



JOINT REQUIREMENTS  
OVERSIGHT COUNCIL

THE JOINT STAFF  
WASHINGTON, D.C. 20318-8000

JROCM 173-07  
16 July 2007

MEMORANDUM FOR DISTRIBUTION

Subject: Net-Enabled Command Capability Increment One Capability  
Development Document

1. The Joint Requirements Oversight Council (JROC) approves the Net-Enabled Command Capability (NECC) Increment **One Capability** Development Document and Extensions, and validates the enclosed key performance parameters and key system attributes. The JROC will maintain approval authority for all key performance parameter changes, delegates capability development document approval authority oversight for changes to key system attributes to the Joint Capabilities Board, and delegates capability development document approval authority for all other non-key performance parameter/non-key system attribute changes to USJFCOM via the Joint Combat Capability Developer organization as outlined in the capability development document. Capability developers will use the NECC Capability Development Document and Extensions as the initial statement of validated capability needs for all phases of development. This program is assigned the Joint Potential Designator of "JROC Interest."
2. USJFCOM, working in concert with the Services and appropriate agencies, will determine program funding requirements for POM 2010 and beyond.
3. Should the Defense Information Systems Agency encounter costs exceeding ten percent of the approved acquisition program baseline or 25 percent of the original program baseline (Program Acquisition Unit Cost/Acquisition Procurement Unit Cost), they shall return to the JROC prior to reprogramming or budgeting additional funding into the program.
4. The JROC recognizes the importance of the NECC program and requests USJFCOM return to the JROC to provide annual program updates.

A handwritten signature in black ink, appearing to read "E. P. Giambastiani".

E. P. GIAMBASTIANI  
Admiral, US Navy  
Vice Chairman  
of the Joint Chiefs of Staff

Enclosure

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**Net-Enabled Command Capability (NECC)  
Capability Development Document (CDD)  
Linked Extension K – United States Army Annex to  
NECC CDD**

**Increment: I**

7 June 2007

This document has been approved by J8 for release to  
Australia, Canada, and Great Britain

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UNITED STATES ARMY ANNEX..... USA-1

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Further requests for this document should be submitted to:

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**Extension K: United States Army Annex to the NECC CDD**

**United States Army (USA) Annex  
to the  
Net-Enabled Command Capability (NECC)  
Capability Development Document (CDD)**

## Executive Summary

### General

The Army Annex to the Joint Command and Control Capability Development Document (NECC CDD) describes Army unique command and control capabilities needed to complement the Joint command and control capabilities described in the NECC base document. Both Joint (base document) and Army (annex) command and control capabilities are required to enable the conduct of effective planning and execution of the land portion of future Joint operations by Joint and Army commanders and staffs.

These capabilities collectively enable the Command and Control (C2) process, first described in the approved Joint Functional Concept for Command and Control. That process, recapped in the NECC CDD base document, combines the salient properties of the Army's process of "Plan, Prepare, Execute, and Assess" with the cycle of "Observe, Orient, Decide, Act (OODA)" employed by other services. This Joint C2 process is foundational to the NECC CDD and drives how capabilities/MCPs are developed and integrated vertically and horizontally.

As a result of the evolution of the NECC CDD base document, the Army Annex has changed significantly from previously staffed versions. Many of the command and control capabilities articulated in previous versions of the Army Annex have migrated to the base document mission capability packages (MCPs) because they were common requirements for two or more services; these capabilities were not unique to the Army. Most of these capabilities were moved to the Force Employment-Land Operations, Intelligence, and Situational Awareness MCPs. No capabilities from previous versions of the Army Annex were deleted—in fact, 86 new capabilities have been added. Further, the Army Annex should not be viewed as a stand alone document—it is interdependent with the NECC CDD.

### Uniqueness, Nesting and Migration

Inherent to the concept of joint interdependence is the *uniqueness* of capabilities that are provided by each service. It is imperative that these unique capabilities be synchronized and "*nested*" with Joint and service concepts, doctrine, and capabilities. In order to achieve this interdependence, the Joint community must *migrate* from its present capability set to the desired set of future capabilities. The Army Annex to the NECC CDD addresses capability gaps unique to the US Army. Solution sets for closing these gaps must be nested and synchronized with both Joint and Army concepts. A migration plan must be devised to reach an ultimately improved NECC capability over time.

Uniqueness. Although there are many "Joint" capability gaps, the Army has its own unique set of capability needs/gaps driven by Title X responsibilities, and the challenges of conducting sustained land operations. Because of this, it requires specific unique command and control and information technology support capabilities that are defined by the answers to the following questions:

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- What data/information/intelligence does the Joint, Interagency, and Multinational (JIM) community need from the US Army?
- What data/information/intelligence does the Army need from the JIM community?
- What data/information/intelligence does the Army need that only the Army can provide?

Nesting. Joint and Army concepts provide the foundation for synchronizing desired capabilities. Therefore, as an interdependent component, the Army must nest and synchronize its concepts with those of the Joint community. Capability gaps are defined by subtracting capabilities currently available from the desired set of future capabilities. The Army revised its Force Operating Capabilities (FOCs) (TRADOC PAM 525-66) to synchronize with the Capstone Concept for Joint Operations (CCJO) (Figure 1-1). This annex uses the Army FOC framework for categorizing desired capabilities and identifying capability gaps.

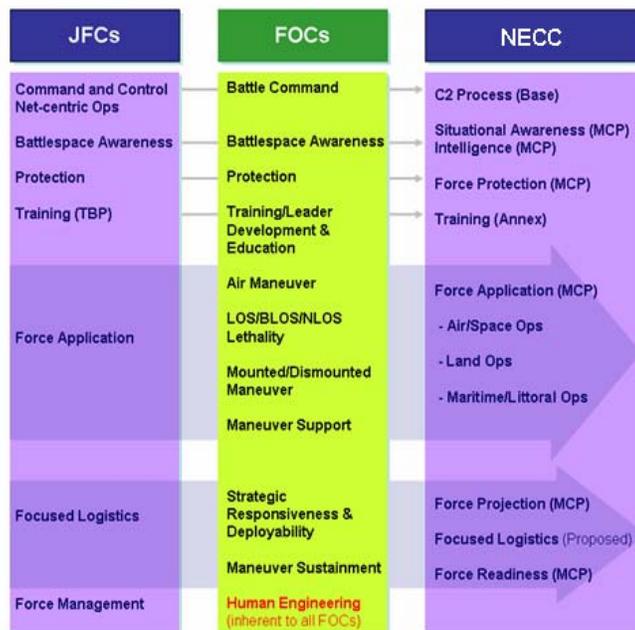


Figure 1-1. Joint and Army Capabilities Crosswalk to NECC

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Migration. Migration to an effective commander-driven, network-enabled command and control environment can only be achieved through the application of joint standards. Once capability gaps are identified, the Joint Force and each of the services must develop plans, which are nested and synchronized both vertically and horizontally, to achieve gap closure over time. Plan development is both difficult and necessary, requiring coordination and consensus building among the combat and material development communities, which must be achieved within existing policy and programmatic efforts over time.

As directed by JROCM 167-03, dated 22 Aug 2003, each service is required to outline its migration from the GCCS Family of Systems (FOS) to the joint capabilities outlined in the NECC and to address its Service-unique capabilities. The later JROCM 087-04, dated 27 May 04 further directed the conversion of the NECC ORD into this CDD. As such, the Army must clearly outline its migration strategy as a part of its transition to a future desired state in which its primary Battle Command Information Systems are FCS and NECC.

The objective of the Army Battle Command Information systems (BCIS) Integration and Migration Plan is to incrementally improve battle command capabilities (quality and speed); decrease support requirements; standardize architecture; reduce complexity; and minimize vulnerabilities, all within budget and schedule constraints imposed by the Army and DOD.

The Battle Command Information System Integration and Migration Plan supports the Army Campaign Plan (ACP) Line of Operation (LO) 16 – Battle Command. It defines the synchronizing process for the integration and migration capabilities, focusing on Army information systems that support Battle Command. The scope of the plan supports the Army's Battle Command Information Systems evolution from its current state (Capability Block I with Army Battle Command System [ABCS] 6.4) to a desired state (Capability Block 6 with a broad fielding of Future Combat System [FCS] Battle Command and Joint Command and Control [NECC]). It provides the groundwork for future paths towards achieving not only the desired endstate for Army operations, but for Joint Land Operations. The Army BCIS integration and migration plan will be conducted within the context of the Program Objective Memorandum (POM), other Joint and Army combat developments, Joint and Army operations (OIF/OEF), and Army LANDWARNET efforts to integrate Missions Areas and experiments.

Although this annex emphasizes gaps to be addressed in NECC Increment I, the entire NECC program over all increments are also addressed in broad terms to articulate an understandable plan for achieving an endstate of success. Each service must fully develop its own migration plan to capitalize on current capabilities, commercial off the shelf (COTS) and government off the shelf (GOTS) solutions, and its own unique tactical and operational migration challenges. This annex presents a snapshot of this migration (Figure 2-1). The migration plan will alter over time based on numerous variables such as demands of operational tempo, changing funding streams and technical development maturity.

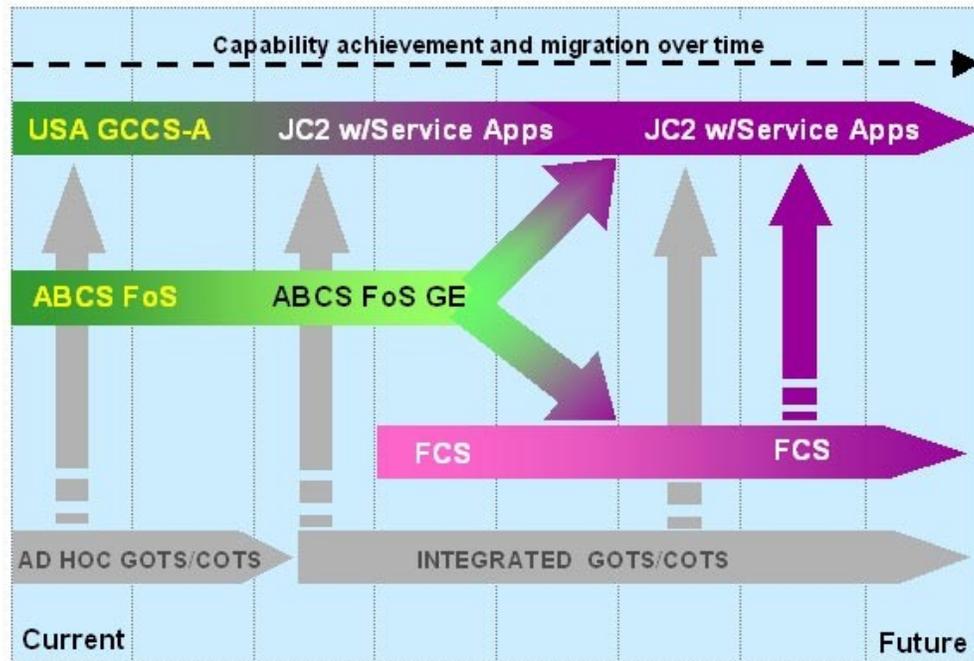


Figure 2-1. Migration to NECC and FCS

Future Increment Challenges

Although not directly addressed in the MCP structure of the NECC CDD main body, the Army continues to emphasize critical developmental issues that must be addressed in future material development and governance forums.

An emphasis on training support is an essential improvement over existing C2 capabilities that NECC must achieve. This includes a prioritization of “ease of use” in design and embedded training support and modeling and simulation capability. Training support is a Key Performance Parameter (KPP) and an annex in the base document but is not articulated as an MCP.

Numerous logistics capabilities are embedded within the existing NECC MCPs. However, this embedding fails to highlight the importance of logistics in executing the full range of military operations. There continues to be a requirement for a separate Focused Logistics MCP.

With the adoption of the recommendations of the Analysis of Alternatives (AoA) provided by Institute for Defense Analyses (IDA), there is a need for additional dialogue on funding decisions. Since NECC will leave a capability gap for many of the MCPs until Increment III or beyond, services will need to preserve adequate funding for the continuance of existing or other emerging C2 capability solutions that will be used in the ongoing war on terror until NECC comes to full fruition. Army Annex Paragraph 15 funding details for the Army’s portion of NECC support can only be accurately determined after a dialogue with OSD, DISA, JFCOM and the other services.

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NECC Capability Development Document – Army Annex Version 1.0

7 June 2007

## Revision History

<b>Date</b>	<b>Version</b>	<b>Description</b>
21 Sep 2005	0.5a	Completed document review; commenced Army FOC crosswalk effort.
26 Sep 2005	0.5b	Added complete rewrite of paragraph 1, and Appendix A – Army FOC Crosswalk template.
29 Sep 2005	0.5c	Added Figure 1-1 Joint and Army Capabilities Crosswalk to MCPs.
30 Sep 2005	0.5d	Added auto-update for Table of Contents, List of Figures, and List of Tables; reformatted document.
10 Nov 2005	0.5e	Completed draft rewrite of Army Annex and Executive Summary. Added new FOC crosswalk table to Appendix A.
11 Nov 2005	0.5f	Added Situational Awareness to Figure 1.1. Substituted brigade for UA and division level and above for UE.
14 Nov 2005	0.5g	Updated figure 2.2 to reflect the 12 (vs 10) Army Battle Command Capabilities. Added para 7.2.16 TBONE. Added para 7.2.17 FORGENET.
15 Nov 2005	0.5h	Reformatted Table of Contents
3 Jan 2006	0.5i	Added language to Executive Summary outlining Army intentions for migration of current Army C2 systems to the NECC/FCS environment. Deleted Appendix F - GCCS-A Capabilities Migration to NECC.
30 Jun 2006	1.0	Incorporated June 06 CDD Adjudication comments

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## Capability Discussion

### 1.1 General

The concept of joint interdependence implies an inherent *uniqueness* of services as well as a requirement to synchronize and “*nest*” with Joint and other service concepts, doctrine, and capabilities. In order to achieve this joint interdependence, the Joint community must move, or *migrate*, from its present capability set to some greater future desired set of capabilities. This Army Annex to the NECC Capabilities Development Document will address capability gaps unique to the US Army, nesting and synchronization with both Joint and Army concepts, and migration, or a plan to reach an ultimately improved NECC capability over time.

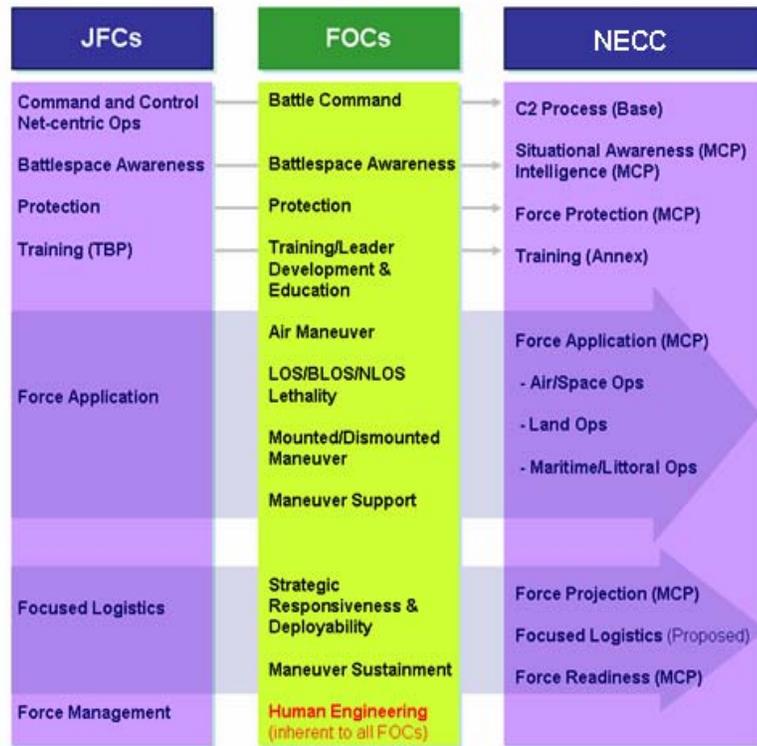
#### 1.1.1 Uniqueness

Although, there are many “Joint” capability gaps, the Army must deal with its own unique set of circumstances, Title X responsibilities, and operational challenges. Because of this, it requires some unique command and control and information technology support capabilities that are defined by the following questions:

- What data/information/intelligence does the Joint, Interagency, and Multinational (JIM) community need from the US Army?
- What data/information/intelligence does the Army need from the JIM community?
- What data/information/intelligence does the Army need that only the Army can provide?

#### 1.1.2 Nesting

Concepts define required capabilities. In order to synchronize any effort to close capability gaps, one must have a clearly defined goal, or set of, capabilities desired. To do so, the Army must synchronize, or nest, its concepts with those of the Joint community. As a starting point, the Army has looked to the approved Capstone Concept for Joint Operations (CCJO) as the pinnacle of a Joint conceptual framework. In an attempt to be doctrinally and conceptually “nested” with the Joint Force, the Army has revised its Force Operating Capabilities (FOCs) (TRADOC PAM 525-66) to reflect those concepts and ideas in the CCJO (figure 1-1). Joint and Army concepts provide the backdrop for definition of desired capabilities. Gaps are defined by those desired sets of capabilities minus those capabilities presently available. In this document, we attempt to use those same FOCs as a framework for categorizing desired capabilities and identifying capability gaps.

