



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.


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

Enclosure

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Net-Enabled Command Capability (NECC) Increment One Capability Development Document (CDD) Key Performance Parameters (KPP)

| KPP | Threshold | Objective |
|--|--|--|
| <p>Shared situational awareness: Provide key and vital information via net-centric services on the disposition of friendly, enemy, neutral, and unknown forces to allow the effective exercise of command and control.</p> | <p>Conduct track management and/or be able to access for filter and display, 20,000 or more friendly, enemy, neutral and unknown tracks, at all sites responsible for providing track information to decision makers at all levels of command and control.</p> | <p>Provide user access to unlimited number of tracks and track information to decision makers at all levels of command and control.</p> |
| <p>Planning and execution: Provide warfighters at all levels of command and control contingency and crisis action planning, force deployment / sustainment / redeployment and mission execution capability in support of National Security Objectives and the Adaptive Planning and Execution process. Provide warfighters at all levels of command and control the ability to maintain force readiness and to report on the ability of forces, units, weapons, or equipment to deliver the outputs for which they were designed at the tactical, operational and strategic levels.</p> | <p>Conduct contingency and crisis action planning, force deployment, sustainment, redeployment, and mission execution activities via generation and modification of time phased force deployment data (TPFDD) files, query and production of reports, managing and maintaining user accounts and reference with TPFDD validation in support of OPORD/OPLAN for Crisis Action Planning in less than 96 hours and less than 12 hours for Contingency Planning from decision to execution resulting in a success rating of 80 percent and no warfighter incident reports containing significant or critical operational impact.</p> <p>Update readiness database records with maintenance activities to produce and verify accurate reports concerning forces, units, weapons, systems and equipment at the UIC (tactical) and OPLAN (operational) levels with a success rating of 90 percent and no warfighter incident reports containing significant or critical operational impact.</p> | <p>Conduct contingency and crisis action planning, force deployment, sustainment, redeployment, and mission execution activities via generation and modification of TPFDD files, query and production of reports, managing and maintaining user accounts and reference files simultaneously from multiple geographic locations with TPFDD validation in support of OPORD/OPLAN for Crisis Action Planning in less than 24 hours and less than two hours for Contingency Planning from decision to execution.</p> <p>Update readiness database records with maintenance activities via multiple applications to produce and verify accurate reports at multiple locations via multiple applications concerning forces, units, weapons, systems and equipment at the UIC (tactical) and OPLAN (operational) levels with a frequency of readiness database updates available throughout the systems in less than three hours and historical updates less than 24 hours.</p> |

Enclosure

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Net-Enabled Command Capability (NECC) Increment One Capability Development Document (CDD) Key Performance Parameters (KPP)

| KPP | Threshold | Objective |
|---|---|--|
| <p>System Training: NECC shall provide dynamic, capabilities-based training support tools, either embedded or via the web, across the full range of integrated operations.</p> | <p>Training support tools must be assessed for ease of use and training support effectiveness as favorable by 70 percent of JS/C/S/A users in an operationally representative test environment.</p> | <p>Units must be capable of simultaneously conducting training exercises in Live, Virtual, and Constructive environments using modeling and simulation tools, either embedded or via the web.</p> |
| <p>Net ready: The system must support Net-Centric military operations. The system must be able to enter and be managed in the network, and exchange data in a secure manner to enhance mission effectiveness. The system must continuously provide survivable, interoperable, secure, and operationally effective information exchanges to enable a Net-Centric military capability.</p> | <p>The system must fully support execution of joint critical operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical requirements for transition to Net-Centric military operations to include 1) DISR mandated GIG IT standards and profiles identified in the TV-1, 2) DISR mandated GIG KIPs, 3) NCOW RM Enterprise Services 4) Information assurance requirements including availability, integrity, authentication, confidentiality, and non-repudiation, and issuance of an Interim Approval to Operate (IATO) by the Designated Approval Authority (DAA), and 5) Operationally effective information exchanges; and mission critical performance and information assurance attributes, data correctness, data availability, and consistent data processing* specified in the applicable joint and system integrated architecture views.</p> <p>* Data processing is defined as: The input, output, verification, organization, storage, retrieval, transformation and extraction of information from data.</p> | <p>The system must fully support execution of all operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical requirements for Net-Centric military operations to include 1) DISR mandated GIG IT standards and profiles identified in the TV-1, 2) DISR mandated GIG KIPs, 3) NCOW RM Enterprise Services 4) Information assurance requirements including availability, integrity, authentication, confidentiality, and non-repudiation, and issuance of an Approval to Operate (ATO) by the Designated Approval Authority (DAA), and 5) Operationally effective information exchanges; and mission critical performance and information assurance attributes, data correctness, data availability, and consistent data processing* specified in the applicable joint and system integrated architecture views.</p> |

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**Net-Enabled Command Capability (NECC) Increment One
Capability Development Document (CDD)
Key System Attributes (KSA)**

| KSA | Threshold | Objective |
|---|---|--|
| <p>Situational Awareness: NECC shall provide net-centric services capable of accessing, sharing (send and receive), collating, and displaying COP and CTP information at the source level of accuracy in a format tailored by the user for all physical domains, all components of the joint force, and special operations forces.</p> <p>Essential CTP and COP elements are:</p> <ul style="list-style-type: none"> - Location / status / intentions of friendly forces (current and planned) - Location/identity/status/intentions of hostile forces (current and projected) - Location/intentions of other forces/actors (neutral forces, NGOs, etc.) (current and projected) - Meteorological and Oceanographic (Current and forecast environmental conditions and their effects on weapons systems and operations) - Geospatial information - Political/diplomatic information (current and projected) - Media reports | <p>Integration of land, air/space, maritime/littoral and intelligence information into a Common Tactical Picture (CTP) in support of the Common Operating Picture (COP).</p> | <p>Integration of land, air/space, maritime/littoral and intelligence information into a CTP in support of the COP.</p> |
| | <p>Display and update user requested COP information at the level of accuracy produced within 15 seconds of user request using standard message formats.</p> | <p>Display and update user requested COP information at the level of accuracy produced in one second or less of user request using standard and non-standard message formats.</p> |
| | <p>Provide 3D visualization of, amplification of and reference to source data for friendly, enemy, neutral and unknown tracks, as well as ISR and logistics (deployment and distribution) data, in Near Real-Time (NRT), contained in a database capable of processing 20,000 or more tracks per user defined allocation table.</p> | <p>Provide 3D visualization of, amplification of and reference to source data for friendly, enemy, neutral and unknown tracks, as well as ISR and logistics (deployment and distribution data) in Near Real-Time (NRT), contained in a database capable of processing an unlimited number tracks per user defined allocation table such that the shared situational awareness available to any NECC user regardless of the geographic viewing area, the scale of the geographic viewing area or type track being filtered is not limited by processing and storage capabilities of the system.</p> |

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Net-Enabled Command Capability (NECC) Increment One Capability Development Document (CDD) Key System Attributes (KSA)

| KSA | Threshold | Objective |
|---|---|--|
| <p>Situational Awareness: (continued)</p> <ul style="list-style-type: none"> - Ensure appropriate access to data based on clearance validation and attributes associated with the data, users, processes or environment - Location status of medical, humanitarian assistance, and terrorist events - Archived / historical COP data | <p>Subjective determination of <i>degree</i> to which a visual representation meets the requirements of 80 percent of the users, by user (1-5 scale: 1 fully, 5 unmet).</p> | <p>Subjective determination of <i>degree</i> to which a visual representation meets the requirements of 100 percent of the users, by user (1-5 scale: 1 fully, 5 unmet)</p> |
| <p>Planning: (Planning and Execution in support of National Security Objectives)</p> <p>NECC shall provide the capability for distributed collaboration for the development and revision of plans and for plans execution.</p> <p>Essential elements are:</p> <ul style="list-style-type: none"> - Distributive and Collaborative Planning - Synchronous and asynchronous collaboration services - Readiness and Operational Capability Identification (sourcing) - Movement, Sustainment and Tracking - Reduce planning cycle time | <p>Provide vertical and horizontal distributed collaboration for development of force generation, sustainment and projection requirements from combatant commander (CCDR) level to JTF/JTF component level.</p> <p>System shall be able to allow up to 1,500 simultaneous users per plan and up to 45,000 simultaneous users on the system.</p> <p>System shall provide simultaneous access to all essential elements of collaborative services for all members of all the boards, centers, cells and any other activities within a JTF HQ and between a JTF HQ, CCDR and the JTF Components.</p> | <p>Provide vertical and horizontal collaboration for development of force generation, sustainment and projection requirements from DoD level down to lowest deployable entity as defined by the Services.</p> <p>System shall be able to allow up to 3,000 simultaneous users per plan and up to 75,000 simultaneous users on the system.</p> <p>System shall provide near real time collaboration for all members of a JTF, including the edge tactical user, US Agencies, NGOs, Allied and Coalition Partners, DOD COEs, Joint Staff (JS), other Communities of Interest pertinent to the JTF, and between the other JTFs and CCDRs.</p> |

| | | |
|--|--|---|
| | <p>be able to view the current collaboration status of any other authorized user to 98 percent accuracy</p> <ul style="list-style-type: none"> • Audio conferencing • Chat/instant messaging • Shared file space • Video teleconferencing • Shared whiteboard <ul style="list-style-type: none"> • Asynchronous collaboration services for 4000 users to include: <ul style="list-style-type: none"> • Person-to-person and organizational messaging (e.g., E-mail) • Delivery of alerts <ul style="list-style-type: none"> - Within 30 seconds • Web Portal | |
| | <p><u>Crisis Action Planning and Execution</u> (after release of warning order)</p> <ul style="list-style-type: none"> - Support development and maintenance cycles for OPORD and associated products: < 96 hours - Time required to perform a readiness assessment: less than six hours | <p><u>Crisis Action Planning and Execution</u> (after release of warning order)</p> <ul style="list-style-type: none"> - Support development and maintenance cycles for OPORD and associated products: < 24 hours - Time required to perform a readiness assessment: less than two hours |

| | | |
|--|---|--|
| | <p><u>Contingency Planning</u> (upon receipt of a planning directive) - Support development and maintenance cycle for OPLAN and associated products: < 12 months - Time required to perform a readiness assessment: < 48 hours</p> | <p><u>Contingency Planning</u> (upon receipt of a planning directive) - Support development and maintenance cycle for OPLAN and associated products: less than two months - Time required to perform a readiness assessment: < 24 hours</p> |
| | <p><u>Total Force Visibility</u> Changes to current readiness data/information are visible globally within two hours of input. - Track inventory readiness, availability, and apportionment down to the individual level, and respond to queries within 10 minutes of initial request. - Provide automatic notification of dual tasking within five minutes of force sourcing.</p> | <p><u>Total Force Visibility</u> Changes to current readiness data/information are visible globally NRT of input. - Provide continuous check for potential dual tasking during force sourcing process and provide immediate notification when and if it occurs. Continuous and uninterrupted Track to asset level visibility - Provide continuous and uninterrupted Track to asset level visibility; globally track inventory, readiness, availability and apportionment of all forces down to the individual level, and respond to queries within one minute of initial request.</p> |
| | <p><u>Track to asset level visibility</u> - User queries across disparate data sources will identify the authoritative data source. Reports or Queries will be delivered in less than seven seconds from the time query is issued at 99.999 percent accuracy.</p> | <p><u>Track to asset level visibility</u> - User queries across disparate data sources will identify the authoritative data source. Reports or Queries will be delivered in less than two seconds from the time query is issued at 99.999 percent accuracy.</p> |

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**Net-Enabled Command Capability Increment One Capability
Development Document -- Key System Attributes**

| KSA | Threshold | Objective |
|---|--|---|
| <p>Training Support: NECC shall provide, either embedded or via the web, training support tools to facilitate effective individual and collective team, staff and unit training.</p> <p>Essential training elements to enable individual, collective and conceptual training:</p> <ul style="list-style-type: none"> - Designed in "ease of use" to minimize the need for extensive use of mobile training teams and resident schools to achieve individual and collective proficiency with NECC tools -Alert/notification of new training provided with new spiral capability - Web-based Training - Web-based transfer -Capability to support distributed exercises -Embedded Modeling and Simulation capability - Learning Management System for training managers | <p>Ease of use and training support effectiveness must be assessed as meeting current IT industry benchmarks for ease of use, the current Joint National Training Capability (JNTC) construct and supporting JT FC attributes and metrics.</p> <ul style="list-style-type: none"> - Help tools, diagnostic proficiency assessment tools, and training management tools must be embedded or available via the web to facilitate assessment and tracking of individual and collective proficiency. - Training tools must be available via the web - Training and remedial, on-demand support must be web transferable - Must have alerts to notify training managers of training updates and new capability. <p>Individual:</p> <ul style="list-style-type: none"> - 70 percent of functional users (JS/C/S/A) judge NECC training capability as favorable in a standard Operational Test environment - 70 percent of Systems Administrators judge NECC training capability as favorable in a standard Operational Test environment <p>Collective:</p> <ul style="list-style-type: none"> - Individuals and or units must be able to conduct training on operational systems without affecting real world picture/data. <p>Conceptual:</p> <ul style="list-style-type: none"> - Supports the learning and training attributes of Training Transformation (T2) as defined by Joint Knowledge Development and Distribution Capability (JKDDC), JNTC and Joint Assessment and Enabling Capability (JAEC). - Supports JT FC attributes and metrics. | <p>Conceptual:</p> <ul style="list-style-type: none"> - Meets all T2 standards of and is fully integrated with JKDDC and JNTC. |

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**Net-Enabled Command Capability (NECC)
Capability Development Document (CDD)**

FINAL

Increment: I

ACAT ID

Validation Authority: JROC

Approval Authority: JROC

Milestone Decision Authority: ASD (NII)

Designation: JROC Interest

Prepared in Support of a Milestone B Decision

7 June 2007

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

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PREFACE

This document (Net-Enabled Command Capability (NECC) Capability Development Document (CDD)) has been developed using an approach through which Warfighters will be able to dynamically define/refine Command and Control capability needs, and capability developers/providers will be able to more rapidly and effectively respond to those needs. This is achieved by adopting a structure for the CDD that follows a different paradigm from the conventional CDD approach that also takes advantage of the network-centric concepts and technologies that form the foundation of the NECC capability itself. While the CDD is presented differently, it includes the information required by the Joint Capabilities Integration and Development System (JCIDS) Manual (CJCSM 3170.01 series).

The CDD consists of this document (the core CDD), which describes high-level NECC concepts and basic requirements, including Key Performance Parameters (KPP) and Key System Attributes (KSA); and a set of CDD extensions. The CDD core and extensions will be validated by the Joint Requirements Oversight Council (JROC). The content of the core CDD is made up of high-level descriptive information and other information about NECC that will remain constant through the course of the development and fielding of NECC Increment I and possibly beyond. More detailed program information, pertinent references, and contextual information (e.g., architectural products, detailed requirements descriptions in the Mission Capability Packages, Service specific details) are promulgated in the form of separately developed and maintained CDD extensions, which can easily and independently be modified in order to 1) adapt to changing or emergent warfighter mission needs; 2) keep pace with the dynamic C2 capabilities; or 3) take advantage of innovative or emerging technologies without requiring changes to the core CDD. These CDD extensions support NECC development as detailed operationally contextual drivers for the building of NECC capabilities.

Coupled with United States Joint Forces Command's (USJFCOM) non-KPP/non-KSA approval authority, the use of CDD extensions will facilitate a more effective and responsive requirements process without returning to the JROC for KPP changes or the JCB for KSA changes after initial validation. The extensions provide the ability to dynamically and collaboratively collect and communicate warfighter capability needs across NECC warfighter and development communities and the range of military operations. The CDD and CDD extensions will be continuously cross-referenced to rapidly identify and adjust C2 requirements to ensure delivered capabilities meet "current day" warfighter mission needs in the context of the overarching objective of a single integrated joint command and control capability.

This approach is supportive of a more responsive capability/requirements governance structure and is in consonance with the construct for the Joint Command and Control Capability Portfolio Management (JC2 CPM) test case. The separation of high-level and detailed requirements into the core CDD and CDD extensions will permit streamlined programmatic decision-making and acceleration of staffing processes without compromising the communication of relevant detail and DOTMLPF context to the capability developers.

Using this document. This document, the core CDD, is a stand-alone document in that it provides a high-level description and overview of NECC (e.g., what NECC is, what capabilities

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are to be delivered, the operational context within which it will be employed, the program's strategy for capability development and delivery, necessary supporting infrastructure, KPPs/KSAs, system supportability requirements). In providing the high-level description of NECC, the core document summarizes and references the detailed documentation contained within the CDD extensions, which provide greater detail. CDD extensions currently include:

- Integrated DoDAF architecture products
- References
- Glossary
- Detailed description of mission capability packages
- Threat summary and assessment
- GCCS FoS to NECC transition
- DOTMLPF considerations
- C2 Shortfalls, NECC Attributes, FoS Synchronization, JCA Linkage, GEOINT
- JC2 Joint Functional Concept/Joint Integrating Concept/Capabilities Based Assessment
- NECC Requirements Identification Database (NRiD) (to be developed)
- Service specific annexes (USA, USN, USMC, USAF)

Note: The NECC CDD extensions will ultimately migrate to a single Secret Internet Protocol Router Network (SIPRNet) site co-located with the NECC Requirements Identification Document (NRiD).

The NECC CDD Core and Extensions are currently posted on the Defense Online (DOL) Portal. A CAC card is required to access the web site. To access DOL:

- a. Click on this link <https://gesportal.dod.mil/sites/necc/JCCD/default.aspx>
- b. Register
- c. Close browser
- d. Re-access web site and request access to desired JCCD folders
- e. You should receive e-mail notification of your requests immediately. The account request process should take one or two days.
- f. Once you have access, enter the JCCD Home “Coordination Cell” link, then under “Shared Documents/NECC Capability Documents/Increment I/ NECC Capabilities Development Document and Extensions and select the appropriate file.
- h. Problems with access can be addressed by Paul Radcliff, DSN 836-2277 or Commercial (757) 836-2277; email: paul.radcliff@jfc.com.mil

Executive Summary

The Net-Enabled Command Capability (NECC) is the Department of Defense's (DoD) principal capability for conducting joint command and control (C2). This Capability Development Document (CDD) outlines the capability development strategy through which NECC will integrate existing and emerging command and control capabilities into a single, flexible, enterprise-based, architecture supporting the National Military Command System (NMCS), Joint Force Commanders (JFC), Service and Functional Component Commanders, and subordinate Service commands. An integral part of this strategy is the transition of the Global Command and Control System (GCCS) Family of Systems (FoS) from its current state of Joint and Service variants to the single joint C2 architecture and capabilities-based implementation of NECC.

NECC will promote decision superiority by enabling advanced distributive, collaborative information sharing vertically and horizontally. It will allow Warfighters to define and tailor their information environment, rapidly adapting to changing mission needs and drawing on capabilities that enable efficient, timely, and effective command and control. NECC will provide the capability to collaboratively plan, execute, monitor, and assess joint and multinational operations by enabling vertical/horizontal information exchange across the joint/coalition command and control community, and when required, with Non-Governmental Organizations (NGOs) and external subject matter experts (SMEs). In addition to achieving interoperability across the mission space, NECC will facilitate the exchange of information across multiple security domains and will reduce logistics/support requirements (e.g., system administration, training, and maintenance).

