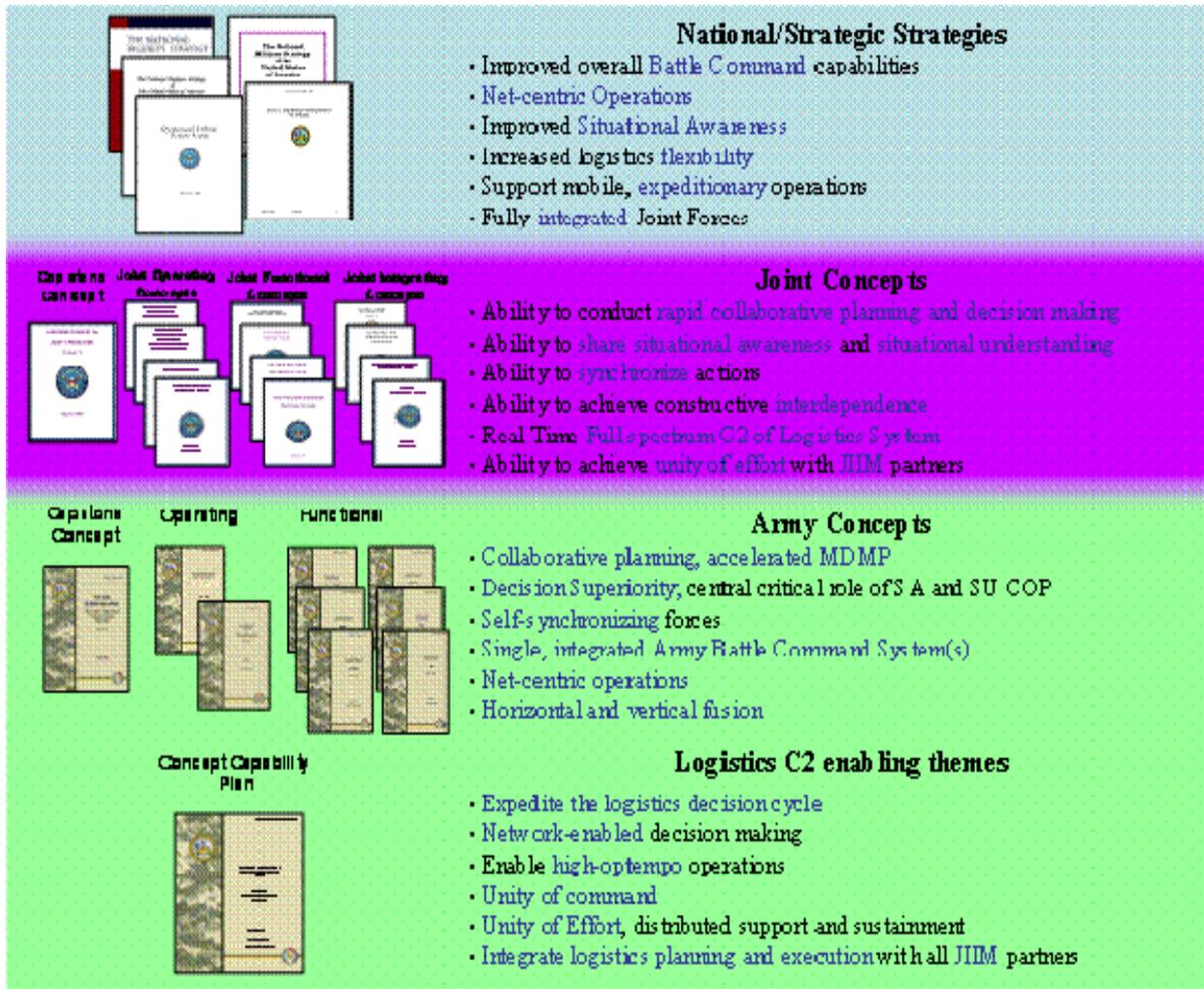


Figure 2-2. The Military Problem

Chapter 3
The Military Problem

3-1. Operational Environment

a. The Joint Operational Environment

(1) The U.S. will remain globally engaged in the future, and U.S. forces will be required to execute missions across the spectrum of conflict. As the U.S. military is predominant in traditional warfare, many potential adversaries have already shifted from challenging with traditional military actions and capabilities to utilizing asymmetric capabilities and methods. U.S. forces will face economic, political, informational, and cultural initiatives in addition to terrorist or irregular force attacks, sophisticated ambushes, and a threat that strikes in unconventional and unexpected ways. Conditions of this environment will include global information and commercial networks, weapons of mass destruction, selected advanced weapons systems, and demographic challenges.

(2) The complexity of the future security environment is rooted in global and regional ideological and political struggles. These struggles will challenge traditional U.S. military approaches. Faced with the conventional warfighting capacity of the U.S., adversaries will likely choose to fight using a hybrid of irregular, disruptive, catastrophic, and traditional capabilities as a way to achieve their strategic objectives. In this environment, the Army cannot destroy the enemy; it must change the enemy's intentions (see fig 3-1). Logistics will play a major role in this process not only by enhanced support to maneuver commanders, but also by effecting nation building and humanitarian efforts to win popular support of the populace.

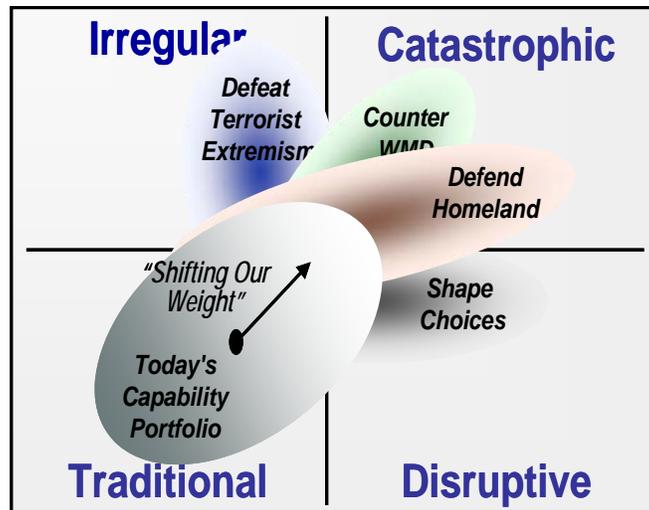


Figure 3-1. The Threat Environment

(3) The future operating environment will be characterized by greater complexity and uncertainty. While the U.S. is likely to have information superiority over adversary nation-states in conventional conflict, such an advantage is less likely in conflict against asymmetric threats such as terrorists and insurgent groups. Commanders will have to make decisions despite imperfect information, complex situations, and competing demands on DOD assets. Effective logistics C2 will reduce chaos and lessen uncertainty for commanders.

b. Future Logistics C2 Operational Environment

(1) The overarching goal of future Modular Force logistics is the continuous, precise, assured provisioning of deployed Army and other supported Service forces in any environment in order to enhance their ability to generate, maintain, and employ combat power throughout the campaign. Supplies, personnel, and forces must flow through a fully integrated national-to-theater-to-tactical distribution system from early entry through termination of operations. This entails underwriting a deployment momentum that enables the joint force to seize the initiative quickly, achieve and maintain force dominance, and ultimately overwhelm the adversary. Such an aggressive posture requires a joint logistics environment (JLE) to exploit and integrate coalition, host nation, and joint service infrastructure, forces, and assets. These requirements further amplify the need for a unified joint theater logistics C2 structure.

(2) Joint and Army forces will be trained and organized to be interdependently functional, at increasingly lower levels, in a net-enabled environment. To a limited extent, a degree of interdependence of the Service components already exists today. For example, the Army is dependent upon supporting combatant commands such as the U.S. Transportation Command (USTRANSCOM) for strategic air and sea lift support. The greater interdependencies sought in the future will require the capabilities to plan joint logistics operations down to the brigade level. Interdependency is not about risk, but rather Service capabilities. It assures the possibility of symbiotic benefits through collaborative planning and self-synchronization.

(3) Capabilities-based force packages will be rapidly composed and tailorable to the mission. Future logistics C2 systems must enable commanders to integrate disparate capabilities rapidly from a variety of sources and locations to create cohesive capabilities for the force. In this context, logistics C2 must be able to support the JFC at both operational and tactical levels.

(4) Commanders will need communications capabilities that are flexible and integrated that allow them to exercise command from austere, as well as robust fixed sites. They will also need them from mobile sites afloat, in the air, in vehicles, or on the ground and in transition between sites.

(5) The comprehensive approach to diplomatic, information, military, and economic realms together with close collaboration of coalition forces and non-DOD agencies, including international and NGOs, will be the normal practice during the 2015-2024 timeframe. The planning process will require a more comprehensive cultural and historical awareness from the various staff elements (see fig 3-2). Interoperability with other national forces and with national and international agencies will vary widely; but, in general, will be significantly less than interoperability between U.S. forces.

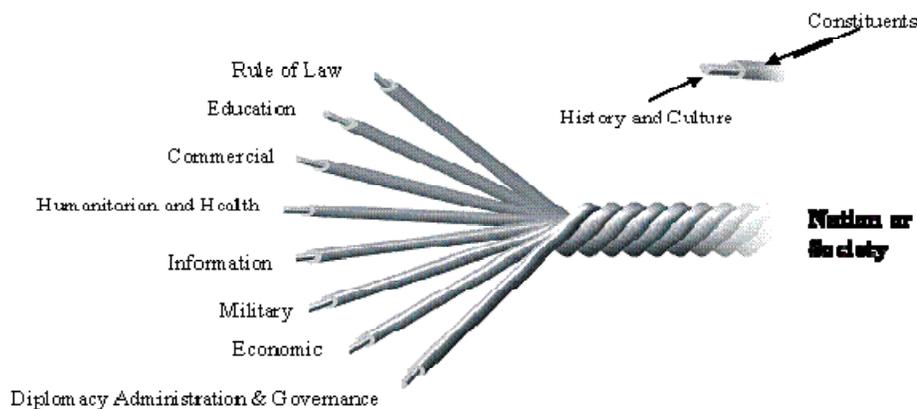


Figure 3-2. The Constituents of a Society

(6) In order to achieve desired military and political effects, future operations will focus on more precise execution of logistics capabilities. The need to achieve prompt effects against time-sensitive threats (such as, military, or natural disasters) will often require that military operations be less sequential and more simultaneous, particularly with respect to logistics

operations. The need to avoid civilian collateral damage during military operations will also continue to grow.

(7) Another significant aspect of the future military environment is the strategic to tactical impacts of mass communications media and public opinion. Through mass media, tactical actions can have strategic effects. To a greater extent, commanders will have to consider the potential impact of their actions on public opinion, manage the dissemination of information appropriately, and understand the impact of the global reach of internet reporting and media presence in the theater of operations. Logistics operations at the right time and place will go a long way to influencing how the media perceives operations in the future.

(8) The Joint C2 Functional Concept summarizes the implications of the future operating environment for C2. As cited in the Joint C2 Joint Functional Concept, “Joint C2 must become more agile in order to continue operating with sufficient speed and quality of decision to operate within an adversary’s decisionmaking cycle. Increasing the agility of joint C2 will enable commanders to better deal with the uncertainty, complexity, and the dynamics of the operating environment. Commanders need access to the information held by their colleagues in other echelons or to inform those in command of other functions. They need to collaborate on their decisions to maintain unity of effort in a rapidly changing environment. They need to be able to employ a variety of coordination and synchronization mechanisms rapidly in order to maximize the effectiveness of forces at their command. Joint C2 must enable commanders to decentralize C2, encourage initiative in lower echelons, and quickly respond to changes in the operational environment.” This holds true for logistics C2 as well. The joint force will be spread across an asymmetric battlefield and will require support from a variety of host nation, multinational, and joint forces. JFCs must be able to C2 logistics at the operational level, which requires the ability to monitor and assess the logistics situation in near real time. At the tactical level, Army logistics elements must also be able to monitor and execute support operations in near real time to facilitate freedom of maneuver for the JFC.

(9) The future operating environment presents great opportunities to enhance the ability to C2 logistics. Deployment of increasingly powerful and robust information networks will enable information sharing and collaboration capabilities that will transform logistics C2. These networks will be protected by commensurate physical and cyber security measures that will protect the integrity and accuracy of the information transiting the networks. The Army will achieve global visibility accessed through a COP, providing on demand, near real time, actionable logistics information, underpinning the capability to exercise positive pipeline control. There is flexibility within the enterprise to allow commanders and staffs at all levels to see Soldier and platform level detail anywhere: in-transit, in-storage, in-maintenance, in-production, and in-use. Data are aggregated at all levels to meet individual needs using intelligent agents and artificial intelligence to predict requirements. Data are also used to initiate necessary fulfillment actions based on the intent of the commander.

(10) Visibility, as a logistics C2 enabler, will aid optimization of the supply chain, assuring timely and accurate logistics support at the point of need. Central to this capability is the need for always-on, secure communications and standardization of supply chain business processes, rules, and systems. The availability of multi-source, multi-path information will lead

to greater shared awareness and understanding. This will result in a higher degree of confidence and lower uncertainty in the availability and quality of information. Service cultures will evolve to accept and take advantage of a collaborative environment. An increasingly well-educated, resourceful officer and noncommissioned officer (NCO) corps will provide the foundation for a more collaborative, decentralized, and agile approach to C2. These officers and NCO will be trained to exploit IT tools and resources. However, in exploiting information networking and collaboration opportunities, capability developers, and commanders must balance the benefits of broad information sharing with the associated security concerns. The IT officers and NCOs must be encouraged to continue their technical education. IT Officers should be encouraged to complete a master's degree as early as possible in their area of expertise. Similarly, the NCOs need to be given the opportunity to complete degrees and courses of study as well. As the complexity of these IT systems increases, there may well be advantages to employing a certain small number of civilians within higher level units who train and deploy with the unit. These subject matter experts provide technology continuity as well as data analysis potential for the JFC.

c. Threat

(1) Adversaries are aware of the importance of logistics support operations for conduct of maneuver operations and the relative vulnerability to disruption at lesser risk to their own capabilities. Thus, logistics operations are often the target of their strikes. They will attempt to strike any C2 nodes and communications channels to disrupt or destroy Army C2 capabilities. Increasingly, they will implement information operations involving computer network operations, electronic attack, and directed energy weapons attacks against communications and computer systems associated with logistics operations. Additionally, nodes associated with logistics C2 will be subject to the full range of conventional and unconventional physical attack threats. Redundant networks at the tactical and operational levels will aid in mitigating these risks, but personnel must be trained to continue in the event that these robust IT tools become disabled. A computer attack may disable the C2 system during a critical time. Commanders and staffs at all levels need to be able to continue operations without perfect information, using remaining resources, in order to deny the enemy the desired outcome. The enemy will do everything within its power to neutralize or develop solutions to the Army's technological advantage as quickly as possible in any conflict.

(2) A proliferation of global positioning system jammers could give adversaries and terrorists the ability to block or degrade U.S. satellite signals that provide this data. The ability of such jammers to interfere with position and timing data has critical impacts including direct and indirect impacts on logistics C2.

(3) Adversaries, enabled by the worldwide proliferation of telecommunications and IT, will attempt to undermine the will of the Nation to conduct operations, and dissolve the cohesion of coalitions and alliances. Adversaries will use these means to influence the media and public opinion to force government changes. This undermining effort will evolve in new directions, stemming from reliance on computer systems for processing and storing sensitive information. As decision superiority is crucial to future Modular Force operations, the synergy gained by integrating information and other operational activities is paramount. Elements of C2 systems

will be targets of information attacks, to include C2 warfare. Left unprotected, links will be jammed, spoofed, monitored, or pirated by adversaries. Protection of this critical capability will be a major objective of operations. The information lines of communication (LOCs) must be protected to speed success for the joint force.

(4) Remote sensing capabilities may allow the enemy to see the battlefield, as clearly as the U.S. forces commander. Imagery (spectral and radar), will be available to potential adversaries through a number of commercial and foreign government-supplied vendors. Adversaries may already have access to direct downlink imagery that is operationally equal to U.S. capabilities in terms of military utility. Commercial remote sensing has the potential to provide an adversary the information required to make timely and effective decisions. An important consideration during stability operations is that an adversary can also exploit remote sensing products that depict existing U.S. or allied forces camps and installations. It is important to recognize the increasing difficulty in implementing governmental controls, designed to limit or deny distribution of space-enabled products and services, when multinational consortia provide these products and services.

d. Joint Interdependence

(1) The synchronized employment of land, air, sea, space, and special operations forces provides the commander with the widest range of strategic, operational, and tactical options. Joint interdependence is achieved through the deliberate reliance of each Service on the capabilities of other Services to maximize its own effectiveness, while minimizing its vulnerabilities. Key joint interdependencies include joint battlespace awareness, joint C2, joint net-centric operations, joint protection, joint homeland defense, defense support of civil authorities, joint logistics, and joint force generation. The Army capstone, operational, and functional concepts recognize and address each of these dependencies.

(2) The increased need for joint interdependence is essential to the conduct of logistics C2 for the future Modular Force. In the area of logistics C2, interdependence extends beyond the traditional Service capabilities and will include national agencies (such as, the Department of State, Department of Homeland Security, Department of Commerce, and Department of Transportation). Further, this interdependence may also extend to other nations, both in any coalition that may be formed and in host nation support. It is critical that the subject matter expertise, roles, and unique capabilities provided by each JIIM organization be leveraged in the conduct of day-to-day operations in order to coordinate joint theater operations and integrate logistics C2 capabilities. Logistics C2 operations support and architectures must remain flexible and responsive to meet the needs of the JFC.

(3) Joint interoperability. Joint logistics capabilities require interoperability across programs, systems, and forces. Gaps occur at all organizational and system interfaces, between the DOD architecture framework, the joint agency architectures, and the Services' architectures. Lack of common business processes, untested interoperability between applications including enterprise resource planning (ERP) applications, and incompatible databases in both legacy systems and new systems all further complicate the problem. Standard rules, tools, and processes, ERP systems like the Global Combat Support System Army (GCSS-A) field and

tactical, GCSS-A Product Lifecycle Management Plus (PLM+), and the Logistics Modernization Program, are critical assets to develop and maintain the SA required by the logistics C2 systems. Joint and Service programs, such as defense medical logistics standard support, Theater Medical Information Program–Joint, and medical communication for combat casualty care, are also critical. Benefits from interoperable logistics systems include the following.