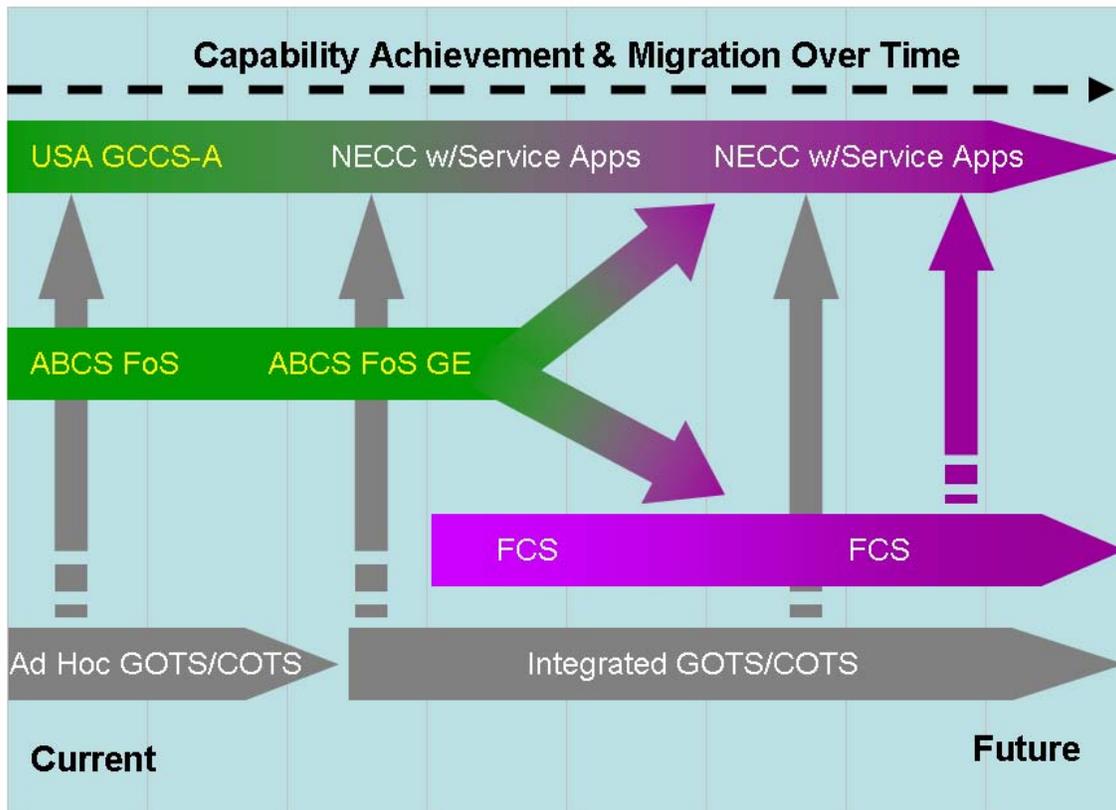


**Figure 1-1. Joint and Army Capabilities Crosswalk to MCPs**

**1.1.3 Migration**

Once capability gaps are identified, the Joint Force and each service must develop plans (which are nested and synchronized vertically and laterally) to achieve gap closure over time. It is a difficult but necessary process of coordination and consensus among many parties in both the combat and material development communities and must be achieved in concert with existing policy and programmatic efforts over time. This annex emphasizes gaps to be addressed in NECC Increment I. However, the entire NECC program over all increments must also be

addressed in broad terms to articulate an understandable plan for achieving and endstate of success. Each service must fully develop its own migration plan which seeks to capitalize on current capabilities, commercial off the shelf (COTS) and government off the shelf (GOTS) solutions, and its own unique tactical and operational migration challenges. This annex presents a snapshot of this migration. The migration plan will alter over time based on numerous variables such as demands of operational tempo, changing funding streams and technical development maturity.



**Figure 1-2. Migration to NECC and FCS**

**1.2 Capability Gap**

In future operations, Army forces will depend upon a degree of Joint interdependence that exceeds integration or deconfliction exhibited during any previous operation. The Army, as a component of Joint Forces, will accomplish operational and tactical missions at higher tempos while distributed across much larger operational areas. Existing C2 systems do not support this tempo, force distribution or notion of interdependence. They focus on vertical information exchanges and do not adequately address horizontal information flows between Joint Force

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components. Lack of joint interoperability between stovepipe C2 systems prevents rapid, seamless, and collaborative exchange of information. Current systems do not adequately provide the continuous levels of situational awareness (SA) required to execute future operational concepts in accordance with (IAW) the Joint Vision.

Our staff structure does not support the way we routinely organize to fight. As a result, commanders form ad hoc staff groupings to meet their information and operational needs. Our doctrine, organizations, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) approaches to Battle Command (BC) have not kept pace with changes in the operational environment. We deploy more staff than we desire to an Area of Operation (AO) because of the lack of adequate network and reach capability as well as a basic uneasiness with distributed operations. We conduct serial planning and execution because of a lack of collaborative tools and real time information and assessment sharing.

Increases in effectiveness will be realized if we revise BC DOTMLPF. Joint and Army organizations will still execute military operations in a commander centric approach that is enabled by better net centric capabilities. The organization will deploy the minimum amount of staff required to plan, prepare and execute branches, sequels and transitions from the base plan. Mission organized staffs will integrate the commander's information needs focused on commander's intent, guidance, and running estimate. Staff functions will be distributed across the organization. Subject matter experts from Army, JIM, academia, and industry will influence operations from a distance, providing on demand input from Flagship Installations, Home Station Operations Centers (HSOC), which are still conceptual, or through the Global Information Grid (GIG) via Knowledge Centers (KCs). "Time available" will dictate the process selected for planning and execution by commanders and staffs. The process will depend on more cohesive teaming of commanders, leaders, and staffs, and must be more parallel and simultaneous rather than sequential. The HSOC at Flagship installations and Corps will perform adaptive campaign planning and provide subject matter expertise to Deployable Command Posts (DCPs) and commanders. The HSOC will likely be as large as or larger than current headquarters, but will deploy much smaller elements and retain the majority of its capability at home station. It will create the base plan and provide the majority of ongoing staff production and analysis through reach operations. DCPs may rotate responsibility for missions or simultaneously control separate missions within the noncontiguous battlespace. Each DCP reaches to the HSOC or elsewhere in the NCEs environment for staff support and subject matter expertise. The commander articulates his intent and guidance which drives the process. The staff synchronizes the detailed planning work and then plans and prepares the execution of their assigned roles.

The group of capabilities first presented in the BC Concept Paper and later refined in the Army's LANDWARNET concept reflect this rethinking of BC. Collectively, these ideas comprise the organizational and operational concept for future BC. The matrix below briefly outlines the capability gaps between current systems and the capability envisioned by these central ideas embodied in the LANDWARNET concept:

Table 1-1. Capability Gaps with Current Systems

Desired Capability	Current Capability Gap
<p><b>Commander Driven.</b> Within the commander’s intent, Army applications for NECC enable maximum initiative by commanders in planning, preparing, executing, and assessing high-tempo, combined arms maneuver as part of widely distributed, parallel land operations in complex environments where decentralized decision-making becomes imperative.</p>	<p>The current generation of Army C4ISR systems does not provide commander driven and focused BC capabilities. Current systems place too much emphasis on aggregating and sorting disparate stove piped information into reports that do not support decision-making. There is no single display or interface that is tailorable to meet the commander’s local and unique BC requirements. The current BC system cannot be optimized for this effort, nor can it be optimized to address unique situational or operational events. This places restrictive limits on operational initiative and complicates pursuit of the commander’s intent. Within current systems, there is an inherent lack of analytical and decision support capabilities for developing and leveraging knowledge-based insights for the commander.</p>

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<p><b>Flexible Force-Tailoring.</b> The capability to flexibly match C2 with forces and functions. The mix of BC, maneuver, sustainment, and maneuver support is mission dependent and not tied to organizational convenience. The true versatility of the Army is providing the correct mobile BC package and functional, tailorable capabilities from BCT to Corps to accomplish missions in support of the combatant commander’s intent and campaign plan.</p>	<p>Current C4ISR systems were developed before this capability was technologically or organizationally feasible. Current systems are explicitly tied to existing organizations, echelons, and the precise capabilities at those echelons. Current systems lack the capability to provide BC on the move (BCOTM). They lack the capability for rapid tailoring of headquarters (HQ) and forces and a capability for dynamically re-tasking during operations.</p>
<p><b>Joint at the Core.</b> Army uniqueness is a key component of joint interdependence. Any C2 capability that rapidly responds to Joint Force Commander needs must enable continuous sustained land combat operations in terms of distance and duration with links to the national infrastructure and JIM forces. Army applications within NECC must be able to support the Combatant Commander across the range of military operations and spectrum of conflict and be interdependent with other JIM forces. Concepts and doctrine must be nested with Joint and Army doctrine.</p>	<p>Current Army C4ISR systems have lacked responsiveness, robustness and reliability in the joint arena. Large-scale Joint and Army exercises have regularly revealed a need for improved system stability, reduced network complexity, a failsafe capability that prevents loss of data, and provides a system that links JIM forces through the employment of common data model and strategy, a common Joint Architecture, and a common transport system. In addition, without the capability to visualize the C4ISR network and its status, commanders cannot effectively resource network shortfalls nor provide for transporting and processing Common Operating Picture (COP) information.</p>

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<p><b>Battle Command – Anytime, Anywhere.</b> High tempo, fluid maneuver from strategic distance will require the commander to exert personal presence at the points of decision across vast areas. <i>Virtual presence alone is insufficient for leading land operations.</i> There are times and locations within operations where commanders must be able to physically share hardships, danger and experience the battle personally, without losing connectivity to the network for effective leadership. Army applications within NECC must allow commanders to move and command effectively, from alert to redeployment, from any location that circumstances may require.</p>	<p>While some current systems are capable of providing on-demand information, the “system” in total does not facilitate the BC operations process while mobile or dispersed. Currently, no provisions exist for robust collaboration during BCOTM due to bandwidth constraints; no capability to easily show multiple echelons of organizations and units simultaneously, and no common, accessible displays or bandwidth efficient toolsets available, all of which limits the commander’s ability to exercise battle command anytime or anywhere.</p>
<p><b>On-Demand Collaboration.</b> Distributed operations and high tempo maneuver will demand rapid synchronization, swift adaptation of plans and control measures, flexible and tailorable groupings of distributed staff elements and activities, and direct exchanges by commanders across hierarchies.</p>	<p>Current C4ISR systems do not provide adequate joint, integrated collaborative capabilities to support vertical and horizontal C2 planning, execution and assessment. They do not provide personal, interactive, and dynamic exchange and sharing of information and ideas to facilitate translation of SA into mutual Situational Understanding (SU). These capabilities, as they exist, are cumbersome and superficial. The intent of this idea is that collaboration occurs so regularly that the method and means would be better viewed as an extension of the leader and not of the system allowing for rapid transition to tactical decision and action.</p>

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<p><b>Fully Integrated.</b> Joint interdependence demands that Army forces dominate maneuver, execute precision fires, efficiently support Army and Joint elements, and provide full dimensional protection. Army combined arms will complement and reinforce each other and other Joint elements throughout the campaign. Additionally, Army applications within NECC will enable more effective Multinational operations, and interagency coordination.</p>	<p>Current C4ISR systems do not adequately provide the continuous COP required to effectively plan and execute operations IAW the Joint Vision. There is a limited capability to link sensors together for specialized missions and interact with databases within Joint forces as well as different agencies in the U.S. Government. Current systems are wholly inadequate for effective logistics operations. Interoperability with Multinational, as well as current forces, remains difficult. Current systems do not provide the capability for collaborative, on-line tutorial and scenario based training in garrison and deployed environments for the full range of military operations.</p>
<p><b>One Battle Command System (Network).</b> A unitary system empowers commanders to execute combined arms operations effectively through one BC system. The same system that enables planning, preparation, execution, and assessments in wartime operations will provide the same functions in garrison and during training. The system will have embedded individual and collective training capability and provide low overhead simulation/stimulation for training and exercises. Because Army applications within NECC are part of the Joint system, Army forces will inherently support and be supported by Joint elements.</p>	<p>No single BC system exists in the Army C4ISR inventory that centers on, and is optimized for, the commander; nor does any single system enable effective support of the commander by his staff, or subordinate decision makers at all echelons. Army C4ISR systems existing today are a confederation of non-standardized systems with limited interoperability to facilitate BC. These stove-piped systems produce a staggering amount of information that is difficult to process, analyze, store, distribute and use across stove piped systems boundaries. Operational missions and readiness are managed “offline” - that is – not part of a single overarching system at the garrison and installation level.</p>

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<p><b>Bridge Current to Future.</b> Any Joint C2 system must capitalize on the inherent goodness of current COTs and GOTs and minimize sunk program costs. It must focus on the future goals and standards of Joint C2. The key to migrating to a “born Joint” future C2 system is the application of technical and warfighting standards. These standards must address data, transport, architecture, security, bandwidth, COP, models and simulations, adaptive planning and execution, and BCOTM. The standards themselves can act as a “filter” for migrating current systems to a more inclusive Joint system of the future.</p>	<p>Current communications and network capabilities form a fragile, inflexible network backbone of isolated physical nodes and networks; reconfiguration requires time and intensive management. The limited ability to tailor the network puts constraints on the commander’s scheme of maneuver, and ability to conduct mobile joint C2 operations. Although some systems have “niche” value, they lack the interdependence required of future Joint operations. In addition, existing C4ISR systems suffer from a host of information dependability issues that include a lack of interoperable applications, limited ability to rapidly catalog, search, and retrieve required information, a limited ability to use the radio frequency (RF) spectrum effectively and efficiently, a limited ability to move digital information seamlessly, and a lack of asset visibility that results in ineffective management of the common user network.</p>
<p><b>Tailored Battle Command.</b> Highly tailorable and responsive Army forces will require highly tailorable and responsive BC; all matched and positioned precisely to meet theater needs. Just as Army forces are task organized and echeloned, Army BC applications within NECC must be adaptable to mission needs.</p>	<p>Current systems are generally not designed to be modular and cannot be easily tailored to support full spectrum operations without considerable cost and effort. Scaling current systems reduces the systems’ overall ability to provide the COP and increases latency in reporting. There are no common tools that allow commanders and staff officers to efficiently conduct faster, improved operations processes.</p>

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<p><b>Reachback and Dramatically Smaller Deployed Footprint.</b> The pace and scope of maneuver, in and outside the theater mandate that BC capabilities be equally maneuverable. Future C2 capability must reduce the footprint of command posts at all levels by an order of magnitude. This will enable a significant increase in deployability, and tactical, operational, and strategic responsiveness. The reduction of onsite staff will be offset by network and reach capability to distributed staff and knowledge centers.</p>	<p>The digitization of analog BC tasks across the Army has resulted in enlarging the size of HQ and tactical operations centers (TOC), which reduces their deployability due to excessive weight and system complexity. Current communications network reliability and quality of service (QoS) do not facilitate distributed, split-based, extensive reach operations.</p>
<p><b>Dependability:</b> A multi-layered, network will allow commanders and Soldiers at all echelons to reach across tactical boundaries, and across theater and intercontinental distances, to access and share actionable information. The system will allow humans to apply judgment and experience, exploiting vast amounts of information, managed more effectively. The network will tie global maneuver, maneuver support, and maneuver sustainment, and provide redundancy and security to protect it.</p>	<p>Current Battle Command systems do not have complete interface at all echelons and lack the robustness to withstand high demand in low-bandwidth environments. QoS standards do not allow the weaving of force with differing capability bases at strategic, operational, and tactical levels.</p>
<p><b>Sustained Battle Command:</b> Joint and Army BC capabilities must be responsive but also structured and resourced to enable the Army’s core competency of sustained land operations.</p>	<p>Current Battle Command systems can provide a “surge capability” for high-demand and high-tempo operations, but lack the ability to sustain a high-demand environment indefinitely.</p>

### 1.3 *Capability the Program Delivers*

Army applications within NECC provide the scope and catalyst to transform from a platform-based and service oriented Army to one that is commander-driven, network enabled, and Joint oriented. Although the basic tenets of successful BC remain timeless, leveraging the GIG and evolving network services offers the prospect of significantly changing the exercise of BC. The system must also support the Army need for tactical point-to-point interfaces to support operations when disconnected from the GIG and interfaces with current force systems using message standards or other tactical bandwidth friendly standards. The creation of a single,

overarching and integrated architecture further offers a holistic approach to BC; one that is vertically and horizontally integrated across the Joint community and within the operational and institutional Army.

These applications enable commanders and staffs to synchronize the warfighting functions in near real time (NRT) to shape, close with, and destroy the enemy. The networked force is empowered for successful mobile operations as the result of robust communications layers that are inherently secure, agile, provide extensive ranges, and are self-configurable. Network-enabled BC will provide advanced sensor operations, information fusion, and display technologies to provide the warfighter an unprecedented view of the battlespace. This view is designed to provide decision makers:

- The science of sensing combined with the art of understanding the present
- The art of visualizing the future (i.e., end state)
- The art and science of envisioning and executing effective courses of action (COA) that synchronize warfighting functions to achieve the desired end state

As a space-empowered force, Army portions of the Joint force will routinely exploit the overhead constellation of military and civilian space platforms for intelligence, focused surveillance, area reconnaissance, long haul communications, early warning, position, velocity, navigation, time (PVNT), integrated tactical warning and attack assessment, weather / terrain / environmental monitoring, precision engagement, combat identification, direct downlink and access to the GIG. The layered redundancy and improved capabilities provided through military and commercial space will sharply improve development of situational awareness at all levels. Space support will extend from national to tactical level and prove particularly indispensable in immature theaters where existing communications infrastructure is insufficient, unreliable, or vulnerable. Overall, space-based capabilities are critical enablers.

Army battle command capabilities will support the following Joint Mission Capability Packages (MCPs) (Figure 2-2):

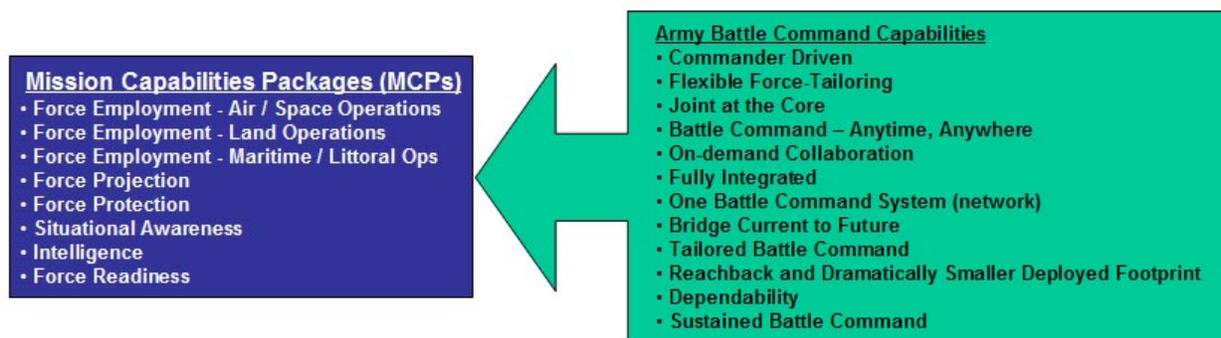


Figure 1-3. Army BC Capabilities support Joint MCPs

Army applications within NECC drive the Army from its current state of variants of C2 systems, locally derived applications, and little or no automated BC capability to a BC capability purposefully designed to enable Joint and Army planning, preparation, execution, and assessment. Army applications within NECC operate in garrison or deployed network environments, provide secure access to Service/Agency/Joint HQ and elements, and support data, information, knowledge, and SU exchange across multiple security domains. These applications will be interoperable with JIM forces. They will provide an array of intuitive knowledge-based tools (such as intelligent decision aids) that streamline decision support tasks, assist in focusing analysis, and interact with users and decision makers during planning, preparation, execution and assessment. Army applications within NECC will be developed to accommodate changes to technology, or new technology advances in the future but will be complementary with the stabilized software version of ABCS systems as long as needed.