In order to be responsive to the Warfighter, NECC will employ a technical and programmatic approach that enables the rapid continuous delivery of C2 enhancements, resulting from tightly coupled processes for capability needs definition, solution development and test, and user engagement. Capability delivery will leverage existing, evolving, and emerging C2 capabilities, centers of excellence, architectures and standards, and commercial best practices. To facilitate this approach, NECC's warfighting capabilities have been grouped into joint focus areas called Mission Capability Packages (MCPs): Force Projection, Force Readiness, Situational Awareness, Intelligence, Force Employment (Air/Space Operations, Land Operations, Maritime/Littoral Operations), and Force Protection. Capabilities for each increment of delivery will be focused on one or more MCPs – the JC2 (NECC) AoA recommended “alternative 3H” (situational awareness, joint operations planning and execution, and selected capabilities, to include targeting) be selected as the preferred JC2 (NECC) alternative focus. Situational Awareness and the Deployment Planning C2 capabilities are the primary focus of Increment I.

In keeping with this new approach, NECC will not identify traditional milestones for Initial Operational Capability (IOC) and Final Operational Capability (FOC) - IOC and FOC will be event-driven rather than calendar-driven. Using GCCS FoS as the starting point, NECC will field frequent spirals within each increment to provide capability subsets specified in this document. Increment One IOC is currently defined as providing users with selectable capabilities to conduct mission tasks supporting command capability and C2 activities from the National Military Command System (NMCS) through the Joint Force Commander and Service/Functional components. FOC for Increment I (projected for 4QFY10) will be achieved

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when NECC fielded to the NMCS, Combatant Commanders (CCDR), JTFs, JTF Service and Functional Component Commanders has met threshold Increment I capabilities, including having trained/certified personnel in place. This approach supports changing Warfighter/business processes and interoperability while not constraining process owners.

To ensure no loss of existing capability, interoperability or compliance with data and net-centricity standards, joint testing and certification will occur for each spiral prior to fielding. To rapidly field enhanced capability, spirals will be delivered upon completion of satisfactory testing and certification without waiting for the entire increment capability to be completed. Individual capability spirals may not meet all NECC increment KPP threshold requirements, but will contribute to the aggregate improvement of NECC capabilities. The sum of all capability spiral testing/certification for a given increment will culminate in an increment IOC/FOC determination. During the transition to NECC, updates to GCCS FoS and other C2 systems will continue to sustain (or improve upon) current warfighting capability, until delivered NECC capabilities meet or exceed current C2 capabilities. NECC will transition current and emerging “best of breed” technology, to include GCCS FoS and current systems functionality, without impacting the Warfighter’s ability to support operations.

NECC will integrate capabilities into a Service Oriented Architecture (SOA) that includes applications and databases in accordance with DoD Net-Centric Data Strategy. NECC will be supported by Global Information Grid (GIG) Enterprise Services (GES) and Network Centric Enterprise Services (NCES) enabling shared access to Service/Agency/Joint-provided services (data sources and applications).

As the Warfighter sponsor for NECC, United States Joint Forces Command (USJFCOM) shall be the focal point for all new and emerging operational C2 needs, defining and articulating the detailed requirements needed to develop materiel solutions; and integrating and synchronizing Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, and Facilities (DOTMLPF) solutions. USJFCOM has established a Joint Combat Capability Developer (JCCD) to carry out this integration and synchronization function. This organization will continuously engage and coordinate with Warfighters, gather/assess/prioritize/analyze Warfighter C2 capability needs, and articulate current and evolving requirements to capability developers/providers (across the full DOTMLPF spectrum), ensuring a rapid delivery of solutions to Warfighter needs.

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Revision History

Version 0.5 (Revised Draft): 01 September 2005: Staffed to Joint Staff J-2, 3, 6, 7, 8, Office of the Secretary of Defense, and C2 Functional Capabilities Board; U.S. Army; U.S. Navy; U.S. Marine Corps, U.S. Air Force, and U.S. Coast Guard; USJFCOM (including SJFHQ, JDPO, JSIC), USCENTCOM, USEUCOM, USNORTHCOM, USPACOM, USSOCOM, USSOUTHCOM, USSTRATCOM, and USTRANSCOM; DISA, NGA and JTAMDO.

Version 0.8 (Action Officer Adjudication): 09 February 2006: Reviewed and adjudicated by Joint Staff J-2, 3, 6, 7, 8, Office of the Secretary of Defense, and C2 Functional Capabilities Board; U.S. Army; U.S. Navy; U.S. Marine Corps, U.S. Air Force, and U.S. Coast Guard; USJFCOM (including SJFHQ, JDPO, JSIC), USCENTCOM, USEUCOM, USNORTHCOM, USPACOM, USSOCOM, USSOUTHCOM, USSTRATCOM, and USTRANSCOM; DISA, NGA and JTAMDO.

Version 0.8A: (Name Change): 10 May 2006: Document updated in accordance with Assistant Secretary of Defense Memorandum of 07 March 2006, approving Milestone A and changing the name of the program from Joint Command and Control (JC2) to Net-Enabled Command Capability (NECC).

Version 0.8B: (KMDS O-6 level review and adjudication): 14 July 2006: Reviewed and adjudicated 13-15 June 2006 by Joint Staff J-2, 3, 6, 7, 8, Office of the Secretary of Defense (DOT&E, NII, P&R) and C2 Functional Capabilities Board; U.S. Army; U.S. Navy; U.S. Marine Corps, U.S. Air Force, and U.S. Coast Guard; USJFCOM (including J-2, 3/4, 6, 8 & 9 (Concepts and JDPO) SJFHQ, JSIC), USCENTCOM, USEUCOM, USNORTHCOM, USPACOM, USSOCOM, USSOUTHCOM, USSTRATCOM, and USTRANSCOM; DISA, NGA and JTAMDO.

Version 0.8C: (KMDS O-6 level review and adjudication): 23 October 2006: NECC CDD split into a base document and extensions.

Version 0.9: (KMDS FO/GO level review and adjudication): 14 February 2007: Reviewed and adjudicated by Joint Staff J-2, J-4, 6, 7, 8, Office of the Assistant Secretary of Defense (NII); Joint Training Functional Capabilities Board; Office of the Under Secretary of Defense (AT&L), Office of the Secretary of Defense (DOT&E, I, PA&E); National Security Agency; U.S. Army; U.S. Navy; U.S. Marine Corps, and U.S. Air Force; USJFCOM, USCENTCOM, USEUCOM, USNORTHCOM, USSOCOM, USSOUTHCOM, USSTRATCOM, and USTRANSCOM; DISA (JPMO, JITC), NGA and JTAMDO.

Version 0.95: (KPP Revision and Key System Attribute [KSA] Addition): 13 April 2007: Joint Capabilities Board recommended the KPPs be distilled into the most critical elements be supported by analysis. Moved previous SME-based KPP attributes obtained through extensive DoD-wide vetting to supporting KSAs.

Version 1.0: JROC Approved, 7 June 2007

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Note: The NECC CDD extensions will ultimately migrate to a single Secret Internet Protocol Router Network (SIPRNet) site co-located with the NECC Requirements Identification Document (NRiD).

External USJFCOM customers may access the NECC CDD and Extensions via the JCCD Defense Online (DOL) website at:

<https://gesportal.dod.mil/sites/necc/JCCD/default.aspx>. The CDD is posted in the “Coordination Cell” link under “Shared Documents,” “NECC Capability Documents/ NECC Capabilities Development Document and Extensions

Internal USJFCOM customers may access the NECC CDD and Extensions at JFCOM Portal Path: Organizations/J8/JCCD/JCCD Shared Directory/NECC CDD/CDD and Linked Extensions/Linked Extensions

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1 Capability Discussion

This document, a conversion from the Joint Command and Control (JC2) Capability Operational Requirements Document (ORD) to an Increment I Net-Enabled Command Capability (NECC) Capability Development Document (CDD), provides amplification of required capabilities in view of new web technologies and net-centric developments.

Per Joint Requirements Oversight Council Memorandum (JROCM) 087-04, the Global Command and Control System (GCCS) Mission Needs Statement (MNS), dated May 1995, was used in lieu of an Initial Capabilities Document (ICD). The objectives defined in the MNS are to:

- Provide a highly flexible architecture,
- Provide Command, Control, Communications, Computers and Intelligence (C4I) systems capable of rapid configuration (or re-configuration),
- Provide systems that integrate all aspects of national power, yielding “...the full range of military force capabilities when and where required...” thereby achieving unified effort and command dominance,
- Provide Command and Control (C2) systems that are “...effective during deliberate and crisis action planning and execution...” as the force engages in the Force Projection Cycle (*GCCS Concept of Operations*, 1994),
- Provide a “...joint system for developing and updating time-phased force and deployment data (TPFDD) and unit movement requirements,”
- Provide the capability to continuously access, review, and update “...current intelligence and tactical information over a global C4I infrastructure that can support joint and coalition missions,”
- Provide “...common software...communications...databases, imagery, teleconferencing, and an open architecture...” to reduce the joint decision cycle,
- Provide systems supporting “...joint and multi-national force interoperability,”
- Provide capabilities maximizing the use of “...commercial-off-the-shelf (COTS)...” systems and leveraging “...industry de-facto standards and user friendly software,” and
- Provide modeling and simulation systems.

Assistant Secretary of Defense Memorandum, NECC Acquisition Decision Memorandum, dated 07 Mar 2006 approved the Milestone A attainment and authorized entry into the Technology Development phase. Additionally, it re-designated the Joint Command and Control Capability Program to the title of Net-Enabled Command Capability.

(Note: The Analysis of Alternatives [AoA] was conducted prior to the program name change from JC2 to NECC. To avoid confusion with published AoA documents, JC2 will be used when referring to or quoting from the AoA or JC2 ORD and should be considered synonymous with NECC.)

1.1 *What NECC Is*

Beginning in the FY08-10 timeframe, NECC will become the Department of Defense (DoD) principal command and control information technology capability, as envisioned in Joint Vision 2020 (now reflected in the National Military Strategy). The objective “mission space” for this capability is defined as the area supporting command capability and C2 activities from the National Military Command System (NMCS) through the Joint Task Force (JTF) and Service/Functional components to unit level commanders. As such, NECC enables horizontal and vertical information flow and collaboration across this command spectrum. In addition, NECC exploits global expertise and information centers of excellence (CoE) through a reach-back functionality, based on net-centric services. NECC Increment I mission space extends from NMCS through Service/Functional Components with the focus on the Joint Force Commander (JFC) with emphasis on situational awareness and joint deployment planning and execution.

JP 1-02: Joint Force Commander – A general term applied to a combatant commander, sub-unified commander, or joint task force commander authorized to exercise combatant command (command authority) or operational control over a joint force.

NECC integrates existing and emerging C2 capabilities through an enterprise-based joint architecture that integrates applications and databases. The enterprise for NECC includes Joint warfighters, coalition partners, and agencies responsible for homeland security and defense. (Note: “Enterprise” in the case of NECC includes the Joint warfighting and business domains.) This flexible joint architecture supports changing warfighter and business processes while not constraining the process owners. The existence of the Global Information Grid (GIG), various ongoing bandwidth expansion efforts and a variety of other capabilities discussed in this section are necessary enablers of NECC.

NECC complements the integrated joint warfighting force by empowering NECC community and Joint Planning and Execution Community (JPEC) commanders with the data and information needed to make timely and informed decisions. The empowerment comes from enhanced information and decision support capabilities to maintain situational awareness and the ability to plan, execute, monitor, and assess joint and multinational campaigns and operations throughout the spectrum of conflict. NECC will draw from the joint warfighter C2 communities to evolve the current and provide new C2 capabilities into a fully integrated, interoperable, collaborative Joint solution. NECC users will be able to rapidly adapt to changing mission needs by defining and tailoring their information environment and utilizing common sets of joint capabilities that enable the efficient, timely and effective command of forces and control of engagements.

NECC will enable commanders and staff to better synchronize operations and integrate capabilities, resulting in enhanced unity of effort and command within the Joint force and with mission partners. NECC will allow all commanders at all levels of C2 to execute

the plan faster and with better synchronization since they will be closely involved with the planning, sharing the senior commander's understanding of the situation, guidance and intent.

1.2 NECC Intent and Focus

Commanders, assisted by staff and technology, execute C2. C2 encompasses the human functions of leading and deciding. NECC focuses on C2 functions in the joint environment performed through procedures employed by the JFC in joint operations planning, execution, directing, coordinating, sustainment, and controlling forces and operations towards mission accomplishment. The human functions of leading and deciding will be enhanced by information technology and changes across the full spectrum of DOTLMPF. Effective C2 requires a balance between art and science, and must initially focus on how humans operate and then design support systems to that end, rather than the other way around.

C2 has been traditionally divided into three levels: a) Strategic, b) Operational, and c) Tactical. In today's warfighting environment, the demarcation lines are indistinct. NECC will reflect evolving operating environments. (Example: Information in the battle space and the decisions it supports can be of strategic value without regard to echelon, function or direction of the information flow up, down or across the chain of command.) NECC transcends boundaries and eliminates barriers to traditional vertical and horizontal C2 boundaries resulting in a holistic mission space.

**NECC Increment I focus will address the mission space from NMCS through Service/Functional Components with the emphasis on JFC operations throughout the Joint Warfighting environment and keyed to capability needs in situational awareness and joint deployment planning and execution. Future increments will expand to address the full NECC mission space.

NECC Increment I will focus on the Situation Awareness, Force Projection and Force Readiness Mission Capabilities Packages (MCPs) and selected related capabilities from the other MCPs. Force Projection and Force Readiness MCPs directly support the AoA recommendation to focus on Deployment Planning (and execution).

NECC will enable horizontal and vertical information flows between joint force components. NECC will permit information flow with our multinational and non-DoD partners and still comply with multiple security level (MSL) exchange requirements. Throughout the transition and transformation to future warfighting capability, NECC will be assured and maintained horizontally and vertically with Joint Staff, Combatant Commanders (CCDR)/Services/Agencies (JS/C/S/A) and multinational partners, as well as industry and NGOs. NECC will also utilize common joint data models enabling quick and less restrictive search and retrieval capabilities. This will reduce time sorting through large amounts of irrelevant or duplicative data, in order to enable interoperability with existing systems and C2 partners and minimize unnecessary new development efforts. The family of data models will support rapid search, discovery, and retrieval capabilities with reduced needs for translation and meditation.

NECC will leverage a web-enabled environment with permission-based access to servers in dispersed locations designed to minimize bandwidth consumption creating a virtual collaboration environment among and within the CCDRs, Service headquarters, the Joint Staff, Office of the Secretary of Defense (OSD), defense agencies, and mission partners.

NECC's enterprise based, integrated single architecture and adherence to data standards will facilitate rapid, seamless, and distributive collaborative information exchange. NECC's single integrated joint architecture and data standards will be designed to enable interoperability and support diversity of vertical/horizontal information flow. NECC's vision is to increase interoperability through the Service Oriented Architecture (SOA) construct, while reducing life-cycle maintenance over current FoS point-to-point, version-specific interfaces. SOA-based development will allow more rapid availability of functionality improvements to warfighters at all levels of command and control.

NECC will support planning, execution, monitoring, and assessment of joint and multinational operations. Development and implementation of NECC is integral to improving the planning and execution of joint and multinational operations at the JTF and Service/functional component commander level.

NECC reach-back capabilities will exploit global expertise and information CoE. Deploying fewer in-theater forces also reduces force protection and sustainment needs, while enhancing overall force agility.

1.3 GCCS Capability Transformation to NECC capability

Transformation to future warfighting capabilities requires enhanced battlespace awareness, timely information exchange, and net-centric forces to support critical joint and multinational operations. Those GCCS Family of Systems (FoS) applications supporting the envisioned NECC concepts will evolve from their current state of joint and Service variants into a single integrated capabilities-based, NECC architecture. During the transition phase, legacy GCCS FoS C2 capabilities/applications that do not comply with NECC concepts or architectures will be maintained to ensure no loss in near term operational capability. Those GCCS FoS capabilities conforming to NECC concepts and architectures will be leveraged and/or improved to meet NECC requirements. The GCCS migration is more than just moving to a net-centric environment. It includes developing supporting applications and functionality to support emerging concepts and processes, such as Adaptive Planning, Intelligence Campaign Planning, and incorporating the Joint Functional Concepts (JFC). To assist this development, NECC will organize required C2 capabilities into joint MCPs and warfare domain-specific applications based on GIG Enterprise Services (GES) enabling shared access to Service/Agency/joint-provided data sources. To facilitate the rapid provisioning of capabilities to the warfighters, NECC will employ a SOA. Transformation will be successful when the appropriate segments of the Joint and Service systems have moved to NECC with no loss of current required capabilities. The GCCS FoS-NECC Functionality Transition Plan will address this transition.

1.4 NECC Mission Capability Packages

The Command and Control (C2) Joint Integrating Concept (JIC) identifies eight C2 capabilities: 1) Exercise Command Leadership, 2) Establish/Adapt Command Structures and Enable Both Global and Regional Collaboration, 3) Develop and Maintain Situational Awareness and Understanding, 4) Communicate Commander's Intent and Guidance, 5) Plan Collaboratively, 6) Synchronize Execution Across All Domains, 7) Monitor Execution, Assess Effects and Adapt Operations, and 8) Leverage Mission Partners. NECC enables commanders to accomplish one or more tasks leveraging all eight capability areas.

C2 also applies directly to all Tier I Joint Capability Areas (JCA). Though C2 is woven throughout all the Tier I and II JCAs, the Tier II JC2 JCAs are almost identical to the eight capabilities listed in the JC2 JIC.

To support the C2 JIC, and JCAs, NECC Mission Capability Packages (MCPs) are DOTMLPF capabilities binned together to form readily identifiable capability sets to facilitate and focus support to the warfighter via evolutionary acquisition and incremental fielding of capability improvement(s). Each MCP is supported by Service/Agency-provided software applications developed and organized to meet joint capability mission area and warfare domain-specific execution requirements. The currently identified and supported NECC MCPs include: Force Projection, Force Readiness, Intelligence, Situational Awareness, Force Employment - Air/Space Operations, Force Employment – Land Operations, Force Employment – Maritime/Littoral Operations, and Force Protection.

NECC MCP descriptions and current systems shortfalls are discussed in Extension H, section 1.4.

1.5 Cross-Functional Capabilities

Needs serving more than one functional or mission area are categorized as cross-functions. NECC aligns itself with the capability definitions of the Net-Centric Environment Joint Functional Concept (NCE JFC) to provide the joint warfighter the ability to use and leverage NCES Core Enterprise Services (CES) and other enterprise services as related in the following sub-sections. This cross-functional and transformational posturing maximizes consistency for the various operational capabilities across the Joint Force, while leveraging specific investments that have already been made within the NCES-related program activities. NECC facilitates the use and leverage of NCE JFC-based NCES CES cross-functional and transformational capabilities to enable and enhance the ability to satisfy the functionally related activities inherent in the mission capabilities. Cross-functional capabilities are enablers derived from JFCs, Joint experimentation, ACTDs, technical evaluations, lessons-learned, prototyping, and cross-functional systems engineering. The NCES program will provide to NECC users access to CES as described in the NCES CDD (JROCM 096-06 22 May 2006). NCES is organized around four Product Lines: Collaboration, Content Discovery and Delivery, Portal, and Service-Oriented Architecture Foundation. These Product Lines are

supported by nine “crosscutting” enterprise services: Discovery, Collaboration, Mediation, Messaging, User Assistant, Information Assurance and Security, Storage, Enterprise Service Management, and Applications. NECC users will leverage the NCES program to accomplish warfighter mission tasks as addressed in the following paragraphs.