- (a) Known and shared knowledge concerning readiness of forces.
- (b) Decreased operational footprint in the theater of operations.
- (c) Increased agility and survivability of the force.
- (d) Decreased logistics demand which would decrease the overall cost of employing the force.
- (e) Improved data management and data integrity.
- (f) Increased asset visibility, including those of other Services and joint agencies.
- (g) Improved total logistics pipeline management allowing for real time control.
- (h) Increased force projection and force sustainment.
- (i) Increased ability to participate effectively as one element of a unified national effort in the unpredictable environment of the future.
- (j) Increased speed and effectiveness of theater opening tasks.

(4) USTRANSCOM provides global transportation management, employing an integrated transportation and distribution system across the FSO through its transportation component commands, which are the Air Mobility Command (Air Force), Military Sealift Command (Navy), and Military Surface Deployment and Distribution Command (Army). Each military Service retains responsibility for organizing, training, equipping, and providing logistics support (including Service unique transportation) for its forces. USTRANSCOM's specific responsibilities include acting as the single DOD manager for transportation, patient movement, and operational support airlift assets. It is also the mobility joint force provider, distribution process owner, and Executive Agent for customs and border clearance.

(5) USJFCOM, as a joint capability provider and joint deployment process owner, coordinates with the supported GCC and JFC and the Services to source and make ready the joint forces for handoff to the deployment. USJFCOM is a supporting commander to the GCC and JFC, while a supported organization of the deployment process.

(6) The Air Force, through their Service component, supports the GCC and JFC under its Title 10 United States Code role to organize, train, and equip forces. The Air Force will enable joint operations through a combination of several operating concepts including global mobility,

global persistent attack, agile combat support, and space and information systems support. The Army will rely on the Air Force often for distribution support, particularly intratheater lift. To obtain true joint interdependency, the Army may also rely on specific Air Force supply assets, communications assets, and transportation assets to support Army logistics requirements.

(a) Global mobility provides the rapid, timely, and effective projection, employment, and sustainment of U.S. power through air and space mobility, global C2, and expeditionary air bases.

(b) Global persistent attack is the concept of conducting and sustaining enduring combat operations to achieve campaign objective with minimal loss through information dominance, freedom of maneuver, and persistent force application.

(c) Global strike enables the attack of key targets anywhere on the globe on short notice and neutralization of adversary anti-access systems to pave the way for follow-on persistent forces under the global persistent attack.

(d) Agile combat support is the capability to create, protect, and sustain air and space forces across the full spectrum of military operations. It is the foundational and cross-cutting distinctive capability that enable Air Force operational concepts and is highly mobile, technologically superior, robust, responsive, flexible, and fully integrated with combat operations.

(e) Space and information systems provides predictive operational environment awareness, facilitates and conducts precision attack, compresses the sensor-to-shooter kill chain, and delivers decision dominance to support joint and combined operations at all levels of conflict.

(7) The Navy, through its Service component, supports the GCC and JFC under its Title 10 United States Code role to organize, train, and equip forces. Additionally, under the Naval Operating Concept, the Navy provides support as outlined in its four operating concepts, Sea Strike, Sea Shield, Sea Base, and FORCEnet that are a part of a unified U.S. force that projects offensive and defensive power. Sea base and FORCEnet operations relate to the CCP as discussed below.

(a) Sea base. Twenty-first-century operations will require greater efficiencies through the development of joint logistics support. This includes the rapid deployment, assembly, command, projection, reconstitution, and re-employment of joint combat power from the sea. This will be accomplished by providing continuous support, sustainment, and operational area security to select, expeditionary joint forces without reliance on land bases within the JOA.

(b) FORCEnet. The Naval Network Warfare Command developed a functional concept called FORCEnet. FORCEnet focuses on exploiting the power of network decisionmaking at all levels, thereby improving the speed, agility, and overall combat effectiveness of the Navy. The idea is for the network to align enterprise business processes with fleet readiness. It is the NECC implementation into the naval service. FORCEnet is the naval C2 system of the future and as

such, must seamlessly integrate with Army C2 systems. Army logistics C2 systems will be a critical component of the overall Army C2 systems of the future and must be able to interoperate with the Navy FORCENet in order to ensure joint interdependence in logistics operations in theater.

(8) The Marine Corps, through its Service component, supports the GCC and JFC under its Title 10 United States Code role to organize, train, and equip forces. It provides the combatant commanders with scalable, sustainable, interoperable, expeditionary, combined-arms Marine air-ground task forces ready to fight and shape the international security environment across the complex spectrum of crises and conflict. Additionally, the Marine Corps operating concepts for a changing security environment presents a family of operating concepts nested within the Naval operating concept. These concepts are informed by operational maneuver from sea and enabled by seabasing, distributed operations, and the four-block marine. Through the enabling concept of sense and respond logistics, the Marine Corps is establishing the relationships and information exchanges between logistics chain management and Marine air-ground task forces C2. Further, once ashore, Marine forces, to include Navy expeditionary combat command units, may come to rely on each other and Army units for logistics support and as such, must be capable of being monitored through sensors and communications systems that are interoperable with each Services' logistics C2 and ERP systems.

(9) Other Agencies

(a) Defense Logistics Agency (DLA) elements contribute to the movement of assets in support of the joint commander. The DLA also plays a major role in the sourcing, packaging, and preparation of sustainment stocks and pre-positioned materiel to be moved through the joint deployment and distribution enterprise. DLA also coordinates for direct vendor delivery of many commodities to include support to classes I, II, III, IV, VIII, and IX.

(b) The U.S. Army Materiel Command (AMC) is the Army's principal materiel developer, provider of power projection platforms, and systems sustainment of Army and Joint requirements in support of the Warfighter. It accomplishes its mission through life cycle management commands and major subordinate commands that direct the activities of numerous depots, arsenals, field support commands, ammunition plants, laboratories, test activities, logistics augmentation, contracting commands, and procurement and logistics operations. AMC's mission is complex and ranges from developing sophisticated weapon systems, to advanced research in such areas as lasers, to property accountability, maintaining equipment and weapons systems and distribution management of equipment and spare parts. AMC also provides logistics support to DOD operations in support of Homeland Defense requirements. AMC's mission is best summarized by three core competencies: acquisition excellence, logistics power projection, and technology generation and application. AMC is the Army's preeminent logistics integrator through the Army force generation process. AMC continues to be a key partner in the Army's continuing efforts to assess logistics capabilities based on needs of the growing Army requirements.

(c) The U.S. Army Medical command in conjunction with its subordinate commands, U.S. Army Medical Materiel Agency and U.S. Army Medical Materiel Center–Europe, will be

critical in helping create true visibility of the JLE, through participation in the single Army logistics enterprise (SALE). Additionally, the Army Medical Materiel Agency will also contribute to the Army force generation process in coordination with USAMC.

(d) The Department of State will continue to be a major role player in developing successful relationships with host nations and various multinational partners. Funding and contractual relationships established by the Department of State with host nation and other multinational partners are critical enablers to successful logistics operations in support of the joint commander.

(e) Depending on the operation, coordination and support between the various agencies from the Department of Homeland Security and the Army can be critical. Humanitarian operations during natural disasters bring the U.S. military into a very close relationship with this department. Even during deployment and redeployment operations to theaters outside the continental U.S., coordination with the U.S. Coast Guard and the U.S. Customs Service is required.

3-2. Problem Statement

a. The problem addressed by this CCP is the lack of timely, accurate information that enables the maneuver and logistics commands to synchronize their decision cycles (see fig 3-3). Complicating this problem is our inability to provide total visibility of assets and logistics requirements to feed SA and understanding that enables effective C2. The demands of the future Modular Force will significantly increase the reliance of the Army on members of the joint supply chain as well as traditional tactical and operational supporting echelons. This will drive the Army to create a unified, fully integrated logistics C2 capability among the Army, defense, and joint C2 systems. Add to this the complexity of executive agency coordination between interdependent services, interagency, multinational partners, host nation support, and the high operational pace and agility required of the future Modular Force and the issues become apparent. These requirements, when matched to current DOTMLPF capabilities, reveal a gap. This gap inhibits C2 of logistics assets and produces a sub-optimal logistics C2 capability that is not integrated with the decision and execution cycles of the maneuver commanders at the operational and tactical levels.

b. The current modular force logistics systems are not able to contribute actionable information synchronized within the decision cycle of the maneuver commander as demonstrated by current operations in Operation Iraqi Freedom and Operation Enduring Freedom. Complicating this is interagency and multinational coordination. Further, the current modular force does not possess the information systems, sensor technologies, staff structure, and tactics, techniques, and procedures (TTP) that enable it to support the operational pace of future operations. In 2015, a unified and integrated logistics C2 capability, aided with advanced communications, data warehouse tool suites, and decision support tools, will enable the ASCC to close the gap between decision, deployment, employment, and support of forces in the JOA.

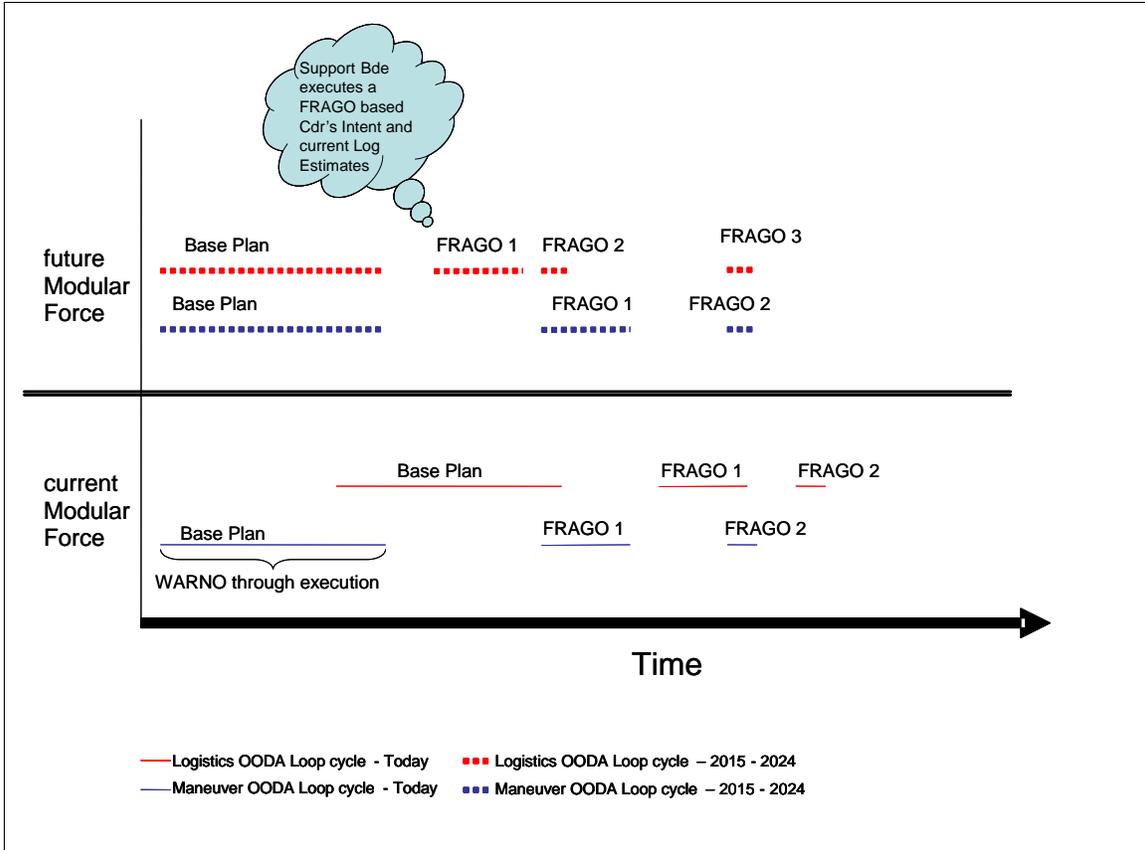


Figure 3-3. The Logistics C2 Problem

Chapter 4

Future Logistics Command and Control (C2)

4-1. Solution Synopsis and Key Ideas

a. The traditional role of Army logistics C2 focused on providing support to a maneuver commander within that particular level of command. While this provided a priority of focus to the maneuver command that owned the logistics unit, there was no integration for overall support to ensure that the entire theater sustainment was coordinated and in synchronization with the combatant command intent. It was subject to the experience, knowledge, and quality of individual commanders as they received new guidance from senior commanders. This interrupted logistics operators and planners in their execution of existing guidance. Overall, this arrangement introduced the potential for inaccuracy, ambiguity, and misinterpretation. This phenomenon was further exacerbated by technical factors such as the quality of communications, and institutional factors such as the insular nature of metrics, cultures, and IT systems. These exist among stove-piped functional domains (such as, transportation, supply, and maintenance), organizations (tactical, operational, and strategic), and supporting domains (such as, life cycle management and acquisition). The result is a “built in” inability of the overall logistics domain to remain synchronized within the decision cycle of the maneuver commander.

b. Current Army logistics C2 is also unable to recognize changes in the intent of the maneuver commander, when they occur, and to collaborate effectively internally even when these changes are recognized. It is suboptimal, largely manual, and does not take advantage of advances in technology and systems. This leads us to an ineffective, reactive system, rather than an anticipatory, proactive system. During peacetime or nonvolatile intervals of deployed operations, this may not be noticeable. But during times of enterprise stress, such as a surge from peacetime or garrison operations to wartime operations, or the need to react to significant changes of the supported commander, the lack of unity of effort, and overall inefficiencies in execution caused by these circumstances, can significantly hinder operations. Considering the future operating environment, commanders must be able to anticipate logistics requirements and forecast operational solutions to support shortened decision cycles. Additionally, they must be capable of reading the operational situation and taking preemptive action in order to ensure mission success.

c. Therefore, the central idea is to synchronize the decision cycle of the logistics commander to operate within the decision cycle of the maneuver commander. Future processes must utilize the intent of the maneuver commander to govern event management and COA decisionmaking in the logistics domain by extending and implementing the MDMP across Army's logistics operations in a theater. The result will provide a unity of effort unrealized in current logistics operations. Furthermore, this idea of synchronizing logistics forecasting, planning, and operations with the intent of the maneuver commander must be developed in the context of the larger joint C2 system. This will ensure proactive and timely support to the JFC. In order to accomplish this, planning and execution activities must be supported across the JIIM enterprise, in a near real time, collaborative, network environment complete with total asset visibility and advanced data mining and decision support tools. In this way, the speed of logistics domain decision cycles can be increased, accommodating the needs of dispersed, distributed forces and their high rates of dynamic mission change and operational pace volatility. The logistics C2 CCP is designed therefore to illustrate three requirements discussed below.

(1) *Expedite the Decision Cycle*

(a) There are six functions inherent to decisionmaking at all levels of command. They are monitor and collect data on the situation, develop an understanding of the situation, develop COAs and select one, develop a plan to execute the selected COA, execute the plan, and provide direction and leadership to subordinates in order to monitor execution of the plan and adapt as necessary. These steps are constantly repeating as the logistics commander and his staff provides running estimates that are continuously updated based on new information as the operation proceeds, which are synchronized with the decision cycle of the maneuver force commander. In addition to these six functions, visibility is also important, as it helps ensure access to logistics processes, resources, and requirements in order to gain the knowledge necessary to make effective decisions. Inherent in this requirement are two key characteristics:

(b) Network enabled decisionmaking. The development of robust communications and network capabilities employed widely across the theater will greatly improve the speed and precision of logistics C2. These capabilities must be supported by information fusion and business area systems, integrated by an automated decision support system. LandWarNet will

provide the global information grid (GIG) services required of all C2 elements. GIG provides a backbone that will enable sufficient bandwidth to allow for sensor data, data warehouse information, and various decision support products to flow between organizations enabling the agility that the future Modular Force requires.

(c) Enable high tempo operations. The logistic C2 capability must enable logistics activities to support the decision cycle of the commander to achieve his desired end state. The logistics OODA loop must be accelerated to the point that it is within the decision cycle of the maneuver commander. The future Modular Force needs a logistic C2 capability that is network-centric, expeditionary, capability based, and modular. It must be designed to fully integrate and incorporate the intent of the maneuver commander. Planning and execution will be the centerpiece to facilitating dynamic planning and execution. By orienting on the intent of the maneuver commander and his desired end state, logistics C2 ensures that logistics enables these outcomes at the right time and place, while reducing and mitigating risks.

(2) *Unity of Command*

(a) The future Modular Force will continue to be BCT based. Each BCT has an organic support battalion that contains traditional logistics support activities and other support slices that each BCT requires (such as, medical, contracting, and others). In echelons above the brigade (EAB) are sustainment brigades and medical commands that provide area support to about 5 to 7 BCTs or like elements. These EAB sustainment brigades and medical commands are not commanded by tactical level maneuver units, but rather by the operational level logistics command (OLLC) at the ASCC level and medical commanders, respectively. The OLLC is singularly responsible for logistics success (less medical and engineering) of the ASCC. The OLLC will need to coordinate all logistics requirements with the appropriate joint logistics integrating authority located within the GCC.

(b) Additionally, the ability to C2 deployable national service sustainment organizations (such as an Army field support brigade or contracting support brigade) is critical. This unity of command will mitigate the effects of distance, time, simultaneity, and complexity of operations. The future Modular Force will require a logistics C2 capability that will mitigate the effects of distance, time, simultaneity, and complexity in executing operations. This will be affected by employing integrated planning and execution. It will also enable a capability to see and sense, plan, monitor, and assess in real time. This will allow control of deployment, redeployment, distribution, employment, regeneration, and sustainment across the entire theater. Logisticians will be able to see the parts, the whole, the environment, the pattern, and the next step. This will allow us to determine options and execute those options that synchronize the priority of support with the priority of effort.

(3) *Unity of Effort*

(a) Unity of effort, not only across the Army, but across joint forces, multinational forces, host nation, interagency, and nongovernmental organizations, is essential to support the GCC. Further, unity of all support functions to include areas such as distribution, personnel services, and contract support need to be unified under the OLLC. The OLLC will work in

conjunction with the theater lead agent for medical materiel to plan and coordinate medical logistics. This allows for quickly building combat power and initiating a theater distribution and sustainment network without deploying excess distribution force structure. Aligning of Army service structure with joint organizational functions will eliminate confusion and redundant C2 structure. Unity of effort is exercised across the spectrum of operations in which the future joint force will be expected to succeed. It integrates various operations in the right proportion. The key to achieving the desired strategic outcomes are adaptable capabilities that can be simultaneously applied to multiple operations.