## **1.4 Current Increment Contribution**

The current increment of Army applications within NECC will be used by Army units and organizations and will begin to improve integration with JIM forces. The Army will develop and field top down battle command enhancements derived from lessons learned in Operation Iraqi Freedom (OIF) and the global war on terror (GWOT) as well as insights derived from the Chief of Staff of the Army's (CSA) focus area task forces. These initiatives include stabilizing the current ABCS baseline to one software version, increasing Blue Force Tracking (BFT) and re-distributing to a key leader level across the Army, improving Army access to commercial satellite bandwidth and communication, improving NLOS communications and data transport capability, improving battle command on the move (BCOTM) capability including both air and ground platforms, improving the effectiveness and mobility of standard command posts, funding and executing an Army digital strategy for training/operations. In addition to capability described in the base document, Army applications within NECC will enable improved battle command through shared SA via a common operational picture (COP) and continuously updated running estimates as part of the COP. Enabled by an increasingly reliable network, Army applications within NECC will allow users to collaboratively access, process, and transmit information across echelons. BC tools will increase the speed, quality, and effect of the operations process, enhance the responsiveness of fire and effects, and improve the ability to maneuver to decisive points to facilitate mission accomplishment.

## **1.5 Operating Environment**

The contemporary operating environment that will likely exist until at least 2020 for Future Forces is extremely fluid with continually changing coalitions, partnerships, alliances, allies, actors, critical environmental variables and threats. Complex terrain and urban environments with civilian population and infrastructure are increasingly becoming centers of gravity and therefore required areas of operation (AO). These changing AOs may add the aspect of humanitarian crisis conditions requiring population management and/or support and control. In addition to civilians, there is also a marked increase in the potential for the presence of private, non-governmental, regional and international organizations each with unique agendas. The

importance of the widespread presence of information architectures, systems, and organizations, both private and public, cannot be overstated. The global flow of information, technology and knowledge now create a fruitful environment for all facets of information operations, information dissemination and information warfare (IW). Technological advances, diversity and access are generating changes in force structure and methods of operation as well as creating conditions for technological surprise. Cultural, demographic and informational factors that transcend border or state issues make conflict resolution a complicated and lengthy process often requiring several changes in the nature of an operation before an end state can be achieved.

In this environment, potential threats abound. Perceptions of the developing Future Force will affect the preparations and actions of potential enemies and allies alike if they perceive a desire on the part of the US to intervene. In a conventional fight, and in environments of moderate complexity, JIM Forces will likely possess a significant overmatch of warfighting capabilities across all spectrums of conflict. Therefore, it is unlikely that any thinking opponent will seek to fight the United States or a US led coalition force-on-force. Potential threats will likely employ asymmetrical and asynchronous strategies and tactics. This method of conflict will further complicate the future battlefield and drives the need for an extremely capable and reliable battle command system in the Future Force. Opponents will seek to redefine the environment and create advantageous asymmetrical conditions by quickly changing the nature of the conflict and moving to the employment of a capability for which the Future Force is least prepared. Capabilities will move to the forefront as the nature of conflict finds opportunities optimized for their particular strengths. This paradigm also predicts that an opponent will choose to operate in complex terrain and urban environments as a way of offsetting U.S. advantages, particularly its principal operating construct of stand off/long-range precision fires. However, the U.S. is not always able to bring the full scope of our military capability to bear, particularly in Smaller-Scale Contingencies (SSC) and Stability Operations and Support Operations (SOSO) where coalition partners and other considerations exist. Therefore, even though Future Force capabilities may be conventionally unparalleled, under certain conditions, asymmetrical advantages may not exist for U.S. forces.

## **2 Analysis Summary**

See paragraph 2.0, NECC CDD for complete list of supporting analysis.

## **3 Army Concept of Operations Summary**

### **3.1 General**

The Army performs the same general C2 functions and process as articulated in Paragraph 3, Concept of Operations Summary in the NECC base document and is logically nested with Joint procedures.

The uniqueness of Army C2 is found in its roles assigned by Title 10 law and in the specific C2 demands of sustained land operations.

### ***3.2 The Army's Statutory Obligations (Title 10)***

Under its Constitutional responsibility to raise and support armies, Congress establishes statutory obligations governing the roles and responsibilities of the Department of the Army. These are contained in Title 10 of the United States Code.

Subject to the authority, direction, and control of the Secretary of Defense, the Secretary of the Army is responsible for the Department of the Army, including the following functions:

- Recruiting.
- Organizing.
- Supplying.
- Equipping (including research and development).
- Training.
- Servicing.
- Mobilizing.
- Demobilizing.
- Administering (including the morale and welfare of personnel).
- Maintaining.
- The construction, outfitting, and repair of military equipment.
- The construction, maintenance, and repair of buildings, structures, and utilities, and the acquisition of real property.

More specifically, Department of Defense Directive 5100.1 lists the primary statutory functions of the Army: organize, equip, and train forces for the conduct of prompt and sustained combat operations on land. Additionally, it requires Army forces to be capable of conducting air and missile defense, space and space-control operations, and joint amphibious and airborne operations. Army forces are also required to support special operations forces, operate land lines of communication, and conduct other civil programs prescribed by law.

Title 10 charges the Army with administrative control (ADCON) of Army forces assigned to combatant commands. ADCON entails providing administrative (legal, personnel, and finance) and logistic support to these forces. When designated an executive agent, the Army also enters

into inter-service, interagency, and intergovernmental agreements for certain responsibilities. These may include-

- Civil engineering support.
- Common-user land transportation.
- Disaster assistance.
- Force protection.
- Mortuary services.
- Detainee operations.
- Bulk petroleum management.

Title 10 also includes combatant commanders' responsibilities and authorities. Two of these overlap the military departments' Title 10 functions: joint training and directive authority for logistics. Title 10 functions and the diverse set of missions assigned by the President and combatant commanders link the Army's enduring roles to its vision and mission.

### **3.3 The Army Vision**

The Army vision expresses how the Army intends to meet the challenges of the security environment.

Relevant and Ready Landpower in Service to the Nation

*The Nation has entrusted the Army with preserving its peace and freedom, defending its democracy, and providing opportunities for its Soldiers to serve the country and personally develop their skills and citizenship. Consequently, we are and will continuously strive to remain among the most respected institutions in the United States. To fulfill our solemn obligation to the Nation, we must remain the preeminent land power on earth-the ultimate instrument of national resolve; strategically dominant on the ground where our Soldiers' engagements are decisive. -- Dr. Francis J. Harvey, Secretary of the Army, April 2005*

The organization and training of its forces, innovation and adaptability of its leaders, and design and practices of its institutional support structures will keep the Army relevant to the challenges posed by the complex global security environment. The Army will be ready to promptly provide combatant commanders with the capabilities- principally well-led, well-trained, and well-equipped forces-required to achieve all operational objectives. To realize this vision, the Army is positioning itself for the security environment in which it will operate for the foreseeable future. It is transforming its mindset, capabilities, effectiveness, efficiency, training, education, leadership, and culture. Throughout this transformation, the American Soldier will remain the Army's primary focus-the centerpiece of Army organizations.

### ***3.4 The Army Mission***

It is the intent of Congress to provide an Army that is capable, in conjunction with the other armed forces, of-

- Preserving the peace and security, and providing for the defense, of the United States, the Territories, Commonwealths, and possessions, and any areas occupied by the United States
- Supporting the national policies
- Implementing the national objectives
- Overcoming any nations responsible for aggressive acts that imperil the peace and security of the United States

Title 10 of the United States Code states the purpose of Congress in establishing the Army and its guidance on how the Army is to be organized, trained, and equipped. Title 10 states that the Army includes land combat and service forces, and organic aviation and water transport. Army forces are to be organized, trained, and equipped primarily for prompt and sustained combat incident to operations on land. The Army is responsible for preparing the land forces necessary to effectively prosecute war except as otherwise assigned. It is also responsible, in accordance with integrated joint mobilization plans, for its expansion to meet the needs of war.

The Army exists to serve the American people, protect enduring national interests, and fulfill the Nation's military responsibilities. Specifically, the Army mission is to provide to combatant commanders the forces and capabilities necessary to execute the National Security, National Defense, and National Military Strategies. Army forces provide the capability-by threat, force, or occupation-to promptly gain, sustain, and exploit comprehensive control over land, resources, and people. This landpower capability compliments the other Services' capabilities. Furthermore, the Army is charged to provide logistic and other executive agent functions to enable the other Services to accomplish their missions. The Army is organized to accomplish this mission.

Emerging NECC capabilities should enable these legally mandated functions, but as a minimum must facilitate Army development of these Service unique and shared functions.

### ***3.5 The Environment of Sustained Land Operations***

In the realm of sustained land operations, there are significant differences between the C2 needs of the Army and those air, sea and short duration, littoral C2 needs of sister services. The development of new information-based, C2 enabling tools must accommodate the specific needs of this unique Army environment.

The Army operates 24/7, in close proximity with the adversary. Although, there is no sanctuary for any service in the modern, global environment, the Army is arguably the most consistently

engaged and committed force with little security respite (e.g. impacts “real time” intelligence needs, multiple security levels (MSL), lack of technical system ability to divine adversary intent, etc).

The Army requires mobile headquarters/command posts that can more rapidly set up, tear down and operate on the move, compared to the relatively permanent and stationary headquarters and command posts of sister services (less USMC) (e.g. Requires energy efficient, plug and play capability that minimizes user requirement for set up, tear down, differences between static and mobile operations and reduced logistical load).

The Army operates primarily in a mobile, wireless environment during operations and is most often a low bandwidth, disadvantaged user (e.g. criticality of bandwidth expansion and dynamically tailorable allocation, applications designed for low bandwidth users, criticality of effective data strategies, criticality of sufficient mobile communication capabilities, etc.).

The Army frequently and dynamically changes task organization during both planning and execution of operations (e.g. criticality of unique identification of data, dynamic internet protocol addressing, efficient/remote database initialization, etc.).

The Army has an entity profile that vastly exceeds (entities in the tens of thousands, as compared to tens and hundreds) the profiles of sister services (less USMC). While NECC will never be developed to service every individual soldier, it must have the capability to go down to selected individual soldiers (e.g. a key SF operator or team, a selected scout soldier or team, etc. dependent on mission). A typical, single Army brigade combat team exceeds 5000 entities with many of these entities lacking communications or C2 enablers and these are frequently dispersed in the most complex terrain (caves, mountains, jungles, urban areas, etc.) (e.g. applications that accommodate large number of simultaneous and dispersed users, bandwidth efficient communication solutions, etc.).

In addition to its Joint Force Title 10 responsibilities, the Army faces significant challenges in the logistics arena during the execution of Land Operations. These challenges increase in dimension as one moves from the tactical to the operational level of war. Despite the fact that the initial increment of NECC contains no Focused Logistics MCP, the Army must address the capabilities necessary to sustain not just ground combat forces, but to address those Title 10 responsibilities to and for its sister services. Future increments of NECC will require some attention to the topic of focused logistics in order to ensure logistic capabilities fully capture the attributes as outlined in the Focused Logistics Joint Functional Concept. These joint logistic attributes are: fully-integrated, expeditionary, networked, decentralized, adaptable, decision superiority, effectiveness, reliability and affordability. By ensuring the attributes are intricately woven into joint C2 capabilities, the Army can take the first step to effectively enable land operations through net-centricity and logistics.

### **3.6 Army Support Concept**

The general C2 process in Paragraph 3 of the NECC base document provides a context and serves as a standardizing function for the development and assessment of MCPs and Army

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applications. MCPs and Army applications will provide specific functional and operational capabilities but must be developed to nest with the general approach that commanders use for operations as well as to integrate as transparently as possible with other MCPs.

A system of systems engineering approach will help facilitate an effective Joint command and control solution, but must be founded on a set of standards that guide development and use of systems to enable this C2 approach. As the technical development process matures and as applications emerge, the following are a start point for standards that Joint and Army developers must adopt for an effective networked approach to Army support of Joint C2:

- Common Data Model and Strategy to ensure interoperability and facilitate data transfer in limited bandwidth environments.
- Common Joint architecture to synchronize development across the force.
- Common transport system based on GIG and NCES efforts and extended to the Tactical level through a primarily wireless communications environment with a tactical level internet.
- Executable security measures that allow for simultaneous protection of information with sufficient ease of dissemination for users in garrison, during training and during real world operations.
- Applications, integrated with Joint and across Services, developed with limited bandwidth availability as a key design criteria.
- Joint Common Operational Picture (COP) of friendly, enemy and operational environmental factors that enables the development of SU through the application of skilled judgment and analysis to the COP.
- C2 and adaptive planning and execution applications (plan, prepare, execute, and continually assess) designed for use in garrison, training and real world operations to promote proficiency and to reduce training burden. They must include a Battle Command “on the move” capability which affords tactical and operational commanders the ability to access and assess a COP and collaborate anywhere on the battlefield at anytime.
- Embedded modeling and simulation that enable both operations and training.
- “Running” Commander and Staff estimate tools that enable “sense making” of the battlespace and visualization of endstates while allowing for historical, current and projected mission state views.

Adopting a common data model and strategy assures success of any future BC system in that it provides for a common language between systems at different levels of war, amongst the services and agencies, and among future potential allies. The sharing of “data” when input into

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various applications will have meaning only so long as the joint data model and strategy exist across the entire JIM framework. As an example, C2IEDM is a NATO data standard that enables multinational forces to share data.

Architecture provides the blueprint for developing future C2 systems. To synchronize development to achieve a common goal, there must be a standardized blueprint. In an environment where many architects are producing a variety of systems with different purposes, it is essential that the efforts be synchronized and geared toward a specific joint endstate.

Agreement upon a common transport system connecting to the GIG will be vital to tactical success in the future. Although we cannot predict future bandwidth requirements or availability, a compromise must be reached between the design and tactical communities on the levels of fidelity versus economy in a bandwidth constrained environment.

Security measures for any such BC system will be paramount in a global environment where force packages will have increased modularity across service, agency, and national lines. Any such security system must possess the capability and flexibility to allow appropriate levels of access for users or deny access to sensitive information on a “need to know” basis.

Applications in any new BC system must be designed with the most basic user in mind. Any given application must be user friendly enough to allow new operators to be easily trained, apply a joint language easy enough for all services, agencies, and multinational players to understand. In addition, it would be desirable for applications to apply off-the-shelf technology as it transition through the time continuum of the migration process toward eventual fielding.

A Joint Common Operating Picture is essential for commanders and leaders to understand their immediate and future situations. The COP must include timely and accurate Red/Blue/Gray information.

Paramount among evaluation criteria for any BC system will be its ability to accommodate adaptive planning and BCOTM to tactical commanders. In a highly demanding environment of major combat operations, homeland security, or stability operations, tactical commanders deserve a tool that provides them with the utmost flexibility in planning, preparing, and execution. It must provide commanders with some added value of reach-back technology on a 24/7 basis through tools similar to the Battle Command Knowledge System (BCKS) or Tele-engineering Kit (TEK), as was used by 3ID in OIF 1.

Future BC systems must possess embedded applications that provide modeling and simulation which enable both operations and training. Although a given model or simulation may not validate a plan, it does add value by allowing commanders to visualize what a reasonable facsimile of future battle may resemble. This ability to visualize the future and determine how events “may” unfold is central to the entire concept of battle command.

The final measuring stick for future BC systems with embedded applications is that it must provide commanders and staffs with estimate tools that enable “sense making” of battlespace and

visualization of endstates while allowing for historical, current, and projected mission state views.

### ***3.7 Army Applications for NECC Support Concept***

See paragraph 3.2, NECC CDD Support Concept.

Army applications will comply with the same support requirements as its parent NECC.

### ***3.8 Army Applications for NECC Information Exchange Concept***

See Extension A, NECC CDD for Architecture Graphics and SV-6 for specific Information Exchange Requirements.

Army applications for NECC are an integral component of this view of Joint command and control. Army applications reside within this information exchange flow. The architecture graphics and matrices in Extension A of the NECC CDD and Army Annex describe the extension of Army applications, within this framework.

## **4 Threat Summary**

See Extension E, NECC CDD for Threat Assessment.

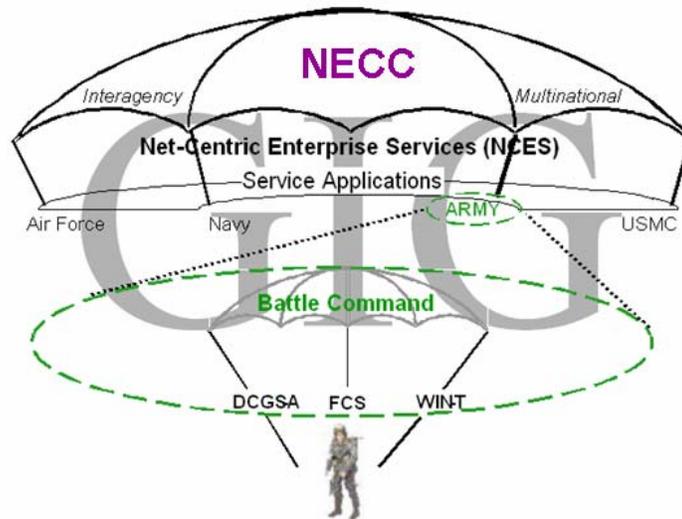
## **5 Program Summary**

Program strategy with relationship to Army programs and delivery considerations are detailed in the following subsections.