The following sub-sections provide an overview of what NECC will provide to address the current GCCS FoS capability gaps and shortfalls (not all inclusive) identified by JC2 AoA and Joint Staff FNA. GCCS FoS capability gaps and shortfalls are further discussed in Extension H, Section 1.4.9.

1.5.1 Collaboration

NECC will enable an operational collaboration environment by using a DoD provided enterprise solution that provides a suite of fully integrated, web-enabled collaboration applications. These applications provide for rapid virtual aggregation of individuals and organizations, communications pathways, infrastructure, and include procedures to create and share the data, information, and knowledge needed to plan, execute, and assess joint force operations. This will enable a commander to make decisions better and faster than the adversary. It will leverage NCES to facilitate collaborative coordination among the NECC Community, NGOs, and external Subject Matter Experts (SMEs). The development and fielding of a collaborative environment capability is mandated by JROCM 036-03 to ensure warfighter information superiority. NECC will also support the continuity of collaboration by units engaged in Disconnected Operations or by units that lose net connectivity. NECC will support the resumption of previous on-going collaboration efforts, and will allow reconnection and automated synchronization without the operational commanders having to restart all previous collaboration efforts. Current systems do not provide adequate integrated collaborative capabilities to support vertical/horizontal C2 information exchange/coordination among the NECC Community.

1.5.2 Security Cross-Domain Services

NECC will provide the capability to leverage future NCES/CES Cross Domain Solution(s) (CDS) to exchange information across multiple security domains. This will provide the warfighters the information they need, while securing classified data from access by unauthorized persons, and protecting networks from intended/unintended corruption by malicious or hidden code and denial of service attacks. NECC will use a single log-on CES from the NCES, allowing tailored security and access to mission capability to be tied to each authenticated user ensuring sufficient rigor so as to protect data in a failsafe manner. New security features will enable users to have a secure single repository of data, which can be accessed by different agencies, by people with different levels of clearance and need-to-know authority. User authentication will be shared, enabling a single authentication for collaborative activities. NECC will facilitate access by selected individuals to Special Access Programs (SAP), Code Word Programs and other special projects within each network with each network addressing controls for network support that will preserve SAP and Compartmented data. Current systems do

not permit commanders to access and exchange information across multiple security domains. Current systems do not support NECC capability needs for Secret and Below Interoperability (SABI), Top Secret and Below Interoperability (TABI), and Top Secret (TS) Special Compartmented Information (SCI) and Below Interoperability (TSABI) low-to-high and high-to-low information exchange between selected elements of the NECC community.

1.5.3 Training

NECC will provide system training tools to effectively facilitate effective individual, staff and command positional training & collective team, staff and unit training. System training will seek to maximize embedded help tools and minimize institutional training by applying ease of use principles. NECC training support will enable individual and unit live, virtual, and constructive training through the application of human support interface, modeling and simulation, and training principles consistent with the Training Transformation Implementation Plan (T2IP), Strategic Plan for Transforming DoD Training, and the Joint Training Functional Concept (JTFC). Current systems do not provide adequate embedded or web enabled training capabilities and do not maximize net-centric capabilities for formal institutional training.

1.5.4 Office Automation

NECC will provide the capability to collaboratively perform word processing, graphic/multimedia presentation, spreadsheet and database construction, and optical character and voice recognition functions. Current systems do not fully provide a collaborative office automation environment.

1.5.5 Messaging

NECC will provide the capability to leverage NCES/CES to collaboratively prepare messages and perform cross-domain, inter-agency, and multinational electronic mail and message handling with: coalition partners; US Services, Departments, and Agencies; US State and local offices; first responders; and tribal leaders. Current systems do not fully provide integrated capability to collaboratively exchange information.

1.5.6 Information Assurance

NECC will provide the capability to leverage NCES/CES and augment NCES/CES capabilities to comply with policies and directives to protect and defend NECC, infrastructure, and shared-data sources by ensuring their availability, integrity, authentication, confidentiality, and non-repudiation. NECC services, applications, databases, and tools must work with and be able to implement business rules to leverage NCES services and standards. NECC will meet and maintain minimum Information Assurance (IA) Defense-in-Depth standards, including certification and accreditation IAW the Defense Information Assurance Certification and Accreditation Process (DIACAP) and the DoD Intelligence Information Systems (DODIIS) Security Certification and Accreditation Guide. NECC will provide proof of origin and receipt of certification and accreditation. Current systems do not support appropriate exchange of

data of various classifications (Unclassified through TS, and SCI) via a secure infrastructure to support secure information exchange between elements of the NECC community.

1.5.7 Discovery/Mediation/Storage

In line with JROC guidance contained in the Global Combat Support System (GCSS) and GIG Mission Area Initial Capabilities Document (MA ICD), NECC, leveraging NCES through the GES architecture, will provide a service oriented capability to meet discovery, mediation, and storage needs identified in these documents. NECC must provide the warfighter content staging and content storage beyond those storage capabilities provided by NCES. Current systems do not fully provide adequate web-based capabilities to access, search, generate, post, or advertise mission-relevant information and needs that exploit metadata descriptions of information resources stored in enterprise directories, registries, and catalogs. They do not sufficiently provide the capability to retrieve, broker, translate, aggregate, fuse, or integrate NECC mission-relevant information to plan, execute, monitor, and assess joint and multinational operations.

1.5.8 Language Translation (LT)

NECC shall provide capability to access and use LT tools. These capabilities will allow text-to-text, text-to-voice, voice-to-text, and voice-to-voice translations into specific language and dialects. The LT capabilities shall provide for the direct translation of regional dialects, enhancing communications among agencies, joint forces, and multinational partners. Current systems do not provide adequate LT capability to translate data between languages, limiting information exchange in multi-national operating environments.

1.5.9 Mission Rehearsal and After Action Review

NECC will provide the enhanced capability to support and interface with Mission Rehearsal and After Action Review capabilities through the three primary functions of Data Collection, Analysis and Presentation. Current systems do not adequately support or provide Mission Rehearsal, and After Action Review capabilities.

1.5.10 Effects Assessment Data Management

NECC shall provide the capability to support Effects assessment (EA). EA is vital to the successful implementation of an effects-based approach to joint operations. The utilization of an effects-based approach can help the joint force achieve decision superiority—enhanced decision-making in a combat situation, or in a non-combat situation, at a tempo that allows the force to shape the situation or react to changes and accomplish the mission. (*See Linked Extension D, Section 9.10 Effects Assessment Data Management*).

2 Analysis Summary

Conclusions reached in the JC2 (NECC) Analysis of Alternatives (AoA) revealed the existing GCCS FoS are generally perceived to be deficient in functionality and performance and also constrained by their architectural designs and program management processes and procedures; alternative technical and programmatic approaches for implementing NECC capabilities needed to be investigated. The JC2 (NECC) AoA was conducted as a part of the NECC planning activity strategy for implementing NECC in conjunction with NECC Increment I Milestone A (MS A) and Milestone B (MS B) decisions. The AoA reviewed all capabilities for NECC at large with the resultant recommendations focusing on NECC Increment I. Reference the JC2 (NECC) AoA for a complete review of the analysis and recommendation details at the USJFCOM Portal link: <https://portal.jfcom.mil>

Path is: Organizations/J8/JCCD/JCCD Shared Directory/NECC CDD/References

2.1 Recommendation

JC2 (NECC) AoA recommended “alternative 3H” (situational awareness, joint operations planning and execution, and selected capabilities, to include targeting) should be selected as the preferred JC2 (NECC) alternative focus. (NOTE: Alternative 3H capabilities designated for Increment I will be referred to as Increment I throughout the remainder of this document.)

3 Concept of Operations Summary

C2, as defined by Joint Publication 1-02, is: “The exercise of authority and direction by a properly designated commander over assigned and attached forces in the accomplishment of the mission. C2 functions are performed through an arrangement of personnel, equipment, communications, facilities, and procedures employed by a commander in planning, directing, coordinating, and controlling forces and operations in the accomplishment of the mission.”

The basic C2 process is the systematic execution of the functions an individual commander is required to perform in order to recognize what needs to be done and to ensure appropriate actions are taken. Each commander, regardless of echelon or function, performs the same basic C2 process: Receive Mission and Guidance, Monitor and Collect Data, Develop an Understanding of the Situation, Develop and Select a Course of Action, Develop a Plan, Execute the Plan, and Monitor Execution and Adapt as Necessary (See Figure 3-1 The Basic C2 Functions and Processes). The capability needs found in the MCPs are enablers to the basic C2 functions and processes.



Figure 3-1. The Basic C2 Functions and Processes

A commander develops an initial picture or impression of the operational environment by observing the situation and orchestrating the collection of different types of information from different sources. Once the information is collected, commanders then develop an initial understanding by putting sensor data and surveillance reports into the context of a Common Tactical Picture (CTP), thus creating a level of Situational Awareness (SA) that forms the basis for the Common Operational Picture (COP). Once the commander gains an understanding, the commander develops and decides on a COA. Deciding on a COA in structured or analytic decision-making consists of developing several alternatives, assessing the alternatives and then selecting the best one. In the case of well-understood or rapidly unfolding situations, the decision is made quickly, with little consideration of developing or assessing alternative courses, in a more intuitive decision making style. Once the decision is made, the commander puts the decision into action or instructs others to act in support of the chosen COA, by developing a plan, and exercises leadership to motivate others in executing the decision. Monitoring the execution of the plan allows the commander to observe the results of the decisions and to adapt as the process starts again. Each of these activities may require the guidance or approval of a higher echelon commander or coordination with lateral, supporting, or subordinate elements, and therefore these activities are also integrated into the basic C2 functions and processes.

For NECC Increment I, the major thrust is to enhance SA, joint Deployment Planning and execution, to include some targeting capabilities. NECC complements the integrated joint warfighting force by empowering the NMCS, JFCs, and Joint Planning and Execution Community (JPEC) leadership with enhanced information and decision support capabilities to maintain SA and to plan, execute, monitor, and assess joint and multinational campaigns and operations throughout the spectrum of conflict. GES is the foundation of Joint capabilities-based infrastructure, which is critical to NECC providing

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timely, secure, and ubiquitous edge user access to decision quality information. NECC relies on GES to:

- Support the warrior’s Real Time (RT) & Near Real Time (NRT) needs and business uses.
- Provide global, assured, and homogeneous access to heterogeneous intelligence, logistics, operations, and other information from all sources.

NECC allows rapid exploitation of diverse data sources by individual and organizational users in a manner customized to meet specific mission demands. NECC provides the capability to rapidly incorporate emergent and transformational capabilities demonstrated through experimentation.

The use of GES will enable NECC to provide several operational outcomes. Fused Battle Space Awareness (BA) along with distributive, collaborative and interactive information exchange will enable commanders to plan efficiently and substantially reduce decision-making times. Multinational partners and U.S. Governmental Agencies will be able to securely access NECC capabilities, as required. NECC will support seamless information exchange, allowing commanders and staffs to analyze shared data, project needs, and make time-sensitive decisions rather than relying on historical information.

3.1 NECC Increment I Associated Joint Capability Areas (JCA)

NECC will be an overarching set of capabilities with links to all Tier I and II JCAs. Table 3-1 below focuses strictly on the Tier I and Tier II JCAs most applicable to the NECC capabilities that will be delivered during Increment I, while providing a cross reference pedigree to the GCCS MNS capabilities and relevant MCPs.

Table 3-1. NECC Increment I Associated Joint Capability Areas (JCA)

| GCCS MNS Capabilities | MCPs | NECC Increment I Related Tier I JCAs | NECC Increment I Related Tier II JCAs |
|--|--|---|---|
| Maintenance of a Common Perception of the Crisis | Force Projection Force Readiness Situational Awareness | Joint Global Deterrence Joint Net-Centric Operations Joint Logistics Joint Battlespace Awareness | Global Strike <ul style="list-style-type: none"> ■ Nuclear, Kinetic ■ Non-Kinetic Information Assurance Applications Joint Deployment/Rapid Distribution Planning & Direction <ul style="list-style-type: none"> ■ Identify Info and Collection Requirements ■ Conduct Collection Management ■ Build Collection Plan ■ Develop ISR Architecture |

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| GCCS MNS Capabilities | MCPs | NECC Increment I Related Tier I JCAs | NECC Increment I Related Tier II JCAs |
|--|--|---|---|
| | | <p style="text-align: center;">Joint Command and Control</p> | <ul style="list-style-type: none"> ■ Nuclear/Radiological ■ Radar ■ Human <p>Processing & Exploitation</p> <ul style="list-style-type: none"> ■ MASINT ■ HUMINT ■ GEINT (IMINT) ■ SIGINT ■ TECHINT ■ OSINT <p>Dissemination & Integration</p> <ul style="list-style-type: none"> ■ Develop Databases & Applications ■ Enable Smart Pull/Push for Intelligence Products ■ Enable Real-Time Intel for Warfighter <p>Develop & Maintain Shared SA & Understanding</p> <ul style="list-style-type: none"> ■ Access / Share Info on Adversary / Neutral / Noncombatants ■ Access / Share Blue Force SA ■ Access / Integrate Geospatial Info ■ Reachback for SME <p>Communicate Commander's Intent and Guidance</p> <ul style="list-style-type: none"> ■ Conduct Mission Analysis <p>Establish / Adapt Command Structures and Enable Global & Regional Collaboration</p> <ul style="list-style-type: none"> ■ Establish / Identify Collaboration Mechanisms |
| <p>Visibility of Plan Execution Status</p> | <p>Force Projection</p> <p>Situational Awareness</p> | <p>Joint Net-Centric Operations</p> <p>Joint Logistics</p> <p>Joint Battlespace Awareness</p> | <p>Information Assurance Applications</p> <p>Logistics Information Fusion</p> <p>Analysis & Production</p> <ul style="list-style-type: none"> ■ Current Intelligence <p>Develop & Maintain Shared SA and Understanding</p> <ul style="list-style-type: none"> ■ Display tailored, relevant SA information UDOP |

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| GCCS MNS Capabilities | MCPs | NECC Increment I Related Tier I JCAs | NECC Increment I Related Tier II JCAs |
|-----------------------|------|--------------------------------------|--|
| | | | Adapt Operations <ul style="list-style-type: none">■ Adapt Operations to Changing Situations |

3.2 NECC Standards and Testing Support Concept

Achieving interoperability while minimizing integration and sustainment costs, NECC will be implemented IAW applicable DoD and Commercial standards based on the DoD Information Technology Standards Registry (DISR). The Army Test and Evaluation Command (ATEC) is the designated lead Operational Test Agency (OTA) for NECC (ASD/NII Memorandum, 12 January 2007). NECC will be tested and certified for interoperability IAW Joint Interoperability Test Command (JITC) procedures. NECC must meet interoperability certification requirements as verified through testing delineated in the most current versions of Department of Defense Instruction (DoDI) 5000.2, Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 3170.01 and CJCSI 6212.01. NECC will comply with Clinger-Cohen Act of the 1996 National Defense Authorization Act. NECC will also comply with common Joint Data Models & Strategies, Architectures, and Data and Communication Transport System.

4 Threat Summary

NECC will likely be targeted for direct or indirect attacks to the associated systems and Service/Agency/joint-provided data sources. Threats are addressed in Defense Intelligence Agency (DIA) published documents. A complete discussion of the threat summary is maintained as an extension by the JCCD separately on the USJFCOM Portal. (See Linked Extension E, Threat Summary and Assessment).

5 Program Summary

This NECC CDD describes warfighter requirements for the principal DoD Command Capability for execution of joint command and control (C2) and achievement of decision superiority. NECC will enable decision superiority via advanced distributive and collaborative information sharing achieved through vertical and horizontal interoperability. NECC enables further transformation to future warfighting capabilities requiring enhanced battlespace awareness, rapid operational planning and execution, timely information exchange, and net-centric forces to support critical joint and multinational operations. NECC is the realization of future C2 capability needs derived from the *Quadrennial Defense Review Report*, the *National Military Strategy*, the *Joint Operations Concept*, and the four major Joint Operating Concepts. The GCCS FoS, and a yet to be determined portion of several Joint Battle Management Command and Control (JBMC2) pathfinder programs, will transition capabilities to NECC as the program matures.

The intent of this CDD is to provide clear articulation of warfighter requirements while creating latitude and flexibility in capability development for effective leverage of technological advances and quick response to changes in warfighter capability needs using the JCCD.

5.1 Overall Program Strategy to Reach Full Capability

The transition to NECC will be more than just moving to a net-centric environment or adding new capabilities. Those GCCS Family of Systems (FoS) capabilities conforming to the envisioned NECC concepts will evolve from their current state of joint and Service variants into an integrated capabilities-based, NECC architecture. Legacy GCCS FoS C2 capabilities/applications that do not comply with NECC concepts or architectures will be maintained to ensure no loss in near term operational capability until NECC provides the required capabilities.

5.1.1 NECC Increments by Fiscal Year (FY)

- I: Required operational capabilities developed by the FY08-10 period
- II: Required operational capabilities developed approximately by the FY10-11 period
- III: Required operational capabilities developed by the approximately FY12-13 period

5.1.2 Evolutionary Acquisition Framework

NECC program will be developed and executed within an evolutionary acquisition framework. Based on increments, beginning in FY08, each NECC Increment will be defined by validated and prioritized needs. Each Increment will begin with a Milestone B decision and will contain a Milestone C decision.

5.1.3 Fielding Strategy

NECC will be based on a spiral development fielding strategy. Each Increment will contain a recommended number of spiral releases delivering new and enhanced NECC. Service/Agency executive agents will program/plan new manpower needs for future increments.

5.1.4 Operational Requirements Sponsor / Warfighter Lead

JROCM 167-03, 22 Aug 03, assigned oversight of NECC requirements/capabilities to USJFCOM. The JC2 (NECC) AoA recommended establishment of a JC2 JCCD and establishment of processes for the JCCD and the Joint Program Executive Office (JPEO) to work cooperatively to provide complete joint command and control capabilities to Joint and Service warfighters and include full consideration of the Doctrine, Organizational, Training, Materiel, Leadership and Education, Personnel, and Facilities (DOTMLPF) relationships and needs.

The JROC is the approval authority for all KPP changes and delegates CDD approval authority oversight for changes to KSAs to the Joint Capabilities Board (JCB) and CDD approval authority for all other non-KPP/non-KSA changes to USJFCOM via the JCCD

organization. As part of the Departments' capability portfolio management test case, USJFCOM, as the Joint C2 Capability Portfolio Manager (JC2 CPM), will exercise CDD oversight and execution approval authority for non-KPP/non-KSA requirements and capability needs adjustments for selected C2 portfolio programs to facilitate rapid and flexible capability development. The Joint Capability Developer (JCD) (USJFCOM J8), as the execution arm of the C2 CPM and the C2 Capability Integration Board (C2CIB) will: execute non-KPP/non-KSA adjustments; and inform the C2CIB and request JROC and JCB approval, respectively, on all KPP and KSA adjustment actions. This will provide the CPM with the flexibility and authority necessary to rapidly identify and adjust C2 requirements to spur timely capability development to meet "current day" warfighter joint command and control mission needs.