(b) Unity of effort equates to the unprecedented integration of capabilities in pursuit of a common aim. Unity of effort facilitates the unfettered movement of large and, most importantly, relevant volumes of data, and knowledge between the critical decision nodes of the commander. Unity of effort results in the ability of the logistics OODA loop to synchronize with the intent of the maneuver commander. It enhances survivability and conserves combat power. Unity of effort equates to a responsive logistics system prepared to support other agencies in preventive theater shaping as well as post-crisis or during conflict stabilizing operations, and conversely, prepares to be the supported agency during combat operations. Through unity of effort, the adage that “no plan survives first contact with the enemy” becomes a new rubric, “plans adapt ahead of every contact with the enemy.”

(c) Inherent in this requirement are two key characteristics. The first is linking support to priority of maneuver. Logistics C2 relationships will be predicated on a networked capability across the operational environment that provides timely, battlefield requirements to supporting, logistics units. Command and support relationships as outlined in Field Manual (FM) 3-0, appendix B, which provide the relationships between supported and supporting units, will mitigate ad-hoc logistic activities at the strategic and theater levels. C2 relationships will ensure that logisticians have the same access to information as all other combined arms teams and translate this information into knowledge. C2 relationships must be predicated on the continuous generation of combat power and multiple options for action by the JFC in an ever changing and dramatically more complex battlefield environment. Within C2 relationships, logisticians will obviously be proficient in systems and processes—but their greatest skills will be in using these tools for proactive and intuitive leadership in executing the intent of both the maneuver commander and the logistics and medical commanders.

(d) The second characteristic is integrating logistics planning and execution. The staff planners at all levels must master the art of simultaneous planning for current operations, future operations, and future plans in support of the campaign plan. The speed and complexity of future Modular Force operations will require logistics operations to be continuous and synchronized with the joint deployment and distribution enterprise through consistent use of processes, use of the JLE, and control of all logistics networks to achieve desired results at the appropriate time to accomplish the mission successfully.

(e) Logistics C2 operations and capabilities are inextricably linked with and dependent upon a supporting joint infrastructure to meet the requirements of the maneuver commander. This dependency drives the two basic tenets of logistics C2 operations: joint interdependence and agility. Realization of these two basic tenants is necessary in order to truly synchronize C2

processes at both the tactical and operational levels of command. Joint interdependence relies on all the Services and defense agencies to maximize their complementary capabilities and minimize their vulnerabilities in order to fulfill the mission requirements of the JFC. To meet new challenges stemming from changes in the joint operating environment, the Army must transition into a fully integrated, globally synchronized system. The system must be capable of providing responsive support to tailored expeditionary joint forces conducting simultaneous distributed operations in a dynamic, nonlinear, and noncontiguous environment. A joint logistics C2 capability, operating at the geographical combatant command level, would achieve that interdependence and provide the support needed for joint operations.

(f) In 2015, the logistics C2 functions need to not only perform well in terms of speed and quality of decision, it also must be agile. Agility permeates all aspects of the force. In short, agility is the ability to move quickly and easily. An agile logistics C2 system is a synergistic combination of six characteristics.

- Responsive. Military organizations become more responsive when not bound to the “one size fits all” processes inherent in a deliberate planning process model.
- Resilient. Improving the collaborative logistics C2 functions allows an organization to become more resilient because of the fewer critical failure points in its underlying processes. When critical failure points are removed, more than one path through the organization becomes available and the C2 capability becomes more survivable.
- Robust. The organization becomes more robust when it is not specifically tied to the bounds of a particular set of circumstances or operating environment.
- Flexible. Flexible planning processes help commanders at each level to select a COA more quickly.
- Adaptive. Adaptive organizations have the ability to respond effectively and timely to changes in the operating environment, primarily to external actions (such as, enemy, political, environmental), by manipulating work processes and internal organizational structures.
- Innovative. The opportunity to exchange information freely and gain an understanding of the intent of the overall commander, combined with a greater opportunity to initiate action, create organizations that develop innovative solutions to new situations (see the Joint C2 Functional Concept).

(g) Future Modular Force joint logistics C2 interdependence is underpinned by an agile infrastructure and a more robust and expedited decision cycle. The Service centric focused infrastructure for logistics support of the past must be replaced by an agile JIIM logistics infrastructure. Logistics C2 operations and capabilities are inextricably linked with, and dependent upon, a supporting joint infrastructure. No single medium will provide the complete operational environment picture. Rather, the future Modular Force will exploit the synergy of JIIM logistics assets extending support to the furthest tactical element.

d. Army Operations within a Joint Campaign Framework

(1) The joint force will conduct a phased campaign to achieve assigned objectives. The phases, as elements of the joint campaign, can be inferred from the current joint operations

concept and MCO JOC. These phases often overlap and are described as shape, deter, seize initiative, dominate, stabilize, and enable civil authority.

(2) The Army future Modular Force will conduct operations fully integrated within the joint operational or campaign framework across the spectrum of conflict. Army operations will enable the JFC to seize the initiative early, transition rapidly to decisive operations, sustain operations to achieve strategic objectives, and maintain stability thereafter.

(3) Within the context of the joint campaign framework, the Army future Modular Force will apply adaptive combinations of seven key operational ideas. These are shaping and entry operations; operational maneuver from strategic distances, intratheater operational maneuver, decisive maneuver, concurrent and subsequent stability operations, distributed support and sustainment, and network-enabled battle command.

(4) To facilitate the vignette-based description of Army logistics C2 operations in support of the future Modular Force, this plan will concentrate on only one of the key operational ideas: decisive maneuver. The assumption is that the processes associated with logistics decisionmaking remain constant throughout all the operational ideas. Therefore, focusing on one of them will simplify the illustration of the logistics C2 central idea.

4-2. Vignette

a. Operational Setting

(1) The illustrative vignette used in this CCP is built on a notional scenario. It depicts logistics C2 accomplishment at the operational and tactical levels during the 2015-2024 timeframe. It does not attempt to address all aspects of the campaign. While the mission, enemy, terrain and weather, troops and support available, time available, and civil considerations (such as urban environment versus open terrain) will create additional challenges, it does not affect the decision cycle process.

(2) National and ethnic tensions in the region have grown over a period of years. Recently, B-Land initiated a campaign to control areas of A-Land populated by a similar ethnic population (see fig 4-1). A-Land does nothing to reclaim the region involved, and B-Land moves an army corps into the claimed region. Emboldened by the lack of A-Land response, B-Land increases its support of insurgent activities throughout A-Land focusing on population centers. Terrorist acts directed against oil and natural gas production and pipelines increase. B-Land and E-Land initiate military training operations along their shared border and, in a show of solidarity with its ethnic brothers, E-Land repositions forces along its northern border. Rogue paramilitary forces in the eastern region of C-Land seize key pipeline flow regulation and pump facilities and threaten the flow of oil. A-Land requests United Nations and U.S. assistance, and shortly thereafter the U.S. President authorizes military intervention.

(3) The possibility of military action in this region was predicted well before it occurred due to the coordinated fusion and sharing of information between the JIIM communities most concerned with this region. Prior to the outbreak of violence, the relevant U.S. combatant

commander orchestrated a central planning and wargaming activity. This activity involved all the key JIIM representatives to ensure that a comprehensive approach is adopted in the operational level plan formulated to counter any unrest in this region. As part of this process the supporting OLLC participated in the collaborative planning and decisionmaking process that led to the development of the operational level plans and the COAs developed. This was enabled by the OLLC staff having automatic access to accurate, historical logistics data from previous operations, and the near real time readiness status of JIIM capabilities that are to be employed in each operational plan. This logistics data was collected in near real time by data mining systems, and fused with other operational data sources. It was then modeled through very capable and adaptable simulation and decision support tools. This enabled the coalition forces and the supporting interagency and intergovernmental organizations to be well prepared for rapid deployment and employment in the JOA.

(4) An OLLC operational command post (OCP) also deployed into the region to C2 logistic activities to include deployment and distribution, informed by a deployment and distribution operations center (DDOC) in support of the ASCC. The DDOC synchronizes and optimizes national and theater multimodal resources for distribution, force movement, and sustainment in the area of responsibility. The DDOC accomplishes this by linking strategic deployment and distribution processes to operational and tactical functions in support of the Soldier. Furthermore, the DDOC provides visibility, synchronization, and management of capacity through reach. The DDOC fusion cell conducts detailed logistics assessments, request for information tracking, COA supportability analysis, and task management. The fusion cell uses an aggressive battle rhythm, synchronized with the one used by the maneuver command. The OLLC strives to improve the integration of multi-Service logistics capabilities by engaging all stakeholders and by crossing operational boundaries between Services and process owners to meet the needs of the joint warfighter. The early deployment of various tactical logistics assets is necessary to replenish combat units immediately. Replenishment will commence immediately as combat units consume their initial supplies in about 72 hours. The OLLC is task organized to plan and support combat operations within the decision and execution cycle of the JFLCC and ASCC commanders throughout FSO. The OLLC and other operational and tactical logistics C2 elements are highly responsive and agile, capable of deploying quickly on strategic sea and airlift, and able to link into the joint battle command system, NECC, while en route to the JOA. It is during the early preparation that the OLLC OCP sets the conditions for a favorable operation.

(5) Support operations begin simultaneously with the deployment of forces and remain continuous throughout the campaign. By doing this, the OLLC commander mitigates the need for unplanned operational pauses. The force was established with a much smaller logistics presence and was able to continue vast distribution operations due to the securing of LOCs, to include mobility corridors, and coordination for protection of movement in the high threat environment. Operational contract support is critical throughout, but particularly in theater opening when various initial life support functions are needed. Operational contract support systems need to be part of the logistics enterprise system in order to provide a full COP for logisticians. The early deployment of contracting capabilities is critical in the success of this complicated phase.



Figure 4-1. Operational Setting

b. Homeland defense implications. Although not discussed in the following vignette, defense of the homeland remains our highest priority effort. The increase in international tensions associated with these vignettes and the corresponding need for increased vigilance will place additional demands on capabilities both at home and abroad. Integrated logistics C2 capabilities will enable early warning resources supporting homeland defense operational requirements.

c. Decisive maneuver. The future Modular Force executes decisive maneuver to achieve the operational tasks assigned by the JFC. Decisive maneuver is characterized by simultaneous, distributed operations, direct attack of enemy decisive points and centers of gravity, and controlled operational tempo.



Figure 4-2. Decisive Maneuver

(1) The JFLCC and the Army units assigned to it have successfully conducted shaping operations, operational movement across strategic distances, and intra-theater operational movement placing them in positions of operational and tactical advantage across the JOA. The JFLCC now executes decisive, simultaneous, distributed operations to conduct a direct attack on enemy forces occupying A-Land (main effort) and defensive operations to ensure the security of attacking forces and prevent further cross-border operations by B-Land (supporting effort). The Future Combat System (FCS) BCT moves to prevent any involvement by E-Land and secure the east coast approaches to the capital city. JFLCC secures LOCs and conducts operations to prevent paramilitary force disruption of logistics operations. Extended range unmanned aerial systems, JFLCC aviation, OLLC assets, tactical logistics units, and joint fires continue to support the maneuver forces. The Joint Force Air Component Command (JFACC) maintains air superiority, provides joint fire support, and conducts reconnaissance operations to monitor threat force movement.

(2) As part of the JFLCC orders process, the OLLC is tasked with providing support and a logistics estimate to be part of the higher headquarters orders processes at the GCC. Throughout the campaign, the JFLCC, ASCC, OLLC, and other commands at the operational and tactical levels have all been using a C2 cycle. This cycle is conducted deliberately in the initial orders development and then more hastily as the operations continue. See figure 4-3 for the basic C2 functions and process cycle and figure 4-4 for the interrelationship of the basic C2 functions within a JIIM environment and the decisionmaking process. This figure portrays the centrality of the commander and his decision cycle, and the interaction between him and the logistics, operational, and intelligence decisionmakers influenced by and within the JIIM environment. There are numerous different methods used to describe the C2 cycle in joint and Army concepts. Table 4-1 shows a linkage of these different descriptions. The products of this cycle are actual operations orders, logistics estimates, and fragmentary orders (FRAGOs) as required to adjust to changing dynamics of the operation. A dynamic, synchronization matrix is

also developed and updated during these rapid decision cycles to aid in controlling the logistics forces. The critical issue throughout the campaign is for the logistics commanders and staffs to run the C2 cycle nested and synchronized within the decision loop of the maneuver commander at each level. It tracks not only assets, supplies, and requirements of joint forces, but also inter-agency and multinational partners, and host nation support. We will now look in depth at exactly how this logistics C2 cycle flows within the planning and execution of the decisive maneuver operations on the enemy forces.

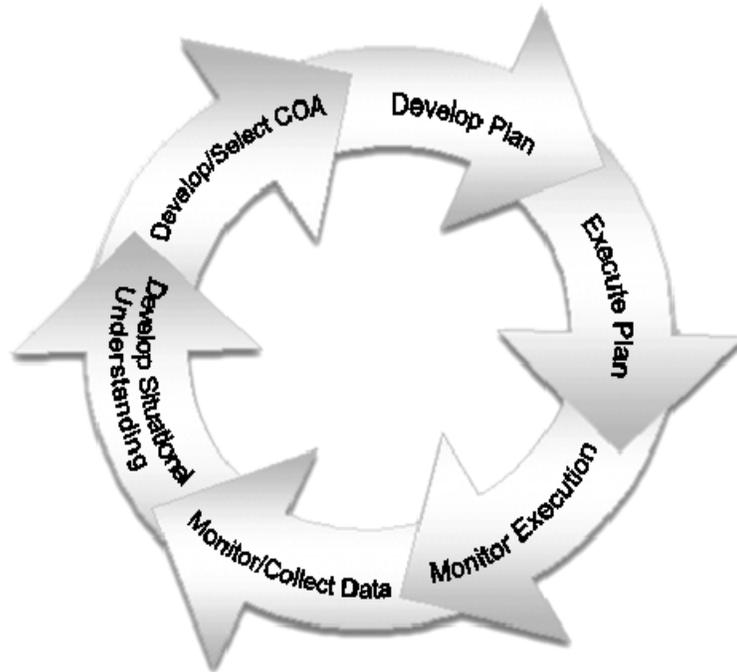


Figure 4-3. Basic C2 Functions and Process

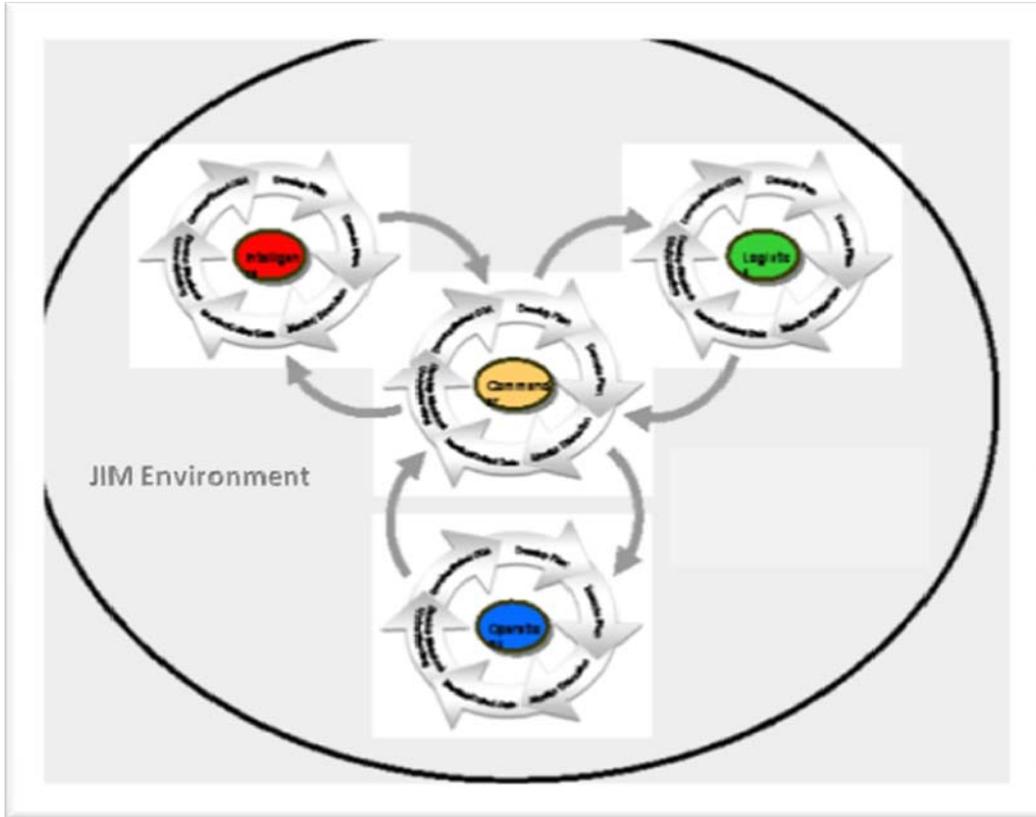


Figure 4-4. The Interrelationship of the Basic C2 Functions and Processes

Table 4-1
Decision Cycle Comparison Chart

Decision Cycle Comparison Chart				
Joint Functional Concept for Command and Control	Joint Publication 1-02	Army Functional Concept for Battle Command	FM 6-0 Mission Command	FM 6-0, Appendix A (OODA Loop)
Monitor and Collect Data	Planning	Plan	Plan	Observe
Develop an Understanding of the Situation				Orient
Develop and Select a Course of Action	Directing	Prepare	Prepare	Decide
Execute the Plan	Controlling	Execute	Execute	
Monitor Execution and Adapt as Necessary		Frame/Re-frame	Assess	Observe/Orient

(a) Monitor and collect data on the situation. The integrated picture of the interrelated data from all sources (maneuver, logistics, other joint and multinational forces, other agencies, and the host nation) need to be extrapolated and fused into a relevant informational picture for use by logistics commanders and staffs. Each staff section in the JFLCC publishes their specific estimates or annexes for the rest of the staff to use in their planning processes. A network centric system enables commanders and staffs to share information simultaneously to aid in self-synchronization and ensures they understand the operational intent of the commander. Various

levels have distinct permissions which allow them to publish MDMP products. All staff sections and lower commands at both operational and tactical levels have permissions through the NECC to access these higher MDMP products. There they can access and use products of all staff elements during the development of their SA. In addition, like logistics elements, many of the staff sections have very dynamic environments where the status of equipment, personnel, and supplies are constantly changing. On board sensors will extract this critical information and, through wireless communication systems, push this data to the GIG. This will then populate data warehouses located on the continental U.S. (CONUS) and other safe havens. The logistics C2 systems as a part of the overall NECC will pull information from these data warehouses to develop and publish functional staff products that will become part of the overall command products. The strategic level commands and agencies will also be able to access these data warehouses to develop trend analysis and historical reports to better support the GCC from the strategic level.