### ***5.1 Overall Program Strategy to reach Full Capability***

Army C2 applications and functionality currently resident in GCCS-A, the ABCS family of systems, and in GOTS/COTS solutions employed by units will migrate to NECC or FCS over time

Army applications within NECC will be an integral part of Joint Command and Control (see Figure 5-1). They will eliminate stove-piped systems and will be interoperable at all Army levels of command and with JIM forces. Army applications within NECC will be designed to integrate capabilities that ensure the Army will be effective and dominant in the land portion of Joint Operations. Army forces will exercise battle command through applications that are “born joint” and not merely superficially interoperable. The GIG, with NCES, is the enabling foundation for network centric warfare. The Warfighter Information Network–Tactical (WIN-T) (projected for Increment II/III) is the Army’s program of record to extend the GIG to lower echelons, whether tactically deployed or in garrison. The Distributed Common Ground System – Army (DCGS-A) is the program of record to fuse Future Force, JIM, and current sensor data. FCS provides tactical C2 capabilities. The integration of existing and future systems facilitates information exchange from the joint level to the soldier level.



**Figure 5-1. Overarching Battle Command**

The overall strategy is to provide incremental capabilities supporting emerging Joint concepts and the Army’s Future Force operational concepts, based on DOTMLPF change, technology advancements, funding, performance, and/or schedule constraints. Army applications within NECC will not reach full capability in Increment I. These applications will use evolutionary acquisition techniques to develop and field Army C2 capabilities throughout their lifecycle. There are currently three planned increments to NECC and Army applications will adhere to those planned increments.

The first increment employs the lessons learned from OIF, operations in Afghanistan, the global war on terror, and from the Army’s focus study groups to accelerate the Army’s merging of command and control capabilities with Joint command and control in a top down approach. It includes Army efforts known as “Battle Command Good Enough” and results of the Army focus groups, such as TF Network. This increment begins development of an Army command and control applications for NECC that succeed GCCS-A and ABCS. It replaces and extends the capabilities provided by GCCS-A (Block IV) by adding capabilities that use the Network Centric Enterprise Services (NCES), and includes additional capabilities to support battle command for

Army units across echelons currently provided by ABCS and ISR systems. It stops future development of ABCS and stabilizes ABCS at one software level for the Army. It incorporates network and net services initiatives ongoing at DOD level. At Army level it seeks to fund and field improvements to blue force tracking, BCOTM (ground and air platforms), command posts, NLOS communications and data transport, greater access to satellite bandwidth, improved Army networks, and digital strategies for training and operations. This increment will also incorporate architectural and design criteria to facilitate (in future Increments II/III), seamless battle command flow with C2 system improvements generated from the FCS program. Army applications within NECC/NCES must provide the capability to support the integration, interface and continuity of Battle Command capabilities between the brigade and higher Army and Joint echelons. This increment will also be interoperable with current ABCS systems to ensure unit interoperability during the extended transition of the Army force.

The Army FCS is a net-centric family of systems at brigade and below and is composed of a network of manned and unmanned ISR and weapon platforms, and C4ISR systems operating within a System of Systems Common Operating Environment (SoS COE). The SoS COE supports real-time Sensor to Shooter operations and near real-time (NRT) applications associated with the engagement operations at this echelon. Capabilities required by the tactical units to close with and destroy the enemy are outlined in the FCS FoS ORD and for purposes of this document, these battle command capabilities are mandated to be interoperable with joint command and control. It is envisioned that the FCS SoS COE will provide extensions to the NCES to support the real-time Sensor to Shooter operations and near-real time applications associated with engagement operations, and other “edge user” capabilities. In Increment II and III, NECC may incorporate C2 spirals of the FCS program. It will incorporate the continuous improvements to Army applications within NECC and improvements to network environment and services, to include provisions for bandwidth constrained tactical units, in increment III.

## **5.2 Relationship to Other Army Applications for NECC Increments**

Increment I (FY08/09). The migration of GCCS-A applications and functionality to NECC will initiate the realization of the capabilities identified in this CDD for Increment I. These capabilities will evolve into a single, integrated and seamless C2 and battlespace awareness system from the Joint Task Force (JTF) down through army tactical units in future Increments II/III. Each subsequent increment will provide additional capabilities, and greater integration and commonality within the Army and between the Army and other Services until full capability is achieved.

This Army application increment (and follow-on increments) will be interoperable with the stabilized software version of ABCS systems existing during Increment I, and as technology evolves, Army applications within NECC increments will maintain ABCS interoperability, as long as needed.

The incorporation of architectural and design constructs to facilitate a seamless information flow to/from Army (and Joint) higher echelons and “edge users” within Army tactical units will be provided in this increment.

Increment II (FY10/11) will accommodate a capability to allow a continuous flow of Battle Command information to/from the Army Future Combat System (FCS) equipped forces. Two elements will be addressed: NCEs extensions to support emerging real-time and near real-time SoS COE capabilities for these “edge users”, and common functionality of Battle Command applications.

The FCS FoS ORD identifies the capabilities to plan, prepare, execute and assess actions required for operations in the JIM environment.

Increment II will also continue development of an inherently Joint C2 capability with its associated Army mission capability software applications for Joint force mission packages that will succeed the current hardware/software stove piped approach of ABCS.

Increment III (FY12/13) will extend the fielding of initial FCS developments in C2 from Increment II with continuing FCS C2 development and improve the development of Army applications for NECC to achieve the currently envisioned interdependence with NECC during this increment. It will facilitate the initiation of ABCS lifecycle retirement as time, mission and funding allows. This progression of fielding and retirement will extend well beyond the projected timeframe of Increment III.

### **5.3 Increment Delivery Considerations**

Investment/ Fielding/ Interoperability. GCCS-A and ABCS will transition applications and functionality to NECC based on Army fielding priorities after successful operational testing. Investment realities, however, will constrain the Army’s ability to transition the entire force structure over a period of a number of years. It is therefore imperative that Army applications for NECC incorporate a strategy to interface with ABCS systems to interoperate in the current (communication and service) environments.

Technical - Network Maturity. The emergence of advanced Network Centric technologies is critical to the development of NECC and Army applications within NECC. These NCEs technologies directly impact the development of the NECC/Army applications and the development of key supporting systems. Critical NCEs extensions, to support “edge users” in the real-time and near-real-time domains, are also key factors, since capabilities that are currently under development need to be integrated with the NCEs program. Coordination of application functionality along with consensus on data modeling, strategy and global force structure strategy will be key factors in future.

Technical - Communications and Sensor Maturity. Key communications technology areas include transport (e.g. air/ground on-the-move communications, self-organizing networks, broadband power amplifiers, etc), antennas (e.g. body-borne, vehicle conformal (narrowband), phased array (wideband), multi-band (e.g., 2MHz–2GHz)) and security/information protection (e.g. intrusion detection/response, malicious code detection, and CDS). Critical supporting ISR technologies include intelligent/neural agents, electronic mapping, high resolution sensors, embedded smart processors, multi-function sensor suites, foliage/ground penetration radar, high speed wide area search and multi-target tracking, long range target identification capability,

intelligence analytical tools incorporating fusion levels 0-5, and affordable target acquisition sensor suites for unmanned ground and air vehicles, man portable and crew served systems.

Technical - Software Development and Code. The challenge of developing one overarching C2 capability that includes all of the required mission software applications and capability packages needed by Joint and Army forces is daunting. Developing applications to operate in a bandwidth efficient way for a primarily wireless warfighting environment is even more challenging and requires a level of standardization and development cooperation that has not been achieved in past systems. Intelligent decision aids and fusion engines of sufficient sophistication do not yet exist. Success in this area will determine the effectiveness of C2 in a mobile, dispersed and bandwidth limited environment.

Other Systems. Other developmental systems/organizations that will impact Army applications for NECC include Future Combat Systems (FCS) (being developed IAW JTA and Net-Centric standards), Distributed Common Ground System (DCGS) in the area of Battlespace Awareness, Deployable Joint Command and Control (DNECC) system in support of the Standing Joint Force HQ (SJFHQ) initiative, Network Centric Enterprise Services (NCES) advancements and the creation of NETCOM, other service programs associated with the Air Force's C2 Constellation and the Navy's FORCEnet, Joint Tactical Radio System (JTRS), Warfighter Information Network Tactical (WIN-T) and the various programs to increase satellite access and bandwidth capabilities.

## **6 System Capabilities Required for the Current Increment**

See Appendix F Expanded Attributes / Capabilities Matrix, Army Annex, NECC CDD.

Paragraph 6 describes unique Army capabilities required to satisfy major shortfalls identified in Paragraph 1.2. It depicts the operational capabilities needed to conduct Army planning, preparation, mission execution, operational assessment and training for Army forces as part of JIM operations. Employed at all levels down to individual platform, Army applications within NECC are optimized for the teaming of commanders, effective for staff and decision makers, and enabled by the GIG and NCES.

Army applications within NECC shall interoperate in all environments with JIM systems, existing Army systems, systems already under development, and new systems to be developed to meet the needs of Army Future Force. In addition to the Key Performance Parameters (KPPs) listed in paragraph 6.1, NECC CDD, Table 6-1 (Key Performance Parameter Table) below provides the summary of the Army's KPP 1 – Shared Situational Understanding.

Key Performance Parameter	Development Threshold	Development Objective
<b>KPP 1 – Shared Situational Understanding:</b> Army applications within NECC shall enable decision superiority anywhere in the battlespace through shared SU via a COP.	Fused friendly, threat, civilian populace, and battlespace environment information in NRT	Threshold = Objective

**Table 6-1. Key Performance Parameters**

### **6.1 Battle Command Capabilities Overview**

Military operations at all echelons follow a continuum of planning, preparation and execution, with continual assessment and refinement. Army capabilities needed to achieve Battle Command are embedded throughout the set of Joint MCPs with the largest concentrations in Force Employment – Land Operations, Situational Awareness and Intelligence. These MCPs articulate the capabilities the Army needs to conduct its portion of Joint C2. Although all of these capabilities may not be fully achieved in this increment, the first increment describes the vision of what is required, and defines and starts the process to acquire these capabilities. Because of the nature of the evolution of these technologies, this approach must be inherently spiral in nature and facilitate the insertion of maturing technology as it becomes available, affordable and achieves an adequate fit with NECC in this and in future increments.

The Joint Situational Awareness (SA) MCP addresses Army capabilities to be developed for the COP, which will display SA and enable SU for the commander--a key enabler to the operations process. In the Joint SA MCP capabilities, user profile needs are defined, information management is described, and the relationship of the COP to SA, SU and a running estimate is developed. Paragraph 6.2 below describes the Army’s unique SU capabilities requirements.

The next categories of capabilities are grouped according to activities resident within the operations process, including **Plan, Prepare, Execute**, and **Assess**. These capabilities are embedded throughout the set of Joint MCPs with the largest concentrations in the MCPs of Force Employment – Land Operations, Situational Awareness and Intelligence (see paragraphs 3, 4, 6, and 9, Extension D, NECC CDD):

**Planning** capabilities include the following: collaboration, automated orders and plans, scaling across mission and service competencies, BC tools, Language translation and interpretation needs, automated air planning and synchronization, rules of engagement, key attribute profiles, application suites, reach operations for knowledge and services, space operations and satellite needs.

**Prepare** capabilities include the following: embedded training needs, mission rehearsal requirements, geo information exchange needs, task organization creation and change, combat power status and future prediction, biometric measures for personnel tracking and manipulation, remote information management initiation and change, and automatic recognition templates.

**Execute** capabilities include the following categories: execution via voice, direct device or keyboard, execution of Net Fires, clearance of fires, analysis of fire effects and general combat assessment, mission handover support for transitions, battle command on the move needs, air operations monitoring and re-tasking, ISR execution, survival notification information, HSOC activity, 3D view and influence, and space operations influence during execution.

**Assess** capabilities include the following: Assessment, including combat assessment of enemy, friendly assessment, environmental assessment and subsequent decision aids, and AAR/mission debrief tools.

The final category of capabilities is a reliable **network**, over which the data for the COP and the orders and plans for the operations process must ride. These capabilities include: net readiness, net access, net management, communications, user preferences, information dissemination management, user info seek tools, adjustable filters, direction services, general information assurance, remote initiation, security across multiple levels, net health management, and simultaneous voice and data needs. These capabilities are addressed in the paragraph 6.1, NECC CDD base document.

In addition to the BC capabilities listed above, the following sections describe unique Army capability requirements.

## **6.2 Shared Situational Understanding (SU)**

**KPP 1 – Shared Situational Understanding (SU):** NECC shall provide a tailorable, scaleable COP to sense, understand, act, and finish decisively anywhere across the spectrum of operations in all dimensions of the battlespace. NECC shall provide an automated capability to perform levels 0-1 fusion, without a soldier in the loop, and an automated assist capability to perform levels 2-5 fusion in order to create, modify, and transmit a COP (See Glossary or Joint Directors of Laboratories (JDL) Fusion Model). NECC must integrate combat information, targeting data, and intelligence from organic and non-organic sources in a uniform, consistent manner to provide a current horizontally and vertically fused COP that is available to operators from the dismounted Soldier through Joint and National agencies. The COP may be tailored to provide concise, relevant, adaptable, interactive, and visual depiction of past, current, and future operations.

## **6.3 Execute**

NECC shall provide the HSOC with the BC capabilities required to function effectively as a division or other command post. These capabilities shall include support of forces while deploying, deployed or redeploying, the ability to monitor and synchronize operations,

performing information management, conducting planning, managing logistics, and coordinating training (Threshold = Objective).

## **6.4 Network**

NECC depends on the network to move information in a manner that enables all of the functions of BC:

NECC shall interface with the network management system (e.g., WIN-T NETOPS or other future management solutions) to obtain a visual display (e.g., current network status and connectivity) of the various networking and internetworking components (e.g., relay stations and communications satellites) for networks that connect users of different security levels, while physically located in the Area of Responsibility (AOR) (Threshold) or from a location outside of the AOR (Objective).

NECC shall enable the HSOC to function as a virtually linked extension of the commander's staff. HSOC personnel shall be enabled to collaborate in planning, preparing, executing and assessing operations with the full set of capabilities described in this document (Threshold = Objective).

## **7 Family of System (FoS) and System of Systems (SoS) Synchronization**

Key interfaces, systems and programs are detailed in the following subsections.

### **7.1 Capstone Requirements Document (CRD) Interfaces**

See paragraph 7, NECC CDD base document.

### **7.2 Related, Supporting, and Supported Systems and Complementary / Programs**

Related systems and programs are detailed in the following subsections.

#### **7.2.1 Net-Enabled Command Capability (NECC)**

NECC capability will be the DOD principal C2 capability. The JC2 ORD describes the C2 requirements of the National Military Command System (NMCS) and Joint command levels down to and across the JTF/Service component commanders. The single NECC architecture will enable the NMCS and JFCs to accomplish assigned missions with greater speed and efficiency, improved interoperability, and reduced logistics support requirements. Joint Force commanders will require NECC to meet all force-level planning, execution, and assessment activities in support of JIM operations. The NECC will employ a secure, collaborative, web-enabled, and tailorable C2 architecture that provides decision superiority and vertical/horizontal interoperability. Users will access fused information sources through common Internet Protocol (IPv4 and IPv6)-based network services, common data representations, and common

catalogs/directories utilizing intelligent thin and ubiquitous (e.g., wireless, Personal Digital Assistant (PDA)) clients. NECC will operate in garrison and deployed local area network environments and will support simultaneous operation at different security levels and compartments/categories. Army applications will be designed to provide inputs to the MCPs identified in the NECC ORD.

## **7.2.2 Net-Centric Enterprise Services (NCES)**

NCES will provide a common set of information capabilities for the GIG to assess, collect, process, store, disseminate, and manage information on demand to warfighters, policy makers, and support personnel. The NCES enables interoperability across systems. The NCES will support the entire DOD and Intelligence Community (IC), conventional/nuclear warfighter, warfighter support, and business units. NCES will provide core enterprise services such as enterprise system management, messaging, mediation, security, user assistance, discovery, collaboration, and information storage. NCES will also *support* community of interest capabilities such as Command and Control, Intelligence, Weapon Systems, Logistics, Personnel, and Finance. NCES will provide all of these services to Army applications for NECC.

## **7.2.3 Defense Message System (DMS)**

The DMS is the designated messaging system for the DOD and supporting agencies. It is a flexible, COTS-based application providing multi-media messaging and directory services using the flexible and expandable underlying Defense Information Infrastructure (DII) network and security services. DMS provides message service to all DOD users (to include deployed tactical users); access to and from DOD locations worldwide; and interfaces to other U.S. government agencies, allied forces, and Defense contractors. DMS handles information on all classification levels, compartments, and handling instructions.

## **7.2.4 Warfighter Information Network – Tactical (WIN-T)**

The WIN-T is a mission critical system as the integrating communications network for the Future Force, optimized for offensive and joint operations, while providing the Regional Combatant Commander (RCC) the capability to perform multiple missions simultaneously with campaign quality. It will be a framework, which will set standards and protocols for Future Force Infospheres while interfacing with and/or replacing equipment in Current and Stryker forces. The WIN-T is the Future Force high-speed and high capacity backbone communications network, which supports Army applications for NECC. It will be focused on moving information in a manner that supports commanders, staffs, functional units, and capabilities-based formations – all mobile, agile, lethal, sustainable, and deployable. The WIN-T must enable them to plan, prepare, and execute multiple missions and tasks simultaneously. The WIN-T will provide required reach, reachback, and network operations for the brigade Infospheres and seamlessly interface with JTRS, which extends to the individual warfighter platform level. At the division level and above, WIN-T will provide command centers and staff elements with the communications capabilities to link to adjacent divisions and above, subordinate brigades, the sustaining base, and JIM. The WIN-T will provide Network

Operations (NETOPS) for the Future Force to enable command, control, communications, and computers operations and Information Management (C4IM). NETOPS includes Network Management, IDM, and IA. IM includes Relevant Information and Information Systems functions.