To fulfill NECC operational sponsor and requirements lead responsibilities, USJFCOM has established a JCCD organization as recommended by the AoA. This USJFCOM-led, JS/CCDR/Service/Agency collective team will gather, assess, prioritize C2 requirements and capabilities, and perform other management and direct engagement functions as required to support warfighter capability needs – end-to-end. The primary mission tasks of the JCCD are to conduct continuous and dedicated engagement and coordination with the warfighter, analysis of warfighter C2 capability needs, and articulation of current and evolving requirements to the DOTMLPF developers to ensure a quick-turn of warfighter requirements into solutions supporting warfighter mission and C2 process areas. Detailed information is contained in the USJFCOM JCCD Management Plan.

USJFCOM's six key responsibilities as operational sponsor and warfighter lead include:

- 1) Be the focal point for collection and collation of Joint C2 requirements/capability needs and describe all new and emerging operational needs throughout the life of the program.
- 2) Integrate and synchronize warfighter capability needs and DOTMLPF requirements to meet warfighter mission requirements.
- 3) Certify DOTMLPF developer products satisfy warfighter capability needs based on developmental outcome using end-to-end evaluations.
- 4) Development and use of operational scenarios to ensure supporting tasks facilitate production of an operational outcome via end-to-end engagement of warfighter community throughout capability need and product development validation processes.
- 5) Execute non-KPP/non-KSA requirements adjustment approval authority using the JCCD as an instrument to facilitate rapid and flexible capability development, and rapidly coordinate, prioritize and articulate changes in warfighter requirements and priorities to the appropriate DOTMLPF developer. The JCD will inform the C2CIB and request JROC approval on all KPP adjustment actions

and JCB approval on all KSA adjustment actions. NECC is a key program in the Department's initial C2 portfolio.

6) Manage all CDD extension documents enabling evolving content update based upon emerging requirements, joint urgent operational needs, lessons learned, external drivers (e.g. industry standards), etc.

The JCCD will provide annual JROC updates to maintain program oversight and synchronization. Frequency of updates will be determined on an as-needed basis by USJFCOM and Joint Staff J8.

5.2 Relationship Between CDD Increment I and other Increments

NECC will employ evolutionary acquisition and spiral development to speed the delivery of advanced joint C2 capabilities to its users. By receiving NECC in spirals, users will be able to participate in and influence the development process. NECC will evolve over time through ongoing concept development and experimentation. The evolutionary improvements in NECC are often driven by improvements in GES. For example, a NECC MCP requirement to access/display data from Service/Agency/joint-provided databases to support OPORD development may apply to Increments I-III. Time required to access/display information will decrease as improvements in enterprise discovery and mediation services are integrated into NECC Increment/spiral releases.

The GCCS FoS will deliver future blocks or increments to improve capabilities throughout the transition timeframe. The GCCS FoS will remain operational and will be sustained until NECC has attained a comparable level of capabilities on a net-centric architecture. Sustainment in this sense may involve enhancements as necessary to address emerging user requirements in MCP areas not being addressed by the current NECC Increment. It is expected that these enhancements will align with the architectural direction established by NECC to the extent possible.

5.3 Considerations Driving Incremental Delivery Plan

GCCS will evolve from its current state of joint and Service variants to a single joint C2 architecture and capabilities-based implementation comprised of joint and domain-unique applications based on GES enabling shared access to Service/Agency/joint/multinational -provided data and information sources. NECC will support planning, execution, monitoring, and assessment of joint and multinational operations. Integrated Test Teams will verify NECC functionality.

5.3.1 Network Centric Enterprise Services

NECC is net-centric based. In other words, it is a networked collection of capabilities empowering the user to pull required information from any available source, with minimal latency. NECC's net-centric capabilities are founded on the Core Enterprise

Services (CES). CES provides and manages the underlying net-centric capabilities to deliver content and value to end-users.

NCES will be the vehicle to provide CES as the basis for the cross-functional capabilities supporting NECC and Service-unique applications and information services. NECC users will utilize NCES based on GES to access to Service/Agency/joint-provided Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) services and data sources. NECC architecture will support secure vertical/horizontal information exchange between elements of the NECC community, NGOs, and SMEs.

NECC integrates databases, servers, client workstations, local area networks, and computer software into an open, scaleable, network centric single architecture while maintaining compliance with Net-Centric Operations and Warfare Reference Model (NCOW RM), Net-Centric Data Strategy (NCDS), Network Centric Enterprise Services (NCES) and the DoD Information Technology Standards Registry (DISR). CES is a key component of GES, which is a collection of net-based capabilities composed of networks, the core services, and Community of Interest (COI) services. The NCES program will incrementally deliver the CES. NCES is a Defense Information Service Agency (DISA) program intended to implement key enabling capabilities for net-centric operations. NCES provides a common set of interoperable information capabilities in the GIG to access, collect, process, store, disseminate, and manage information on demand for warfighters, policy makers, and support organizations.

A key enabler for planning and decision-making is the establishment and use of a collaborative environment. NCES will provide collaboration services and an information sharing backbone to NECC users providing warfighters the environment in which to exercise enhanced organizational effectiveness and reduce hierarchical, serial planning timelines through information/idea sharing and parallel planning.

5.3.2 Architecture

NECC will develop an Information Support Plan (ISP) technical architecture that will identify current/future National Security Systems (NSS) and information technology (IT) system interfaces and other technical specifications (e.g. system/data standards) integral to NECC design and development. The NECC ISP will also facilitate interoperability by ensuring NECC architecture design is aligned with Service and Joint Task Force architectures.

5.3.3 Transition Plan

The Transition Plan will address pre-deployment, cutover, and sustainment needs and responsibilities for each NECC Increment and associated spiral releases.

6 Capabilities Required For The Current Increment

NECC capabilities required to satisfy Increment I listed in Table 6-1 include existing GCCS-Joint and Service GCCS FoS capabilities transitioning to the NECC environment

as well as GCCS shortfalls. A full description of the Table 6-1 capabilities along with associated attribute thresholds and objectives is maintained by the JFCOM JCCD. As part of an evolutionary acquisition strategy, NECC capabilities have been incremented to deliver time-phased capabilities based on the maturation of key technologies as a trade-off for accelerated delivery, affordability, and risk reduction. The KPPs are linked to the capability requirements. Joint and cross-function capability requirements with their associated threshold and objective values will be defined and refined in mission focused context through development of more detailed post CDD documentation. This documentation is the product of a collaborative JCCD capability needs development process that, in conjunction with CCDRs and Service Joint Warfighter input, provides the materiel developer the operational perspective, relationships, functional behavioral and performance detail necessary to build a fieldable C2 capability – simply, these documents translate warfighter capability needs to engineering/acquisition language. Each set of documentation contains a description of the desired capability, the conditions under which it must operate, the key performance parameters it must meet, and the DoDAF operational views to supplement that information. The materiel developer participates in the requirements development process to ensure the result is of sufficient technical/engineering detail and content to enable the materiel developer to allocate functions to materiel components.

Beyond increment I, remaining Table 6-1 capabilities, Global Command and Control System Requirements Identification Database (GRiD) requirements (contains GCCS-J requirements), and warfighter capability need inputs will be developed into a prioritized set of detailed requirements documents through the JCCD capability need process. As a follow-on to the GRiD, the repository of all NECC capability requirements will be the “to be developed” NECC Requirements Identification Database (NRiD) maintained by the JFCOM JCCD. The complete NECC DoDAF architectural views are maintained in the Joint Battle Management Command and Control (JBMC2) Capability Mapping Environment (JCME) repository at USJFCOM.

The capabilities for fielding in Increment I were identified during the conduct of the JC2 AoA, but it is understood the actual capabilities selected may differ from the ones currently selected due to necessary tradeoffs. Some current Increment I selections could move to Post Increment I and Post Increment I capabilities could move to Increment I based on TD phase developments and coordinated JPEO and warfighter, as represented by the JCCD, trade off decisions. A complete listing of NECC capabilities, by Mission Capability Package, is provided in Table 6-1, NECC Increment I, and Post Increment I Capabilities. (“XXX” indicates the Increment the specified capability is expected to be fielded.)

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Table 6-1. NECC Increment I and Post Increment I Capabilities

| Attributes | Mission Capability Package | Incr I | Post Incr I |
|---------------------|---|--------|-------------|
| | 1 Force Projection | | |
| 1, 2, 3, 4, 5, 6, 7 | 1.1 Conduct Planning | | |
| | 1.1.1 Checklist | XXX | |
| | 1.1.2 Shared Data | XXX | |
| | 1.1.3 Workflow | XXX | |
| | 1.1.4 Orders | XXX | |
| | 1.1.5 Course of Action (COA) Development and Selection | XXX | |
| | 1.1.6 Command Relationships | XXX | |
| | 1.1.7 Force/Logistics Selection | XXX | |
| | 1.1.8 CONOPS | | XXX |
| | 1.1.9 Initial Mobilization | | XXX |
| | 1.1.10 Civil Engineering Support Plan (CESP) | | XXX |
| | 1.1.11 Logistics Needs | | XXX |
| | 1.1.12 Crisis Management | XXX | |
| | 1.1.13 Force Conversion | | XXX |
| | 1.1.14 Force and Logistics Needs | XXX | |
| | 1.1.15 Arrival of Forces | | XXX |
| | 1.1.16 Unit Deployment | XXX | |
| | 1.1.17 Movement | | XXX |
| | 1.1.18 Notification | | XXX |
| 1, 2, 3, 5,6 | 1.2 Conduct TPFDD Development / Maintenance | | |
| | 1.2.1 Deployment Data | XXX | |
| | 1.2.2 Transportation Needs | XXX | |
| | 1.2.3 Force Modules | | XXX |
| | 1.2.4 Cross-Linkage | | XXX |
| | 1.2.5 Continuous Asset Visibility | XXX | |
| | 1.2.6 In-Transit Visibility | XXX | |
| | 1.2.7 Sustainment Estimates | | XXX |
| | 1.2.8 Transportation Feasibility | | XXX |
| | 1.2.9 Transportation Visibility | XXX | |
| | 1.2.10 Automatic Notification | XXX | |
| 1, 2, 3, 5,6 | Provide Total Force Visibility of Conventional Force Management Information | | |
| | 1.3.1 Force Structure | XXX | |
| | 1.3.2 Force Capabilities Identifier | XXX | |
| | 1.3.3 Force Readiness | XXX | |

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| Attributes | Mission Capability Package | Incr I | Post Incr I |
|---------------------|---|--------|-------------|
| | 1.3.4 GFM Strategic Guidance | XXX | |
| | 1.3.5 Force Availability | XXX | |
| | 1.3.6 Force Location | XXX | |
| | 1.3.7 Force Apportionment | XXX | |
| | 1.3.8 Common Operational Picture (COP) | XXX | |
| | 1.3.9 Work-in-Progress | XXX | |
| | 2 Force Readiness | | |
| 1, 2, 3, 4, 5, 6 | 2.1 Readiness Oversight | | |
| | 2.1.1 Total Force Analysis | XXX | |
| | 2.1.2 Single/Multiple TPFDD | XXX | |
| | 2.1.3 Historical/Trend analysis | XXX | |
| | 2.1.4 Readiness Reporting Updates | XXX | |
| | 2.1.5 Readiness Information | XXX | |
| | 2.1.6 Registering Units | XXX | |
| | 3 Intelligence | | |
| 1, 2, 3, 4, 5, 6, 7 | 3.1 Joint Intelligence Preparation of the Battlefield (JIPB) | | |
| | 3.1.1 Plotting Data | | XXX |
| | 3.1.2 Geospatial Intelligence | | XXX |
| | 3.1.3 Characteristics and Performance Data Analysis | | XXX |
| | 3.1.4 Force Protection Analysis | | XXX |
| | 3.1.5 Fused Intelligence | | XXX |
| | 3.1.6 SCI Level Information | | XXX |
| | 3.1.7 Battlespace | | XXX |
| | 3.1.8 Nodal Analysis | | XXX |
| | 3.1.9 Virtual Knowledge Base (VKB) | | XXX |
| | 3.1.10 BLUE Critical Infrastructure | | XXX |
| | 3.1.11 Information Integration | | XXX |
| | 3.1.12 Product Generation | | XXX |
| | 3.1.13 Threat Assessments | | XXX |
| 1, 2, 3, 5,6 | 3.2 Targeting | | |
| | 3.2.1 Frequency Analysis | | XXX |
| | 3.2.2 Target Numbering | | XXX |
| | 3.2.3 Political-Military Objectives | | XXX |
| | 3.2.4 Target Lists | | XXX |
| | 3.2.5 Imagery | | XXX |
| | 3.2.6 Weapon Analysis | | XXX |
| | 3.2.7 METOC Impacts | | XXX |
| | 3.2.8 Battle Damage Assessment (BDA) | | XXX |

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| Attributes | Mission Capability Package | Incr I | Post Incr I |
|---------------------|--|--------|-------------|
| | 3.2.9 Target System Analysis (TSA) | | XXX |
| | 3.2.10 Mobile Targeting | | XXX |
| | 3.2.11 Weapon-Derived Data | | XXX |
| | 3.2.12 Theater-Level Targets | | XXX |
| | 3.2.13 Target Archives | | XXX |
| | 3.2.14 Mapping | | XXX |
| | 3.2.15 Joint Munitions Effectiveness Manual (JMEM) | | XXX |
| | 3.2.16 Law Of Armed Conflict (LOAC), Rules of Engagement (ROE), No-Strike Target Lists | | XXX |
| | 3.2.17 Database Management | | XXX |
| | 3.2.18 Digital Target Materials | | XXX |
| | 3.2.19 Non-Lethal Targeting Solutions | | XXX |
| | 3.2.20 Areas of Interest | | XXX |
| | 3.2.21 Target Folder Definition and Management | | XXX |
| | 3.2.22 Target List Validation | | XXX |
| | 3.2.23 Weapon Target Pairing | | XXX |
| 1, 2, 3, 4, 5, 6, 7 | 3.3 ISR Management | | |
| | 3.3.1 Modeling and Simulation | | XXX |
| | 3.3.2 Collection Requirements | | XXX |
| | 3.3.3 Collection Management | | XXX |
| | 3.3.4 Collection Message Types | | XXX |
| | 3.3.5 Intelligence Requirements | | XXX |
| | 3.3.6 Feedback Products | | XXX |
| | 3.3.7 Collection Publications and Directives | XXX | |
| | 3.3.8 ISR Asset | | XXX |
| | 3.3.9 Link Collection Requirements and ISR Assets | XXX | |
| | 3.3.10 Collection Needs, Tasking, and Coverage | | XXX |
| | 3.3.11 ISR Asset Battle Management | | XXX |
| | 3.3.12 ISR Asset Status | | XXX |
| | 3.3.13 Terrain Masking of Sensors | | XXX |
| | 3.3.14 Target Match | | XXX |
| | 3.3.15 ISR Management, Targeting: Surveillance Targets | | XXX |
| 1, 2, 3, 4, 5, 6, 7 | 3.4 Joint IPB, ISR Management, and Targeting | | |
| | 3.4.1 General Military Intelligence (GMI) | | XXX |
| | 3.4.2 GMI Overlays | | XXX |

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| Attributes | Mission Capability Package | Incr I | Post Incr I |
|---------------------|---|--------|-------------|
| | 3.4.3 Dynamic Links | | XXX |
| | 4 Situational Awareness | | |
| 1, 2, 3, 4, 5, 6, 7 | 4.1 Shared Situational Awareness | | |
| | 4.1.1 Blue Force Location, Automated Track Feeds | XXX | |
| | 4.1.2 Blue Force Location, Other Data Source | XXX | |
| | 4.1.3 Blue Force Location, ISR Sensors | XXX | |
| | 4.1.4 Unit Aggregation/De-Aggregation | XXX | |
| | 4.1.5 Red/Gray/Unknown Force Tracking | XXX | |
| | 4.1.6 Display Moving Targets | XXX | |
| | 4.1.7 Display Red/Gray Unknown ISR Assets | XXX | |
| | 4.1.8 Multiple Target Database | XXX | |
| | 4.1.9 Overlay Generation and Display | XXX | |
| | 4.1.10 Map Displays | XXX | |
| | 4.1.11 Coordinate Conversion | XXX | |
| | 4.1.12 METOC Data | XXX | |
| | 4.1.13 Joint Force Synchronization | XXX | |
| | 4.1.14 Display Urgent Information | XXX | |
| | 4.1.15 COP on The Move | XXX | |
| | 4.1.16 Identify and Access Amplifying Data | XXX | |
| | 4.1.17 Record/Playback | XXX | |
| | 4.1.18 Projected Location/Coverage | XXX | |
| | 4.1.19 Historical Location | XXX | |
| | 4.1.20 Global COP | XXX | |
| | 4.1.21 Track Refresh | XXX | |
| | 4.1.22 Filter Display and Dissemination Based on Track Attributes | XXX | |
| | 4.1.23 Customize Symbology | XXX | |
| | 4.1.24 Color Mapping | XXX | |
| | 4.1.25 Mission Management | XXX | |
| | 4.1.26 Friendly Force Description | XXX | |
| | 4.1.27 Non-NECC Equipped Forces | XXX | |
| | 4.1.28 Customized COP | XXX | |
| | 4.1.29 Common Tactical Picture (CTP) | XXX | |
| | 5 Force Employment – Air/Space Operations | | |
| 1, 2, 3, 5,6 | 5.1 Air and Space Operations | | |
| | 5.1.1 Air and Space Planning | | XXX |
| | 5.1.2 Pre-Planned Air Support Request | | XXX |
| | 5.1.3 Allocation Options | | XXX |
| | 5.1.4 Support Resource Matching | | XXX |

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| Attributes | Mission Capability Package | Incr I | Post Incr I |
|---------------------|--|--------|-------------|
| | 5.1.5 Aerospace Deconfliction | | XXX |
| | 5.1.6 Emitting Weapons Systems Deconfliction | | XXX |
| | 5.1.7 Monitor ATO/STO Execution | | XXX |
| | 5.1.8 Automated Alerting | | XXX |
| | 5.1.9 Blue Force Deconfliction | | XXX |
| | 5.1.10 ISR Collection Alerts | | XXX |
| | 5.1.11 Automated Plan Evaluation | | XXX |
| | 5.1.12 Immediate Air Support Request (ASR) | | XXX |
| | 5.1.13 Mission Reports | | XXX |
| | 5.1.14 Space Infrared (IR) Correlation | | XXX |
| | 5.1.15 Automated Production of COA Options | | XXX |
| | 5.1.16 Automated Immediate Targeting Capability | | XXX |
| | 5.1.17 Automated Operational and Combat Assessment | | XXX |
| | 5.1.18 New Triad Planning | | XXX |
| | 5.1.19 Integrated Missile Defense Planning | | XXX |
| | 5.1.20 Information Operations Planning | | XXX |
| | 6 Force Employment – Land Operations | | |
| 1, 2, 3, 4, 5, 6, 7 | 6.1 Display Battlefield Geometry | | |
| | 6.1.1 Plans/Orders Development | | XXX |
| 1, 2, 3, 4, 5, 6, 7 | 6.2 Plan Joint Fires and Land Operations | | |
| | 6.2.1 Estimates and Orders | | XXX |
| | 6.2.2 Planning Capability | | XXX |
| | 6.2.3 Text and Voice Dialogue | | XXX |
| 1, 2, 3, 4, 5, 6, 7 | 6.3 Prepare for Land Operations | | |
| | 6.3.1 Mission Rehearsals | | XXX |
| | 6.3.1.1 En Route Planning | | XXX |
| | 6.3.1.2 Rehearse operations | | XXX |
| | 6.3.1.3 Functional Area Rehearsals | | XXX |
| | 6.3.1.4 Fire Plan Rehearsal | | XXX |
| | 6.3.2 Task Organization | | XXX |
| | 6.3.3 Combat Power | | XXX |
| | 6.3.4 Biometric Data | | XXX |
| | 6.3.5 Functionalities | | XXX |
| 1, 2, 3, 4, 5, 6, 7 | 6.4 Execute Joint Fires and Land Operations | | |
| | 6.4.1 Networked Fires | | XXX |
| | 6.4.2 Clearance of Fires | | XXX |
| | 6.4.3 Analysis and Calculations | | XXX |
| | 6.4.4 Handover | | XXX |