(b) Develop an understanding of the situation. It is not enough for the JFLCC, the OLLC, or lower commands to access this vast amount of data. In order to make sense of it, they must also take into account the intent of the commander and the desired results required to achieve the strategic objectives. It is here that cultural understandings, unique to each part of the JOA, enter the equation and are considered. This vast amount of data that will be present in these data warehouses from sensors throughout the JOA and strategic locations could overwhelm the staff elements. Intelligent agents will be used to collect data and intelligence analysis will fuse this data into a relevant, COP considering logistics status information, intelligence data, cultural data, and other relevant information. This COP will provide the staff and commanders at the OLLC OCP and lower level commands with critical knowledge which will foster SU. With this COP, they can develop continuous evolving COAs. The OLLC OCP will share this SU with support and maneuver brigades, as well as our JIIM partners and, in the appropriate format, with host nation entities.

(c) Develop COAs and select one. In the OLLC, advanced decision support systems are linked directly into the NECC as part of the logistics C2 systems. This allows the OLLC staff to use artificial intelligence to analyze the SU and combine it with both the intent and the commander's critical information requirements (CCIR) to provide the staff with COAs. Each staff element has been institutionally trained to evaluate the decision support tools products and apply risk management procedures to develop a recommended COA for the commander. Only the commander at each appropriate level will make the final decision on which COA to develop into a plan, as well as any caveats to be included. It is here that the art of leadership and command, the human in the loop, come to play in our future operations. The commanders and their staffs rely on advanced automation systems and artificial intelligence based on a network centric framework in a web based environment to aid in their collaborative planning. This will allow for and greatly accelerate their decision cycle to better support the JFLCC commander.

(d) Develop a plan to execute the selected COA. The staff at the OLLC level, under the guidance of the Chief of Staff, will, using the logistics C2 systems as part of the NECC, begin to finalize the plan, publish it, and provide any additional guidance to subordinate units and JIIM forces. Subordinate units of the OLLC and the maneuver brigades have been kept informed during the planning process. This, along with access to the same SA, SU tools, and warning

orders allows parallel planning to occur. This will further shorten the decision cycle. The plan that the OLLC has developed leverages all logistics capabilities of the JIIM forces and host nation assets through the NECC environment in order to support the simultaneous attacks and initial resupply actions of the JFLCC Commander.

(e) Execute the plan, to include providing the direction and leadership to subordinates. The OLLC and the sustainment brigades and maneuver brigade staffs rehearse the operations through virtual means. The commands use chat rooms, virtual white-boards, and virtual overlays on their COPs to walk through the concept of support as it relates to the maneuver concept of operations. H- Hour arrives; JFLCC forces begin the execution of the decisive maneuver operations. Sensor data from both fights come streaming in rapidly as ammunition counts, maintenance status, and Soldier status begin to change in the dynamic environment. Data shows that one of the brigades is expending ammunition and suffering battle damage quicker than anticipated. CCIRs on the logistics C2 systems at all levels related to that brigade and the sustainment brigade publishes alerts concerning the status of the brigade. These alerts allow the sustainment brigade to redirect needed support or prepare a configured load of Class V and Class IX as well as normal re-stockage of the other classes of supply such as, I and III (B). Additionally, the sustainment brigade staff uses the system to analyze the best MSR to send a supply convoy to the affected brigade. The logistics C2 system is constantly updating the SA and understanding on the consoles of the commander and staff allowing them to pass guidance to the sustainment brigades as they execute the plan.

(f) Monitor execution of the plan and adapt as necessary. The operation is proceeding well. The forces are being supplied as they continue to press the attack. The long duration of weeks in theater is starting to take a toll on the tracked vehicles. Sensors are indicating that fuel pumps are failing faster than anticipated. The OLLC, through their dynamic synchronization matrices, adds this as a CCIR and directs DLA to increase distribution of fuel pumps and begin pushing them faster to theater.

(g) End state for this operation is, JFLCC brigades destroy B-Land forces within A-Land and restore the territorial integrity of A-Land. E-Land forces are prevented from conducting cross-border operations. Paramilitary forces are incapable of conducting operations above team level. The A-Land capital city, its domestic infrastructure, and government are intact, and coalition forces are conducting security operations throughout the eastern provinces of A-Land. JFACC maintains air superiority throughout the JOA and provides joint fires as required. OLLC in conjunction with the theater lead agent for medical materiel continues to coordinate and provide logistics support to all elements in the JOA. Operations now shift to distributed support and sustainment. During this time, sustainment brigades have received the initial order of fuel pumps and using sensor information and the direction or intent of the maneuver commander have prioritized which BCT will receive the first order. Subsequent orders come in daily and fuel pumps are distributed in accordance with the guidance provided by the distribution management cell, which is part of the OLLC. This guidance is in agreement with the supported commander's intent. With the end of each phase, the decision support systems use artificial intelligence resident in them to assist in compiling an after action report on themselves and the staff. This allows the system, the commander and the staff to learn from the operation and apply these

lessons learned into modeling the next COAs for future operations and to keep training relevant to actual operations.

(3) This decision cycle listed above and described in this vignette is just that, a cycle; it repeats in the rapidly changing dynamic of the environment in which the joint and multinational forces operate. It is repeated for each FRAGO and subsequent order that is published by each level of command. Collaboration is greatly enabled by systems like the NECC, GIG, LandWarNet, and other network centric technologies. In order for much of the planning and collaboration to take place, information must be able to address multiple levels of security in order for true collaboration and JIIM execution to occur. This is especially true in logistics when dealing with host nation support and multinational partners. Further, much of the sensor data being transmitted will be in unclassified modes until it reaches the data warehouse. This will require greatly improved methods of crossing information systems security boundaries to allow for this planning and coordination to occur rapidly.

(4) The logistics C2 capabilities illustrated in this operation include the following.

(a) Allocation of logistics forces and assets is continually monitored and adjusted to ensure adequate support to the operation's efforts in support of the commander's intent.

(b) On-the-move C2 capabilities are most critical during this phase, allowing commanders and leaders to position themselves at decisive points on the battlefield while maintaining SA and contact with both supported and supporting commanders.

(c) On-the-move elements and C2 elements are able to maintain access to critical information to meet mission requirements.

(d) Logistics C2 capabilities enable the continuous connection of sensors, Soldiers, and commanders to maximize the effect of Army and joint fires, maneuver, and logistics support in near real time.

(e) Command posts receive a stream of locally- and nationally-generated intelligence products to maintain awareness of enemy force movements. Local intelligence information is passed through the same network transport links to higher headquarters and national agencies for further analysis and dissemination.

(f) Field medical facilities maintain contact with CONUS military and civilian medical centers to consult on patient treatment.

(g) Network services and transport means enable updates of unit sustainment status, requests for supplies and repair parts, and casualty reporting. Connection of automated logistics management systems enables immediate updating of global data bases and prompt dispatch of needed materials to the area of operations (AO).

b. Logistics C2, as described in this CCP, is an agile construct combining the expertise, skills, and capabilities of the business process systems of logistics and maneuver commanders, and sensors organic to many of our unit. JIIM personnel are together in the OLLC staff operating in fusion cells to create the synergy necessary to support the high operational pace that the operation is creating at the tactical and operational level.

c. Advanced decision support tools and data mining tools are enabling the logistics commanders and staffs at operational and tactical levels to operate their decision cycles in synchronization with the supported maneuver commanders in order to afford them greater agility in the on-going operation. Numerous Army distribution, health system support, and maintenance operations are occurring simultaneously at all levels in order to allow the maneuver units to maintain their momentum. Sensors are feeding data through LandWarNet to servers located back in CONUS. The data from these platform sensors and other systems data, located in data warehouses in a safe haven, is simultaneously interrogated by logistics C2 intelligent agents for critical information to update the SA and SU required by the logistics staffs. Virtual collaboration technologies allow geographically dispersed logisticians to meet and collaborate to determine how to best support the ongoing operations. This drives the ever changing decision cycle that is supporting logistics operations. Logistics staffs have the ability to see all manner of status on both Soldiers and systems in operation, logistics requirements coming from sensor data, supply status to meet these requirements, and stockage levels at all echelons from platform to depot.

d. In order to keep the entire logistics chain unified, information related to SA is transitioning across security boundaries between high and low sides and back again. This enables all multinational and host nation partners to be more anticipatory and able to prepare to push resources quicker to the needed locations. It also allows decisionmakers a clearer picture of all the resources that are available at any given time.

e. With all these enablers working in concert with the trained logistics staffs and their commanders, the logistics chain is able to support the demands of the future Modular Force.

Chapter 5

Required Capabilities

5-1. Introduction

a. Army functional concepts provide both explicit and implicit descriptions of the logistics C2 functions necessary to achieve the objective state of the future Modular Force. These capabilities are not ends unto themselves but integral components of a larger capability goal. The influence of a single logistics C2 enabler is not confined to a single functional concept. It often enables or affects one or more of the functional concepts and multiple proponent areas of responsibility. As a result, when logistics C2 capabilities are applied simultaneously, they have the potential to create synergy few commanders or military forces have enjoyed.

b. This listing of required capabilities should be interpreted as optimum capabilities during the 2015-2024 timeframe. The Army logistics C2 required capabilities listing is presented in relationship to the Army functional concepts. The listing is not all inclusive and will be further refined and developed as the Army logistics C2 operations concept emerges and as the JCIDS analysis is executed. Technological and threat advances may also drive changes to the listed logistics C2 related capability requirements. These capabilities are required by elements from Soldier, platform, and sensor level to corps, joint task force, and ASCC theater Army levels in a JIIM environment unless otherwise stated.

5-2. Battle Command Logistics C2 Capabilities

a. TRADOC Pam 525-3-3 provides a visualization of how Army future Modular Force commanders will exercise C2 of Army operations in a JIIM environment. The battle command function is a blend of the cognitive and the technical. Central to the technical component is the concept of a single, integrated joint battle command system enabled by an agile, ubiquitous communications network. It is achieved by combining the art of well-prepared leaders with the enabling science and technical systems of the future Modular Force.

b. Many of the key ideas within TRADOC Pam 525-3-3 relate to or are enabled by logistics C2 systems. These include collaborative planning; accelerated MDMP, decision superiority, and red teaming. It also includes a single, integrated joint battle command system, which includes the network, interagency and multinational interoperability and integration, horizontal and vertical fusion of logistics information, and an agile, ubiquitous communications network from CONUS-based national level, through the tactical level, and to the individual Soldier.

c. Full achievement of the capabilities described in TRADOC Pam 525-3-3 will require the integration of a wide range of DOTMLPF solutions. Supporting battle command in the future Modular Force requires the following capabilities.

(1) Centralized management of JIIM logistics under a single interoperable system in order to provide a single logistic COP for all levels of command. This along with the Theater Medical Information Program–Joint located with the theater lead agent for medical materiel will also provide the JFC a consolidated Army point of focus for theater logistics.

(2) The ability to securely exchange logistics data and information at the appropriate level of classification with JIIM partners in order to direct and receive logistics support among and between these partners in support of the JFC concept of operations.

(3) The ability to minimize unnecessary duplication of effort, eliminate competition for the same resources and reduce unnecessary warehousing of materiel that taxes manpower resources in order to maximize effectiveness of the sustainment effort, to ensure replenishment among and between JIIM partners.

(4) Integrated, networked, and effective information and communication systems to enable decision support tools allowing logistics to operate within the operational commander decision cycle by expediting COAs development and analysis; uninterrupted plug and play

logistics systems which allows rapid changes to the task organization; and in-transit visibility with the ability to reprioritize, reroute, and reallocate in transit and allow the coalition or joint forces command commander to employ integrated options.

(5) An organizational construct, with clearly delineated lines of C2, that is rapidly deployable, fully capable, and immediately employable to enable immediate, dynamic, and consistently available support to deploying JIIM mission partners.

(6) Support systems capable of the commensurate mobility, self-protection, and communications (linked to logistics C2 as the forces being supported. This will provide improved logistic agility and continuous, uninterrupted logistics to JIIM mission partners.

(7) The ability to control all aspects of the logistics system for all matters of support.

(8) Standard DOD logistics systems and procedures.

(9) Ability to influence information engagements directed at mass media.

5-3. See Logistics C2 Capabilities

a. TRADOC Pam 525-2-1 describes how the future Modular Force will acquire and generate knowledge of itself, its opponent, and the operational environment. Conversion of huge amounts of data into information and knowledge will require new capabilities for exceptionally fast and accurate processing, analysis, and distribution. The fusion and analysis required to achieve this is the most important and challenging facet of the see function. Without the ability to see, the Army is incapable of creating a force capable of seeing first, understanding first, acting first, and finishing decisively.

b. Full achievement of the capabilities described in the TRADOC Pam 525-2-1 will require the integration of a wide range of DOTMLPF solutions. Supporting the ability to see in the future Modular Force, requires the following capabilities.

(1) An integrated system of systems, assessable at the lowest echelon of command, that enables constant real time monitoring of Soldiers, equipment, supplies, available assets, requirements, and priorities. This system will provide comprehensive asset balance status as well as in-transit visibility throughout the JOAs. A specific example includes the ability to view in detail materiel awaiting lift assignment at ports of embarkation as well as frustrated cargo waiting disposition at ports of debarkation.

(2) Sensors and communications systems must have passive systems that automatically report status from the platform or Soldier, both vertically and horizontally as part of the publish and subscribe system architecture on a nonintervention basis.

(3) Relevant information from authoritative sources within intelligence and operations domains must be available to all communities of interest.

(4) Data mining tools must be available to process rapidly the large amounts of data located in the various data warehouses. This will enable the logisticians to provide the commanders and staffs with accurate, timely information.

(5) Logistics operational items must contribute to (publish) and have access to (subscribe) a clear and relevant COP that presents current and forecast information on all aspects of friendly forces.

(6) Ability to see in near real time actual consumption or use of assets that facilitate forecasts of both near-term and continuous future logistic requirements.

(7) The ability to predict future states in order to recognize and exploit opportunities for preemptive action, thereby reducing risk, variability, and uncertainty. This includes the ability, within a net-centric environment, to predict logistics requirements for improved COA analysis, decision making, and mission execution

5-4. Move Logistics C2 Capabilities

a. TRADOC Pam 525-3-6 focuses on strategic force projection and operational agility in support of joint campaign objectives. Operational maneuver from strategic distances and achievement of the deploy equals employ paradigm are heavily reliant on accurate SU, reach, and the ability to execute en route mission planning and rehearsal. Modular in construct, the future operational support commands will C2 Army theater distribution. It will establish a distribution network that optimizes all available distribution capabilities to provide a robust, adaptive, and dynamic network of logistic nodes, linked by multi-nodal transportation capabilities to optimize available assets. The other Services will contribute and manage specific capabilities in support of their efforts using the theater base as required. Distribution will be coordinated centrally at the operational level in accordance with the maneuver commander's priorities, but executed regionally, in close proximity to the user, by logistic formations, weighted to priority of maneuver in support of critical campaign objectives. Subordinate logistics formations will provide both area support and formation specific support as directed.

b. Full achievement of the capabilities described in TRADOC Pam 525-3-6 will require the integration of a wide range of DOTMLPF solutions. Supporting move in the future Modular Force requires the following capabilities.

(1) Rapid positioning of scalable, tailorable, employable joint support packages within the JOA to support the priorities of the maneuver commander and achieve the desired outcomes.

(2) Ability to at least positively influence and at best C2 JIIM logistics elements in all phases of the operation, while on the move.

(3) Ability to transmit platform sensor data and information while on the move.

(4) Ability for supported units to be sustained during planned cycled movements during operations.

(5) Ability to plan and control intra-theater movements to ensure the right materiel and personnel arrive at the right time and the right place.

(6) Ability to control a robust distribution process capable of supporting all JIIM elements in the JOA. Illustrative of this is the ability to plan efficient transloading among modes of transportation. For example, planning inbound air shipments with outbound ground transportation at ports of debarkation.

(7) Ability to maintain movement control and in-transit visibility of all friendly logistics elements.

(8) Ability to track status of equipment and personnel to the individual part or the individual Soldier.

5-5. Strike Logistics C2 Capabilities

a. TRADOC Pam 525-3-4 addresses future Modular Force fires at the strategic, operational, and tactical levels. This access provides near real time SA and SU, enables precision strike operations, and is equally applicable to both lethal and nonlethal effects.

b. Full achievement of the capabilities described in TRADOC Pam 525-3-4 will require the integration of a wide range of DOTMLPF solutions. Supporting strike in the future Modular Force requires the following capabilities.

(1) The ability for sensors to provide real time status during operations, such as the amount of ammunition expended, fuel and rations consumed, or the operational status of a major combat system.

(2) The ability for the logistics commanders and staffs to assess the effects of on-going operations and the resultant impacts as they relate to maneuver commander tactical and operational objectives and intent.

5-6. Protect Logistics C2 Capabilities

a. TRADOC Pam 525-3-5 describes how the future Modular Force will protect people, physical assets, and information against the full spectrum of threats. Each of the five enabling tasks contained in TRADOC Pam 525-3-5: detect, assess, decide, act, and recover, are enhanced by logistics C2 systems and enablers.

b. Full achievement of the capabilities described in TRADOC Pam 525-3-5 will require the integration of a wide range of DOTMLPF solutions. Supporting protect in the future Modular Force requires the following capabilities

(1) The ability to protect assets from improvised explosive devices, ambush, and other irregular warfare threats.