## **7.2.5 Digital Topographic Support System (DTSS)**

The DTSS provides critical, timely, and accurate digital and hardcopy geospatial information to support mission planning, execution and training. The DTSS missions include generating and collecting geospatial information, developing and managing a geospatial database, and providing of a suite of geospatial information and capabilities that support the warfighter with terrain analysis products, special map reproduction, and geodetic survey support. Provides timely and accurate knowledge of the battlespace to commanders and staff at all echelons through direct and indirect digital topographic support. Provides enhanced terrain analysis and visualization capabilities to support mission planning and execution; employ intelligent algorithms that function with non-standard, sparse data sets and produce a confidence level for the results. The DTSS will provide the NECC the capabilities of receiving, analyzing, storing, managing, and disseminating geospatial data within the NECC architecture and provide direct-access memory dedicated to the on-line storage of the digital geospatial information for the JOA.

## **7.2.6 Army Battle Command System (ABCS)**

The ABCS is a system of systems (SoS) designed to provide the framework for the digitized battlefield. It is an integrated network of ten primary Battlefield Automation Systems (BAS) that provide C2 from the foxhole to echelons above corps. BAS are defined as those processing systems that support Air Defense, Combat Service Support, Fire Support, Intelligence and Electronic Warfare, and Maneuver systems. Other systems like CPOF and IDM-T enhance the capabilities of ABCS. ABCS functionality will gradually migrate to NECC. While NECC can capably assume the core C2 functionalities of ABCS, the breadth and depth of NECC is far greater. Army applications for NECC span the Army from soldier to garrison level while providing a greater depth of BC capabilities across every level.

## **7.2.7 Future Combat Systems (FCS) Family of Systems (FoS)**

The FCS FoS is comprised of a family of advanced, networked air- and ground-based maneuver, maneuver support, and sustainment systems that will include manned and unmanned platforms. The FCS FoS is networked via a Battle Command architecture that includes networked communications, network operations, sensors, battle command systems, distributed analysis, and manned and unmanned reconnaissance and surveillance capabilities to enable levels of SA and synchronized operations heretofore unachievable. The FCS FoS will operate as a system of systems that will network with current capabilities and those being developed to meet the needs of the brigade. The network will enable improved ISR, battle command, RT sensor-shooter linkages, sustainment, and increased synergy between echelons and within small units. The FCS FoS enable the networked brigade to develop the situation in and out of contact, set conditions

for success, maneuver to positions of advantage, and close with and destroy the enemy through standoff attack and combat assault.

### **7.2.8 Battle Command On The Move (BCOTM)**

BCOTM is a mission equipment set, platform independent, which provides enhanced C2 capabilities enabling the commander to effectively execute BC tasks while displaced from command posts (CPs). The BCOTM platform is the maneuver commander's combat vehicle, with the BCOTM mission equipment set, that empowers him with the ability to lead soldiers and to command all elements of combat power by shaping and sustaining decisive actions seamlessly and, while on the move, synchronizing those elements in close combat from any vantage point on the battlefield. BCOTM provides enhanced collaborative planning, friendly and enemy SA, and an ability to quickly develop and execute fire support. Army applications for NECC will incorporate the key functions and capabilities from BCOTM to ensure the capabilities are consistent throughout the program. The Army Airborne Command and Control System (A2C2S) is the designated airborne (helicopter) BCOTM platform. Several variants of ground vehicle C2 platforms are under development.

### **7.2.9 Distributed Common Ground System – Army (DCGS-A)**

DCGS-A is the Army's primary system for ISR tasking, processing, exploitation, and dissemination (TPED) which will evolve to tasking, posting, processing, and using (TPPU). Army applications within NECC must be interoperable with Distributed Common Ground System-Army (DCGS-A). The DCGS-A is the ISR processing component for Army applications within NECC, as well as being the Army's single integrated Future Force Intelligence System. DCGS-A is responsible for providing fused red and gray intelligence, and environmental information to the COP. It enables the commander to leverage multiple sources of information to achieve situational understanding and synchronize the elements of joint and combined arms combat power. The DCGS-A provides commanders access to ISR collection systems and data; synchronizes ISR collection, exploitation, processing, and distribution of information; and operates in a network with multiple levels of security. The DCGS-A is composed of common software and hardware that is interoperable with sensors and other information sources, and the DOD DCGS Family of Systems (FoS). DCGS-A information will be protected using filters on a need to know basis and IAW appropriate DOD security regulations.

### **7.2.10 Enroute Mission Planning and Rehearsal System (EMPRS)**

EMPRS is the capability that allows commanders and staff to continue to plan and rehearse their mission while deploying to the objective area. The objective of EMPRS is to create a joint interoperable capability shared between services and residing on service C2 systems. EMPRS is the integration of existing systems, technologies, and software applications for C2 while deploying to the JOA that the NECC must also accomplish.

### **7.2.11 Joint Enroute Mission Planning and Rehearsal System - Near Term (JEMPRS-NT)**

The JEMPRS-NT is based on the specification for the revised Secure Enroute Communications Package – Improved (SECOMP-I). It is a robust collaboration and planning capability for the warfighter, providing point-to-point system from the aircraft back to the Joint Operations Center (JOC). It will load the software applications from services including C2 applications. It uses windows operating systems, with voice and video, application sharing, web service, COP, email and File Transfer Protocol (FTP), digital dashboard, and whiteboard with text chat.

### **7.2.12 Joint Tactical Radio System (JTRS)**

The JTRS will combine the functionality of numerous single function radios among the services into a single, joint-interoperable family of radios. It will attain JIM interoperability and performance requirements. The JTRS provides tactical radio sets that may include routers, switches, and other networking components/functions integral to the set and configured to meet the diversity of host platforms. It satisfies requirements common to the three domains that coincide with operational missions and environments: Airborne, Maritime/Fixed, and Ground. The radio sets will be software-reprogrammable, multi-band/multi-mode capable, network capable, and provide simultaneous voice, data, and video communications. The joint family of radios that comprise the JTRS will fully integrate into the GIG to enable successful implementation of new service and joint warfighting concepts (e.g., Army Future Force, Expeditionary Maneuver Warfare (EMW), etc.) and systems (e.g., NECC, FCS FoS, WIN-T, Automated Digital Network System (ADNS), etc.). The JTRS is a key portion of the Future Force communications network that supports NECC. Specifically, JTRS will provide the warfighters vertical and horizontal network connectivity across the RF spectrum that will permit them to achieve the information dominance that is critical to the style of warfare intended in the future.

### **7.2.13 Land Warrior (LW)**

The LW system will be an integrated soldier and small team system of systems within the FCS FoS equipped brigade. The LW will achieve revolutionary advances in netted communications, collaborative SA, lethality, enhanced survivability, man-portable power, soldier mobility/sustainability, and human performance utilizing a fully integrated combat ensemble. The LW system will contribute to operational dominance during the four methods of tactical assault for the brigade: mounted enabled by dismounted, dismounted enabled by mounted, dismounted, and mounted. The LW equipped soldier will operate as an element of a unit, whether a fire team, squad, platoon, or larger. The full benefit of the enhanced systems will flow from the C2 systems, which will allow Soldiers and units to see first, understand first, act first, and finish decisively. The LW is the dismounted soldier system to which NECC will interface to provide the soldier with the COP and other relevant BC capabilities.

### **7.2.14 Global Combat Support System (GCSS)**

The GCSS provides integration and interoperability between combat support functions and C2 to support the operational needs of the warfighter. It directly supports C4I for the warfighter and Chairman of the Joint Chiefs of Staff (CJCS) Joint Vision 2020. Using the Defense Information Infrastructure (DII) and/or Common Operating Environment (COE), as well as the shared data environment, it ensures rapid integration of combat support applications, providing a seamless flow of operational and sustaining base information to Army applications for NECC. The GCSS provides accurate and NRT total asset visibility for the National Command Authority (NCA), Commanders, and Service components vital to the deployment, employment, sustainment, reconstitution, and redeployment of joint combat assets or resources. The GCSS capabilities include the COP, the GCSS portal with basic Internet web services that include the Global Transportation Network (GTN) (being sunsetted with GTN for the 21<sup>st</sup> Century (GTN 21)), and Joint Decision Support Tools (JDST). Army applications for NECC will receive joint logistical information compiled from institutions, Knowledge Centers (KCs), industrial bases, HSOCs, governmental and non-governmental agencies.

### **7.2.15 Theater Battle Management Core System (TBMCS)**

The TBMCS is an Air Force led program that provides Joint and Service Combat Air Forces with automated C4I systems to plan and execute theater-level air campaigns. It is the theater air module of the Global Command and Control System (GCCS). The mission of TBMCS at the operational level is to provide the Joint or Combined Forces Air Component Commander (JFACC/CFACC) with the automated tools necessary to effectively and efficiently plan, monitor, and execute the air campaign. NECC will increase joint 3<sup>rd</sup> dimensional SA to TBMCS with the infusion of non-sensor generated (self-reporting position) inputs of low-level Army assets not readily acquired by other joint sensor assets. This includes planning and issuing the Air Tasking Order (ATO) and Air Control Order (ACO) that ensure the Theater Commander's intent is supported through the application of airpower using the latest intelligence. The TBMCS capabilities also ensure that theater-wide air operations are de-conflicted. Army applications for NECC shall integrate Army air assets and airspace users with this system while planning and executing JIM operations. Army applications for NECC shall also facilitate sharing of information to increase SA, especially the integrated air picture updated from a number of theater and strategic sensors and organizations.

### **7.2.16 FORCENet**

FORCENet is the Navy's transformational architecture for how Navy and Marine Corps elements will be linked with joint, allied, and coalition forces through seamless, interoperable integration with the DOD Global Information Grid. FORCENet enables the pillars of Sea Strike, Sea Shield, and Sea Basing, as well as the supporting initiatives of Sea Trial, Sea Enterprise and Sea Warrior. FORCENet is not an acquisition program; rather it is an enterprise alignment and integration initiative to serve as a change agent and an engine for innovation, potentially

touching every naval program. FORCEnet enables dispersed, human, decision-makers to leverage military capabilities to achieve dominance across the entire mission landscape with joint, allied and coalition partners. FORCEnet is the future implementation of Network Centric Warfare in the Naval Services. The Naval Services will organize, deploy, employ, and sustain forces to conduct operations guided by the interrelated and complementary concepts of Sea Strike, Sea Shield, and Sea Basing integrated with the family of Marine Corps concepts, Expeditionary Maneuver Warfare, Operational Maneuver from the Sea, and Ship-to-Objective Maneuver; all of this will be enabled by FORCEnet. Army applications for NECC shall integrate with this system for planning and executing JIM operations. Army applications for NECC shall also facilitate sharing of data and information with FORCEnet to increase SA.

## **8 National Security System and Information Technology System (NSS and ITS) Supportability**

Bandwidth and C4I issues are detailed in the following subsections.

### **8.1 Bandwidth Estimate**

See paragraph 9, NECC CDD base document.

### **8.2 C4I / Standardization, Interoperability, and Commonality**

Army applications for NECC shall interoperate with Army (including Current Forces) and Joint, Interagency, and Multinational (JIM) NSS and ITS.

Army applications for NECC will exchange information with NECC and the other Services' NECC components. Army applications will complement the ABCS until Army applications for NECC and Future Combat Systems (FCS) Family of Systems (FoS) replace ABCS.

The WIN-T is the integrating communications network for the Future Force, optimized for offensive and joint operations, while providing the Regional Combatant Commander (RCC) the capability to perform multiple missions simultaneously with campaign quality. It is the Future Force high-speed and high capacity backbone communications network, which supports Army applications for NECC.

The JTRS is a key portion of the Future Force communications network that supports Army applications for NECC. Specifically, it will provide warfighters with vertical and horizontal network connectivity across the radio frequency (RF) spectrum that will permit them to achieve the information dominance that is critical to the style of warfare intended in the future.

WIN-T with JTRS shall provide the Theater tactical communications infrastructure that extends GIG information services (e.g., Net-Enabled Command Capability [NECC], Net-Centric Enterprise Services [NCES], Global Command and Control System [GCCS], Defense Message System [DMS], Joint Operation Planning and Execution System [JOPES], Non-Secure Internet Protocol Router Network [NIPRnet], Secret Internet Protocol Router Network [SIPRnet], Joint Worldwide Intelligence Communications System [JWICS], National Security Agency Network

[NSANET], secure and non-secure voice, video teleconferencing capability [VTC], Defense Collaborative Tool Set [DCTS], etc.) using all available transmissions media (e.g., host nation cable/fiber, military and commercial SATCOM, etc.) throughout the Future Force. This gives commanders the flexibility to tailor the network to mission, task, and purpose.

## **9 Intelligence Supportability**

See paragraph 9, NECC CDD base document.

## **10 Electromagnetic Environmental Effects (E3) and Spectrum Supportability**

Army applications and spectrum dependency are detailed in the following subsections.

### ***10.1 Electromagnetic Environment***

Army applications within NECC will operate in a range of platforms to include tents, wheeled vehicles, tracked vehicles, watercraft, aircraft, and fixed facilities in Continental United States (CONUS) and Outside Continental United States (OCONUS). The internal E3 environments for these platforms include the numerous computers, radio systems, and weapon systems with munitions. The E3 environment external to the platforms will include the entire range of Army C4ISR systems, UAVs, unmanned ground vehicles (UGV), and weapons systems. The RF spectrum will be used extensively, nearly to the point of saturation. The RF spectrum will be shared with JIM systems, as well as civil systems.

Army applications within NECC will be pervasive throughout the current force. As a minimum, they will co-exist with existing systems, such as ABCS and with future Army and Joint systems, to include FCS FoS, WIN-T and JTRS.

Army applications for NECC shall be internally and externally compatible with other equipment within the system's expected operational electromagnetic environment.

### ***10.2 Need for Frequency Spectrum***

All spectrum dependent equipment and all emitters associated with NECC must comply with applicable national and international spectrum management statutes, policies and regulations, to include obtaining spectrum supportability in all host nations where deployment of the system or equipment is planned.

All NECC components that include any type of radio transmitter must be RF certified and supportable for the intended areas of operation.

NECC component design must include consideration for mitigation of signal (e.g., co-site) interference with other Army equipment operating in the same frequency range(s) and close proximity.

Spectrum supportability includes spectrum certification, frequency assignments, and host nation coordination for Army use worldwide.

## **11 Assets Required to Achieve Initial Operational Capability (IOC)**

The assets required to achieve initial operating capability are one or more division headquarters, the Army applications within NECC Increment I capability, GIG and ES availability, individually and collectively trained operators and leaders, and appropriate updates to DOTMLPF to accommodate a net ready approach to operations.

## **12 Schedule and IOC / Full Operational Capability (FOC) Definitions**

See paragraph 12.0, NECC CDD base document.

## **13 Other Doctrine, Organizations, Training, Materiel, Leadership and Education, Personnel, and Facilities (DOTMLPF) Considerations**

A material solution is insufficient for creating a warfighter solution to Battle Command. Battle Command involves so much more than the information domain; it involves an artful combination of human (social, moral, and cognitive), virtual (cyber and informational) and physical (air, land, sea, and space) domains. Too often, the only approach to solving a Battle Command problem involves a technical or network solution. Although this approach may solve an immediate symptom, usually the more holistic and enduring approach would require a Battle Command solution across domains that are enabled by the technical or network solution. As Battle Command evolves and improves over time, there are profound implications for the Army and the Joint community. NECC and its army-unique applications must reflect this holistic “network-enabled” Battle Command approach.

### **13.1 Doctrine**

Doctrine will both drive transformation and adapt as the force transforms. Emerging doctrine will focus on the necessary capabilities to engage any adversary across the full range of military operations with a Joint force sharing common systems, TTPs and doctrine. The doctrinal concepts necessary to initiate the organizational and cultural changes described in TP 525-3-.01, *Objective Force Battle Command (CAISR) Concept* (under revision) are promulgated in FM 1 *The Army*, FM 3-0 *Operations*, and FM 6-0 *Mission Command: Command and Control of Army Forces*. These new manuals, however, are not Future Force doctrine. As the Future Force nears operational readiness, these documents will evolve. Our system of doctrine production and dissemination will become more responsive. The nature of Army and Joint doctrine must change as well. The degree of modularity envisioned requires some doctrine that is more synergistic and adaptive than current doctrine. Standardization of digital rules will be necessary to effectively

execute a networked approach to operations. At the same time, tactics and operational doctrine must stress the art of operations - flexible and adaptive solutions that depend upon human creativity.

## **13.2 Organizations**

Joint mutual support becomes the key factor in determining Service roles and missions, and mission context will determine the apportionment of Army headquarters and forces. The range of missions assigned to Army forces will compel a change from the traditional echelonment of commands and from the size and number of units assigned to that HQ. Army HQ at division level and above will support the combatant commander with the command structure appropriate for land operations. The rank of the commander and the functions of the HQ will not necessarily correspond to the numbers of forces assigned to it. Higher HQ (Divisions and Corps) will be organized and equipped to exercise BC over highly flexible task organizations made up of combined arms and functional units of action. In many operations, the number and composition of subordinate units will differ dramatically from industrial age warfare echelons. As each operation proceeds, the makeup of the deployed Army force will evolve, shifting in composition as the mission and circumstances require. While units that are stationed with the HQ may align for training and readiness, actual operational groupings will be based upon mission requirements.

## **13.3 Training**

In past operations, ad hoc task forces, whether Multinational or Joint, usually relied on inventiveness and adaptability during operations to overcome a lack of prior collective training. This lack of prior training resulted mostly from the ad hoc nature of the task force, and a limited amount of time from alert to deployment. Having recognized the absolute need for completely flexible tailoring of forces and command elements in the Future Force, peacetime training should be designed to routinely engage widely varying force packages in the most difficult and demanding, as well as the most likely, tasks that they perform in war in order to identify and correct weaknesses in C2. All leaders and units must also train tasks that contribute to their leader development, as well as individual and collective proficiency. They must adopt a Joint and Expeditionary mindset that is adaptive to the range of operations that they may be called on to perform. The point is to build synergy and synchronization across disparate force packages that potentially could be mixed to accomplish ever changing national objectives. Compounding this need for increased force package training is the requirement to dramatically reduce deployed C2 elements. To ensure that a lean deployed staff is effective with ever changing force structures, it must be continuously trained in complex Joint and Multinational operations at the operational and tactical levels. This training is essential both to build the basis for trust and rapport (essential human qualities for effectiveness), which will be vital in war, and to use training opportunities for leader development as well as to identify the abilities and limitations of certain force packages and their C2 elements. For ad hoc coalitions, the same methodology applies, but the time available may be condensed or occur during deployment or actual hostilities.