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| Attributes | Mission Capability Package | Incr I | Post Incr I |
|---------------------|---|--------|-------------|
| | 6.4.5 Operate | | XXX |
| | 6.4.6 Monitor | | XXX |
| | 6.4.7 Task / Re-task | | XXX |
| | 6.4.8 ISR Synchronization | | XXX |
| | 6.4.9 Terrain and Airspace Management | | XXX |
| | 6.4.9.1 Integrated Air Picture | | XXX |
| | 6.4.9.2 Integrated Air and Ground Functions | | XXX |
| | 6.4.9.3 Sensors | | XXX |
| | 6.4.9.4 Responsive Data Set | | XXX |
| 1, 2, 3, 4, 5, 6, 7 | 6.5 Assess Joint Fires and Land Operations | | |
| | 6.5.1 Assessment | | XXX |
| | 6.5.2 Combat Support Estimates | | XXX |
| | 6.5.3 Fire Support Information | | XXX |
| | 6.5.4 Fire Support Estimates | | XXX |
| | 6.5.5 Target Cross Reference | | XXX |
| | 6.5.6 Close Air Support (CAS) Planning | | XXX |
| | 7 Force Employment – Maritime/Littoral Operations | | |
| 1, 2, 3, 4, 5, 6, 7 | 7.1 Undersea Warfare | | |
| | 7.1.1 Water-space Management (WSM) | | XXX |
| | 7.1.2 Prevention of Mutual Interference (PMI) | | XXX |
| | 7.1.3 Anti-Submarine Warfare (ASW) | | XXX |
| | 7.1.4 ASW Decision Support | | XXX |
| | 7.1.5 ASW Courses of Action | | XXX |
| 1, 2, 3, 6 | 7.2 Mine Warfare (MIW) | | |
| | 7.2.1 MIW Situational Awareness | | XXX |
| | 7.2.2 MIW Mission Planning & Evaluation, Asset Mgmt & Deconfliction | | XXX |
| | 7.2.3 Collaborative Mine Warfare and Undersea Warfare Operations | | XXX |
| 1, 3, 4, 5, 6 | 7.3 Maritime Patrol Aircraft (MPA) Support | | |
| | 7.3.1 MPA Shared Situational Awareness | | XXX |
| | 7.3.2 MPA Mission Support | | XXX |
| | 8 Force Protection | | |
| 1, 3, 5,6 | 8.1 Improved Early Warning (IEM) | | |
| | 8.1.1 Suspend Simulated and/or Exercise Scenarios | | XXX |
| | 8.1.2 WMD Effects Area Prediction | | XXX |
| | 8.1.3 Terrorism Alerts/Advisories | | XXX |

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| Attributes | Mission Capability Package | Incr I | Post Incr I |
|---------------------|---|--------|-------------|
| | 8.1.4 Alert for Intrusion of Base or Critical Facility | | XXX |
| | 8.1.5 Critical Infrastructure Protection SA | | XXX |
| | 8.1.6 Rear Area & HS/HD: Crisis Response/ Consequence Management | | XXX |
| | 8.1.7 Civil Military Operations | | XXX |
| | 8.1.8 Information Exchange | | XXX |
| | 8.2 Conduct Crisis Action / Contingency Planning: Integrated Air and Missile Defense (IAMD) | XXX | |
| | 9 Cross Functions | | |
| 1, 2, 3, 4, 5, 6, 7 | 9.1 Collaboration | XXX | |
| | 9.1.1 Relevant Data Exchange | XXX | |
| | 9.1.2 Reachback | | XXX |
| | | | |
| 1, 2, 3, 4, 5, 6, 7 | 9.2 Security Cross-Domain Services | XXX | |
| | | | |
| 1, 2, 3, 5,6 | 9.3 Training | XXX | |
| | 9.3.1 Collaborative Training | XXX | |
| | 9.3.2 Embedded Training | XXX | |
| | 9.3.3 SCORM Compliant Courseware | XXX | |
| | 9.3.4 Test / Simulation Environment | XXX | |
| | | | |
| 1, 2, 3, 4, 5, 6, 7 | 9.4 Office Automation | XXX | |
| | | | |
| 1, 2, 3, 4, 5, 6, 7 | 9.5 Messaging | XXX | |
| | | | |
| 1, 2, 3, 4, 5, 6, 7 | 9.6 Information Assurance | XXX | |
| | 9.6.1 Protect and Defend | XXX | |
| | 9.6.2 Multinational Information Sharing | XXX | |
| | | | |
| 1, 2, 3, 4, 5, 6, 7 | 9.7 Discovery / Mediation / Storage | XXX | |
| | 9.7.1 Information use | XXX | |
| | 9.7.2 Profiles | | XXX |
| | | | |
| 1, 2, 3, 4, 5, 6 | 9.8 Language Translation | | XXX |
| | | | |
| 1, 3, 5,6 | 9.9 Mission Rehearsal / After Action Review | | XXX |
| | 9.9.1 Data Collection | | XXX |
| | 9.9.2 Data Analysis | | XXX |
| | 9.9.3 Data Presentation | | XXX |

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| Attributes | Mission Capability Package | Incr I | Post Incr I |
|------------|--|--------|-------------|
| 1,3,4,5,6 | 9.10 Effects Assessment Data Management | | XXX |
| | | | |
| | ATTRIBUTES LEGEND | | |
| | Attributes per Joint C2 Functional Concept | | |
| 1 | Superior Decision Making | | |
| 2 | Flexible Synchronization | | |
| 3 | Shared Understanding | | |
| 4 | Dispersed Command and Control | | |
| 5 | Simultaneous C2 Processes | | |
| 6 | Shared Quality Information | | |
| 7 | Robust Networking | | |

For further details of Table 6-1 attributes, see section 6.2, Extension H.

6.1 Key Performance Parameters (KPPs)

In an evolutionary acquisition strategy, programs are incremented to deliver time-phased increments of capabilities based on the maturation of key technologies as a trade-off for accelerated delivery and risk reduction. KPPs are those attributes considered most essential for an effective military capability and capture the minimum operational effectiveness and suitability attributes needed to achieve the overall desired capabilities during the applicable increment. Failure to meet a KPP threshold can result in a reevaluation of the system selection, reassessment of the program or modification of the content of production increments [CJCS Manual (CJCSM 3170.01B)]. USJFCOM (C2 CPM) will execute oversight and approval authority for NECC non-KPP/non-KSA requirements/capability needs adjustment, and address all KPP adjustment actions with the JROC and all KSA adjustment actions with the JCB. Since the JC2 ORD was approved by the JROC, the KPPs have required revision. This was necessary to comply with the CJCSI 6212.01 requirement to include the NR-KPP. Three of the original five JC2 ORD KPPs (Single Architecture, IA, and Interoperability) have been deleted because they are incorporated in the NR-KPP. The NR-KPP assesses information needs timelines, IA, joint interoperability and supportability as well as the net-ready attributes required for the technical exchange of information and end-to-end operations. The Training Support KPP (KPP#3) was added to address CCDR and Service concerns, and it has been renamed “System Training KPP” IAW JROCM 074-07.

NECC KPPs are underpinned by supporting Key System Attributes (KSA), performance attributes, and system requirements and characteristics. KPPs, KSAs, attributes and requirements are written in a threshold objective format per JCIDS. A recent addition to JCIDS, KSAs are those system attributes considered critical or essential in support of achieving a balanced solution or approach to a KPP for the design and sustainment of an effective military capability. NECC KSAs, as described in Section 6.2, have been

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developed to provide clear linkage and relationships between NECC KPPs and more detailed attributes and requirements listed in Table 6-1, Extension D, and Extension H.

KSAs, in conjunction with KPPs, capture the minimum operational effectiveness and suitability needed to provide joint force net-centric command and control for NECC Increment I. All NECC KPP changes require JROC approval. The JROC delegates CDD approval authority oversight for KSA changes to the JCB and CDD approval authority for all other non-KPP/non-KSA adjustment changes to USJFCOM via the JCCD organization. NECC KPPs are listed in Table 6-2 and NECC KSAs are listed in Table 6-8.

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Table 6-2. Key Performance Parameters

| Key Performance Parameter | Development Threshold | Development Objective | Rationale |
|--|--|---|---|
| <p>KPP# 1 Shared Situational Awareness: Provide key and vital information via net-centric services on the disposition of friendly, enemy, neutral, and unknown forces to allow the effective exercise of command and control.</p> | <p>Conduct track management and/or be able to access for filter and display, 20,000 or more friendly, enemy, neutral and unknown tracks, at all sites responsible for providing track information to decision makers at all levels of command and control.</p> | <p>Provide user access to unlimited number of tracks and track information to decision makers at all levels of command and control.</p> | <p>Supports DODD O-5100.30 (DoD Command and Control) and Global COP CONOPS. Shared Situational Awareness is essential to a joint force commander's ability to monitor, assess, analyze, predict, plan, execute and report global and/or theater mission responsibilities and address trans-regional threat capabilities.</p> <p>Shared Situational Awareness is the critical component of a joint force commander's ability to achieve / sustain decision superiority.</p> <p>Situational Awareness is one of the focus areas for NECC Increment 1 per the JC2 Analysis of Alternatives (AoA)</p> <p>Baseline metric is from GCCS 4.1 Analysis and Operational Test</p> |

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| Key Performance Parameter | Development Threshold | Development Objective | Rationale |
|--|--|--|---|
| <p>KPP#3 System Training: NECC shall provide dynamic, capabilities-based training support tools, either embedded or via the web, across the full range of integrated operations.</p> | <p>Training support tools must be assessed for ease of use and training support effectiveness as favorable by 70 percent of JS/C/S/A users in an operationally representative test environment.</p> | <p>Units must be capable of simultaneously conducting training exercises in Live, Virtual, and Constructive environments using modeling and simulation tools, either embedded or via the web.</p> | <p>Supports Training Transformation (T2) Strategy with foundational capabilities stated in Joint Knowledge Development and Distribution Capability (JKDDC), JNTC, and JAEC. (CJCSI 3500.01C). Integrates and builds on baseline training capability in GCCS-J. Surveys are a routine and acceptable method for qualitative user measurement of systemic functionality / capability effectiveness.</p> |
| <p>KPP#4 Net Ready: Net-Ready: The system must support Net-Centric military operations. The system must be able to enter and be managed in the network, and exchange data in a secure manner to enhance mission effectiveness. The system must continuously provide survivable, interoperable, secure, and operationally effective information exchanges to enable a Net-Centric military capability.</p> | <p>The system must fully support execution of joint critical operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical requirements for transition to Net-Centric military operations to include 1) DISR mandated GIG IT standards and profiles identified in the TV-1, 2) DISR mandated GIG KIPs, 3) NCOW RM Enterprise Services 4) Information assurance requirements including availability, integrity, authentication, confidentiality, and non-repudiation, and issuance of an Interim Approval to Operate (IATO) by the Designated</p> | <p>The system must fully support execution of all operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical requirements for Net-Centric military operations to include 1) DISR mandated GIG IT standards and profiles identified in the TV-1, 2) DISR mandated GIG KIPs, 3) NCOW RM Enterprise Services 4) Information assurance requirements including availability, integrity, authentication, confidentiality,</p> | <p>Ensure timeliness and accuracy requirements support command and control planning and execution.</p> <p>Ensure information is accessible, discoverable and trusted by the Joint Force.</p> |

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| Key Performance Parameter | Development Threshold | Development Objective | Rationale |
|-------------------------------------|--|---|-----------|
| KPP#4 Net Ready: (continued) | Approval Authority (DAA), and 5) Operationally effective information exchanges; and mission critical performance and information assurance attributes, data correctness, data availability, and consistent data processing* specified in the applicable joint and system integrated architecture views. * Data processing is defined as: The input, output, verification, organization, storage, retrieval, transformation and extraction of information from data. | and non-repudiation, and issuance of an Approval to Operate (ATO) by the Designated Approval Authority (DAA), and 5) Operationally effective information exchanges; and mission critical performance and information assurance attributes, data correctness, data availability, and consistent data processing* specified in the applicable joint and system integrated architecture views. | |

6.1.1 Shared Situational Awareness (KPP #1)

6.1.1.1 Overview

Shared Situational Awareness as a NECC MCP is defined in terms of a COP supported by a CTP. As a KPP, Shared Situational Awareness requires NECC to provide net-centric services capable of accessing, sharing (send and receive), collating, and displaying COP information at the source level of accuracy in a format tailored by the user for all physical domains, all components of the joint force, and special operations forces.

6.1.1.2 Rationale

Shares Situational Awareness supports DODD O-5100.30 (DoD Command and Control) and Joint Staff J3/USSTRATCOM J3 Global COP CONOPS, 31 Jan 07. Shared Situational Awareness is essential to a joint force commander's ability to monitor, assess, analyze, predict, plan, execute, and report global and/or theater mission responsibilities and address trans-regional threat capabilities. Shared Situational Awareness is the critical component of a joint force commander's ability to achieve / sustain decision superiority. Situational Awareness is one of the focus areas for NECC Increment 1 per the JC2 Analysis of Alternatives (AoA).

The COP enhances the flow of information among the Secretary of Defense, Joint Staff, and combatant commanders, both supplementing and amplifying theater commander's situation reports (SITREP), operations reports (OPREP), and other reports. The COP is a tool for sharing critical standing and situation dependent information across combatant commands to achieve success in the spectrum of operations. CJCSI 3151.01A GCCS COP Reporting Requirements states "combatant commands should develop a single reporting structure for the COP to facilitate clear, accurate, and timely (real or near-real time) SA.

The Global COP capability is intended to support effective Global Command and Control, and to add value to Commanders and decision makers by providing a Common – Global Situational Awareness which is shared amongst users. Situational Awareness is essential to a joint force commander's ability to plan, execute and assess the mission environment. USTRATCOM will receive operational track data from the Combatant Commands and other data providers for consolidation and dissemination via the Global COP. The quality of the Global COP is directly related to the quality of each COCOM COP which is directly related to the Common Tactical Pictures (CTP) provided by each of the Component and JTF Commanders as well as other relevant supporting data sources (e.g., Intelligence data reported on the Integrated Broadcast Service [IBS]). The COP is the integrated capability to receive, correlate, and display a Common Tactical Picture, including planning applications and theater-generated overlay/projections (i.e., Meteorological and Oceanographic [METOC], battleplans, and force position projections). Overlays and projections may include location of friendly, hostile, and neutral units, assets, and reference points.

The COP may include information relevant to the tactical and strategic level of command. This includes, but is not limited to, any geographically oriented data, planning data from JOPES, readiness data from SORTS, intelligence (including imagery overlays), weather from METOC, predictions of nuclear, biological, and chemical (NBC) fallout, and Air Tasking Order (ATO)/Airspace Control Order (ACO). (Joint Staff J3/USSTRATCOM J3 Global COP CONOPS, 31 Jan 07).

6.1.2 Planning and Execution (KPP#2) (in Support of National Security Objectives)

6.1.2.1 Overview

Joint Pub 5-0, *Doctrine for Planning Joint Operations*, and CJCSM 3122.01, JOPES Volume I, define a crisis within the context of joint operation planning and execution. It is described as “an incident or situation involving a threat to the United States, its territories, citizens, military forces, and possessions or vital interests that develops rapidly and creates a condition of such diplomatic, economic, political, or military importance that commitment of U.S. military forces and resources is contemplated to achieve national objectives.” Several characteristics of a crisis can be given: it may occur with little or no warning; it may be fast breaking requiring accelerated decisions; and, sometimes, a single crisis may spawn another crisis elsewhere. Whatever the nature or perceived magnitude of the situation, a commitment of U.S. military forces and resources is being considered as a solution. In the U.S. defense establishment, the President and Secretary of Defense decide on the use of military force.

The rapid development of an adequate and feasible military response is the purpose of crisis planning. Joint planners must quickly evaluate the adequacy of proposed COAs, rapidly build a force list and calculate sustainment, and effectively determine transportation feasibility. Crisis action planners may build an OPORD with Annex A, Task Organization and TPFDD, through access to plans prepared in contingency planning.

Should the President and Secretary of Defense decide on the use of military forces to resolve the crisis, the President and Secretary of Defense will select a COA for full development by the CCDR. By direction of Secretary of Defense through CJCS, the CCDR prepares the detailed operation order (OPORD) to support the selected COA. At the direction of the President and Secretary of Defense through the CJCS, the CCDR executes the OPORD.

The OPORD is the product of the execution planning phase. Joint Pub 1-02 defines it as “a directive issued by a commander to subordinate commanders for effecting coordinated execution of an operation.” Movement data and schedules are entered into the crisis action and planning databases as part of collaborative planning.

6.1.2.2 Rationale

NECC planning and execution supports identified National Security Objectives as stated in published Presidential guidance, currently known as National Security Presidential Directives; supports the Adaptive Planning and Execution Processes, and meets or exceeds current/legacy system OPORD/OPLAN management performance utilizing Net-Centric services and architecture.

6.1.3 System Training (KPP 3#)

6.1.3.1 Purpose

Command and control by commanders and staffs of joint forces, in the accomplishment of missions across the full range of joint military operations, are unequivocally human activities. Increasingly, these human activities are enhanced by information technology. Both human connectivity/performance and technical connectivity/performance are essential components of an information-based approach to joint operations. In past efforts to leverage new technologies to improve command and control, the proportion of developmental attention and resources was skewed heavily towards technical connectivity/performance - this is not sufficient. To achieve joint force goals and objectives within a net-centric environment attention and resources must also focus on human connectivity/performance.

Endorsed by the Joint Training Functional Capabilities Board, the System Training KPP supported by Extension D, section 9.3 Cross-Function - Training, makes the case for a better approach to balance these interests. System Training is defined as those training methodologies (Embedded, institutional, Mobile Training Team, computer and web based) which can be used to train and educate operator and maintainer personnel in the proper technical employment and repair of the equipment and components of a system, and to educate and train the commanders and staffs in the doctrinal tactics, techniques and procedures for employing the system in operations and missions.

Specifically, NECC must dramatically improve human-system interface design (to provide more efficient system training and reduce the need for specific system “buttonology” training) as well as develop individual through unit/collective training support tools facilitating the conduct of training, determined necessary by commanders and staff, to achieve proficiency in their command and control functions. NECC must go well beyond the elementary system user training past and current C2 systems have sought.

6.1.3.2 Scope

NECC must enable the DoD T2 concepts for training from individual/positional, to unit, force, component and Joint training, in a JNTC context supporting the JTFC central ideas and attributes, based on CDR's requirements, and in accordance with the Universal Joint Task List (UJTL).

At the individual/positional level, NECC must be designed to decrease the amount of initial and sustainment training required to acquire and maintain proficiency in the use of

NECC operating environments and applications. (Current C2 systems are generally hard to learn initially and then hard to maintain proficiency, without decay, over time). This effort must start with priority on designing human machine interfaces reflecting the intuitive tools of the best business, military and academic applications and operating systems. It must also include adequate help capability (e.g. intuitive help menus, help desks) supporting 24/7 education and training of units and individuals dispersed temporally and geographically.