(2) The ability to change orders rapidly, redirecting logistics assets that may be advancing into a hostile area.

(3) The ability to predict when logistics personnel and assets may be advancing into a potentially hostile area.

(4) The ability to protect logistics sites and network nodes from physical and cyber threats.

(5) The ability to protect and disguise the various electronic emanations from all of the various platform sensors from interception, disruption, detection, corruption, or falsification while they are performing their mission.

5-7. Sustain Logistics C2 Capabilities

a. TRADOC Pam 525-4-1 describes future Modular Force logistics as a single, coherent system that senses and interprets the operational environment and responds through network capabilities. The ability to execute logistics support missions efficiently through a sustainment system from the source of support, generally CONUS, to the point of effect, generally an organization deployed in a theater of operation, is heavily dependent on logistics C2 systems.

b. Full achievement of the capabilities described in TRADOC Pam 525-4-1 will require the integration of a wide range of DOTMLPF solutions. Supporting sustain in the future Modular Force requires the following capabilities.

(1) The ability for sensors to monitor platform status in near real time.

(2) The ability to provide a secure, pervasive, logistics C2 and support infrastructure. The structure will emphasize speed, precision, accuracy, visibility, and centralized management from Soldier platform to CONUS through a logistics COP. This will include: logistics requirements; supply distribution and management; reach to industry and knowledge centers; passive and active tracking and monitoring capabilities; petroleum and fuel supply; ability to support a logistics COP; proactive and anticipatory maintenance, supply, and distribution; munitions; water; and logistics preparation of the battlefield (Soldier platform through JFC).

(3) The ability to tailor information so that it meets the needs required at each specific level of command.

5-8. Crosswalk of Logistics C2 Requirements with Required Capabilities

In order to illustrate more clearly the relationship between the required capabilities for logistics C2 and the three overarching requirements described earlier in chapter 4 of expedited decision cycle, unity of command, and unity of effort, this crosswalk is established (table 5-1).

**Table 5-1
Logistics C2 Requirements vs. Required Capabilities Crosswalk**

Requirements	Required capabilities grouped by Functional Concept					
	TP 525-3-3 (Section 5-2)	TP 525-2-1 (Section 5-3)	TP 525-3-6 (Section 5-4)	TP 525-3-4 (Section 5-5)	TP 525-3-5 (Section 5-6)	TP 525-4-1 (Section 5-7)
Expedited Decision Cycle	1, 2, 4, 6, 7	1, 2, 3, 4, 5, 6, 7	2, 3, 5, 6, 7, 8	1, 2	2, 3	2,
Unity of Command	1, 4, 5	3, 5	1, 2	2		3
Unity of Effort	3, 7, 8, 9	1, 2, 3, 6, 7	1, 3, 4, 5, 6, 7, 8	1	1, 3, 4	1, 2, 3

**Chapter 6
DOTMLPF Implications and Questions**

6-1. Introduction

a. The Army is pursuing the most comprehensive transformation of its forces since the early years of World War II. This transformation is happening while the nation is at war. The urgency of supporting the current fight blurs what would usually be a clear distinction between the current force and a future force. The Army seeks to accelerate incorporation of select future Modular Force capabilities into the current Modular Force to support today’s fight, while simultaneously ensuring lessons learned today are applied to future Modular Force developments.

b. This transformation encompasses more than materiel systems. Adaptive and determined leadership, innovative concept development and experimentation, and lessons learned during recent operations produce corresponding changes in the DOTMLPF domains. Experimentation, war games, and experience are the methods the Army uses to mitigate risk while considering and improving capabilities for the future Modular Force.

6-2. Previous Experiments, Wargames, and Studies

TRADOC and its proponent schools have conducted extensive experimentation that has implications on TRADOC Pam 525-7-18 and logistics C2 in general. The following is a selective list of major experiments and war games involving logistics C2 functions. They include: the Unified Quest exercise, Omni-Fusion exercise, and the modular force logistics (looking out to 2015) workshop. They also include the Modular Logistics in a Future Army Modular Force computer assisted map exercise (CAMEX), the logistics exercise planning workshop, the theater opening rehearsal of concepts (ROC) drill, the theater distribution Experiment, the air and ground distribution CAMEX, U.S. and United Kingdom ROC drill, and the logistics C2 seminar.

6-3. Experimentation

a. Experimentation is the process of exploring innovative methods of operation to assess feasibility, evaluate utility, and determine limitations of the concepts being explored. Experiments conducted in support of JCIDS efforts target the 2015–2024 timeframe. The Army also conducts wargames using futuristic scenarios (15 to 20 years in the future and beyond) to explore concepts in order to better define which of those concepts should be the subject of experimentation. Army experimentation is usually conducted in the form of discovery (usually in a constructive modeling and simulation environment), hypothesis (also in a modeling and simulation environment, but with human-in-the-loop role players) and demonstration (live or simulated) settings.

b. Discovery experiments are designed to inform a concept. The setting tends to lack the degree of control necessary to allow a reasonable inference of cause and effect.

c. Hypothesis testing experiments. Hypothesis testing experiments are the traditional type used by individuals to build, confirm and advance knowledge. This occurs by seeking to falsify specific hypotheses—usually described in “if...then” statements—or by discovering their limitations. In order to conduct hypothesis testing experiments, the experimenter creates a situation in which one or more factors of interest can be observed systematically under conditions that vary the values of factors thought to cause change in the factors of interest. As this occurs, other potentially relevant factors are held constant.

d. Demonstration experiments are used to display knowledge, and the settings tend to be somewhat orchestrated. Often the Army uses this method to display prototypes of emerging technologies that are nearing maturity and may be considered for fielding to the force.

6-4. Modeling and Simulation

Models and simulations are often used to make an informed assessment. They are also used to support training and leader development. Scenarios or vignettes are built to look at one or more sets of conditions that will best help to evaluate hypotheses. However, the raw data is often not conclusive or requires reasoned review by seasoned subject matter experts to confirm the reliability of simulation or modeling outcomes.

6-5. Concept Development and Experimentation (CD&E)

a. CD&E is fundamentally a risk reduction activity. Failure to conduct effective CD&E significantly increases developmental risk for the future Modular Force and operational risk to the current Modular Force. Specific actions are required to reduce operational risk to the current Modular Force and developmental risk for the future Modular Force.

(1) Operational risk to the current force. Increase the capabilities of the current Modular Force through prototype experiments that test the compelling solutions and develop DOTMLPF capability packages to support the early introduction of future Modular Force capabilities to satisfy critical current Modular Force operational needs.

(2) Developmental risk for the future Modular Force. Reduce future Modular Force developmental risk by developing concepts and capabilities that meet the needs of the future JFC through rigorous concept development and experimentation.

b. Army efforts. Army wargames and experimentation to support this CCP for logistics C2 operations and their impact on DOTMLPF factors will be developed and studied using approved defense planning scenarios and vignettes. If required, other scenarios and vignettes may be recommended or other methods found to evaluate aspects of logistics C2 capabilities. Experimentation will help define how the required capabilities described in chapter 5 of this CCP can best be achieved.

c. Joint efforts. Joint war games and experimentation will support this CCP. Active participation in other Service and joint events is critical to the full assessment of the Army's DOTMLPF solution sets. Army logistics organizations and logistics C2 operations will be tested, evaluated and modified as conditions (for example, scenario, vignette) change during experimentation. Scenarios and vignettes selected for experimentation will provide an illustration of how Army logistics organizations and logistics C2 capabilities will support full-spectrum operations throughout the deployment cycle.

6-6. Wargaming

a. Wargaming is a process of discovery and assessment. Wargaming develops insights into the impact of logistics C2 capabilities and aids in assessing the validity of strategic visions and emerging concepts while looking 20 to 30 years into the future. War games are also used to stimulate training. Wargaming begins by attaining operational research on future warfighting systems and concepts and applying them to simulated military operations in order to prove or disprove visionary ideas and to discover gaps and seams in future Army logistics C2 operations.

b. Wargaming examines Army functional concepts to include TRADOC Pam 525-2-1, TRADOC Pam 525-3-2, TRADOC Pam 525-3-3, TRADOC Pam 525-3-4, TRADOC Pam 525-3-5, TRADOC Pam 525-3-6, and TRADOC Pam 525-4-1, and generates insights that inform experimentation and guide the development of logistics C2 concepts, architectures, and systems that meet future Modular Force requirements. Game personnel lead participation in Army, joint, interagency, and multinational war games. They integrate logistics C2 capabilities, concepts, and visions into war game scenarios, orders of battle, force lay-downs, and computer simulations.

6-7. DOTMLPF Questions

a. There are significant implications for the Army and the joint community as we evolve Army logistics C2 and the required synchronization of these operations across the DOTMLPF domains. This question list relates only to this CCP and may drive updates to the TRADOC Integrated Questions List in the future. Due to joint interdependence associated with logistics operations, some study issues transcend the direct role of the Army. However, the ability to influence the design and development of the range of DOTMLPF solutions for the joint force is an Army responsibility. Specific areas of logistics C2 should be examined fully as the joint and

Army communities move to an advanced form of integrated joint and Army logistics C2. The Army concepts used in the development of this CCP include a discussion of the implications of the concepts for DOTMLPF. In many cases, those implications relating to logistics C2 are explicit enough to generate some action for change within the DOTMLPF domains by responsible proponents and agencies.

b. The *primary* implications arising from this Army CCP, vice an exhaustive list, are described below. However, many of the items cited below will require additional analysis before comprehensive, actionable recommendations emerge.

(1) What are the most effective organizational designs for implementation of the Army logistics C2 concept?

(2) What are the objective and threshold capabilities required for achieving the capabilities and supporting logistics C2 enablers identified in the logistics C2 concept?

(3) What future operational and organizational challenges remain from conceptual efforts today?

(4) What logistics C2 capabilities does the Army have to provide other services in order for them to implement the logistics C2 concept?

(5) What logistics C2 training and training support capabilities does the Army have to provide to other services or integrate with other services to implement the train-as-you-fight concept?

c. Doctrine

(1) Doctrine provides the intellectual foundation of our Army. It provides principles and terminology that guide our use of forces in joint and Army operations. Emerging joint and Army logistics C2 doctrine will address the operational and tactical levels and provide the fundamental principles for the application of logistics C2 enablers across the future Modular Force. This emerging doctrine must establish a common frame of reference on the best way to prepare and apply logistics C2 enablers.

(2) As the future Modular Force nears operational readiness, these documents will continue to evolve. The evolution of organizations is driven by concepts and doctrine. Consequently, new doctrine and TTPs will be required to effectively plan and manage battles collaboratively. Evolving Army doctrine must seamlessly integrate joint doctrine to optimize planning and execution of warfighting operations at all levels. Doctrine questions include, but are not limited to the following.

(a) How does joint logistics and battle command doctrine influence the conduct of Army logistics C2 operations?

(b) Is Army logistics doctrine in concert with joint logistics doctrine?

- (c) Is current joint logistics and battle command doctrine adequate?
- (d) Does joint doctrine adequately address the joint interdependence of the Services in the area of logistics C2?
- (e) Is current Army logistics and battle command doctrine adequate?
- (f) What are the impacts of international law on joint and Army doctrine?
- (g) What are the impacts of national rules of engagement, policies, and law on Army logistics C2 doctrine?
- (h) Is logistics C2 adequately addressed in Army doctrine in the theater, corps, and division doctrinal publications?
- (i) Are current TTPs adequate to execute required Army logistics C2?
- (j) Do proponent doctrinal publications integrate requisite Army logistic needs across the JIIM spectrum?
- (k) What emerging logistics C2 technologies, processes, and capabilities need to be codified in Army doctrine?
- (l) Does our doctrine include use of civilian DOD technicians within units and data warehouses that would deploy with the unit or organization when required?

d. Organization

(1) Army and joint forces headquarters will be organized into tailorable packages. These forces will be designed to be capable of “plugging” joint capabilities into any command structure in any smaller-scale contingency or major combat operation. At the theater and/or operational level, the Army will be assigned or operate as part of a joint or multinational command where the integration of JIIM and NGO will take place. It is critical that this operational command level be joint to ensure a more harmonious unity of effort in supporting the operational commander. At tactical levels, logistics organizations may be Service specific, but they must still operate with all JIIM organizations they may be supporting or by whom they are supported. Virtual liaisons through the NECC will provide greater interoperability and coordination for the supported and supporting units. At both operational and tactical levels of command, logistics staffs will be more proficient and effective as more advanced data mining and decision support tools expedite the logistics staff decision cycle and automate the manually intensive efforts this requirement currently takes.

(2) The rank of the commander and the functions of the headquarters (HQ) will not necessarily correspond to the numbers of forces assigned to it. In many operations, the number and composition of subordinate units will differ dramatically. As each operation unfolds, the structure of the deployed Army force will evolve, shifting in composition, as the mission and

circumstances require. While units stationed with the HQ may align for training and readiness, actual operational groupings will be based upon mission requirements. Organizational questions include, but are not limited to the following.

(a) What are the appropriate organizational structures to enable effective Army logistics C2?

(b) Are current Army logistics C2 organizations adequate to meet the joint logistics requirements of the future Modular Force?

(c) Can current organizational structures be augmented to satisfy the capabilities of Army logistics C2?

(d) Is a new organizational structure required to achieve the required capabilities?

(e) What Army logistics C2 capabilities should reside in our tactical and operational forces?

(f) What Army logistics C2 capabilities should reside in Army logistics C2 organizations?

(g) What are the appropriate organizational structures to enable effective joint logistics?

(h) How does the Army get trained civilian technicians integrated within an organization structure from tactical and higher so they are deployable?

(i) What Army logistics C2 capabilities should reside in our generating and operating forces?

e. Training

(1) Future Modular Force training will focus on the joint environment. Commanders will conduct unit level to joint task force level training from home station to joint training centers to operational deployments. Doctrine and organizational change cannot be realized without changes to the Army training systems. Training ensures that the future Modular Force is able to conduct the operations envisioned in the joint and Army concepts and codified in doctrine. By embedding logistics C2 capabilities and effects into future Modular Force training, commanders and leaders will begin to realize the impact of applied logistics C2. Live, virtual, and constructive training simulations that include virtual operations and combat support planning and assessment will improve Army training opportunities in the functional areas of battle command, operational environment awareness, force application, strike operations, protection, and sustainment.

(2) Army training must be flexible enough to train and incorporate new technologies as they mature, and become available. The Army must develop Soldiers and leaders who possess a joint and expeditionary mindset and who are able to optimize the logistics C2 capabilities

available to them. The Army must also develop leaders that can react to interruptions in these advanced IT systems and continue the mission without them if necessary. Training questions include, but are not limited to the following.

(a) How is the integration and application of logistics C2 included in current training and leader development?

(b) How can the Army adapt its training to better integrate Army logistics C2?

(c) How will evolving technologies and ongoing or planned changes in organization affect the ways in which Army units and leaders operate and what are the training implications of these changes to support Army logistics C2?

(d) How will evolving logistics C2 doctrine affect units and leaders?

(e) What training designs will develop units and leaders able to capitalize on the full range of logistics C2 capabilities?

(f) What are the logistics C2 training requirements for enlisted personnel, noncommissioned officers, officers, contractors and DA civilians?

(g) What type, scope, and frequency of Army logistics C2 training must the future Modular Force conduct to enable effective operations?

(h) What logistics C2 test and training facilities are necessary?

(i) What logistics C2 modeling and live, virtual, and constructive simulations are required to support Army logistics C2 at the tactical and operational levels?

(j) What joint logistics C2 training is necessary and for whom?

(k) What national and commercial agency training is necessary and for whom?

(l) What is the role of the Combined Training Centers in conducting training for Soldiers and units?

(m) How does the Army maintain personnel technical proficiency and unit cohesion?

(n) How will units train to maintain proficiency of operations without automated tools?

f. Materiel

(1) Logistics C2 capabilities equipment and materiel consists mainly of advanced enterprise and other IT systems. They can be data warehousing and data-mining tools or decision support systems that take all the relevant information and fuse it into relevant COAs for the staff to evaluate and present to the commander. All these systems, from sensors on platforms

and ammunition, to the operational level logistics C2 nodes, will ride on secure wireless communications backbones that are redundant, efficient, and provide high throughput. This backbone will link logistics C2 nodes into the GIG for total network access, enabling a more robust and complete operational, intelligent, and logistics picture on which to base decisions. The logistics C2 systems will be incorporated as an integral part of the joint command NECC system. Advancements in sensors will add greater detail to the logistics operating picture giving materiel management systems more information on the health and condition of Soldiers, equipment, and platforms, as well as their locations in near real time.

(2) Resources are always limited and the joint interdependence of logistics makes the selection and development of logistics C2 systems and logistics operations materiel more demanding and difficult. Modernization and sustainment ensure that baseline capabilities are maintained and future Modular Force capabilities are pursued. Realization of the Army logistics C2 concept is dependent upon the development and incorporation of advanced technology. Logistics C2 materiel solutions must proceed along a top-down, joint-driven path. Materiel questions include, but are not limited to, the following.

- (a) What IT systems are needed for the future Modular Force logistics C2?
 - (b) What communications assets are needed to support future Modular Force logistics C2 operations?
 - (c) What intelligence, surveillance, and reconnaissance assets are necessary to support future Modular Force logistics operations?
 - (d) What sensors are needed for logistics C2 operations?
 - (e) What position, velocity, timing, and navigation systems are needed for the future Modular Force logistics operations?
 - (f) What weather and environmental monitoring systems are needed for the future Modular Force logistics operations?
 - (g) What intelligent agents and other artificial intelligence advances are required to provide platform data?
 - (h) What predictive, forecasting systems are required?
 - (i) What information protection systems are needed?
 - (j) What shielding or protective system is needed to protect a platform's electronic signature and emanations from detection, pirating, corruption, or falsification?
- g. Leadership and Education

(1) One of the keys in enabling effective Army operations will be the development of leaders and staffs who can perform effectively across the spectrum of conflict in a complex, uncertain, and dynamic operational environment. Leaders must be educated, trained, and developed to be self-aware, innovative, and adaptive throughout training and operations. In the area of logistics C2 operations, they must think strategically, operationally, and tactically to successfully apply the joint and Army aspects of logistics C2 power. Leaders will also need JIIM education, and experience early in their careers. Further, the Army should continue to train its new generation of leaders on the cultural and history underpinnings of the specific region where the Soldiers may deploy. Combined with foundations in doctrine, educational opportunities within our institutional training base will prepare leaders to be comfortable and well rounded in logistics C2 operations.