As a means to frequently train the skills and techniques associated with C2 of tailored force packages, NECC, with its Army applications, shall provide embedded training modules supported by low-cost, low-overhead, simulations. Army embedded training modules shall complement New Equipment Training (NET), Battle Staff Training, Home Station Sustainment Training, and Institutional Training. NECC embedded training shall also provide the tools to assess operations and evaluate individual and collective task performance based on Mission Training Plans (MTPs) during training so that lessons are captured and focused retraining may occur. Furthermore, Army applications for NECC shall have the embedded capability to individually train commanders and staff planners on essential operational process skills that may be applied through the range of strategic, operational and tactical levels of war. A new set of multifunctional staff skills must be trained, both individually and collectively, in order to support smaller deployed HQ and varying force packages. Constructive and virtual simulations must complement field training or training at the Combined Training Centers (CTCs). Small unit training will remain the bedrock of readiness and effectiveness, and will be supported by Army applications in their operational mode.

## **13.4 Materiel**

Materiel solutions are discussed throughout the Army Annex to NECC CDD.

## **13.5 Leadership and Education**

Leaders must be developed, trained, and educated to be self-aware, innovative and adaptive throughout training and operations. They must think strategically and successfully apply the joint operational art across the range of military operations. The magnitude of changes required will not occur overnight. Doctrine will provide the intellectual foundation, educational opportunities will prepare leaders for how to think, and experience will convert knowledge into operational competence. Our system of leader development must focus on the human qualities of initiative, flexibility, trust in subordinates, and teamwork to realize the full benefit of NECC and its Army applications. We must instill audacity in our leaders and condition them away from passivity in the absence of certainty. Significant changes will also occur within the mix of specialist and generalists that comprise our staffs. The rapid evolution of automated systems and their capabilities require a change in leader development to ensure future leaders can leverage these new tools.

Army applications within NECC will help leaders focus on critical decisions, highlight opportunities for initiative, and facilitate teamwork. Future Army leaders must be trained to aggressively manage information and instill trust in the output of decision support tools that automated systems provide.

## **13.6 Personnel**

The emerging capabilities required for future operations calls for a new culture that emphasizes adaptability in its personnel structure. An expeditionary and “joint team” mindset must be ingrained into Army forces to ensure a more globally deployable and interoperable Joint force.

Effective use of Army applications within the modular and distributed NECC capability will require new combinations of uniformed and non-uniformed personnel. The HSOC, in particular, will rely on a greater proportion of civilian and contractor personnel to provide the expertise needed to support global operations while freeing up more uniformed personnel for expeditionary warfighting and operations. The right combinations of Active and Reserve Component, Army civilian and contractor attendant to each brigade and divisions and above level will be determined through research, experimentation, unit exercise and operational experience.

## **13.7 Facilities**

Army installations will continue to evolve into strategic platforms for global operations as Flagship Installations. The HSOC at these Corps and Flagship installations must be capable of performing all functions and tasks that are not essential to be performed in the Joint Operations Area (JOA), thereby, reducing the deployable footprint. It must be capable of supporting multiple contingencies from a fixed secure location. Prior to unit deployment, these fixed facilities can collect and process large volumes of data such as terrain databases that must be pre-positioned down to platform level prior to deployment. During operations, they have access to high-speed data networks to filter and disseminate relevant information to deployed elements.

## **13.8 Basing Requirements**

Basing requirements are TBD. There are currently no unique environmental compliance requirements envisioned for this capability. The HSOCs and DCPs will require suitable facilities and supporting infrastructure to house command posts and support structures. Additional training facilities may be required. The HSOC will function as the primary unit CP until a DCP deploys and is able to assume control of operations. During decisive operations, the HSOC monitors operations, performs information management for all CPs and is prepared to assume control of deployed forces for a short duration. These basing requirements are independent of any echelonment decision.

## **14 Other System Attributes**

- Army applications within NECC shall be implemented in accordance with the latest versions of the DOD Joint Information Technology Standards Registry (DISR) for standards based open systems (see Appendix B – Integrated Architecture Products, Army Annex, NECC CDD).
- To enable data sanitization of removable media after training and operations, NECC shall provide an embedded capability to purge classified information without affecting application software. Physical security shall be provided in accordance with applicable security directives for all configurations.
- NECC Human System Integration (HSI) shall be compliant with the DOD JTA. Army applications within NECC shall:

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- Present and accept information using a combination of visual, aural, tactile, and/or voice;
  - Be as uncomplicated and intuitive as possible in the way it displays information, including screen content and layout, menus, and help availability;
  - Present relevant information with zero or minimal interaction by the user;
  - Provide context-sensitive on-line help;
  - Emphasize a graphical, intuitive user interface that has commonality with user interfaces in business and educational applications. Extensive user input early in the design process is required;
  - Be ergonomically designed with respect to the user's operating environment;
  - Functionally accommodate use while on the move and in a CBRN or other specialized operating environment as designated by mission needs;
  - Be useable by all end user skill levels in the aspects of ease of learning, flexibility, and tailorability.
- Army applications shall provide a familiar look, touch, sound, and feel to the commander, no matter where the commander is deployed. Information presentation and C4I system interfaces shall be maintained consistently enabling the commander to focus attention on the crisis at hand.
  - Army applications for NECC shall provide monitoring tools (that include visual and audible alerts appropriately for users and administrators) to support system, security, database, and data exchange administration; security monitoring; system reconfiguration, and remote software loading from centralized locations.

## 15 Program Affordability

Based on the current draft of FY 08 – FY 13 Program Objective Memorandum (POM), within the Army, the following costs are estimated for Army funding for NECC. Fund cost estimates are subject to change in the Fund FY08 – FY13 POM after staffing.

**Table 15-1.** NECC Program Funding

	<b>FY 08</b>	<b>FY 09</b>	<b>FY 10</b>	<b>FY 11</b>	<b>FY 12</b>	<b>FY 13</b>
<b>NECC RDT&amp;E</b>	\$3958	\$1760	\$1759	\$ --	\$ --	\$ --

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## Appendix A – Capstone References Crosswalk

See Appendix A – Capstone Reference Crosswalk, NECC CDD

NECC CDD w/Army Annex Crosswalk to Army Future Operating Capabilities:

### Army Unique Future Operating Capabilities attained in Increment I:

<b>Force Operating Capability (FOC)</b>	<b>FOC#</b>	<b>Sub FOC#</b>	<b>Capability to achieve FOC</b>	<b>Joint Functional Concept (JFC)</b>	<b>NECC MCP</b>
<b>Battle Command</b>	<b>FOC-01-01</b>	01.01.21	Use predictive planning and decision-making tools.	JFC: Joint Command and Control/Net-Centric Operations	N/A - See JFC: Joint Command and Control/Net-Centric Operations
<b>Battle Command</b>	<b>FOC-01-01</b>	01.01.22	Employ embedded training (ET).	JFC: Joint Command and Control/Net-Centric Operations	NECC Cross Functions

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<b>Battle Command</b>	<b>FOC-01-03</b>	01.03.02	<p>Future Forces must be interoperable with joint forces, and systems consistent with the mission and responsibilities of each echelon. Any and all Future Force combat systems must be capable of supporting operations with Current and interim units, coalition forces, interagency, intergovernmental elements and partner nations. Future Force C4ISR network must comply with appropriate requirements in the following Capstone Requirements Documents (CRDs): Global Combat Support System, Global Air Traffic Management, Military Satellite Communications, Unified Cryptologic System, Combat Identification, Global Information Grid (GIG), Hard and Deeply Buried Targets, Imagery and Geospatial, Theater Air Missile Defense (TAMD), and Distributed Common Ground Station. Future combat system critical information exchange requirements (IERs) and appropriate requirements defined in the CRDs primarily drive this requirement. Joint and Coalition partners must have common CBRN sensors, Doctrine, and Training to make CBRN defense fully interoperable.</p>	JFC: Joint Command and Control/Net-Centric Operations	N/A - See JFC: Joint Command and Control/Net-Centric Operations
<b>Battle Command</b>	<b>FOC-01-03</b>	01.03.06	<p>Future Force systems must comply with the IER format and development guidance contained within CJCS Instruction 6212.01B. Future Force systems must be reasonably hardened (Threshold)/fully hardened (Objective) against the effects of electromagnetic pulse (EMP). Systems must be fully hardened IAW existing Joint Chief of Staff guidance, published Military Standards, and Executive Order 13231, 16 Oct 01, Critical Infrastructure Protection in the Information Age. Any hardware fielded as a result of this requirement must not produce unacceptable electromagnetic emissions that interfere with, or degrade, the performance of existing platform/dismounted Soldier instrumentation, weapons, sensors, or communications subsystems.</p>	JFC: Joint Command and Control/Net-Centric Operations	N/A - See JFC: Joint Command and Control/Net-Centric Operations

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<b>Battle Command</b>	<b>FOC-01-03</b>	01.03.07	<p>Battle Command Systems must process, send, receive, display, and store information classified up to SECRET. Overall, the system must comply with INFOSEC requirements of Army Regulation (AR) 380-19. The system hardware must include the provision of TEMPEST safeguards, applicable to appropriate elements of Future Force combat systems. Many systems will exchange both classified and unclassified information among all echelons, horizontally and vertically operating in the AO. Mechanisms are needed to protect data confidentiality from both internal and external sources. Future Force units must possess embedded capability to encrypt/decrypt, or encode/decode, with existing COMSEC equipment, using National Security Agency-approved techniques. Information safeguards will be a paramount concern for the Future Force network. Specific techniques must be used in order to protect the network from compromise, or intentional corruption by enemy Information Warfare attacks, to prevent the loss of information/data.</p>	JFC: Joint Command and Control/Net-Centric Operations	N/A - See JFC: Joint Command and Control/Net-Centric Operations
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<b>Battle Command</b>	<b>FOC-01-04</b>	01.04.07	The ability for systems to be mobile, fully interoperable in the joint, multinational, interagency operational environment.	JFC: Joint Command and Control/Net-Centric Operations	NECC Cross Functions
<b>Battle Command</b>	<b>FOC-01-04</b>	01.04.19	The ability to facilitate multiple service planners to simultaneously build respective component forces.	JFC: Joint Command and Control/Net-Centric Operations	N/A - See JFC: Joint Command and Control/Net-Centric Operations
<b>Battle Command</b>	<b>FOC-01-04</b>	01.04.21	The ability to incrementally move forces through the increased use of a Request for Forces and Deployment Order.	JFC: Joint Command and Control/Net-Centric Operations	N/A - See JFC: Joint Command and Control/Net-Centric Operations
<b>Battlespace Awareness</b>	<b>FOC-02-05</b>	02.05.03	Intuitive Man-Machine interfaces.	Battlespace Awareness	NECC Cross Functions

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<b>Air Maneuver</b>	<b>FOC-04-01</b>	04.01.02	Enable graceful function degradation to minimize mission aborts.	Force Application	Force Application: Air/Space Operations
<b>Air Maneuver</b>	<b>FOC-04-04</b>	04.04.03	Communication system will have sufficient bandwidth to handle analog and digital voice and data message traffic.	Force Application	Force Application: Air/Space Operations
<b>Maneuver Support</b>	<b>FOC-06-01</b>	06.01.02	Common Operational Picture for Mobility.	Force Application	Force Application: Land Operations
<b>Maneuver Support</b>	<b>FOC-06-01</b>	06.01.11	Visual and virtual obstacle marking system for point and area CBRN/hazardous material detection, decontamination, and hazard area marking.	Force Application	Force Application: Land Operations
<b>Protection</b>	<b>FOC-07-01</b>	07.01.24	Ability to restore corrupted data.	Protection	NECC Cross Functions
<b>Strategic Responsiveness and Deployability</b>	<b>FOC-08-04</b>	08.04.04	Provide models and simulations to address joint mobilization, deployment and sustainment;	Focused Logistics	Force Projection
<b>Human Engineering</b>	<b>FOC-11-01</b>	11.01.02	Decrease task complexity and execution times to improve performance, while minimizing sensory, cognitive, and physical demands on the Soldier.	NA	N/A - See JFC: Joint Command and Control/Net-Centric Operations

## Army Unique Future Operating Capabilities attained in Increment II:

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Force Operating Capability (FOC)	FOC#	Sub FOC#	Capability to achieve FOC	Joint Functional Concept (JFC)	NECC MCP
<b>Battle Command</b>	<b>FOC-01-05</b>	01.05.07	Developing psychological operations (PSYOP) plans, programs and products, disseminating PSYOP products, and integrating and synchronizing diplomatic, military and informational activities in peacetime and combat operations.	JFC: Joint Command and Control/Net-Centric Operations	N/A - See JFC: Joint Command and Control/Net-Centric Operations
<b>Battle Command</b>	<b>FOC-01-05</b>	01.05.08	Contributing to U.S. Governmental information campaigns designed to promote U.S. interests and support U.S. policy initiatives worldwide.	JFC: Joint Command and Control/Net-Centric Operations	N/A - See JFC: Joint Command and Control/Net-Centric Operations
<b>Battlespace Awareness</b>	<b>FOC-02-06</b>	02.06.02	Sources of collected data will interact over a network to provide all force elements with the highest quality fused data. Within this “producer interactive network,” force elements will subscribe to products or data (including archival data). Software agents will broker data and products, posting some unprocessed information. In this manner, all are provided access to common data, enabling Joint, Allied, and Coalition warfighters to construct tailor-able, relevant pictures.	Battlespace Awareness	Situational Awareness

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<b>Line of Sight/Beyond Line of Sight (LOS/BLOS), Non-Line of Sight (NLOS) Lethality for Mounted / Dismounted Operations</b>	<b>FOC-05-02</b>	05.02.12	Teaming by ISR and indirect fire systems, dispersed throughout the battlespace, and by small tactical units fully integrated with maneuver, is critical. A system-of-systems framework must achieve the requirements for such a capability. It is critical that an enabling, integrated networked fires system-of-systems solution, leveraging a wider set of capabilities, including sensors, C2, and attack means from Army, joint and multinational forces, be pursued to provide the operational capability required today, and in the future. Protective fires can also support maneuver by suppressing enemy air defenses, and countering the fires from enemy indirect fire systems. Close support may involve danger-close missions and final protective fires that are designed to bring fires especially close to maneuver formations for ultimate protection.	Force Application	Force Application: Land Operations
<b>Maneuver Support</b>	<b>FOC-06-01</b>	06.01.12	Computer-aided analysis, to enable prediction of enemy efforts to impede maneuver, based on terrain reasoning, threat capabilities, and employment patterns.	Force Application	Force Application: Land Operations
<b>Maneuver Support</b>	<b>FOC-06-03</b>	06.03.05	Means to detect, track, and group populations into four broad categories, for identification and subsequent disposition: EPWs, CIs, and detainees.	Force Application	Force Application: Land Operations
<b>Maneuver Support</b>	<b>FOC-06-03</b>	06.03.06	Means to detect, track, and group populations into four broad categories, for identification and subsequent disposition: Resident populations, refugees, displaced persons, stateless persons, war victims, and evacuees.	Force Application	Force Application: Land Operations
<b>Maneuver Support</b>	<b>FOC-06-03</b>	06.03.07	Means to detect, track, and group populations into four broad categories, for identification and subsequent disposition: Insurgent groups and organized crime syndicates.	Force Application	Force Application: Land Operations

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<b>Maneuver Support</b>	<b>FOC-06-03</b>	06.03.08	Means to detect, track, and group populations into four broad categories, for identification and subsequent disposition: Governmental, law enforcement, political, informational, military, economic, religious, and social leaders (legitimate or otherwise).	Force Application	Force Application: Land Operations
<b>Maneuver Support</b>	<b>FOC-06-03</b>	06.03.19	Means to fuse civil information with Command and Control and Battlespace Awareness systems to inform the COP and derive a common relevant operating picture (CROP).	Force Application	Force Application: Land Operations
<b>Maneuver Support</b>	<b>FOC-06-04</b>	06.04.05	must also be able to execute real time battle damage assessment of the NL weapons' or systems' affect on target, especially when employing non-lethal weapons systems at standoff ranges.	Force Application	Force Application: Land Operations
<b>Maneuver Support</b>	<b>FOC-06-06</b>	06.06.12	CBRN sensors must be integrated to accept data from Disparate Sensors existing for specific purposes not related to CBRN (meteorological, fire control, and others) that, when combined with CBRN sensor data, produce a synergistic data improvement.	Force Application	Force Application: Land Operations
<b>Protection</b>	<b>FOC-07-01</b>	07.01.11	Making timely and appropriate active and passive protection measures decisions based on the information collected from various sources.	Protection	N/A - See JFC: Joint Command and Control/Net-Centric Operations
<b>Protection</b>	<b>FOC-07-01</b>	07.01.20	Actionable intelligence that identifies the attack's characteristics and the attacker's identity sufficient to support a wide range of information protection response operations as well as the restoration and recovery of Future Force network capabilities.	Protection	Intelligence
<b>Protection</b>	<b>FOC-07-01</b>	07.01.20	Actionable intelligence that identifies the attack's characteristics and the attacker's identity sufficient to support a wide range of information protection response operations as well as the restoration and recovery of Future Force network capabilities.	Protection	NECC Cross Functions