At the unit and higher levels, NECC must include capabilities facilitating training on not just “how” the system works (“buttonology” training), but more importantly, “how” the capabilities can be employed collectively to achieve superior command and control capability over joint forces. To facilitate effective, iterative training of teams of commanders and staffs, this NECC training support capability must employ models and simulations either embedded or can be accessed via the web. This NECC training support capability must support any combination of Live, Virtual and Constructive environments. As NECC evolves, the system training capability must also evolve. Increment I system training capability must focus on employment of Shared Situational Awareness, Joint Force Projection, and Joint Force Readiness capabilities as they relate to joint deployment planning and execution.

6.1.3.3 Rationale

Joint forces support our National Security Strategy and implement our National Military Strategy by planning and conducting successful missions across the full range of military operations. When not performing actual military operations, joint forces are training to do so. Training is a core activity of Joint forces and commanders/staffs that requires focused support. NECC must support the warfighter in individual, unit, service, staff and joint training of the force.

Development of NECC system training must be complementary to joint operations Joint Operations Concepts (JOpsC), with emphasis on the central ideas and attributes contained in the JTFC, T2 capabilities (JKDDC, JNTC, Joint Assessment and Enabling Capability (JAEC)), and the UJTL. It must nest doctrinally with approved and emerging joint doctrine (such as the ongoing revision to JP 3-0 Operations) and with emerging tactics, techniques and procedures (TTP) from joint and lessons learned in current operations around the globe. It must effectively and efficiently support and enhance the execution of UJTL tasks as directed by joint force commanders at all levels and across the full range of military operations. NECC system training supports Training Transformation (T2) Strategy with foundational capabilities stated in JKDDC, JNTC, and JAEC (CJCSI 3500.01C), and it must leverage available Technical Standards regarding Sharable Content Object Reference Model (SCORM), Advanced Distributed Learning (ADL)/ADL Registry (ADL-R), to maximize Learning Management System (LMS) utility (DoDI 1322.26). NECC system training integrates and builds on baseline training capability in GCCS-J. Finally, it must conform to emerging DoD level net readiness standards (e.g. data strategy, transport, applications).

Figure 6-1 displays the three capabilities forming the foundation for Training Transformation. They include the Joint Assessment and Enabling Capability, JNTC and Joint Knowledge Development and Distribution Capability.

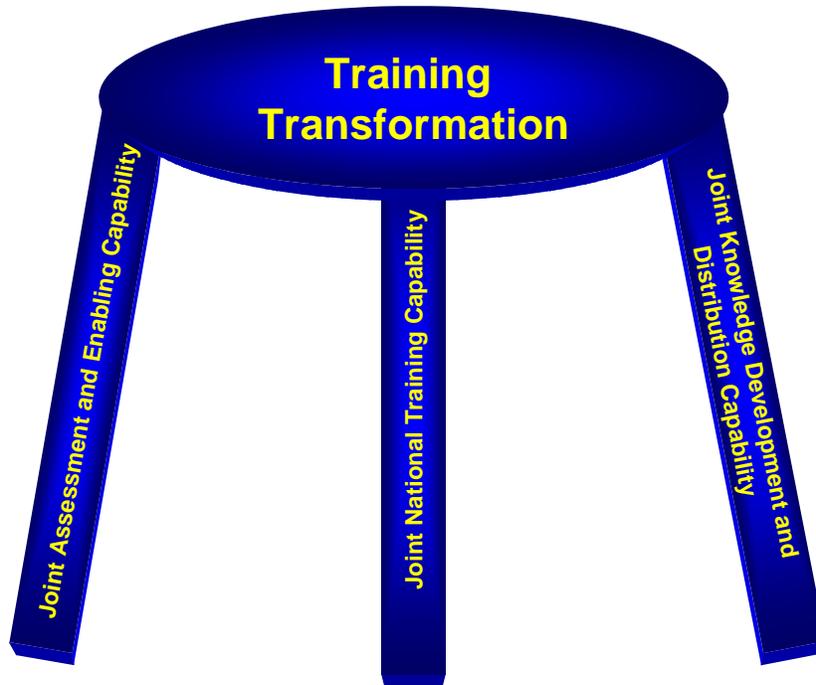


Figure 6-1. DoD Training Transformation (T2)

These capabilities are designed to prepare individuals, units, and staffs for the new strategic environment, and to provide enabling tools and processes to carry out missions. Through these three capabilities, combatant commanders - the ultimate focal points for joint operations - will receive better prepared forces aligned with their needs.

The UJTL is a comprehensive integrated menu of tasks, conditions, measures, and criteria used for describing requirements, and planning, conducting, evaluating, and assessing joint and multinational training. As a tool to assist commanders and staff in the planning and execution of training, NECC must fully link with the UJTL and compliment it in application. By leveraging a proven tool - the UJTL - NECC will increase its utility and relevance as a system training capability for commanders and staff in their pursuit of increasing training efficiency and effectiveness.

6.1.4 Net-Ready Key Performance Parameter (NR-KPP) (KPP #4)

The NR-KPP, mandated by CJCSI 6212.01D, is used to assess information needs, information timeliness, information assurance, joint interoperability and supportability, and net-ready attributes required for both the technical exchange of information and the end-to-end operational effectiveness of that exchange to support command and control planning and execution. As such, the NECC architecture shall be assessed from both a survivability and security standpoint. These assessments ensure information is

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accessible, discoverable, and trusted by the Joint Force, and ensures the secure exchange of vital information in the event of an attack.

The NR-KPP is comprised of: (1) Supporting Integrated Architecture products, (2) Compliance with the NCOW RM, (3) Compliance with applicable GIG KIPs, and (4) Compliance with Information Assurance policies and procedures.

Net Ready applications for NECC, all activity interfaces, services, policy enforcement controls, and data-sharing of NCOW RM and GIG-KPPs will satisfy requirements of specified Joint integrated architecture products, and information assurance accreditation, specified in threshold and objective values, 100% of interfaces; services, policy-enforcement controls; and data correctness, availability, and processing requirements designated as enterprise-level or critical in the Joint integrated architecture. NECC shall:

- Have access to appropriate networks as required to exchange information and provide an awareness of supporting communications capability.
- Provide automatic database replication capability between theater servers.
- Remain operational for all other users in the event of a single server failure.
- Have servers and workstations, which automatically complete an orderly shutdown without loss of data in the event of power failure.
- Establish an interface with the network to access the network-centric environment, which provides seamless communications, anywhere, anytime.
- Enable users to assign and request precedence and other quality of service attributes (including prioritization, response time, reliability and latency).
- Interface with network Information Dissemination Management (IDM) capabilities to rapidly build and dynamically adjust policies and automatically readjust dissemination policies of subordinate commands, with appropriate notification to those commands that the policy has changed. Users of NECC shall be capable of monitoring the information flow within their Area of Responsibility (AOR) to facilitate adjustments.
- Enable users to interface with the network to locate, retrieve, send, and receive information across the network based on the priority of information flows set by policies and infrastructure availability.
- Provide the capability to filter out user-defined unnecessary information.
 - 75% accuracy. (THRESHOLD)
 - 90% accuracy. (OBJECTIVE)
 - Minimal delivery of redundant information 90% accuracy. (THRESHOLD = OBJECTIVE)
 - Identify complementary, parallel, or reciprocal relationships among information elements. (THRESHOLD = OBJECTIVE)

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- Have a capability to make information products accessible to users and shall provide directory services with minimal personal intervention.
 - It shall enable information producers to describe their products accurately using established search words and descriptions, and label them using standardized metadata (including classification). (THRESHOLD)
 - It shall enable information producers to automatically build catalogs of information products and updates based on available information products and users' profile requests. (OBJECTIVE)
- Provide the ability to protect and defend information and information systems on host platforms against known external threats for 99% of all attacks and report intrusions to network IA manager. In the event of an attack, security functions, if achievable, shall define, detect, and respond appropriately based upon security policy to anomalies/attacks/disruptions from external threats, internal threats, and natural causes. NECC will provide controls for network support that will preserve Special Access and Compartmented data.
- Allow remote or local initialization and be able to determine when a platform has been captured or compromised. It shall provide the capability to locally or remotely destroy a system in the event a platform is captured or compromised. It shall also provide the capability to remotely and locally block the system within 15 seconds and re-establish a previously blocked platform/system within 5 minutes.
- Have the capability to ensure information and process integrity throughout (storage, processing, transmission and presentation). Information integrity shall be 99.99% and will provide controls to preserve Special Access and Compartmented data..
- Incorporate and use DoD standard IA tools and techniques to prevent introduction of new vulnerabilities to the network.
 - Provide system protection. (THRESHOLD)
 - Use the DoD Public Key Infrastructure (PKI). (OBJECTIVE)
- Operate at all classifications of information (up to and including TS/SCI), in multiple security levels (MSL) environments (THRESHOLD) leveraging NCES provided Cross Domain Solution(s) (CDS) (OBJECTIVE).
- Provide the capability to conduct analysis of communication infrastructures, systems, and nodes, to include modeling & simulation.
- Provide hands-free simultaneous voice and data capabilities.

6.1.4.1 NR-KPP Compliance.

The NR-KPP is comprised of: (1) Supporting Integrated Architecture products, (2) Compliance with the NCOW RM, (3) Compliance with applicable GIG KIPs, and (4) Compliance with Information Assurance policies and procedures.

Supporting Integrated Architecture products.

Architecture products included in architecture Extension A are the mandatory CDD architectures; Architectural All View AV-1, Operational Views OV-2, OV-4, OV-5, OV-6c, Systems Views SV-4, SV-5, SV-6, and Technical Views TV-1 and TV-2. The OV-7 and SV-11 architectures, while not mandatory, will be included as they are developed. The architectural views are integrated within architecture Extension A and include a short description describing the architecture, its intended use, and the top-level exchanges depicted (as appropriate). Mandatory architecture views contain required fields from the Department of Defense Architectural Framework (DODAF). Because the existing DODAF does not adequately support SOA, NECC will use tailored DODAF products as required.

NECC Mapping to the NCOW RM Version 1.1.

The net-centric focus of the reference model (*Global Information Grid (GIG) Net-Centric Operations and Warfare Reference Model, VI.1*, September 2005) includes: dynamically established user, service, and data associations; assured creation and management of shared information spaces; user interaction with a shared information space; discoverable, accessible, and composable services; discoverable, accessible, and understandable data assets; and assured creation, operation, and management of the enterprise information environment and supporting infrastructure. The NCOW RM is derived, in part, from three Department net-centric strategies: DoD Enterprise Services Strategy, DoD Net-Centric Data Strategy, and DoD IA Strategy.

- NECC Enterprise Service Strategy

The NCOW RM v1.1 uses activity decomposition diagrams to describe key activities associated with the model. The root for this model is activity A0-Provide Enterprise Information Environment (EIE). This activity encapsulates all the activities involved in instantiating, operating, maintaining, and managing the net-centric IT environment in which DoD's information-based operations are conducted. This root node activity is decomposed into five high-level activities: A1-Interact with EIE, A2-Perform User Agent Services, A3-Provide EIE Services, A4-Allocate Resources to Services, and A5-Manage EIE.

Figure 6-2 maps NECC in context with the NCOW RM. The figure depicts NECC MCP resident on the GIG, and NECC's relationship with the NCOW RM.

This graphic depicts a collaborative environment supporting vertical/horizontal interoperability between users representing the DoD Business, Warfighting, National Intelligence, and EIE mission areas. The users represent Inter-Agency communities and

Multinational organizations, including the NECC community. The graphic highlights the net-centric EIE, its service-oriented mission capabilities, and its wide distribution of users.

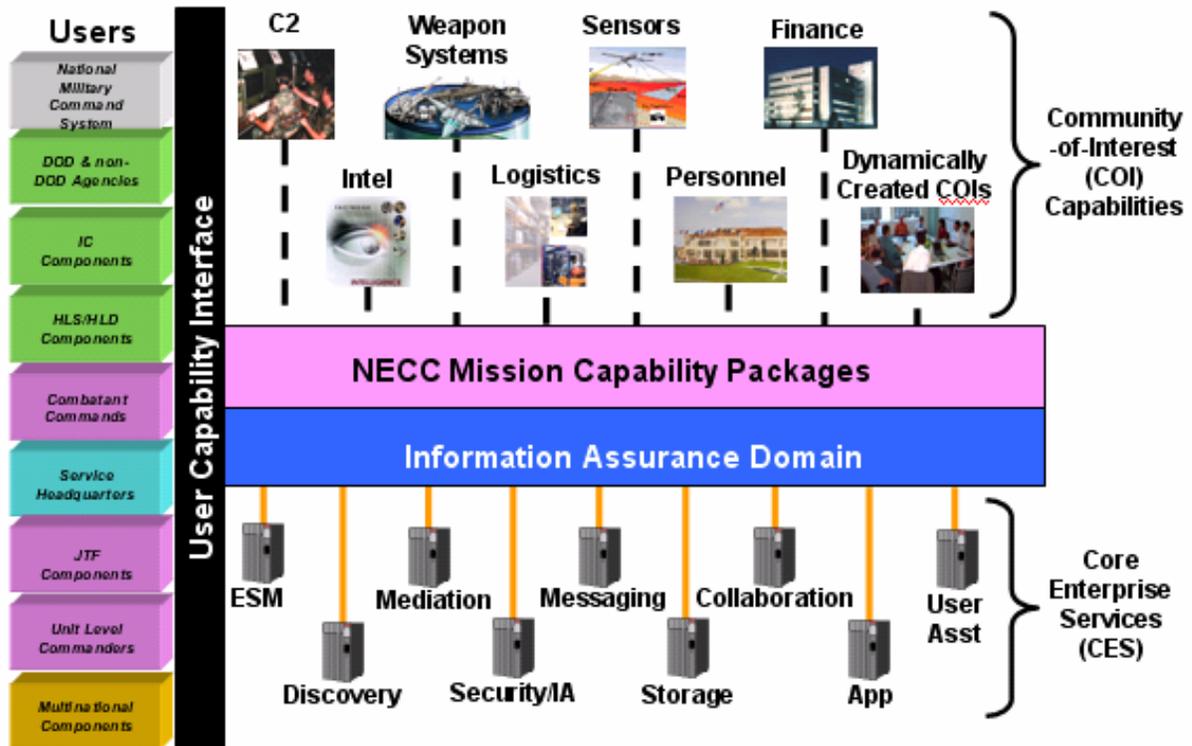


Figure 6-2. NECC NCOW RM Context

The left portion of the graphic depicts the geographically dispersed NECC operational Edge Users. These edge devices span the range of computing and communications technologies all having the common attribute of being able to interface with the EIE. The bottom portion of the graphic depicts the CES, Communications, Computing Infrastructure, and Information Assurance domains providing the foundation of the EIE. The middle portion of the graphic shows NECC MCP’s which will utilize the CES. The upper portion of the graphic represents the sharing of information and services between and among the mission areas, domains, and COI, as they conduct operations.

For the purposes of the enterprise services strategy, “a service in a Service Oriented Architecture (SOA) is an exposed piece of functionality with three properties: (1) the interface contract to the service is platform independent; (2) the service can be dynamically located and invoked; (3) the service is self-contained; it maintains its own state.”

The following will discuss NECC’s mapping to the major operational activities of the NCOW RM.

- o A-1: Interact with EIE

The capability interface (CI) is the Human-Computer-Interface (HCI) to interact with the EIE. Breakdowns of the NCOW RM EIE A1 operational activities are listed in Table 6-3. A NECC user will establish this interface, upon edge-device activation at a local or remote point-of-presence, through pre-set, exportable, generic or specialized COI-service interfaces. These service interfaces make services visible to and operable by the user. The CI enables a user to interact within the net-centric system to execute a specific task or to execute a specific set of tasks as defined by a role.

Table 6-3. User Capability Interface

| |
|--|
| A1-Interact with Enterprise Information Environment |
| A11-Request Access to the Enterprise Information Environment |
| A12-Maintain User-Defined Elements of User Profile |
| A13-Request Services |
| A14-Provide Data Assets |
| A15-Get Information |
| A16-Initiate/Join Collaboration Session |

The user interactions may be through a set of generic interfaces allowing a user to request services, put information into the environment, and get information out of the environment to support NECC MCPs. These generic interfaces of the user may be specialized with the addition of NECC COI-specific interactions provided through COI-service interfaces. Such interfaces may provide capabilities to perform NECC specific COI roles, or they may provide contextually based COI interfaces constraining the information being created and/or accessed.

The login prompt will be the initial generic CI provided to the NECC user. Additional generic capabilities are provided at the interface if no role is established at login. The specifically requested, role-based, NECC COI functions are provided at the CI for the user upon successful login with an authorized role.

The user has an operational need requiring a capability and/or information. The assumption is, the user has already gained authorized access to the GIG and therefore possesses a profile. Based on his current role, attributes from his profile are instantiated and permissions and accessibility rights are given. From the A1 perspective, the user has performed the requisite activities to gain assured access to the environment. Based on the user’s role, the CI acts as the functional gateway permitting the user to contextually access and retrieve appropriate information and services.

- o A-2: Perform User Agent Services

The second activity block provides a semi-autonomous agent and advocate capability between the NECC user and the services provided within the information environment. A breakdown of the NCOW RM EIE A2 operational activities is listed in Table 6-4. It is where intelligent agents may be introduced into the architecture to provide user

assistance. The user agent references the user profile in order to provide optimal service to the NECC user and invokes other services as required.

Table 6-4. User Agent Services

| |
|---------------------------------------|
| A2-Perform User Agent Services |
| A21-Evaluate Inputs |
| A22-Assist User |
| A23-Invoke Services |

The NECC user will invoke CES services to perform operations within the NECC MCPs. For example, Force Projection, Adaptive Planning may require Discovery and Mediation services to locate data to provide inputs for a TPFDD. Collaboration services would be invoked to develop the TPFDD using the Discovery information obtained. Table 6-5 is a mapping of the services a NECC user could potential invoke.

Table 6-5. Invoke Services

| | |
|---------------------------|---|
| A3-Invoke Services | |
| NCES CDD Service | NCOW Reference Model Activity |
| Application | A316-Provide Application Services |
| Collaboration | A312-Provide Collaboration Services |
| Discovery | A311-Perform Discovery |
| Mediation | A314-Perform Information Mediation Services |
| Messaging | A313-Provide Messaging Services |
| Storage | A315-Perform Information Storage Services |

- o A-3: Provide EIE Services

Provide EIE services, has three associated operational activities, A31 Provide Core Services, A32-Provide COI Services, and A33 Perform Environmental Control Services (ECS). Table 6-6 only lists A32-Provide COI Services as being applicable to NECC. NECC is not anticipated to provide Core Services or perform Environmental Control Services.

Table 6-6: EIE Services

| |
|---|
| A3-Provide Enterprise Information Environment Services |
| A32-Provide COI Services |

A32-Provide COI Services provides services common to all COIs and mission-specific services associated with the warfighter, business, intelligence, enterprise management mission areas, and their domains. This activity provides common COI management

services, support services used within and among all COIs, and includes the activities taken by a COI to make their information and services accessible. It also includes the activities taken by a mission area, domain or COI to provide unique and common functions (i.e., modular application services) for its specific missions or, for the common use with other COIs. A functional service initially specific to a COI may satisfy the requirements of other COIs, and can become a common function for all COIs. Furthermore, any COI function can become a core function at some time in the future.