(2) Doctrine will provide an operational foundation and combined with educational opportunities that provide an intellectual foundation, the Army will prepare leaders who are as comfortable with logistics operations as they are with other operations. Leader development questions include, but are not limited to the following.

- (a) How can the Army develop more adaptive logistics savvy leaders?
- (b) How does the Army provide world class leader development in the area of logistics operations in a joint and multinational construct?
- (c) How does the Army develop leaders ready to deal with the complexity of logistics operations, its associated operating environment, threats, and interagency implications?
- (d) What leader development programs are needed in officer and NCO education systems?
- (e) What civilian leader development programs are needed?
- (f) What changes are required in Army Reserve and National Guard leader development models (professional military education)?
- (g) What changes will be required in unit training offered in Combat Training Centers to create more agile and perceptive logistics leaders and units?

h. Personnel

(1) Army personnel, from a wide range of branches and proponents, possessing unique logistics expertise in specific logistics areas and acquisition should be present in Army organizations at each echelon. Support personnel (such as, logisticians, along with human resource personnel, financial management personnel, medical service personnel, chaplains, and staff judge advocate) organic to the Army's tactical and operational warfighting HQ will assist in the integration of logistics operations in the planning and execution of operations across the spectrum of conflict. These various logistics officers will advise Army commanders and staffs on the capabilities, limitations, and use of logistics C2 systems and capabilities to ensure

optimum use of all available systems. They will also, when designated, advise JIIM partners on these same subjects. Supporting this organic, layered infrastructure will be various civilian professionals from across industry assigned to various commands located in CONUS or other safe haven locations in support of the Soldier.

(2) Soldiers are the greatest resource of the Army and the most important factor in maintaining and effecting unit readiness. The integration of logistics operations into future Modular Force operations will increase the demands on an already stressed population. Selecting and assigning the right personnel to logistics and C2 related positions and occupational specialties are difficult tasks. The personnel management system must ensure that it provides the career paths needed to utilize to the fullest extent possible the logistics expertise of the force. New organizational constructs may rely on experienced civilian personnel to provide the expertise needed to support training readiness and sustainment operations. The right combinations of military, civilian, and contractor personnel can only be determined through research and exercise. Personnel questions relating to logistics C2 include, but are not limited to the following.

- (a) How does the Army recruit and retain the personnel necessary to perform Army logistics C2 functions?
- (b) What skill sets are required in Army enlisted, Army civilian, and contractor support personnel?
- (c) What is the best means of selecting Army logistics officers and NCOs?
- (d) Should Army precommissioning programs include a logistics C2 component?
- (e) What is the right mix of personnel between logistics professionals and other personnel selected to serve in logistics C2 related positions?
- (f) What is the right mix of IT trained personnel to support the logistics C2 systems?
- (g) What changes in the promotion system are necessary to ensure trained and experienced IT operators, (especially those that stay for longer tours in a specific location), will remain competitive for promotion.

i. Facilities

(1) Facilities in the CONUS, safe haven, and theater must be improved to provide greater support to the operational and tactical Soldiers. Facilities must be able to exploit capabilities such as onboard processing, direct downlink, and dynamic retasking. Surge capabilities using fixed and mobile stations may be necessary. Mobile facilities may be virtually or physically linked to operational and tactical commanders and the role of these facilities will expand to include both inter- and intratheater logistics operations support. Fixed and mobile facilities, in CONUS and in theater, are vulnerable to a wide range of threats such as special or conventional forces, missiles, air, electronic and cyber attack. As facilities with unique logistics C2 related

capabilities are developed, they must integrate appropriate protection functions. Finally, training and planning facilities that enable Soldiers to train and model events need to be constructed to aid in sustainment training and when appropriate, new equipment training functions.

(2) Installation information facilities will enable distributed information sharing among the sustaining base and deployed forces during all phases of operation. Prior to deployment, fixed facilities on the installation can collect, process, and analyze large volumes of logistics C2 data such as platform and Soldier status. Installations will require suitable facilities for skilled civilian personnel supporting a military staff. Logistics training facilities in addition to modeling and simulations may be needed. Facilities questions include, but are not limited to the following.

(a) Are there adequate facilities available to Soldiers, leaders, battle staffs, non-uniformed personnel, and units to attain and maintain acceptable levels of logistics C2 training effectiveness?

(b) What infrastructure is required at forts and installations to support logistics C2 adequately in both training and operational constructs consistent with joint Army, and multinational concepts?

(c) What infrastructure is required in theater to support Army logistics C2 missions?

(d) What facilities are needed to support logistics related special access programs?

(e) What installation infrastructures are needed to support home station logistics operations functions?

(f) What security requirements need to be included in design or renovation of existing facilities to maintain and/or expand a future force logistics network?

6-8. Plan for Assessment

a. Introduction. Logistics C2 capabilities are essential to successful future Modular Force operations and overall Army battle command functions. This CCP is the first Army-specific document that attempts to provide a concept for future integrated logistics C2 operations. The concepts referenced in the development of this document reflect the capabilities researched and the mission areas studied either prior to or during the formulation of this CCP.

b. Assessment Options

(1) Future CCP and JCIDS Efforts

(a) The intent of TRADOC Pam 525-7-18 is to provide a holistic view of the logistics C2 capabilities required to enable the future Modular Force in full-spectrum operations. An integrated capabilities development team (ICDT) preparing this CCP consisted of 13 core members and 10 supporting members (appendix B). Each of these proponents has or likely will develop its own concept or plan for how it will operate in the future. The number of proponents

involved and the range of their proponent responsibilities indicate that the development of additional CCPs, which include logistics C2-enabled capabilities, is likely.

(b) The span of required capabilities identified in the CCP indicates the need for detailed analysis to determine if current and projected DOTMLPF solutions are adequate, identify capability gaps, and determine possible solutions to mitigate gaps. Based on the extensive scope of this CCP, the ICDT chair recommends a logistics C2 CBA to consider topics and associated required capabilities. The efforts of the logistics C2 CBA should serve to facilitate the Army's overall battle command CBA efforts.

(2) Future Experimentation, wargaming, and simulation. The following experiments and war games will facilitate the exploration of required capabilities and answering questions that will further develop the ideas from this CCP and facilitate the CBA process: the Unified Quest exercises, Omni Fusion exercises, and the LandWarNet ROC drill. Also, those exercises and others from the TRADOC Army Concept Development and Experimentation Program, and operational movement from strategic distance exercises will also be explored. In addition to these listed events, there are many small analysis events and experiments that occur within the CASCOM Battle Lab, within other organizations like the Logistics Innovation Agency (LIA) and throughout various installations that will also provide insights to further refine this CCP.

Chapter 7

Risk and Mitigation

7-1. Introduction

This chapter examines potential risks associated with implementation of required logistics C2 capabilities. It also considers possible risks related to alternatives, the most significant of which would be insufficient resourcing of required logistics capabilities. These risks expand on risks described in the earlier discussion of the operational environment (chapter 3), and are grouped into three categories: operational risk, expectation risk, and adversary action risk. In each case, the potential for mitigation is included.

7-2. Operational Risk

a. Failure to provide required logistics capabilities will restrict the ability of the future Modular Force to execute warfighting functions and overall battle command functions, limit the utility of information systems (including battle command), constrain the sharing of critical information, limit collaboration, and others. This will affect all aspects of operations, including mission preparation during the Army force generation process, C2 of forces en route to the AO, speed of maneuver and operational agility, achievement of decision superiority, and sustainment at every level. This will require changes in warfighting doctrine and training, may drive increases in force structure to accommodate manual performance of tasks, and will generally force a lower operational pace than that envisioned for the future Modular Force. Mitigation response: revise warfighting doctrine to reflect capabilities compatible with reduced information exchange, limited collaboration, and slower decisionmaking; constrained maneuver over shorter distances; and limited battle command.

b. The future Modular Force may become dependent on logistics C2 capabilities to the point of being incapable of operating in a degraded network state. The ability of commanders and staffs to conduct effective operations with limited network services may diminish as network capabilities become more reliable and pervasive. Mitigation response: the conduct of operations in a degraded network environment must be addressed in doctrine, trained in service schools, and exercised frequently.

7-3. Expectation Risk

a. Achieving required logistics C2 capabilities may create an expectation that unlimited logistics support will be available throughout an operation. Such an expectation could offset “appetite suppression” efforts, and lead to wasteful or trivial use of logistics assets. Mitigation response: training, supervision, and enforcement by commanders of logistics policies and standards are keys to ensuring sufficient logistics assets are always available to satisfy real operational requirements.

b. A related risk is the assumption that logistics capabilities eliminate the need to carefully engineer user applications to operate efficiently on the network. Such an assumption could lead to the acceptance of poorly crafted applications that require inordinately large amounts of network bandwidth to accomplish functions that could be achieved in more bandwidth-efficient ways. Mitigation response: include network efficiency and bandwidth utilization criteria in application requirements documents; require network certification during the design of applications to ensure bandwidth efficiency parameters are incorporated.

7-4. Adversary Action Risk

a. The most significant risk associated with logistics C2 capabilities is a security breach of the network. While security features can be designed into network systems, poor compliance with and enforcement of security and information assurance procedures could allow an adversary to penetrate the network, halt, slow, or misdirect information flow, and/or alter information used in the decisionmaking process. All of these actions can have both immediate and long-term detrimental impacts on future Modular Force operations. Mitigation response: maximize reasonable security design in network systems; train and enforce information assurance policies and procedures.

b. Direct action may be taken by adversary elements against logistics C2 capabilities. This may occur both within the AO and in areas that host logistics facilities outside the AO. Direct action may take the form of either physical attacks against facilities or people, or electronic attacks against logistics systems or assets. Direct action may result in the complete or partial loss of logistics support to operational forces. Mitigation response: where operationally feasible, locate logistics C2 network capabilities in sanctuary; provide adequate physical security; include redundancy and continuity of operation as a key system and network design parameters.

Appendix A References

Section I

Required Publications

(ARs, DA Pams, FMs, and DA forms are available at [Army Publishing Directorate \(APD\) - Home Page](#). TRADOC publications and forms are available at [TRADOC Publications](#). Joint Concepts are available at <http://www.dtic.mil/futurejointwarfare/concepts>)

Command and Control Joint Integrating Concept.

Focused Logistics Joint Functional Concept.

Joint Command and Control Functional Concept.

Joint Logistics (Distribution) Joint Integrating Concept.

Net-Centric Environment Joint Functional Concept.

Net-Centric Operations Environment Joint Integrating Concept.

TRADOC Pamphlet 525-2-1

The United States Army Functional Concept for See 2015-2024.

TRADOC Pamphlet 525-3-3

The United States Army Functional Concept for Battle Command 2015-2024.

TRADOC Pamphlet 525-4-1

The United States Army Functional Concept for Sustain 2015-2024.

Section II

Related Publications

Army Concept Capability Development Plan.

Army Concept Development and Experimentation Plan.

Army Strategy.

Army Strategic Planning Guidance. Retrieved from <http://www.army.mil/howwewillfight/references/7a%20ASPG.pdf>

Capstone Concept for Joint Operations.

CJCSI 3170.01B

Joint Capability Integration Development System Manual.

TRADOC Pam 525-7-18

CJCSI 3170.01E

Joint Capability Integration Development System Instructions.

CJCSM 3500.04D

Universal Joint Task List.

DA Pamphlet 25-40

Army Publishing: Action Officers Guide.

Defense Planning Guidance.

DOD Architecture Framework Document, Vol I, II, and III, v1.5.

FM 3-0

Operations.

FM 7-15

Army Universal Task List.

FM 4-0

Combat Service Support.

Focused Logistics Campaign Plan.

Homeland Security Joint Operating Concept.

Joint Defense Capabilities Study. Improving DOD Strategic Planning, Resourcing and Execution to Satisfy Joint Capabilities. Final Report. Department of Defense. Retrieved from <http://www.paxpartnership.org/files/ACF1223.pdf>

Joint Forcible Entry Operations Joint Integrating Concept.

JP 3-0

Doctrine for Joint Operations.

JP 4-0

Doctrine for Logistics Support of Joint Operations.

JP 4-01.4

Joint Tactics, Techniques, and Procedures for Joint Theater Distribution.

JP 4-09

Joint Doctrine for Global Distribution.

Major Combat Operations Joint Operating Concept.

National Security Strategy.

National Military Strategy.

Naval Transformation Roadmap. Power and Access from the Sea. Retrieved from http://www.oft.osd.mil/library/library_files/document_202_naval_transformation.pdf

Quadrennial Defense Review Report.

Stability Operations Joint Operating Concept.

Strategic Deterrence Joint Operating Concept.

The Joint Operating Concept.

TRADOC Regulation 10-5
U.S. Army Training and Doctrine Command.

TRADOC Regulation 25-35
Preparing and Publishing United States Army Training and Doctrine Command Administrative Publications.

TRADOC Pamphlet 525-3-0
The Army in Joint Operations, The Army's Future Force Capstone Concept 2015-2024.

TRADOC Pamphlet 525-3-1
The United States Army's Operating Concept for Operational Maneuver 2015-2024.

TRADOC Pamphlet 525-3-2
The United States Army Concept for Tactical Maneuver 2015-2024.

TRADOC Pamphlet 525-3-4
The United States Army Functional Concept for Strike 2015-2024.

TRADOC Pamphlet 525-3-5
The United States Army Functional Concept for Protect 2015-2024.

TRADOC Pamphlet 525-3-6
The United States Army Functional Concept for Move 2015-2024.

TRADOC Pamphlet 525-4-01
Distribution Operations for the Future Force.

Appendix B

Logistics C2 CCP Integrated Concept Development Team Members

ICDT Chair:

Director, Concepts and Doctrine; Capabilities Development and Integration;
U.S. Army Combined Arms Support Command

Project Team:

Members from Joint, Allied, and Future Concepts Division Concepts and Doctrine,
Capabilities Development and Integration; U.S. Army Combined Arms Support Command,
Fort Lee, VA

Core Members:

HQ TRADOC (G-2, G1/4)
HQ TRADOC ARCIC (Concepts Development, and Experimentation Division, Future Force
Integration Division, LandWarNet Division and Capabilities Development and
Assessments Division,)
U.S. Army Space and Missile Defense Command
U.S. Army Maneuver Support Center
U.S. Army Combined Arms Center (Battle Command Integration Directorate, Combined
Arms Doctrine Directorate, and TRADOC Capabilities Manager, battle command)
U.S. Army Aviation Center
U.S. Army Armor Center
U.S. Army Intelligence Center
U.S. Army Infantry School
U.S. Army Field Artillery School
U.S. Army Signal Center
U.S. Army Quartermaster Center and School
U.S. Army Ordnance Center and School
U.S. Army Transportation Center and School
U.S. Army Chaplain School
U.S. Army Soldier Support Institute
U.S. Army Combined Arms Support Command (Enterprise Systems Directorate, Battle Lab)
U.S. Army TRADOC Analysis Center, Fort Lee, VA

Supporting Members:

Department of the Army: (G-3, G-4, G-4/6, LIA and Chief Information Officer/G-6)
U.S. Joint Forces Command
Joint Chief of Staff, J-4
U.S. Marine Corps (Logistics Vision and Strategy Center)
U.S. Army Materiel Command (G5, Surface Deployment and Distribution Command)
U.S. Transportation Command (J4, J5, J6)
DLA
U.S. Army Combined Arms Center, Center for Army Lessons Learned (CALL)
U.S. Army Medical Department
U.S. Army War College

Appendix C

Bridging Current to Future Capabilities

C-1. Introduction

a. This appendix is provided as a tool and a starting point for the CBA study team. It provides a “snapshot in time” of current logistics C2 capabilities, addresses the development of near- and mid-term future capabilities, and identifies potential logistics C2 capabilities under development. The appendix identifies known gaps between current and mid-term logistics C2 capabilities, and describes programmed logistics, C2 and network capabilities that address those gaps and may meet requirements outlined in the future Modular Force concepts. As stated, this is a start point for future JCIDS analysis.

b. This appendix identifies current logistics C2 capabilities and explains those required by the future Modular Force (such as those identified in future oriented documents such as TRADOC Pam 525-66. It also describes the attributes that enable the achievement of those capabilities. Chapter 2 of this CCP described the plan for Army logistics C2 operations as “being underpinned by a layered infrastructure of advanced IT systems and communications capabilities, personnel, organizations, and materiel” and this infrastructure is evident in the enablers. The description of enablers is organized by key logistics C2 attributes and divided into three timeframes.

c. Figure C-1, Capability Development Blocks, represents the incremental steps associated with achieving the required logistics C2 enabled capabilities of the future Modular Force. These blocks are defined by the timeframes of the DOD Program Objective Memorandum. Bridging the gap between current and future logistics C2 capabilities is a complex task involving national and civil agencies, the joint community, and numerous Army proponents. As such, the future capabilities described in this chapter, and the associated solution components, are crafted in the “best possible” scenario. They represent the optimum logistics C2 IT systems, personnel, organizations, and materiel for the timeframe, the threat, and the FSO.