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<b>Protection</b>	<b>FOC-07-02</b>	07.02.02	Detect. The Future Force must be able to monitor, detect, track and engage adversary actions against critical facilities and infrastructure in sufficient time and distance to enable protection activities execution (adequately protecting these facilities and infrastructure and allowing time to assess the effectiveness of protection measures, and provide for sufficient mitigation and negation of these attacks through active and passive measures). Additionally, a system of personnel security measures to ensure the integrity of employees, contractors and others who have access to critical assets in order to prevent sabotage and espionage must be incorporated in the protection process. Sensing physical attacks such as air and missile attacks, cyber attacks and sub-surface attacks against critical facilities will require pulling together multiple sensing capabilities and information input sources.	Protection	Intelligence
<b>Protection</b>	<b>FOC-07-02</b>	07.02.03	Assess. The Future Force commander must continually assess, develop and gain a clear picture of the operational environment and gain a real-time depiction of the threat against critical assets. Developing an initial understanding of the threat against critical facilities and the vulnerability of these facilities, will require the integration of sensors and information networks to provide the data necessary to create situational awareness (i.e., orient on the threat), allowing the Future Force to take timely and accurate protection measures to counter adversary actions against key facilities and to achieve the desired protection affects.	Protection	Intelligence

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<b>Protection</b>	<b>FOC-07-02</b>	07.02.04	Warn. This involves making timely and appropriate active and passive protection measures decisions based on the information collected from various sources. Commanders must decide to issue appropriate warnings to units and facilities and must deduce appropriate courses of action to implement appropriate critical asset protection measures in order to prevent or mitigate hostile actions against facilities. Commanders can elect to take active defense measures to interdict and neutralize an adversary's actions or, to take passive defense measures in anticipation of an adversary's attack. Once commanders reach a decision, issuing timely warnings and implementing decisions will require a C2 system that provides effective means to issue warnings and to coordinate decisions to ensure mission success and to achieve the desired protection affects.	Protection	N/A - See JFC: Joint Command and Control/Net-Centric Operations
<b>Strategic Responsiveness and Deployability</b>	<b>FOC-08-04</b>	08.04.11	Provide processes, analysis tools and decision aids to detect, assess, warn, defend and recover from attack, sabotage, emergencies and natural disasters.	Focused Logistics	Force Projection

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## Army Unique Future Operating Capabilities attained in Increment III:

Force Operating Capability (FOC)	FOC#	Sub FOC#	Capability to achieve FOC	Joint Functional Concept (JFC)	NECC MCP
<b>Battle Command</b>	<b>FOC-01-04</b>	01.04.30	The ability to provide processes, decision aids and analysis tools to assist in installation planning for effective and efficient operational support at national, regional and installation levels.	JFC: Joint Command and Control/Net-Centric Operations	N/A - See JFC: Joint Command and Control/Net-Centric Operations
<b>Battle Command</b>	<b>FOC-01-03</b>	01.03.01	Network operations consists of communications, and the means to effectively protect and manage the flow of information, through prevention, monitoring, detection and dynamic prioritization, allocation, and response. Network operations must integrate, direct, and prioritize the information flow between units, decision-makers, sensors and shooters. It allows seamless operations across, while integrating the full capability of, the GIG. Communications will consist of multiple tiers or layers, including terrestrial, airborne, and space. The Future Force C4ISR network must be interoperable. Network components in each layer are interconnected to form a survivable, self-configuring, self-healing backbone. Layered redundancy also ensures there is no single point of failure. Reliance on multiple layers also reduces technological and programmatic risks incurred by over-dependence on communications assets in any single layer. These layers will be combined to operate as a single integrated network, fully integrated with the GIG. Future electronic systems must meet Electromagnetic Interference / Electromagnetic Compatibility requirements of MIL STD 464.	JFC: Joint Command and Control/Net-Centric Operations	N/A - See JFC: Joint Command and Control/Net-Centric Operations
<b>Battle Command</b>	<b>FOC-01-03</b>	01.03.08	Battle Command systems must be capable of collaborative planning, information sharing and full interoperability with joint, interagency, coalition and partner nations in both the unclassified and classified realm.	JFC: Joint Command and Control/Net-Centric Operations	N/A - See JFC: Joint Command and Control/Net-Centric Operations

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<b>Battle Command</b>	<b>FOC-01-04</b>	01.04.01	The ability for an abbreviated, continuous planning cycle incorporating predictive analysis.	JFC: Joint Command and Control/Net-Centric Operations	N/A - See JFC: Joint Command and Control/Net-Centric Operations
<b>Battle Command</b>	<b>FOC-01-04</b>	01.04.16	The ability for a red teaming capability that can independently and continuously challenge concepts, plans, operations, and capabilities in the context of the operational environment and from our partners' and adversaries' perspectives.	JFC: Joint Command and Control/Net-Centric Operations	N/A - See JFC: Joint Command and Control/Net-Centric Operations
<b>Battle Command</b>	<b>FOC-01-03</b>	01.03.03	Network Operations must include Networked Fires. Networked fires are the triad of relevant sensors, effects capabilities, and battle command that enables dynamic application of lethal and nonlethal effects, to achieve the commander's tactical and operational objectives. Networked fires are a component of the battle command construct, and supporting communications architecture.	JFC: Joint Command and Control/Net-Centric Operations	N/A - See JFC: Joint Command and Control/Net-Centric Operations
<b>Battle Command</b>	<b>FOC-01-03</b>	01.03.04	Future Forces must have a networked, integrated approach to air and missile defense (AMD) to enable all future combat platforms to receive early warning, and conduct self-defense counter-air engagements against low and slow moving portions of the rotary wing and UAV threat, and against rocket, artillery and mortar fires (RAM). Future Forces must have organic battle command capabilities necessary to provide third dimension situational awareness, situational understanding, and battle management, for both organic tactical and supporting operational AMD fires. The tactical Future Force must enable its commanders to effectively orchestrate integrated air and ground maneuver, fires, and air defenses in support of sustainment, shaping, and decisive operations, within their respective AOs.	JFC: Joint Command and Control/Net-Centric Operations	N/A - See JFC: Joint Command and Control/Net-Centric Operations

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<b>Battle Command</b>	<b>FOC-01-03</b>	01.03.05	Future Force networks and INFOSYS must conform to the Joint Technical Architecture for Information Management, and emerging Army Knowledge Enterprise Architecture, leveraging Warfighter Information Network-Tactical (WIN-T) and Joint Tactical Radio System (JTRS) capabilities. Embedded training system must provide interfaces that allow interoperability with the current and interim synthetic training environment (e.g., Combined Arms Tactical Trainer; Joint Simulation System). The Future Force networks and information systems must provide fully integrated DSTs to Chemical and non-Chemical units that provide near-realtime full spectrum CBRN warnings to avoid CBRN hazards through movement around the hazards, or protect themselves by donning protective gear, closing vehicles, or sealing protective shelters. By doing so, the Future Force will possess increased survivability and improved mission accomplishment probability.	JFC: Joint Command and Control/Net-Centric Operations	N/A - See JFC: Joint Command and Control/Net-Centric Operations
<b>Battle Command</b>	<b>FOC-01-04</b>	01.04.06	The ability for automated cognitive decision aids and real-time distributed, multi-echelon collaborative planning support tools, including urban-specific decision aids and planning tools.	JFC: Joint Command and Control/Net-Centric Operations	N/A - See JFC: Joint Command and Control/Net-Centric Operations
<b>Battle Command</b>	<b>FOC-01-04</b>	01.04.23	The ability for an enabled battle command and planning capability that enables joint forces en route on any strategic lift platform to interoperate with organic battle command systems.	JFC: Joint Command and Control/Net-Centric Operations	Cross Functions
<b>Battlespace Awareness</b>	<b>FOC-02-04</b>	02.04.06	Models to assess and prioritize reconstruction efforts in relation to the impact they will have on the adversary's decision cycle and indigenous population perceptions.	Battlespace Awareness	Situational Awareness

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<b>Battlespace Awareness</b>	<b>FOC-02-06</b>	02.06.03	Commanders will maintain a deeper understanding of potential enemy courses of action by integrating archived and real time data to auto-populate models and simulations, and by leveraging these models and simulations in training and operations to perform rapid and continuous alternative forecasting. By providing simultaneous current and forecasted future depictions of intelligence resources, and insight into their potential responsiveness, the ISR Officer will be able to quickly re-task multiple sensors to react to emerging operational situations.	Battlespace Awareness	Situational Awareness
<b>Battlespace Awareness</b>	<b>FOC-02-06</b>	02.06.04	Battlespace sensing (from manned aerial and ground platforms, unmanned aerial and ground vehicles or forces) will be incorporated into operations planning and execution. Environmental information (e.g., weather, terrain and civil component) will be augmented with information from battlespace sensors. All sources of information will be integrated into modeling and simulation to facilitate an understanding of the potential impacts of various courses of action.	Battlespace Awareness	Situational Awareness
<b>Battle Command</b>	<b>FOC-01-01</b>	01.01.07	Airborne C2 provided from divisions and above-level aviation.	JFC: Joint Command and Control/Net-Centric Operations	N/A - See JFC: Joint Command and Control/Net-Centric Operations

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<b>Line of Sight/Beyond Line of Sight (LOS/BLOS), Non-Line of Sight (NLOS) Lethality for Mounted/Dismounted Operations</b>	<b>FOC-05-02</b>	05.02.11	Networked fires is a system-of-systems that will provide future commanders a real-time capability to apply full dimension effects solutions, across the battlespace. It is fully integrated and interdependent with Army, joint, multinational, and interagency sensors, effects-generating systems and capabilities, and IT systems. Networked fires is a purpose-oriented, execution-focused, networked capability optimized to provide a broad range of lethal and nonlethal effects, against enemy decisive points and centers of gravity, in concert with maneuver and support operations. It enables the commander to dynamically apply fires and effects, on demand, to any echelon, in support of combined arms and joint operations, in any operating environment.	Force Application	Force Application: Land Operations
<b>Maneuver Support</b>	<b>FOC-06-01</b>	06.01.10	Circulation/traffic control measures.	Force Application	Force Application: Land Operations
<b>Maneuver Support</b>	<b>FOC-06-01</b>	06.01.13	Reach-back for technical expertise and enablers (i.e., Civil Affairs Functional Specialists).	Force Application	Force Application: Land Operations
<b>Maneuver Support</b>	<b>FOC-06-03</b>	06.03.13	Universal language translation capabilities.	Force Application	Cross Functions
<b>Maneuver Support</b>	<b>FOC-06-05</b>	06.05.02	Means to perform environmental risk assessment, including establishment of the environmental baseline.	Force Application	Force Application: Land Operations
<b>Maneuver Support</b>	<b>FOC-06-05</b>	06.05.03	Means to conduct consequence management, when hazards cannot be avoided, or when hazards result from interception (e.g., reach back for consequence management experts).	Force Application	Force Application: Land Operations
<b>Maneuver Support</b>	<b>FOC-06-06</b>	06.06.06	Computer-aided analysis and reasoning tools that enable prediction and understanding, and provide accurate, timely, current and actionable advice.	Force Application	Force Application: Land Operations
<b>Protection</b>	<b>FOC-07-03</b>	07.03.01	The Future Force must employ an information protection Sensor Grid to monitor networks and detect potential electronic attacks against system vulnerabilities.	Protection	N/A - See JFC: Joint Command and Control/Net-Centric Operations

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<b>Protection</b>	<b>FOC-07-03</b>	07.03.03	Ability to warn users quickly and to make the right decisions that enable supporting commanders to effectively counter adversary cyber attacks.	Protection	N/A - See JFC: Joint Command and Control/Net-Centric Operations
<b>Protection</b>	<b>FOC-07-03</b>	07.03.04	Include efficient and effective implementation of the Information Condition and the Information Assurance Vulnerability Management process for warning others of the cyber attack, determining the appropriate actions to mitigate the effects of the current attack, and selecting additional protection measures to preclude a future occurrence.	Protection	N/A - See JFC: Joint Command and Control/Net-Centric Operations
<b>Protection</b>	<b>FOC-07-03</b>	07.03.05	Automated remediation tools and can include recommendations or actions by network operations (including information assurance) restoration priorities, law enforcement, military forces and other U.S. government agencies.	Protection	N/A - See JFC: Joint Command and Control/Net-Centric Operations
<b>Protection</b>	<b>FOC-07-03</b>	07.03.06	The recovery capabilities will include effective access denial, the ability to recover from electromagnetic attacks, ability to prevent/mitigate system intrusions, and the ability to restore corrupted data.	Protection	N/A - See JFC: Joint Command and Control/Net-Centric Operations
<b>Strategic Responsiveness and Deployability</b>	<b>FOC-08-04</b>	08.04.01	Provide processes, decision aids and analysis tools to assist in installation planning for effective and efficient operational support at national, regional and installation levels.	Focused Logistics	Force Projection
<b>Strategic Responsiveness and Deployability</b>	<b>FOC-08-04</b>	08.04.03	Provide analysis and planning tools to augment installation capabilities with commercial provision of goods and services.	Focused Logistics	Force Projection
<b>Strategic Responsiveness and Deployability</b>	<b>FOC-08-04</b>	08.04.08	Provide decision aids and current, accurate information for garrison commanders.	Focused Logistics	Force Projection

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<b>Strategic Responsiveness and Deployability</b>	<b>FOC-08-04</b>	08.04.13	Provide infrastructure capacities that enable embedded/distributed training across all training domains integrated through a network of interconnected installations.	Focused Logistics	Force Projection
<b>Strategic Responsiveness and Deployability</b>	<b>FOC-08-04</b>	08.04.14	Provide models and simulations to address joint stationing; provide technologies, analysis and risk assessment tools, and decision aids for reducing power and energy costs.	Focused Logistics	Force Projection
<b>Strategic Responsiveness and Deployability</b>	<b>FOC-08-04</b>	08.04.15	Provide economic and technical analysis tools to estimate factors impacting installation sustainability including impact to mission, community, and environment; provide environmentally sustainable live fire ranges and maneuver areas suitable for realistic, joint training of future forces.	Focused Logistics	Force Projection
<b>Strategic Responsiveness and Deployability</b>	<b>FOC-08-04</b>	08.04.16	Provide tools to manage and mitigate the environmental impact of day-to-day operations; provide automated facility systems to detect, assess, mitigate and notify of condition changes to streamline operation and maintenance; create efficiencies through well-executed customer-centered procedures and processes for continuous improvement embracing the lean six sigma approach.	Focused Logistics	Force Projection
<b>Strategic Responsiveness and Deployability</b>	<b>FOC-08-04</b>	08.04.17	Provide for the analysis and exploitation of best organizational structure to maximize the effectiveness of modernized systems.	Focused Logistics	Force Projection
<b>Strategic Responsiveness and Deployability</b>	<b>FOC-08-04</b>	08.04.20	Provide tools, systems and processes that address the demands the mission places on the Soldier, their families, and our civilian workforce.	Focused Logistics	Force Projection
<b>Strategic Responsiveness and Deployability</b>	<b>FOC-08-04</b>	08.04.21	Be able to anticipate and provide support for, as well as mitigate the impact of, relocation of Soldiers and their families through information systems, analysis tools and decision aids.	Focused Logistics	Force Projection

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<b>Maneuver Sustainment</b>	<b>FOC-09-01</b>	09.01.03	Distribution-based sustainment—delivering the right support, to the right place, at the right time, over extended distances.	Focused Logistics	Force Projection
<b>Maneuver Sustainment</b>	<b>FOC-09-01</b>	09.01.08	Simultaneous Deployment-Employment-Sustainment in a Joint, Interagency, Intergovernmental and Multinational (JIIM) environment.	Focused Logistics	Force Projection
<b>Maneuver Sustainment</b>	<b>FOC-09-01</b>	09.01.12	Capable of executing DOD Executive Agent responsibilities as well as those missions outlined in Army Support to Other Services (ASOS) directives: Mortuary Affairs.	Focused Logistics	Force Projection
<b>Maneuver Sustainment</b>	<b>FOC-09-01</b>	09.01.16	Capable of executing DOD Executive Agent responsibilities as well as those missions outlined in Army Support to Other Services (ASOS) directives: Manager for Military Traffic Management.	Focused Logistics	Force Projection
<b>Maneuver Sustainment</b>	<b>FOC-09-01</b>	09.01.17	Capable of executing DOD Executive Agent responsibilities as well as those missions outlined in Army Support to Other Services (ASOS) directives: Manager for Military Postal Operations.	Focused Logistics	Force Projection
<b>Maneuver Sustainment</b>	<b>FOC-09-02</b>	09.02.01	Provide real-time IM, graphically and/or digitally, of asset availability, throughout the maneuver sustainment pipeline, from point-of-origin to delivery at final destination, allowing the logistician to effectively and efficiently support the warfighter within and beyond the defined battlespace.	Focused Logistics	Force Projection

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**Training, Leader  
Development and  
Education**

**FOC-10-02**

10.02.01

Training for the FF will capitalize on emerging technologies to make training readily accessible to Soldiers any place, any time. Dispersed Soldiers and units will be linked with one another and with the training institutions through distributed training and integrated live, virtual, and constructive (LVC) training environments. Embedding training in equipment will enable more cost effective training and mission rehearsal on-demand, whether at home station or deployed. New training technologies will be employed to provide a universal training support capability that extends to Active Army, National Guard, and Reserve units and ensures that training capabilities keep pace with advancements in warfighting technologies. Soldiers and leaders will have quick access through reach back to the training opportunities, lessons learned, and other knowledge relevant to their immediate mission or required as part of their career development plan. The accessible training capability will be characterized by:

- Effective distributed individual and collective training available globally, on- demand.
- Ability for Soldiers to train and commanders to train units without significant external support through enhanced embedded training.
- Reach back to knowledge and training repositories.