Every program contributing to the evolution of the GIG is expected to develop and register their COI services. Every program must make their COI services available to the enterprise and ensure accessibility of these services through the core and ECS services. Each program must account for how the core services are utilized to access the unique COI services of their program. Through distinct interfaces (i.e. capability interfaces), COI services will be legacy services as well as newly developed services sharable throughout the environment in a service oriented architecture practice.

NECC as it develops will leverage NCEC provided CES and deliver capabilities as services developed by NECC, COIs and/or other organizations. As NECC matures, COIs may be established by the NECC community to explore and generate services to meet specific capability need shortfalls.

- A-4: Allocate Resources to Services

The fourth activity block receives infrastructure resource service requests and provides the local and enterprise shared resources (e.g., processors, memory, storage media, and bandwidth) necessary. If the request cannot be satisfied as presented, a negotiation process may ensue among shared service resource providers to gain as much of the requested resources for the invoking requestor as possible, or an “unable to fulfill” response is returned to the invoking requestor. As NECC capabilities are developed as Services, this resource allocation activity will become a requirement applicable to NECC.

- A-5: Manage Enterprise Information Environment

The fifth and final activity block represents the set of activities involved in the planning, organizing, coordinating, and controlling the establishment, maintenance, and dissolution of all the capabilities of, and services provided by, the EIE. These activities are performed by specialized users [e.g., Information System Architects, System Engineers, and Network Operations (NetOps) personnel] and are identified separately from the A1 Block to ensure these management activities are specifically identified and addressed by every component architecture developer. This activity represents the scope of management activities for the EIE from the local level to the global level, to include intermediate enclaves. It does not prescribe how or where this management activity must take place, but instead this activity must take place. This activity is not anticipated to be applicable to NECC.

- NECC Net-Centric Data Strategy

The Net-Centric Data Strategy (NCDS) activities serve as a guide to architects and program managers in establishing and maintaining the Net-Centric data foundation for their enterprise.

The context activity for the NCDS activity decomposition is A-0: Provide Net-Centric Data Capabilities. It is defined as:

This activity implements the DoD NCDS, providing both the necessary supporting data asset management infrastructure for the EIE and the continuous operational management of data assets and the supporting data infrastructure within the EIE.

The NCDS A-0 activity is decomposed into five major activities. They are: Develop NCDS, Policies, and Plans; Manage Data Infrastructure; Manage COIs; Provide Data Assets; and Institutionalize NCDS. A NECC NCDS will be developed to provide implementation guidance to the NECC community.

- NECC IA Strategy

NECC will be in compliance with all appropriate DoD IA policies and the *JC2 Acquisition Information Assurance (IA) Strategy in Support of Milestone A Approval*.

Compliance with the Key Interface Profile (KIP).

To date 17 KIPs have been identified; currently KIPs 1 through 7 have been fully defined and promulgated for use. Except for the KIPs already finalized and in progress (KIPs 14 – 16), the original 17 KIPs will *not* be produced as individual documents. Instead individual KIPs will be organized in a set of KIP families:

- *Communications*: the KIPs in this family define the interface profiles for communications and network components.(KIPs 1 through 8.)
- *Computing Infrastructure*: the KIPs in this family define computing environments to which applications taking advantage of hosting services must be designed. (KIPs 9 through 17 less 11.)
- *Enterprise Services*: the KIPs in this family define interface profiles for software services. (KIP 11.)

NECC KIPs are declared in Table 6-7. The table will be updated as information becomes available.

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Table 6-7. Key Interface Profile (KIPs) Declaration Table

| Key Interface Family/Name | VER | Applicable (Yes or No) | DISR Status (Emerging or Mandated)¹ | Implementation Phase (Objective or Threshold)² | Consumer or Provider | Implementation Issues/KIP Options |
|----------------------------------|--|-------------------------------|---|--|-----------------------------|--|
| Transport Family | Transport Family of Key Interface Profiles Version 1.0 24 February 2006 | | | | | |
| UHF SATCOM | Transport Family of Key Interface Profiles Version 1.0 24 February 2006 | No | Mandated | N/A | N/A | N/A |
| C-Band SATCOM | Transport Family of Key Interface Profiles Version 1.0 24 February 2006 | No | Mandated | N/A | N/A | N/A |
| X-Band SATCOM | Transport Family of Key Interface Profiles Version 1.0 24 February 2006 | No | Mandated | N/A | N/A | N/A |
| Ku-Band SATCOM | Transport Family of Key Interface Profiles Version 1.0 24 February 2006 | No | Mandated | N/A | N/A | N/A |
| Ka-Band SATCOM | Transport Family of Key Interface Profiles Version 1.0 24 February 2006 | No | Mandated | N/A | N/A | N/A |
| EHF/AEHF SATCOM | Transport Family of Key Interface Profiles Version 1.0 24 February 2006 | No | Mandated | N/A | N/A | N/A |
| GBS | Transport Family of Key Interface Profiles Version 1.0 24 February 2006 | No | Mandated | N/A | N/A | N/A |
| DISN IP | Transport | Yes | Mandated | Threshold | Consumer | None |

¹ Per <http://jtc.fhu.disa.mil/kip/>

² NECC Increment I

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| Key Interface Family/Name | VER | Applicable (Yes or No) | DISR Status (Emerging or Mandated) ¹ | Implementation Phase (Objective or Threshold) ² | Consumer or Provider | Implementation Issues/KIP Options |
|---|---|------------------------|---|--|----------------------|-----------------------------------|
| Router Network Layer | Family of Key Interface Profiles Version 1.0 24 February 2006 | | | | | |
| DISN IP Router Optical Network Interface Feature | Transport Family of Key Interface Profiles Version 1.0 24 February 2006 | No | Mandated | N/A | N/A | N/A |
| DISN IP Router Physical and Data Link | Transport Family of Key Interface Profiles Version 1.0 24 February 2006 | Yes | Mandated | Threshold | Consumer | None |
| DISN Multi-Service Provisioning Platform (MSPP) | Transport Family of Key Interface Profiles Version 1.0 24 February 2006 | Yes | Mandated | Threshold | Consumer | None |
| DISN Optical Digital Cross-Connect (ODXC) | Transport Family of Key Interface Profiles Version 1.0 24 February 2006 | No | Mandated | N/A | N/A | N/A |
| DISN Optical Transport Services (OTS) | Transport Family of Key Interface Profiles Version 1.0 24 February 2006 | No | Mandated | N/A | N/A | N/A |
| GPS | Transport Family of Key Interface Profiles Version 1.0 24 February 2006 | No | Mandated | N/A | N/A | N/A |
| JTIDS | Transport Family of Key Interface Profiles Version 1.0 24 February 2006 | Yes | Mandated | Threshold | Consumer | None |
| CENTRIXS | Transport Family of Key Interface Profiles Version 1.0 24 February 2006 | Yes | Mandated | Threshold | Consumer | None |

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| Key Interface Family/Name | VER | Applicable (Yes or No) | DISR Status (Emerging or Mandated) ¹ | Implementation Phase (Objective or Threshold) ² | Consumer or Provider | Implementation Issues/KIP Options |
|---|--|------------------------|---|--|----------------------|-----------------------------------|
| IBS | Transport Family of Key Interface Profiles Version 1.0 24 February 2006 | Yes | Mandated | Threshold | Consumer | None |
| Application Enterprise Services Family | Application Enterprise Services Family of Key Interface Profiles Version 1.0 24 February 2006 (DRAFT) | | | | | |
| Service Security | Application Enterprise Services Family of Key Interface Profiles Version 1.0 24 February 2006 (DRAFT) | Yes | Provisional | Threshold | Consumer | None |
| Service Discovery | Application Enterprise Services Family of Key Interface Profiles Version 1.0 24 February 2006 (DRAFT) | Yes | Provisional | Threshold | Consumer | None |
| Content Discovery | Application Enterprise Services Family of Key Interface Profiles Version 1.0 24 February 2006 (DRAFT) | Yes | Emerging | Threshold | Consumer | None |
| Messaging | Application Enterprise Services Family of Key Interface Profiles Version 1.0 24 February 2006 (DRAFT) | Yes | Provisional | Threshold | Consumer | None |
| Content Staging | TBD | Yes | Provisional | Threshold | Consumer | None |

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| Key Interface Family/Name | VER | Applicable (Yes or No) | DISR Status (Emerging or Mandated) ¹ | Implementation Phase (Objective or Threshold) ² | Consumer or Provider | Implementation Issues/KIP Options |
|---------------------------------|-----|------------------------|---|--|----------------------|---|
| Web Services | TBD | Yes | TBD | TBD | Consumer/ Provider | Web Services Standards identified in the TV-1 will be used. |
| Computing Infrastructure Family | TBD | TBD | Provisional | TBD | TBD | TBD |

Information Assurance (IA) policies and procedures.

NECC will be in full compliance with the IA requirements of DoDD 8500.1, DoDI 8500.2, and DIACAP. NECC aligns with the IA Component of the GIG Integrated Architecture, through integrated IA services, as well as leveraging IA services from NCES, DoD PKI, and other DoD programs. PKI technology will be acquired as part of this effort and will be installed and used, including in initial fielding efforts, to ensure information security over all voice, video, and data transmission. PKI implementation will also consider communications interoperability with commercial and multinational partners.

6.2 Key System Attributes (KSA)

A recent addition to JCIDS, KSAs are those system attributes considered most critical or essential for the design and sustainment of an effective military capability. KSAs, in conjunction with KPPs, capture the minimum operational effectiveness and suitability needed to provide joint force net-centric command and control for NECC Increment I. The Net-Ready KPP (#4) does not have an associated KSA.

NECC KSAs are listed in Table 6-8.

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Table 6-8. Key System Attributes

| Key System Attribute | Development Threshold | Development Objective | Rationale |
|--|---|--|--|
| <p>KSA# 1 Situational Awareness: NECC shall provide net-centric services capable of accessing, sharing (send and receive), collating, and displaying COP and CTP information at the source level of accuracy in a format tailored by the user for all physical domains, all components of the joint force, and special operations forces.</p> <p>Essential CTP and COP elements are:</p> <ul style="list-style-type: none"> - Location/status/intentions of friendly forces (current and planned) - Location/identity/status/intentions of hostile forces (current and projected) - Location/intentions of other forces/actors (neutral forces, NGOs, etc.) (current and projected) - Meteorological and Oceanographic (Current and forecast environmental conditions and their effects on weapons systems and operations) - Geospatial information - Political/diplomatic information (current and projected) - Media reports - Ensure appropriate access to data based on clearance validation and attributes associated with the data, | <p>Integration of land, air/space, maritime/littoral and intelligence information into a Common Tactical Picture in support of the Common Operating Picture (COP).</p> | <p>Integration of land, air/space, maritime/littoral & intelligence information into a CTP in support of the COP.</p> | <p>Supports DODD O-5100.30 (DoD Command and Control) and Global COP CONOPS. Shared Situational Awareness is essential to a joint force commander's ability to monitor, assess, analyze, predict, plan, execute and report global and/or theater mission responsibilities and address trans-regional threat capabilities.</p> |
| | <p>Display and update user requested COP information at the level of accuracy produced within 15 seconds of user request using standard message formats.</p> | <p>Display and update user requested COP information at the level of accuracy produced in one second or less of user request using standard and non-standard message formats.</p> | <p>Shared Situational Awareness is the critical component of a joint force commander's ability to achieve / sustain decision superiority.</p> |
| | <p>Provide 3D visualization of, amplification of and reference to source data for friendly, enemy, neutral and unknown tracks, as well as ISR and logistics (deployment and distribution) data, in Near Real-Time (NRT), contained in a database capable of processing 20,000 or more tracks per user defined allocation table.</p> | <p>Provide 3D visualization of, amplification of and reference to source data for friendly, enemy, neutral and unknown tracks, as well as ISR and logistics (deployment and distribution data) in Near Real-Time (NRT), contained in a database capable of processing an unlimited number tracks per user defined allocation table such that the shared situational awareness available to any NECC user regardless of the geographic viewing area, the scale of the geographic viewing area or type track being filtered is not limited by processing and storage capabilities of the system.</p> | <p>Situational Awareness is one of the focus areas for NECC Increment 1 per the JC2 Analysis of Alternatives (AoA)</p> |

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| Key System Attribute | Development Threshold | Development Objective | Rationale |
|---|---|---|---|
| <p>KSA# 1 Situational Awareness: (continued) users, processes or environment</p> <ul style="list-style-type: none"> - Location status of medical, humanitarian assistance, and terrorist events - Archived / historical COP data | <p>Subjective determination of degree to which a visual representation meets the requirements of 80 percent of the users, by user (1-5 scale: 1 fully, 5 unmet).</p> | <p>Subjective determination of degree to which a visual representation meets the requirements of 100 percent of the users, by user (1-5 scale: 1 fully, 5 unmet)</p> | |
| <p>KSA#2 Planning: (Planning & Execution in support of National Security Objectives)</p> <p>NECC shall provide the capability for distributed collaboration for the development and revision of plans and for plans execution.</p> <p>Essential elements are:</p> <ul style="list-style-type: none"> - Distributive and Collaborative Planning - Synchronous and asynchronous collaboration services - Readiness and Operational Capability Identification (sourcing) | <p>Provide vertical and horizontal distributed collaboration for development of force generation, sustainment and projection requirements from combatant commander (CCDR) level to JTF/JTF component level.</p> <p>System shall be able to allow up to 1,500 simultaneous users per plan and up to 45,000 simultaneous users on the system.</p> | <p>Provide vertical and horizontal collaboration for development of force generation, sustainment and projection requirements from DoD level down to lowest deployable entity as defined by the Services.</p> <p>System shall be able to allow up to 3,000 simultaneous users per plan and up to 75,000 simultaneous users on the system.</p> | <p>Support identified National Security Objectives as stated in published in Presidential guidance, currently known as National Security Presidential Directives.</p> <p>Support the Adaptive Planning and Execution Processes.</p> <p>Meet or exceed current / legacy system OPORD / OPLAN management performance utilizing Net-Centric services and architecture.</p> |

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| Key System Attribute | Development Threshold | Development Objective | Rationale |
|--|---|---|-----------|
| <p>KSA#2 Planning: (continued)</p> <ul style="list-style-type: none"> – Movement, Sustainment and Tracking – Reduce planning cycle time | <p>System shall provide simultaneous access to all essential elements of collaborative services for all members of all the boards, centers, cells and any other activities within a JTF HQ and between a JTF HQ, CCDR and the JTF Components.</p> | <p>System shall provide near real time collaboration for all members of a JTF, including the edge tactical user, US Agencies, NGOs, Allied and Coalition Partners, DoD COEs, Joint Staff (JS), other Communities of Interest pertinent to the JTF, and between the other JTFs and CCDRs.</p> | |
| | <ul style="list-style-type: none"> ▪ Synchronous collaboration services to include: <ul style="list-style-type: none"> • Persistent workspaces for every board, center, cell and other established activities <ul style="list-style-type: none"> – Concurrent access to 150 sessions • Non-persistent sessions for Ad Hoc meetings <ul style="list-style-type: none"> – Concurrent access to 500 sessions • Session participant metrics: <ul style="list-style-type: none"> – 75 percent shall have 10, or fewer, participants – 20 percent shall have 200, or fewer, participants – Five percent shall have 1000, or fewer, participants • Scalability <ul style="list-style-type: none"> – Sessions shall have the ability to scale (prioritize) and structure collaborative services in order to accommodate | <p>Provide asynchronous messaging services to include:</p> <ul style="list-style-type: none"> • Guaranteed delivery person-to-person and organizational messaging in support of record traffic environments • A strong mechanism for message origin authentication, non-repudiation, and guaranteed delivery. • Survivability alerts | |

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| Key System Attribute | Development Threshold | Development Objective | Rationale |
|------------------------------------|--|---|-----------|
| KSA#2 Planning: (continued) | <p>session users within system limitations</p> <ul style="list-style-type: none"> • Presence and Awareness <ul style="list-style-type: none"> – All Users shall be able to view the current collaboration status of any other authorized user to 98 percent accuracy • Audio conferencing • Chat/instant messaging • Shared file space • Video teleconferencing • Shared whiteboard ▪ Asynchronous collaboration services for 4000 users to include: <ul style="list-style-type: none"> • Person-to-person and organizational messaging (e.g., E-mail) • Delivery of alerts <ul style="list-style-type: none"> – Within 30 seconds • Web Portal | | |
| | <p><u>Crisis Action Planning and Execution</u> (after release of warning order)</p> <ul style="list-style-type: none"> - Support development and maintenance cycles for OPORD and associated products: < 96 hours - Time required to perform a readiness assessment: less than six hours | <p><u>Crisis Action Planning and Execution</u> (after release of warning order)</p> <ul style="list-style-type: none"> - Support development and maintenance cycles for OPORD and associated products: < 24 hours - Time required to perform a readiness assessment: less than two hours | |

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| Key System Attribute | Development Threshold | Development Objective | Rationale |
|------------------------------------|--|--|-----------|
| KSA#2 Planning: (continued) | <u>Contingency Planning</u> (upon receipt of a planning directive) - Support development and maintenance cycle for OPLAN and associated products: < 12 months - Time required to perform a readiness assessment: < 48 hours | <u>Contingency Planning</u> (upon receipt of a planning directive) - Support development and maintenance cycle for OPLAN and associated products: less than two months - Time required to perform a readiness assessment: < 24 hours | |
| | <u>Total Force Visibility</u> Changes to current readiness data/information are visible globally within two hours of input. – Track inventory readiness, availability, and apportionment down to the individual level, and respond to queries within 10 minutes of initial request. – Provide automatic notification of dual tasking within five minutes of force sourcing. | <u>Total Force Visibility</u> Changes to current readiness data/information are visible globally NRT of input. – Provide continuous check for potential dual tasking during force sourcing process and provide immediate notification when and if it occurs. Continuous and uninterrupted Track to asset level visibility – Provide continuous and uninterrupted Track to asset level visibility; globally track inventory, readiness, availability and apportionment of all forces down to the individual level, and respond to queries within one minute of initial request. | |

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| Key System Attribute | Development Threshold | Development Objective | Rationale |
|--|---|--|--|
| KSA#2 Planning: (continued) | <u>Track to asset level visibility</u> | <u>Track to asset level visibility</u> | |
| | <ul style="list-style-type: none"> – User queries across disparate data sources will identify the authoritative data source. <p>Reports or Queries will be delivered in less than seven seconds from the time query is issued at 99.999 percent accuracy.</p> | <ul style="list-style-type: none"> – User queries across disparate data sources will identify the authoritative data source. <p>Reports or Queries will be delivered in less than two seconds from the time query is issued at 99.999 percent accuracy.</p> | |
| KSA#3 Training Support: NECC shall provide, either embedded or via the web, training support tools to facilitate effective individual and collective team, staff and unit training. Essential training elements to enable individual, collective and conceptual training: - Designed in “ease of use” to minimize the need for extensive use of mobile training teams and resident schools to achieve individual and collective proficiency with NECC tools -Alert/notification of new training provided with new spiral capability - Web-based Training | Ease of use and training support effectiveness must be assessed as meeting current IT industry benchmarks for ease of use, the current Joint National Training Capability (JNTC) construct and supporting JT FC attributes and metrics. - Help tools, diagnostic proficiency assessment tools, and training management tools must be embedded or available via the web to facilitate assessment and tracking of individual and collective proficiency. - Training tools must be available via the | Conceptual: - Meets all T2 standards of and is fully integrated with JKDDC and JNTC. | Supports Training Transformation (T2) Strategy with foundational capabilities stated in JKDDC, JNTC, and JAEC. (CJCSI 3500.01C). Integrates and builds on baseline training capability in GCCS-J. Surveys are a routine and acceptable method for qualitative user measurement of systemic functionality / capability effectiveness. |

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| Key System Attribute | Development Threshold | Development Objective | Rationale |
|--|--|-----------------------|-----------|
| <p>- Web-based transfer KSA#3 Training Support: (continued)</p> <p>-Capability to support distributed exercises</p> <p>-Embedded Modeling and Simulation capability</p> <p>- Learning Management System for training managers</p> | <p>web</p> <p>- Training and remedial, on-demand support must be web transferable</p> <p>- Must have alerts to notify training managers of training updates and new capability.</p> <p>Individual: - 70 percent of functional users (JS/C/S/A) judge NECC training capability as favorable in a standard Operational Test environment - 70 percent of Systems Administrators judge NECC training capability as favorable in a standard Operational Test environment</p> <p>Collective: - Individuals and or units must be able to conduct training on operational systems without affecting real world picture/data.</p> <p>Conceptual: - Supports the learning and training attributes of Training Transformation (T2) as defined by Joint Knowledge Development and Distribution Capability (JKDDC), JNTC and Joint Assessment and Enabling Capability (JAEC). - Supports JT FC attributes and metrics.</p> | | |

6.2.1 Situational Awareness (KSA #1)

Situational Awareness as a NECC MCP is defined in terms of a COP supported by a CTP. The Situational Awareness KSA further refines and establishes foundational NECC requirements to provide net-centric services capable of accessing, sharing (send and receive), collating, and displaying COP information at the source level of accuracy in a format tailored by the user for all physical domains, all components of the joint force, and special operations forces.