CAPABILITY DEVELOPMENT BLOCKS

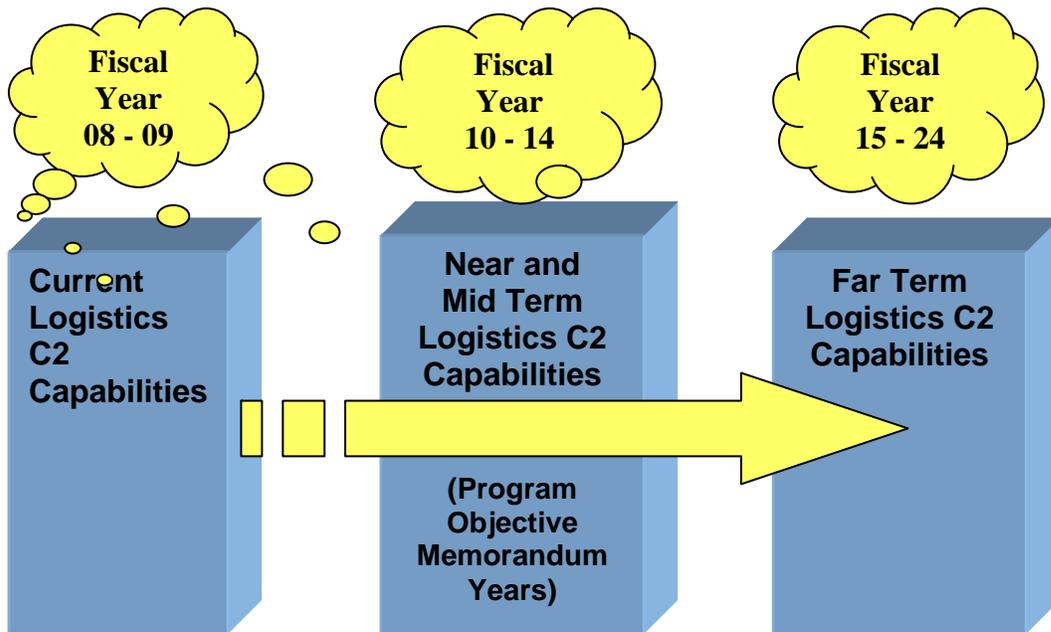


Figure C-1. Capability Development Blocks

C-2. Assessment of C2 Capabilities

a. Current

(1) The Army has pursued improving battle command for many years by focusing on operational C2 information systems. The approach focused on the technological component of battle command. The use of information in an integrated COP has largely remained a manual posting and analysis effort. Further, historical systems development has focused on individual staff functions vice a system of systems supporting the holistic battle command process. The past tactical networks did not provide networking and enterprise application services.

(2) While there have been successes, they have been the exception rather than the norm. Continuing gaps include, but are not limited to non-intuitive interfaces (such as, middleware and commercial off the shelf); difficulty in training and maintaining systems and application proficiency; lack of interoperability among capabilities and within capabilities with different software version levels; and lack of adequate software maintenance protocols, either on or off the battlefield. Gaps also include incompatibility between application characteristics; available information transport and bandwidth capabilities; lack of hardware standardization and interoperability; inability to synthesize relevant information; and poor individual and no collective training. Often units have succeeded in spite of, rather than because of, the tools the Army provided.

(3) The end result is that the Army has a patchwork quilt of battle command solutions. These observations are documented in the lessons learned from recent operations in Iraq, Afghanistan, and the larger global war on terrorism.

(4) These ad hoc battle command solutions have led the Chief of Staff of the Army to direct a standardization of battle command efforts and systems throughout the army. He also directed that the ABCS stop development and focus on providing a standard “good enough” battle command capability to the entire Army. This direction led to ABCS version 6.4, the starting point for migration to the objective battle command system.

b. Mid term. The product manager for the battle command sustainment support system (BCS3) is partnering with several organizations to continue to develop and refine its current system. Advances in data mining technologies and decision support tools will continue to improve these C2 systems through software blocking efforts.

c. Far term. The logistics decision support system, part of the FCS development, will replace the BCS3 for classified logistics C2 within FCS units in the future. At this time, BCS3 replacement for unclassified systems in 2015 and beyond has not been identified. Further, current plans do not call for this support system to be fielded to other than FCS BCTs. In the future, all systems regardless of the security domain must operate in a seamless manner to provide a web-based logistics COP.

C-3. Assessment of SA and SU

a. Current. Current procedures and systems enable only a rudimentary sharing of information to peers. Up and down the operational chain of command, information is shared more readily. But, the time it takes information to move throughout the chain of command is still unacceptable.

b. Mid Term. As GCSS-A, field and tactical, and other enterprise systems come on line, they will populate data warehouses that will feed SA. This will improve SA and SU, enabling logistics commanders to have a clearer view of the exact near real time status of assets.

c. Far Term. Beyond 2015, sophisticated decision support and collaboration tools have the potential to facilitate the development of SU and by extension quicker and more accurate decisions by commanders and staffs. Technology advancements, predictive technologies, and knowledge-based methodologies will be fully integrated into decision tools and models. These tools and models will continuously collect and fuse information, develop and analyze multiple COAs simultaneously, and allow for not only monitoring of logistic execution but also dynamic assessment and re-planning during execution of sustainment plans. Advanced cognitive decision support capabilities enhanced with data mining, automated filters, advanced information processing, pattern recognition, and predictive analytical capabilities will help reduce uncertainty, variability, and risk; maximizing the freedom of action for the Soldier.

C-4. Assessment of Logistics Planning and COA Development

a. Current. Current staff operations require intense human and multiple Standard Army Management Information System (STAMIS) and command systems to gather required data; develop COAs, brief commanders, and finalize operational orders based on the commander's intent and decision. Manual compiling of data, stand-alone data sheets, and reporting formats compound the problems of latent data reports, transcription errors and missing or conflicting data and information. Management decisions tools are rudimentary at best and have progressed little over the last several decades.

b. Mid term. As accuracy and speed of digital formatted data improve, and the Army STAMISs are integrated into the SALE, new management decision support tools can leverage the increasing fidelity of data and integration of information systems. New leadership training and improved SA by both logistics and maneuver commanders will increase real time collaboration, situation assessments, and development of COAs. This will result in shortened decision cycles in the near term, with additional improvements possible as information and decision support systems mature and leverage emerging technologies.

c. Far term. Decision support tools that improve capabilities with internal self-learning will aid the staff and commanders in the future development and recommendations of COAs. This will increase the associated confidence levels and management actions for the commander based on pre-set, readiness-based metrics or operational thresholds. Increased information, access, timeliness, and a full COP will provide the prerequisites to improve predictive capabilities on a continuous basis. These capabilities will assist logisticians in management actions necessary to support the warfighter on a dynamic, global scale. Integration of virtual collaboration capabilities will enable geographically dispersed logisticians to work together. In this way, they will take full advantage of the improved COP to enhance their decisionmaking. Development of the Army integrated logistics architecture (AILA) will provide the architecture necessary to provide the national level enterprise with information required to support actions. These actions will provide continuous assessment and analysis of actions necessary to mobilize commercial and depot entities to sustain the fight.

C-5. Assessment of Communications and Network Enablers

a. Current

(1) Present communications assets are not adequate for the volume of logistics data and for logistics C2 communications requirements and needs. As a result, numerous independent networks and communications links have been established in stovepipe fashion to meet the needs of the various warfighting and business area functions. Critical logistics information from the brigade level and lower is transmitted by limited range systems. Predominately, this is conveyed vocally with excessive delay and error rates that restrict the timeliness and fidelity of detail needed for SA. Further, current communications assets do not facilitate horizontal collaboration that assists in self-synchronization of forces.

(2) Finally, data must be able to flow between secure domains and unsecure domains without compromising either domain in order to provide the full operating picture for elements that must operate in the unclassified domain. On-going efforts to provide embedded reporting systems, wireless connectivity for limited range reporting, and very small aperture terminal capability to move digital information from the brigade are only now being fielded. Initial efforts to provide logistics status reporting through the Blue Force Tracker System and Movement Tracking System are beginning to provide the COP necessary for the future force, but the process is flawed and not used in all operations.

b. Mid term. Improvements in throughput abilities for voice over internet protocol and other data packet technologies will continue to improve, which will increase the ability of forces to communicate from strategic levels to the lowest tactical level. Fielding of embedded reporting systems at the platform level that provide near real time, accurate, and automated digital information will leverage communications networks and the AILA to move accurate and timely information to users at all levels and within the joint community as required. Efforts to eliminate redundant and stovepipe reporting systems will continue to decrease the number of logistics C2 personnel while improving logistics reporting through digitized data passed through federated information architecture. With improved communications capability, standardized data formats and protocols, a fully developed AILA, and the ability to collect and automate logistics data, unprecedented levels of information will be collected through improved business processes and practices. Enhanced logistics communication will support multiple users throughout the enterprise to access the logistics information warehouse (LIW) and support condition-based maintenance plus.

c. Far Term

(1) LandWarNet is conceptually envisioned to provide enhanced SA of the friendly and enemy situation, a collaborative, common understanding of the mission and commander intent, concept of operation, scheme of maneuver, service and support, and command and signal. LandWarNet establishes a global collaborative environment, providing shared end state display and an increased ability to “see, know, and anticipate.” Further, this collaborative environment fosters creative adaptation and supports decentralized execution.

(2) Logistics managers must have the information, access, and management tools to quickly assess and react to the dynamics of rapidly changing warfighter requirements and operations on a global scale. Further, LandWarNet envisions integrated applications, services, and network transport capabilities across the warfighting, intelligence, and business mission areas; thereby enabling leader-centric operations anytime, anywhere, at every echelon as a part of the joint force. The focus of this effort is providing Soldiers, leaders, and units, today and in the future, the means to conduct information-enabled, joint warfighting and supporting operations on one integrated common network.

C-6. Assessment of Logistics Business Process Enablers

a. Current. The Army has a myriad of stovepipe logistics STAMIS that are not fully interoperable. Data from these systems goes to many different master databases that are

independent of other systems. This myriad of automation systems has required staffs to consolidate this data and provide it for other staff elements and commander use. The logistics staffs at all levels of command manually create synchronization matrixes, multiple reports, and other actions to aid in tracking and controlling execution of logistics plans. This leads to latency in the current C2 systems, human data errors, nonstandard data, and redundant reporting.

b. Mid Term

(1) Efforts are underway to consolidate these various databases into one coherent data warehouse called the LIW. This consolidation is a critical step in the evolution of data management to be used at all levels of the logistics chain. As part of this effort, data must utilize standard reporting formats and protocols, a common architecture, for example, the AILA, and the communications network necessary to move the information from the origin to the LIW. As STAMIS systems are provided bridges to future capabilities, old systems inactivated, and the SALE implemented, new business processes and procedures will be developed as the AILA is leveraged in the growing common logistics operating environment. The SALE will achieve initial operational capability in this period and GCSS-Army field and tactical will provide the web-based enterprise solution logisticians have long needed to manage the business processes of maintenance, supply, and distribution of most classes of supply in a coherently manner.

(2) The Logistics Modernization Program will provide a similar enterprise solution for business processes at the national and wholesale level. GCSS-A (PLM+) will provide the interface between the data warehouses, the national level, and tactical level logistics systems to complete the SALE. GCSS-A (PLM+) is a commercial technology program. It will serve as the technical enabler to link the field-level logistics system, (GCSS), with the national-level logistics system, the Logistics Modernization Program, and as the point of entry for other automation systems seeking logistics data. This statement and similar comments in past SALE briefings have misled decisionmakers into believing that PLM+ is a communications capability. It is not; rather, it is a data interface compatibility software tool. Communications tools would be whatever is used or replaces the joint network node – network (hi-side) very small aperture terminal (lo-side) across the two sides of the security domains.

c. Far term. The SALE will be extended to reach all the logistics functions required by the joint warfighter. Areas such as financial management, health protection and medical logistics, legal support, contracting support, human resources, religious support, and transportation services, systems will interface or be pulled under the same enterprise tool to ensure consolidated and cohesive support to the joint force in theater through a true common logistics operating environment.

Glossary

Section I Abbreviations

ABCS	Army battle command system
AILA	Army integrated logistics architecture
AMC	Army Materiel Command
AO	area of operations
ARCIC	Army Capability Integration Center
ASCC	Army service component command
BCS3	battle command sustainment support system
BCT	brigade combat team
C2	command and control
CAMEX	computer assisted map exercise
CBA	capabilities based assessment
CCIR	commander's critical information requirement
CCJO	Capstone Concept for Joint Operations
CCP	concept capability plan
CD&E	concept development and experimentation
COA	course of action
CONUS	continental United States
COP	common operational picture
DA	Department of the Army
DDOC	deployment and distribution operations center
DLA	Defense Logistics Agency
DOD	Department of Defense
DOTMLPF	doctrine, organization, training, materiel, leadership and education, personnel, and facilities
EAB	echelons above brigade
ERP	enterprise resource planning
FCS	future combat system
FM	field manual
FRAGO	fragmentary order
FSO	full spectrum operations
GCC	geographic combatant commander
GCSS(A)	global combat support system (Army)
GIG	global information grid
HQ	headquarters
ICDT	integrated capabilities development team
IT	information technology
JCA	joint capabilities area
JCIDS	joint capabilities integration and development system
JFACC	joint force air component command
JFC	joint force commander
JFLCC	joint force land component command

JIC	joint integrating concept
JIIM	joint, interagency, intergovernmental, and multinational
JLE	joint logistics environment
JOA	joint operations area
JOC	joint operating concept
LIA	Logistics Innovation Agency
LIW	logistics information warehouse
LOC	lines of communication
MCG	mobile command group
MCO	major combat operations
MDMP	military decisionmaking process
NCO	noncommissioned officer
NECC	net-enabled command capability
NGO	nongovernmental organization
OCP	operational command post
OLLC	operational level logistics command
OODA	observe, orient, decide, and act
OV	operational architecture view
PLM+	Product Lifecycle Management Plus
ROC	rehearsal of concepts
SA	situational awareness
SALE	single Army logistics enterprise
STAMIS	Standard Army Management Information System
SU	situational understanding
TF*	task force
TRADOC	U.S. Army Training and Doctrine Command
TTP	tactics, techniques, and procedures
U.S.	United States
USJFCOM	U.S. Joint Forces Command
USTRANSCOM	U.S. Transportation Command
WMD	weapons of mass destruction

Section II

Terms

accessibility

The ability of all levels of command (strategic, operational, and tactical), at any time, and from anywhere, to pull or push relevant data and information that is the basis for shared SA.

Additionally, access to a standardized joint application tool set at austere and robust, fixed and mobile sites will enhance decisionmaking capabilities supporting rapid, efficient, effective C2. (C2 JIC).

accuracy

Conforming precisely to fact or truth. A system with this attribute provides error free (or within a range of acceptable error) measurements or data via credible, dependable and reliable sources.

Accuracy and trust may exist due to prior performance and/or specific integrity assurance measures that have been adopted. (C2 JIC).

adaptive

Capable of operating in a variety of unexpected situations or conditions. Adaptive systems differ from flexible systems in that adaptive systems can operate even when unexpected events occur. From an organizational standpoint, this attribute enables a timely, effective response to an altered and unforeseen operating environment. Such operating environment changes, often caused by adversary actions, may require modification of organizational structures, workflow, and decisionmaking processes. (C2 JIC).

agility

The ability to respond effectively and in a timely manner to changing circumstances against a thinking and adaptive enemy, from anywhere in the area of operations, at any time, even when the networks and command structure are degraded. Agility includes both “flexibility” and “responsiveness.” Agility enables organizations, systems or processes to react and adapt to changing situations and conditions, such as performing C2 during operational transition and reorganization and reconstitution; while airborne, afloat, or “on the move”; or in response to enemy actions. (C2 JIC).

area of responsibility

The geographical area associated with a combatant command within which a combatant commander has authority to plan and conduct operations. (JP 3-0).

attribute

A quantitative or qualitative characteristic of an element or its actions. (CJCSI 3010.02B; CJCSI 3170.01E).

campaign plan

A plan for a series of related military operations aimed at accomplishing a strategic or operational objective within a given time and space. (JP 1-02).

campaign planning

The process whereby combatant commanders and subordinate joint force commanders translate national or theater strategic and operational concepts through the development of campaign plans. (JP 1-02).

capability

The ability to achieve a desired effect under specified standards and conditions through combinations of ways and means to perform a set of tasks (CJCSI 3170.1E); the ability to achieve an effect to a standard under specified conditions through multiple combinations of means and ways to perform a set of tasks. (CJCSI 3010.02B).

common logistics operating environment

A process to achieve the Army's vision for developing a technology-enabled force equipped with self-diagnosing equipment platforms that interact with a network sustainment infrastructure that supports condition based maintenance. (LIA).

coalition joint force commander

A general term applied to a combatant commander, sub-unified commander, or joint task force commander authorized to exercise combatant command (command authority) or operational control over a coalition joint force.

cognitive domain

Exists in the warfighters' minds and encompasses leadership, morale, unit cohesion, experience, training, SA, strategy, doctrine, tactics, techniques, and procedures. (DOD Transformation Planning Guidance, April 2003).

coherence

The systematic or logical integration of numerous diverse elements, relationships, and values in order to achieve clarity or a desired end. In the C2 domain, coherence is enhanced through understanding of the mission and commander's intent and guidance and through collaboration. (C2 JIC).

cohesion

A characteristic of an organization that means having well-defined roles and group norms, common goals, a positive identity, good working relationships, shared responsibility, respect, positive energy, trust, cooperation, unity, good communication, pride in membership and synergy. An indicator of the amount of cohesiveness is the frequency of "we" and "our" statements vice "I," "me," and "mine." In a cohesive organization, everyone is striving toward the same objective. Member goals coincide with the organization's goals, and there are no hidden agendas. (C2 JIC).

collaboration

Joint problem solving for the purpose of achieving shared understanding, making a decision, or creating a product across the Joint Force and mission partners. (NCE Joint Functional Concept).

collaborative information environment

Uses distributed collaboration tools and virtual collaboration to facilitate parallel operations among regional combatant command headquarters, joint force headquarters and staffs, the service components, and other organizations that are separated by time, organizational boundaries, and geography. The information backbone providing warfighters the ability to enhance organizational effectiveness and reduce hierarchical and serial planning timelines through information, idea sharing, and parallel planning. (Joint Forces Command Glossary).

command and control

The exercise of authority and direction by a properly designated commander over assigned and attached forces in the accomplishment of the mission. C2 functions are performed through an arrangement of personnel, equipment, communications, facilities, and procedures employed by a

commander in planning, directing, coordinating, and controlling forces and operations in the accomplishment of the mission. (JP 1-02). Further, C2 is the ability to recognize what needs to be done in a situation and to ensure that effective actions are taken. At its core, C2 is about decisionmaking and the individuals who make decisions. In 2015, joint C2 will be a joint decisionmaking process that is dynamic, decentralized, distributed, deployable, and highly adaptive. Enabled by a collaborative information environment, skilled joint planners, and standardized operating procedures, joint C2 will provide the JFC an ability to have a networked, dispersed, joint force that can work together in a virtual problem space, accessing any piece of information, any place and at any time, in response to any operation across the FSO. (JP 1-02).