Training

NECC Cross  
Functions

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<p><b>Training, Leader Development and Education</b></p>	<p><b>FOC-10-03</b></p>	<p>10.03.01</p>	<p>Future Force training capabilities must, to the maximum extent possible, replicate the OE. This capability must include live training at home station and during deployments to CTCs and theaters. Training support capabilities must complement the fielding of current and new warfighter technologies and provide the human performance development applications that enable realistic Army and joint training and education. Further, the virtual and constructive environments must provide the realism and feel needed to train individuals, teams, and units effectively across the spectrum.</p>	<p>Training</p>	<p>NECC Cross Functions</p>
<p><b>Training, Leader Development and Education</b></p>	<p><b>FOC-10-03</b></p>	<p>10.03.02</p>	<p>The following capabilities are critical to achieve this FOC:</p> <ul style="list-style-type: none"> <li>• Training that provides realistic replication of weapons and battlespace effects.</li> <li>• Models and simulations that enable training and mission rehearsal for the full spectrum of operations in a JIIM environment.</li> <li>• A synthetic training environment that accommodates training the full spectrum of operations.</li> <li>• Both live and simulated training environments must be able to realistically and accurately portray the societal and cultural aspects of the future operational environment.</li> </ul>		<p>NECC Cross Functions</p>

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<b>Training, Leader Development and Education</b>	<b>FOC-10-04</b>	10.04.01	<p>The end state training development system must have the capability to support shorter cycle times by rapidly capturing and integrating garnered insights and changes, leading to timely and effective training products needed for both individual and collective training for Future Force jobs. A responsive training development system must be capable of:</p> <ul style="list-style-type: none"> <li>• Producing Soldiers who can perform a wide range of tasks.</li> <li>• Conducting comprehensive analysis of Future Force functions, jobs, skills, and knowledge requirements.</li> <li>• Using skill decay models and decision tools that enable trainers to determine how, when, and where to deliver training and performance support most effectively and efficiently.</li> <li>• Enabling trainers and training developers to work collaboratively in a distributed environment to rapidly develop training tailored to individual or unit needs.</li> <li>• Ensuring, through quality assurance and other feedback mechanisms, that training planning and development address the most critical FF training requirements.</li> <li>• Rapidly document training resource requirements and provide for accelerated delivery of these resources.</li> </ul>	Training	NECC Cross Functions
<b>Training, Leader Development and Education</b>	<b>FOC-10-05</b>	10.05.01	Capability to train JIIM operations, including capabilities that facilitate the training of forces with incompatible coalition C4I systems.	Training	NECC Cross Functions
<b>Training, Leader Development and Education</b>	<b>FOC-10-05</b>	10.05.02	Joint and multinational doctrine, training and knowledge programs.	Training	NECC Cross Functions

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**Training, Leader  
Development and  
Education**

**FOC-10-07**

10.07.01

The universal aspect of training support will provide access, at all Army installations and during deployments, to whatever training capabilities are needed to support training of units, whether those units are equipped fully with digitized battlefield capabilities, or not. The capability will provide training support products and services for exercises, battle drills, and mission rehearsal capabilities with worldwide, around-the-clock availability to Soldiers, leaders, and trainers. Capability will support the provision of realistic, mission-focused, individual, unit, and leader training support, using state-of-the-art performance enhancement technologies that prepare the Army to succeed across a wide range of military operations in JIIM environments. Capability will allow the Army to synchronize training operational capabilities with warfighting capabilities and provide operationally relevant training opportunities that directly support the Army mission. Key capabilities are embodied in the following characteristics:

- Universal accessibility to training support products and services.
- Operational characteristics that support training to Move, Shoot, Communicate, See the Battlefield, Survive, and Sustain.
- Responsive, timely delivery/fielding of training enablers to units and the institution; a holistic plan that provides for equipment, facilities, maintenance, and operators throughout the lifecycle of the enabler.

Training

NECC Cross  
Functions

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## ARMY UNIQUE CAPABILITIES PROVIDED BY NECC INCREMENT I

None.

Capabilities provided by NECC Increment I (as outlined in the IDA 3H AOA recommendations):

1.1.1	Checklist. NECC shall provide capabilities to access, display, develop, modify, and coordinate checklists of actions required from strategic national level down to joint force and Service/functional component levels.
1.1.2	Shared Data. NECC shall provide capabilities to: access, display, aggregate, synchronize, validate, analyze, and archive shared campaign planning data (e.g., JOPES, GTN / GTN21). NECC shall provide the capability to drill down to unit (mission), Service, transportation data, and other applicable planning data.
1.1.3	Workflow. NECC shall provide capabilities to access, display, develop, modify, and coordinate workflow processes (e.g. pre-formatted OPLAN and OPORD templates, user-defined) to guide the development of crisis action/adaptive campaign plans from strategic national level down to joint force and Service/functional component levels.
1.1.6	COA Selection. NECC shall provide capability to access, analyze, coordinate, and execute a crisis plan; quickly analyze a crisis situation, evaluate a course of action (COA), select and notify the appropriate units.
1.1.7	Command Relationships. NECC shall provide the capability to link joint C2 command relationships (OPLAN/OPORD Annex J) to the transportation planning data.
1.1.8	Force/Logistics Selection. NECC shall provide capabilities to access, display, generate, analyze, coordinate, refine, validate, and archive force and logistic selections required to meet commanders' needs. NECC shall provide the capabilities to identify potential combat, combat support, and combat service support units (active, national guard, and reserve) to support COA alternatives based on readiness, availability, and time required to deploy. NECC shall provide the capability to support dynamic and changing deployment packages in JOPES in order to match validated concepts of operations (CONOPS). The logistics portion of the COP shall include supply, maintenance, transportation, personnel, medical, personnel recovery, noncombatant evacuation, reconstitution, politico-military support, finance, religious support, legal services, public affairs, and field services.
1.1.15	Force, Logistics, Transportation Needs. NECC shall provide capabilities to: access; display; analyze; process; model/simulate; and archive OPORD/OPLAN force, logistic, and transportation needs; COA alternatives for adequacy; feasibility acceptability; and consistency with joint doctrine.
1.1.17	Unit Deployment. NECC shall provide capabilities to access, graphically display, monitor, and coordinate planned, scheduled, and actual deployment of units into a theater of operations based on a TPFDD.

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- 1.2.1 Deployment Data. NECC shall provide capabilities to provide information for the coordination of deployment routing, over-flight routes, landing rights, and refueling routes, needs, timing, and schedules. NECC shall provide capabilities to access, display, and analyze user-defined or predefined infrastructure information on facilities/terminals supporting multi-modal transportation (e.g., seaports, airfields, terminals, railway, barge, surface transportation).
- 1.2.2 Transportation Needs. NECC shall provide capabilities to access, display, generate, analyze, process, and coordinate transportation needs (e.g., schedules, flow paths, channel traffic) to meet force, non-unit, and logistic movement/sustainment needs from origin to destination. NECC shall provide capability to generate Personnel Increment Numbers (PIN). NECC shall provide the capability to incorporate PINs into TPFDD movement needs as the basis for lift analysis and allocations.
- 1.2.6 Asset Visibility. NECC shall provide capabilities to access, graphically display, coordinate, and monitor: Location/operational status of all assets (i.e., personnel/equipment down to the item/personnel identification levels) from origin to destination via single/multiple carriers; Planned, scheduled, and actual movement of assets; Location/operational status of air, land and sea movements.
- 1.2.7 1.2.7 In-transit Visibility. NECC shall provide capability to seamlessly interface the GTN / GTN 21 and JOPES databases in support of cargo and personnel movements to include organic and non-common (e.g., commercial, multinational) user transportation provided by USTRANSCOM and other sources. Visibility of transportation missions and assets and the location of key replacement personnel, supplies, and equipment in transit including the time-definite, ground, sea, rail, or air, delivery of material, equipment, units, personnel, and services from the sustaining base to installation to intermediate sustainment bases to the area of operations.
- 1.2.10 Conduct Crisis Action/Exercise Planning: Transportation Visibility. NECC shall provide capabilities for operational users to access, display, analyze, coordinate, and disseminate TPFDD scheduling and movement needs. NECC shall provide the capability to seamlessly interface the JFAST in exercise support and planning as well as conducting Crisis Action planning.
- 2.1.1 Readiness Oversight. NECC shall provide capabilities to access, display, analyze, model/simulate, track, and coordinate readiness oversight of registered and measured US military units and selected DOD Agencies' current and historical ability to undertake assigned wartime and current missions (to include the ability to survive and fight in a chemical-biological contaminated environment) at selected points in time based on levels of resources/training and commanders' objective/subjective assessments.
- 2.1.2 Total Force Analysis. NECC shall provide capabilities to access, display, analyze, model/simulate, and coordinate total force ability to undertake assigned wartime and current missions at selected points in time based on current unit levels of resources/training. Total force analysis includes units that have deployed as partial organizations.
- 2.1.3 Single/Multiple TPFDD. NECC shall provide capabilities to access, display, analyze, model/simulate, and coordinate force readiness assessments based on single/multiple TPFDD scenarios.
- 2.1.5 DRRS Updates. NECC shall provide capabilities to access, display, analyze, coordinate, and disseminate the most current and complete, registered and measured unit information to evaluate the total forces' ability to undertake assigned wartime and current missions at selected points in time.
- 2.1.6 Readiness Information. NECC shall provide capabilities to access, display, analyze, and coordinate personnel, maintenance, logistical, infrastructure, and transportation information from multiple campaign planning and readiness data sources.

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- 2.1.7 Registering Units. NECC shall provide capabilities to register joint units organized under an approved joint manning document, US military forces with Service affiliation, DOD and non-DOD Agencies, multinational units, and other entities that contribute to the total force readiness picture.
- 3.3.14 Link Collection Requirements and ISR Assets. NECC shall provide capability to dynamically link intelligence collection management information with ISR asset capability to determine status, current/planned employment and provide a deconflicted collection plan.
- 3.3.17 ISR Asset Capability. NECC shall provide capability to provide: underlying data pertaining to ISR assets, quick reference to status and employment with multiple visualization options for battle managers.
- 4.1.1 BLUE Force Location, Automated Track Feeds. NECC shall provide the capabilities to access and display BLUE force locations for surface, subsurface, air, space, and ground units or entities originating from Tactical Data Links, Line-Of-Sight/Non-Line-Of-Sight (LOS/NLOS) BLUE Force Tracking devices, unattended ground stations (e.g. Federal Aviation Administration radar) and broadcast messages.
- 4.1.2 BLUE Force Location, Other Data Sources. NECC shall provide the capabilities to access and display unit position data derived from external/non-track producing data sources such as relational databases, planning data, and combat support data.
- 4.1.3 BLUE Force Location, ISR Sensors. NECC shall provide the capabilities to access and display current ISR and CBRNE sensor locations.
- 4.1.4 Unit Aggregation/De-Aggregation. NECC shall provide the capability to aggregate/de-aggregate selected BLUE force units into succeeding higher and lower echelons. NECC shall provide user selectable ability to maintain individual unit/platform locations for entities such as plotting center mass while maintaining visibility of forward units. NECC shall provide have the capability to develop, access, display, process, assign authorizations and store user preferences, filters and/or profiles (e.g. the capability of automatic and/or user defined unit aggregation/de-aggregation for entities on the COP, the capability to dynamically overlay specific portions of the running estimate, etc.).
- 4.1.5 RED/GRAY/Unknown Force Tracking. NECC shall provide the capabilities to access and display RED/GRAY/ Unknown (land, maritime, air, and space) entities derived from raw and/or processed MASINT, SIGINT, HUMINT, and unattended ground station data.
- 4.1.6 Display Moving Targets. NECC shall provide the capabilities to access and display unexploited and exploited moving target indicator data.
- 4.1.7 Display RED/GRAY/Unknown ISR Assets. NECC shall provide the capabilities to access and display RED/GRAY/Unknown force ISR sensor locations.
- 4.1.8 Multiple Target Database. NECC shall provide the capabilities to access and display targeting information from local and external databases for targets using a variety of search criteria definable within the COP. NECC provides a capability to archive, maintain, and interact with Red Threat Assessment history data and tracks to support NECC Course of Action (COA) development, developing a capability and concept for storing significant activity/events to enable Predictive and Intelligence Battlespace Awareness for the COP and the supporting common intelligence picture (CIP).
- 4.1.9 Overlay Generation and Display. NECC shall provide the capabilities to access, generate, and display combat support, land component, maritime component (i.e., Screen KILO, FOUR WHISKEY), airspace command and control, air defense, fire support, airspace coordination, current/projected enemy situation overlay information in the COP, and related views. NECC shall provide capability to create overlays with embedded pedigree information such as created by and last updated.

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- 4.1.10 Map Displays. NECC shall provide capabilities to access and display three-dimensional geospatial intelligence data (e.g. JIPB products and targets) to support airspace de-confliction, fire support coordination, and mission planning/execution functions. NECC shall provide the capability to roam, zoom, and fly/drive-through (i.e. BLUE/RED views) without degrading plotted data accuracy or topological structure. NECC provides the capability to geo-register and render Digital Nautical Charts (DNC), Additional Military Layers (AML), Tactical Ocean Data (TOD), unit position and planned track data, Blue Force planned track data, and navigation-quality map products.
- 4.1.11 Coordinate Conversion. NECC shall provide the capability to translate local datum coordinates to/from World Geodetic System (WGS)-84, Universal Polar Stereographic, Universal Transverse Mercator (UTM), or future standard.
- 4.1.12 Exchange Geospatial Intelligence Products. NECC shall provide the capability to exchange geospatial intelligence (e.g. imagery, imagery intelligence, and geospatial information).
- 4.1.13 Weather Data. NECC shall provide the Joint METOC Data Base, the capabilities to access, disseminate, and display current and forecasted weather to include atmospheric, oceanographic, exo-atmospheric with effects, data on the COP and in other related views of information such as temporal depictions of effects on systems and operations as weather moves across an operational area.
- 4.1.14 Joint Force Synchronization. NECC shall provide the capabilities to access, integrate, and display blue/RED/GRAY force locations, disposition, tasks, timelines, and capabilities (e.g. communications status, force readiness, order of battle, etc.) on an integrated information display tailored to ensure mission/situational relevance to enable vertical and horizontal self-synchronization of the Joint Force. NECC shall provide the capability to: permit operators to tailor presentations readily to a task or decision at hand; and activate/deactivate alerts to receive and send.
- 4.1.15 Display Urgent Information. NECC shall provide the capability to rapidly disseminate urgent information through messaging alerts to COP users and other appropriate recipients (e.g. TBM event, NBC event, overlay updates, high interest track messages). NECC shall provide the capability to alert operators and forward alerts to the other MCPs when relevant information or conflicts are detected (e.g. air-strike operations scheduled in a place and time where BLUE ground operations are occurring, warning information when RED forces enter certain areas or mass a certain number or type of forces in an area). NECC shall provide the capability to add/modify unique audible alarms for missile alerts predicted to impact user defined areas.
- 4.1.16 COP on the Move. NECC shall provide the capabilities to access and display COP information while users are moving from one location to another using any transportation means including but not limited to: vehicular, maritime craft, airmobile, and ubiquitous clients supporting joint and other echelons.
- 4.1.17 Identify Amplifying Data. NECC shall provide the capability to visually distinguish tracks/plotted objects containing amplifying data and distinguish relevant or time-sensitive information on other related views.
- 4.1.18 Access Amplifying Data. NECC shall provide both manual and automated capabilities to access and display tracks/plotted objects with associated amplifying data (e.g. status, force readiness, order of battle, weapon systems characteristics and performance parameters, imagery) from multiple dissimilar sources. NECC shall provide the capabilities to access and display related information that can be arranged in multiple views to facilitate the decision-making process.
- 4.1.20 Projected Location/Coverage. NECC shall provide the capabilities to access and display projected BLUE/RED/GRAY force locations and sensor coverage derived from available data sources.

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- 4.1.22 Global COP. NECC shall provide the capability to access sufficient track data to support joint force and Service/functional component and global views (e.g. rotatable, 3-D global representations for global ballistic missile defense engagements) and missions. NECC shall facilitate development of a federated COP and be capable of displaying data from the Single Integrated Air Picture/Joint Data Network. NECC will provide displays and human machine interfaces (HMI) to support JTF operations. NECC will provide the capability for the transmission and reception of JTF and Component command orders via tactical data links, with both automatic and operator actions, as required. The operator shall also have the capability to selectively display and manage tactical data link information by data type, geographic location, source, time, and other options. Displays shall be able to correlate and project the cumulative effects of the multiple staff estimates. Displays shall also allow users to represent the battlespace in four dimensions.
- 4.1.23 Track Refresh. NECC shall provide the capability to refresh the display with user-defined parameters (e.g. track type, time increments, call sign).
- 4.1.24 Filter Display and Dissemination Based on Track Attributes. NECC shall provide the capabilities to access, display, process, and store track display filters and track transmission filters using multiple track attributes (e.g. source, latency, speed, geospatial location, altitude, parent unit/type, real, simulated, exercise, track type, unit name/type, call sign, IFF/SIF/PIF, time, mission, readiness and classification).
- 4.1.25 Customize Symbology. NECC shall provide the capabilities to access, customize, display, store, and track symbology (e.g. MIL-STD-2525, Naval Tactical Data System) for local, non-broadcast purposes only.
- 4.1.27 Mission Management. NECC shall provide the capability, tailorable by command, to aggregate/disaggregate data from multiple sources into a decisional information display. NECC shall provide capabilities to identify, access, organize, and display Service/Agency/joint/multinational-provided data sources to meet commanders' mission needs. NECC shall provide the capability to support mission management by providing interactive forms supporting process integration by imbedding status, coordination, comment information, and input requirements specific to key functional offices related to the mission/operation.
- 4.1.28 Friendly Force Description. Fused, timely description of friendly forces to include identity, capabilities, status, organization, network awareness and platform.
- 4.1.29 Non-NECC Equipped Forces. Interoperability with non-NECC equipped subordinate forces to include the capability to receive and manage platform and above level information, force tracking, shared operational graphics.
- 6.5.6 Receive Air Combat Order (ACO). NECC shall provide the capability for land components to receive, parse, and display the ACO in order to deconflict airspace in geographic area, time, and space.
- 9.2 Security Cross-Domain Services. NECC shall provide the capability to exchange information across multiple security domains. NECC will comply with the following approval processes: Secret and Below Interoperability (SABI): DIACAP (e.g., CJCSI 6510.01C, DODI 5200.40) certification and accreditation, DOD Component Designated Approving Authority (DAA), Top Secret and Below Interoperability (TABI): DIACAP, DOD Component DAA, and Top Secret/SCI and Below Interoperability (TSABI): DODIIS Security Certification and Accreditation Guide, IC Component DAA.

## **Appendix B – Integrated Architecture Products**

See Extension A – Integrated Architecture Products, NECC CDD base document.

## **Appendix C – References**

See Extension B —References, NECC CDD base document.

## **Appendix D – Glossary**

See Extension C —Glossary, NECC CDD base document.

## **Appendix E – Mission Capability Package (MCP) List**

See Extension D —Mission Capability Package (MCP) List, NECC CDD