commander's intent

A concise expression of the purpose of the operation and the desired end state that serves as the initial impetus for the planning process. It may also include the commander's assessment of the adversary commander's intent and an assessment of where and how much risk is acceptable during the operation. See also assessment; end state. (JP 5-00.1).

common operational picture

A single identical display of relevant information shared by more than one command. A common operational picture facilitates collaborative planning and assists all echelons to achieve SA. (JP 3-0).

communities of interest

Collaborative groups of users who must exchange information in pursuit of their shared goals, interests, missions, or business processes and who therefore must have a shared vocabulary for the information they exchange. (DOD Net-Centric Data Strategy).

completeness

Having all components, parts, or steps critical to complete an operation. Complete information enables timely, appropriate decisionmaking. (C2 JIC).

concept of operations

A verbal or graphic statement, in broad outline, of a commander's assumptions or intent in regards to an operation or series of operations. The concept of operations frequently is embodied in campaign plans and operation plans; in the latter case, particularly when the plans cover a series of connected operations to be carried out simultaneously or in succession. The concept is designed to give an overall picture of the operation. It is included primarily for additional clarity of purpose. (JP 1-02).

condition

A variable of the operational environment including scenario that affects task performance. (CJCSI 3010.02B).

condition based maintenance plus (+)

The Army's move towards a two-level maintenance force structure using critical enablers and modern maintenance processes that will enable all connection between the logistician and an integrated, enterprise wide logistics system. (Defense Acquisition University (DAU)).

course of action

1. Any sequence of activities that an individual or unit may follow. 2. A possible plan open to an individual or commander that would accomplish, or is related to the accomplishment of, the mission. 3. The scheme adopted to accomplish a job or mission. 4. A line of conduct in an engagement. 5. A product of the Joint Operation Planning and Execution System concept development phase. (JP 1-02).

crisis action planning

The Joint Operation Planning and Execution System process involving the time sensitive development of joint operation plans and orders in response to an imminent crisis. Crisis action planning follows prescribed crisis action procedures to formulate and implement an effective response within the timeframe permitted by the crisis. (JP 1-02).

decentralized execution

Delegation of execution authority to subordinate commanders. (JP 3-30).

distribution process owner

The head of a DOD component assigned the responsibility by the Secretary of Defense to improve distribution processes that involve more than one DOD component. The process owner has the responsibility for coordinating, sustaining, and improving processes; coordinating the creation of new processes, where appropriate; and being accountable for their outcomes. (Department of Defense Instruction 5158.06).

employment

The strategic, operational, or tactical use of forces. (JP 1-02)

execution

The initiation of an operation; a military response with operations being conducted. (C2 JIC).

flexibility

Ability to command and control operations from anywhere in the area of operations, at any time, in a variety of situations and conditions, without loss of effectiveness. Flexible and adaptive systems/processes take into account a thinking and adaptive enemy and enable course corrections with minimal disruption since they are built to respond to multiple situations or events. From a planning standpoint, commanders at all levels can quickly select a COA without being locked into it. From an organizational standpoint, this attribute enables a timely, effective response to an altered and/or unforeseen operating environment. Such operating environment changes, often caused by adversary actions, may require modifying organizational structures, workflows, and decisionmaking processes. (C2 JIC).

global information grid

The globally interconnected, end-to-end set of information capabilities, associated processes and personnel for collecting, processing, storing, disseminating and managing information on demand to warfighters, policy makers, and support personnel. The GIG includes all owned and leased communications and computing systems and services, software (including applications), data, security services, and other associated services necessary to achieve information

superiority. It also includes National Security Systems as defined in section 5142 of the Clinger-Cohen Act of 1996. The GIG supports all DOD, National Security, and related intelligence community missions and functions (strategic, operational, tactical and business), in war and in peace. The GIG provides capabilities from all operating locations (bases, posts, camps, stations, facilities, mobile platforms, and deployed sites). The GIG provides interfaces to coalition, allied, and non-DOD users and systems. (JP 3-05.1).

homeland defense

The protection of U.S. sovereignty, territory, domestic population, and critical defense infrastructure against external threats and aggression, or other threats as directed by the President. DOD is responsible for homeland defense. (DOD Homeland Security Joint Operating Concept, Strategy for Homeland Defense and DPG 04).

homeland security

a concerted national effort to prevent terrorist attacks within the U.S., reduce America's vulnerability to terrorism, minimize the damage, and recover from attacks that do occur. (National Strategy for Homeland Security).

information

Facts, data, or instructions in any medium or form. The meaning that a human assigns to data by means of the known conventions used in their representation. (JP 1-02).

information engagement

The integrated employment of public affairs to inform U.S. and friendly audiences; psychological operations, combat camera, U.S. government strategic communication and defense support to public diplomacy, and other means necessary to influence foreign audiences; and, leader and Soldier engagements to support both efforts.

information environment

The aggregate of individuals, organizations, and systems that collect, process, disseminate, or act on information (JP 3-13).

information protection

Active or passive measures that protect and defend friendly information and information systems to ensure timely, accurate, and relevant friendly information. It denies enemies, adversaries, and others the opportunity to exploit friendly information and information systems for their own purposes. Information protection includes information assurance, computer network defense, and electronic protection.

information superiority

That degree of dominance in the information domain that permits the conduct of operations without effective opposition. (JP 1-02).

innovation

Performing tasks in new ways or by using new, advanced, or original ideas, solutions, or concepts. This attribute is characterized by a proactive approach. This attribute is often found in

organizations that (1) offer abundant freedom to exchange information to gain full understanding of commander's intent, and (2) are empowered to take action. Solutions featuring this attribute may alter or even eliminate current procedures. (C2 JIC).

integration

The arrangement of military forces and their actions to create a force that operates by engaging as a whole. (JP 1-02).

interoperability

The ability of systems, units, or forces to provide services to and accept services from other systems, units, or forces. This also includes the ability to use the services to operate effectively together. (Adapted from JP 1-02).

joint force commander

A general term applied to a combatant commander, sub-unified commander, or joint task force commander authorized to exercise combatant command (command authority) or operational control over a joint force. (JP 0-2).

joint forcible entry operations

Joint military operations conducted against armed opposition to gain entry into the territory of an adversary as rapidly as possible in order to enable the conduct of follow-on operations or conduct a singular operation.

joint functional concept

A description of how the future joint force will perform a particular military function across the full spectrum of military operations in the mid to far term. JFCs support the CCJO and JOCs and draw operational context from them. JFCs identify required capabilities to achieve operational effects; determine capability attributes; inform JOCs; and provide functional context for JIC development and assessment. (CJCSI 3010.02B; CCJO).

knowledge

Data that has been analyzed to provide meaning and value. Knowledge is various pieces of the processed data that have been integrated and interpreted to begin building a picture of the situation. (Joint C2 Joint Functional Concept).

knowledge management

The art of creating, organizing, applying, and transferring knowledge to facilitate SU and decisionmaking. Knowledge management supports improving organizational learning, innovation, and performance. Knowledge management processes ensure that knowledge products and services are relevant, accurate, timely, and useable to commanders and decision-makers. (FM 3-0).

leadership

Leadership is influencing people—by providing purpose, direction, and motivation—while operating to accomplish the mission and improve the organization. (Joint C2 Joint Functional Concept).

logistics

The science of planning and carrying out the movement and maintenance of forces. In its most comprehensive sense, those aspects of military operations that deal with: a. design and development, acquisition, storage, movement, distribution, maintenance, evacuation, and disposition of materiel; b. movement, evacuation, and hospitalization of personnel; c. acquisition or construction, maintenance, operation, and disposition of facilities; and d. acquisition or furnishing of services. (JP 1-02).

logistics decision support system

FCS software application that is part of the overall FCS battle command system. The system serves to manage all manners of logistics activities for the FCS BCTs.

major combat operation

Large-scale operations conducted against a nation state(s) that possesses significant regional military capability, with global reach in selected capabilities, and the will to employ that capability in opposition to or in a manner threatening to U.S. national security. (MCO JOC).

maneuver

Employment of forces in the operational area through movement in combination with fires to achieve a position of advantage in respect to the enemy in order to accomplish the mission. (JP 3-0).

mission partners

Those entities not under the commander's direct authority that are participating in the mission. Some examples include, but are not limited to, supported commands, supporting commands, non-DOD agencies such as State or CIA, coalition partners, host nation civil authorities, international organizations, and NGOs.

mission type order

Order to a unit to perform a mission without specifying how it is to be accomplished. (Joint Publication 1-02).

morale

Often described as esprit de corps, morale is the enthusiasm, confidence, or loyalty of an individual or group with regard to the function or task at hand. In a group, it is a sense of common purpose. For an individual, it is the level of individual psychological well-being based on that sense of purpose and confidence in the future. (C2 JIC).

near real time

1. Pertaining to the timeliness of data or information that has been delayed by the time required for electronic communication and automatic data processing. This implies that there are no significant delays. (JP 1-02) 2. Within 5 seconds to 5 minutes of occurrence. (OP 2.5.3, CJCSM 3500.04C) 3. Data or information delayed by the time required for electronic communication and automatic data processing. Data is older than real time due to data processing, but does not impact the current planning cycle – no significant delays. (CJCSI 3151.01).

nonlethal effects

Effects that are explicitly designed and primarily employed so as to incapacitate personnel or material, while minimizing fatalities, permanent injury to personnel, and undesired damage to property and the environment. Unlike conventional lethal weapons that destroy their targets through blast, penetration, and fragmentation, nonlethal weapons employ means other than gross physical destruction to prevent the target from functioning. Nonlethal effects are intended to have one, or both, of the following characteristics, they have relatively reversible effects on personnel or materiel, and they affect objects differently within their area of influence. (DOD).

operational contract support

The ability to properly plan, integrate, synchronize, and manage contract support to the joint force in a designated operational area. (ASAALT-IO).

operational level of war

The level of war at which campaigns and major operations are planned, conducted, and sustained to accomplish strategic objectives within theaters or other operational areas. Activities at this level link tactics and strategy by establishing operational objectives needed to accomplish the strategic objectives, sequencing events to achieve the operational objectives, initiating actions, and applying resources to bring about and sustain these events. These activities imply a broader dimension of time or space than do tactics; they ensure the logistic and administrative support of the operating forces, and provide the means by which tactical successes are exploited to achieve strategic objectives. See also strategic level of war; tactical level of war. (JP 3-0).

operational level logistics command

The generic term used to explain the future operational level logistics command that will support the ASCC in the area of operations. Similar in nature to the current theater support command, yet not enough is currently known about the modular force to make organizational changes to these organizations. The intent is to keep future JCIDS efforts open to new capabilities brought forth from this operational level command.

operational trust

The aggregate level of trust from each person and earned from each entity (person, object, system) to accomplish a mission or endeavor. Complex operations using interdependent forces require a level of operational trust in order to gain operational efficiency and effectiveness. Operational trust refers to the sum of a variety of trust perspectives including (but not limited to) commander and subordinate, subordinate and commander, peer and peer, operator and equipment, and warfighter and tactics. (C2 JIC).

physical domain

Spans the land, air, sea, and space environments where forces execute the FSO. (DOD Transformation Planning Guidance, April 2003).

reachback

The process of obtaining products, services, and applications, or forces, or equipment, or material from organizations that are not forward deployed. (JP 1-02)

real time

1. Pertaining to the timeliness of data or information delayed only by the time required for electronic communication. This implies there are no noticeable delays. (JP 1-02) 2. Timeliness of data or information delayed only by the time required for electronic communication. This implies there are no noticeable delays. Data is real time when current active tracks show current location, updates occur immediately, and the only delay is of electronic communication. (CJCSI 3151.01).

responsiveness

Readily reacting to or recovering from changing situations and conditions in real time and near real time. The effective use of responsive and resilient planning, execution and assessment enables rapid deployment or redirection of assets when various “windows of opportunity” occur. Ideally, systems with this attribute are designed to function at their normal operational standard upon recovery from or reaction to changing situations and conditions. (C2 JIC).

robustness

Retaining near-full operational capability in a degraded environment due to great strength, durability, survivability, interdependency, resiliency, a distributed nature, or a combination thereof. Can operate in several environments and perform effectively across a range of conditions, situations, and missions. Organizations and systems with this attribute can function during a disturbance; provide surplus capability to improve service reliability and quality; recover from or adjust to malfunctions or changes; and disperse resources performing services throughout a large area. (C2 JIC).

security

A condition that results from the establishment and maintenance of protective measures that ensure a state of inviolability from hostile acts or influences. (JP 1-02) Security includes preventing loss, destruction, exploitation, or denial of use of information or of a system by establishing, maintaining, and implementing protective measures and risk management. (C2 JIC).

self-synchronization

The ability of a well-informed force to organize and synchronize complex warfare activities from the bottom up. The organizing principles are unity of effort, clearly articulated by the commander’s intent, and carefully crafted rules of engagement. Self-synchronization is enabled by a high level of knowledge of one’s own forces, enemy forces, and all appropriate elements of the operating environment. (Vice Adm. Arthur K. Cebrowski, U.S. Navy, and John J. Garstka, “*Network-Centric Warfare: Its Origin and Future*,” *Proceedings*, January 1998).

sense and respond logistics

A logistics system interwoven with net-centric operations and based upon highly adaptive, self-synchronizing dynamically reconfigurable demand and supply networks that anticipate and stimulate actions to enhance capability or mitigate support shortfalls. (G-4, LIA).

shared understanding

A shared appreciation of the situation supported by common information to enable rapid collaborative joint engagement, maneuver, and support. (Joint C2 Joint Functional Concept).

situational awareness

Immediate knowledge of the conditions of the operation, constrained geographically and in time. (FM 3-0).

situational understanding

The product of applying analysis and judgment to relevant information to determine the relationships among the mission variables to facilitate decisionmaking. (FM 3-0).

speed

The appropriate pace of tasks and decisionmaking. At times, the appropriate speed is rapid. When deliberate methodical actions are required, a slower speed may be required. To obtain the appropriate speed of command, subordinate forces must be enabled to synchronize actions among themselves, without restrictive direction from above. (C2 JIC).

stability operations

Multiagency operations that involve all instruments of national and multinational action, including the international humanitarian and reconstruction community to support major conventional combat operations if necessary; establish security; facilitate reconciliation among local or regional adversaries; establish the political, social, and economic architecture; and facilitate the transition to legitimate local governance. Stability operations establish a safe and secure environment; provide essential social services, emergency infrastructure reconstruction, and humanitarian relief in order to facilitate the transition to legitimate, local civil governance. The objective is to establish governance that enables a country or regime to provide for its own security, rule of law, social services, and economic activity and eliminate as many of the root causes of the crisis as feasible to reduce the likelihood of the reemergence of another crisis. (Stability Operations JOC).

standard

Quantitative or qualitative measures for [specifying] the levels of performance of a task. (CJCSI 3010.02B).

strategic deterrence

The prevention of adversary aggression or coercion threatening vital interests of the U.S. and national survival. Strategic deterrence convinces adversaries not to take grievous COAs by means of decisive influence over their decisionmaking. (Battlespace Awareness JFC).

strategic level of war

The level of war at which a nation, often as a member of a group of nations, determines national or multinational (alliance or coalition) security objectives and guidance, and develops and uses national resources to accomplish these objectives. Activities at this level establish national and multinational military objectives; sequence initiatives; define limits and assess risks for the use of military and other instruments of national power; develop global plans or theater war plans to

achieve these objectives; and provide military forces and other capabilities in accordance with strategic plans. See also operational level of war; tactical level of war. (JP 3-0).

suitability

The degree to which a plan, decision or action is appropriate for the task or situation. Suitability extends beyond mere feasibility to an assessment that the plan, decision or action is likely to be effective for the task or situation. (C2 JIC).

sustainment

The provision of personnel, logistic, and other support required to maintain and prolong operations or combat until successful accomplishment or revision of the mission or of the national objective. (JP 1.02).

synchronization

The arrangement of military actions in time, space, and purpose to produce maximum relative combat power at a decisive place and time and; in the intelligence context, application of intelligence sources and methods in concert with the operation plan. (JP 2-0 and JP1-02).

systems visualization

Systems visualization develops a shared understanding of causal relationships and provides critical tools that assist commanders and staffs to plan, execute, assess, and adapt. It also provides some insight into potential effects beyond those that are desired. This SU of the essential political, military, economic, social, infrastructure and information systems within an area of interest highlights how the systems function and are interrelated. (JOC).

tactical level of war

The level of war at which battles and engagements are planned and executed to accomplish military objectives assigned to tactical units or task forces. Activities at this level focus on the ordered arrangement and maneuver of combat elements in relation to each other and to the enemy to achieve combat objectives. See also operational level of war; strategic level of war. (JP 1-02).

task (operational)

A discrete event or action enabling a mission or function to be accomplished by individuals or organizations; an action or activity (derived from an analysis of the mission and concept of operations) assigned to an individual or organization to provide a capability. (MORS Conference 2004 and CJCSI 3010.02B).

timeliness

Occurring at a suitable or opportune moment; well timed. Timeliness is situation dependent. It reflects the relationship between the age of an information item and the tasks or missions it must support. (C2 JIC).

trustworthy

Capable of being believed with a high level of confidence. Systems or organizations that have this attribute are readily accepted as credible, dependable, and reliable. This attribute may exist

due to prior performance and/or specific integrity assurance measures that have been adopted. (C2 JIC).

understanding

The capacity for rational thought or inference, and the ability to comprehend the meaning and importance of focus areas the commander designates and the direction of his intent. Having the ability to grasp the commander's guidance and apply it to operations. SA enables SU—knowing what the enemy is doing and knowing why he is doing it. (C2 JIC).

unity of effort

To focus all actions toward the desired end states and objectives in support of the strategic aim. Unity of effort is a result of unity of purpose that leads to coherency of action, which is the integrated and complementary execution of the actions of all the partners in an operation or campaign, by means of either command or cooperation. (JOpsC).

user friendly

Capable of effective use by the average person. This attribute applies to systems that are easy to use, whether the operator is a layman or expert. This attribute is often used to describe computer systems. Menu-driven programs, GUIs, and online help systems are all examples of tools designed with this attribute in mind. Software and procedures that can effectively be used intuitively or with minimal training have a high degree of this attribute. (C2 JIC).

very small aperture terminal

Refers to a fixed satellite terminal whose antenna diameter typically does not exceed two meters.