6.2.1.1 Key Situational Awareness Terminology

Following is a list of common terminology used with situational awareness.

Accessing, collating, displaying COP and CTP information.

NECC will utilize NCES to provide core services: discovery, collaboration, messaging, information mediation, and information storage; along with core applications/functions. Additionally, NECC will utilize GES Communities-of-Interest (COI) Services. The interface of COP and CTP information with NCES core and COI services will be developed and integrated across the “battlespace entities; sensors, actors, and decision makers,”¹ with consideration to requirements for multiple domains and multilevel security.

Source level of accuracy.

Utilizes post and make information immediately available to access information with the required relevance and latency.

Format tailored by the user.

With the focus of Situational Awareness as a COP and supporting CTP, similar procedures for reporting requirements of CJCSI 3151.01A for GCCS must be developed so users can format a tailorable COP and CTP. Without rules and requirements for the basic picture, the COP will not be a common operational picture. In addition to the basic picture, Service-unique requirements must be considered. The procedures and Service-unique requirements may reside with the respective Service picture programs and must be identified and incorporated as the GCCS FoS transitions to NECC. These processes and requirements must be flexible enough to produce a true COP and allow tailoring without becoming incoherent.

All physical domains and all components of the joint force, including Special Operations Forces.

The physical domains include air, land, sea, and space and all components of the joint force, including Special Operations Forces and support of information exchange with coalition and interagency partners across their respective domains. The Service-unique requirements will reside in the respective Service picture programs. This also needs to include access to users external to NECC or other COIs, such as strike planners, who must access the COP for planning. Another consideration is the ability to conduct disconnected operations. Disconnected operations are considered to be operating

conditions of network nodes with limited bandwidth and loss of GES connectivity due to communications service interruption. Disconnected operations also encompass unique platform operations and operational considerations such as emissions control procedures.

Emerging Concepts.

Situational Awareness is a foundation of emerging concepts, Battlespace Awareness (BA) and Predictive Battlespace Awareness (PBA).

Battlespace Awareness (BA).

Battlespace Awareness, a Joint Functional Concept (JFC), is defined in the Homeland Security Joint Operating Concept (JOC) as “the ability of the Joint Force Commander to understand the operational environment and the adversary. To ensure DoD can dissuade, deter, and defeat threats to the Homeland, the Joint Force Commander should have a comprehensive understanding of the battlespace (within the limits set by law), including the capability to detect the full range of threats – conventional and unconventional – enabled through an interlocking field of sensors with deep reach and remote surveillance capability fused with national-level intelligence collection and analysis to provide common situational awareness across the spectrum of participants for all domains in the operating environment (air, space, land, maritime, and cyber).” The BA JFC combines intelligence with the COP, as well as: modeling/simulation and forecasting; knowledge management; command and control of BA assets; and orienting and assessment – tools potentially available from GES. The BA JFC activities use a “ubiquitous network” which in the case of NECC is the GIG. The NECC activity model (OV-5) was developed from the BA JFC. Anticipate future NECC CDD increments combining the Intelligence and Situational Awareness MCPs into a BA MCP as the BA JFC matures.

Predictive Battlespace Awareness (PBA).

PBA goes a step further towards action and is defined as “a commander-driven process to anticipate and pre-empt adversary actions when and where we choose. The above process is a continuous activity that integrates Intelligence Preparation of the Battlespace (IPB), Target Development, Intelligence, Surveillance, and Reconnaissance (ISR) Strategy and Planning, ISR Employment and Assessment in dynamic interaction that coordinates and synchronizes tasks, directs effects-based planning, assesses operational impact, and refines the process to affect the enemy as we choose. PBA provides a multidimensional understanding of the battlespace and the ability to predict, develop and correlate adversary and friendly Courses of Action (COAs) from which we can plan Effects Based Operations (EBO) and efficiently task our intelligence, surveillance, and reconnaissance (ISR) assets. In order to successfully accomplish this and execute our planning, execution and assessment processes within the enemy’s decision cycle the U.S. must be able to achieve dominant battlespace awareness. This is enabled by a network-centric enterprise that combines integrated information systems, integrated teams of trained people, and analytical tools that support collaboration and decision-making.” Similar to the BA JFC, this is a specific approach to link EBO and use ISR assets. NECC and NCES can effectively provide the functionality and tools.

Related MCPs.

GCCS FoS functionality provides information to the COP, including readiness (e.g. GSORTS) and planning (e.g. JOPES) data. Capabilities contributing to and/or required to support SA functionality cut across or are binned into multiple NECC MCPs to include: Situational Awareness, Force Readiness and Force Projection. The JCCD capability needs process (CNP) will ensure capability interfaces and interdependencies are incorporated into NECC to prevent loss of functionality and capability represented by GCCS FoS.

6.2.2 Planning (KSA#2) (Planning and Execution in Support of National Security Objectives)

6.2.2.1 Introduction

The JC2 (NECC) AoA for Increment I, completed in July 2005 was based on the established mission capability plans in the Draft JC2 CDD. After the JC2 AoA was completed, the Secretary of Defense issued guidance to transform the way the Department plans and executes operations by developing a new planning process that will “succeed the Department’s current planning and execution System.” The Adaptive Planning prototype process and concepts for transforming the way the Department plans are outlined in the Adaptive Planning Roadmap signed by the Secretary of Defense on December 13, 2005. To the maximum extent, capability needs required to support the Adaptive Planning process across all MCPs will be pursued in Increment I of the NECC development cycle.

6.2.2.2 Overview

Adaptive Planning and Execution (APEX) encompasses the full continuum of DoD planning and execution (to include both contingency and crisis action planning. NECC will support APEX joint operations planning and execution requirements and provide access via NCES to required vertical collaboration – from the Secretary of Defense through the Combatant Commander to the Joint Task Force component level, and horizontal collaboration across the Joint Staff, Combatant Commands and Joint Task Forces, and other Defense Agencies. At a minimum, NECC APEX support capabilities will, include force generation, force projection (deployment and redeployment), force employment, force sustainment, and assessment and war gaming to determine sufficiency, feasibility and risk (see Figure 6-3, Adaptive Planning Critical Path Capability Needs). At a minimum, NECC will support APEX requirements to generate and provide access to strategic and operational guidance; real world battlefield intelligence; intelligence campaign planning products; and dispositions, strength, capabilities and readiness of friendly forces.

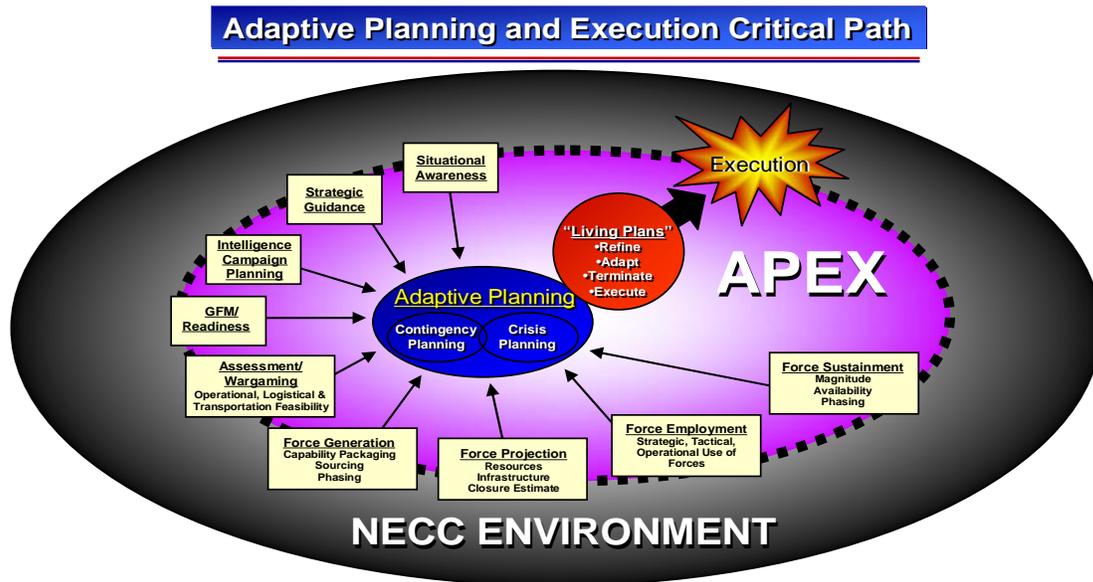


Figure 6-3. Adaptive Planning Critical Path Capability Needs

Assessment and Wargaming – rapid feasibility assessments, timeline projections, risk assessment and management, alternative courses of action, and predictive modeling of diplomatic, information, military, and economic activities through the use of political, military, economic, Social, infrastructure and information (PMESII) developed through operational net assessment (ONA).

Force Generation – rapid force identification and generation, force sourcing and management tied to readiness and availability (to include total force visibility), mobilization and demobilization planning, and rotation planning.

Force Projection – strategic and theater deployment and redeployment transportation planning, transportation asset tracking and management, strategic and theater distribution planning, strategic and theater medical evacuation planning.

Force Employment – planning that prescribes the strategic, operational, or tactical use of forces and how to apply force and/or forces to attain specified military objectives. Combatant commanders through their component commanders develop employment-planning concepts.

Force Sustainment – force support planning and assessment, key asset and resource management for all classes of supply, service support planning and assessment, total asset and in-transit visibility, and sustainment/commodity management and sourcing.

6.2.2.3 Vision

APEX is envisioned as an integrated, DoD-wide planning and execution process with the capability to develop near executable “living plans” as the core component. “Living Plans” require technology to maintain plan currency through utilization of Planner-

determined and enabled key parameters, which when exceeded, automatically alert the planner to significant changes in plan content and supporting data conveying the need to reevaluate the plan's sufficiency, feasibility, and risk.

Today's strategic environment requires a planning and execution capability that adapts rapidly to a variety of threats and uncertainties. A dynamic security environment demands NECC users have the capability to rapidly generate and disseminate detailed operation plans with multiple options. Each option should have branches and sequels that can be quickly updated and adapted to changing circumstances during both planning and execution phases.

NECC technology supporting APEX must provide the capability to monitor, analyze, and control a wide range of military operations to include humanitarian assistance and disaster relief. This includes monitoring and comparing actual events with scheduled events to assess mission accomplishment. It should also have the capability for controlling, directing, revising, redirecting, or terminating operations (to include deployment and redeployment).

6.2.2.4 Attributes

As NECC is implemented, it will provide APEX support for senior-level decision makers and their staffs with enhanced capability to plan and conduct joint military operations. To meet the SecDef's guidance on transforming planning, NECC must provide planning capabilities with the following attributes:

- Rapid – Produces military plans in six months or less. Rapidly revises plans as circumstances demand.
- Iterative – Enables key senior leaders and planners – through regular dialogue – to shape the plan during development.
- Collaborative – Enables parallel and concurrent planning (Synchronous and asynchronous collaboration services) among all echelons of command involved in the development of the plan.
- Networked – Links operational planning, the readiness status of forces, resource and force management processes, and data in a virtual environment.
- Flexible – Produces multiple, fully-developed military options that enable senior leaders to respond to changing circumstances.
- Comprehensive – Addresses the full array of contingencies that could be reasonably anticipated for a given threat or set of threats.
- Focused – Prioritizes plans and planning efforts to best support the strategy.
- Feasible – Determines the practicability of the commander's concept of operation, including whether it can be supported by available forces, logistics, and transportation assets.

6.2.2.5 NECC Support of APEX

NECC will enable plans, planners, planning tools and relevant databases to be truly net-centric and fully networked. Access to and leverage of NCES provided collaboration services will enable relevant and current plans, adaptable in near-real time to changing

circumstances while execution is monitored. Planning is collaborative and iterative. Decision quality information will be promptly available.

NECC development and fielding environment will include policies, procedures, doctrine reporting structures, and personnel updates supported by C4I systems.

NECC will support and integrate joint operation planning activities at the national, theater, operational and supporting command levels and interface with four other national systems: the NSCS, JSPS, PPBES, and the Defense Transportation System (DTS).

6.2.3 Training Support to the Warfighter (KSA 3#)

6.2.3.1 Dependencies

NECC training support of the warfighter is comprised of three main themes; (1) NECC applications supporting joint training in live, virtual, and/or constructive environment, (2) models and simulations, embedded or available via the web, supporting actual operations, exercises and individual/positional through unit training, and (3) human interface design for users and units.

By recognizing training, modeling and simulation, and human system interface design are dependent on each other and viewing the intersection of the three as a system, NECC can produce command and control tools focusing on the needs of the user rather than separately addressing the three areas in a stove-piped manner - and, implicitly requiring the end user to combine them together. This approach affords the chance for significantly improved ease of use and effectiveness of these command and control tools by commanders and staffs.

6.2.3.2 Joint Training Support

Joint training and exercises are essential to building a joint team that includes interagency and multinational partners. Tough realistic training will be necessary to forge teams and foster a joint mindset and establish trust and confidence between leaders and within staffs. Capabilities-based force packages, designated as components and not permanently assigned, must be able to conduct training exercises in the live, virtual and constructive training environments routinely under conditions of both short notice and scheduled/forecasted training.

While large scale, heavily resourced joint exercises may be necessary to provide an effective training environment in some scenarios, NECC must provide training support tools that expand the menu of training options for commanders and staffs. NECC must facilitate the opportunities for capabilities-based force packages to train together on much shorter notice with fewer resources and overhead to recognize the tempo of global operations and the need for strategic and operational responsiveness of joint forces. These rapidly formed teams must be able to share standard operating procedures (SOPs), develop consensus tactics, techniques and procedures (TTPs), form and dissolve subordinate teams, and create and rehearse plans and orders. These joint teams of commanders and staffs must be able to conduct this command and control training (while

distributed in time and space) in a realistic context for the intended operational deployment.

6.2.3.3 Modeling and Simulations Support

Modeling and simulations, or “M&S,” describe the use of realistic computer-generated battlefield models and other types of simulation support used to augment the training of forces. These systems can be used to train in virtual, or constructive environments, or with “live” forces (actual troops on the ground, sea, and in the air training) either independently or in combination, to simulate a larger operational environment. Accordingly, the use of M&S to support military training is not designed to replace actual experience; rather, it is employed as a more cost-effective means to conduct exercises at all levels more frequently. These systems must be able to be distributed across communications networks, allowing staffs at different locations to participate as part of a joint team. M&S tools must utilize warfighter tools and databases “as is” to provide the most effective and realistic mission training environment possible.

Embedding simulations in NECC or making them available via the web, commanders will be able to conduct on-demand, realistic training on short notice. These same M&S applications will be used for developing plans and forecasting the effects of actual operations as well. They can be used to assist commanders and staffs in the decision making process by providing them with a facsimile of what might occur given the same conditions as replicated in the simulation application. This type of technological capability provides commanders and other operators with decision tools to increase the speed and quality of decision making in both training and real world operations. This improved decision superiority affords the opportunity to improve lethality, survivability and mission accomplishment effectiveness.

This effectiveness can be further improved by integrating the development of M&S application development with human-system design principles.

6.2.3.4 Human System Interface

The goal of HSI is to influence concept refinements/ technology development, system design, and associated support requirements so that developmental, non-developmental, and product-improved systems can be operated, maintained, trained, and supported in an optimized, cost-effective and safe manner.

Crucial to the development and subsequent fielding and use of NECC will be “ease of use.” NECC should capitalize on those de-facto standards employed currently in our society. NECC adapts the same or similar interfaces used by our most successful military, commercial and academic applications and operating systems. There is nothing inherently different in document creation, manipulation and sharing, database management, discovery, search, etc., for military use compared to benchmark civilian use. Differences are generally in matters of degree, security, or mobility rather than in basic design.

A concerted effort by NECC to employ these ubiquitous standards and techniques for an increasingly computer savvy younger generation will minimize the need for military specific institutional training. To this end, COTS technology will be considered in the capability development process.

6.2.3.5 Attributes

To support warfighter training at the individual/positional, unit, force, component, and Joint levels, NECC must provide adequate training support tools that are embedded in all applications/systems fielded as part of NECC increment one. Ease of use and military utility by minimally trained users must be paramount. System use must enhance warfighter operational processes and not impede effectiveness by mandating change in processes simply for technical reasons. Conversely, information technology tools should not mindlessly automate manual processes when procedural improvements can be achieved using information technology in new ways. System ease of use shall meet warfighter need to minimize formal training requirements and support intuitive change in process where needed.

NECC training support capabilities must support joint and Service doctrine and processes. There are a number of attributes dealing with standardization, doctrine, common techniques and procedures exemplifying the kind of design criteria to which training support tools should adhere. Some examples might include: graphic symbology in accordance with military standard 2525B, abbreviations, and acronyms as per Joint Pub 1-02, and use of graphical user interfaces (GUIs) replicating the feel of commonly used office products. These attributes should provide tools not just for training, but for execution. They should be the same tools used in operations, but with an ability to use for training only and tailorable by units without the need for extensive contractor support. In the end, the intent of these attributes would be to provide commanders and staff the appropriate tools to integrate models and simulations, training, and some level of human performance.

6.2.3.6 Mission Rehearsal and After Action Review

NECC will provide the enhanced capability to support Mission Rehearsal, and After Action Review. NECC capability will support the three primary Mission Rehearsal and AAR functions of Data Collection, Analysis, and Presentation. NECC capability will include the ability to discriminate and partition training, Course of Action Analysis, Mission Rehearsal, and After Action Review activities and data from real world activities and data.

6.3 NECC Attributes

From the Joint C2 Functional Concept (Joint Staff J6, February 2004), critical attributes necessary for the future NECC concept were developed based on a review of the future operating environment and input from the Combatant Commanders. These included the need for an overall joint C2 capability with a high degree of agility and a number of additional attributes reflecting the successful performance of Information Age distributive collaborative functions necessary to achieve such agility. Agile C2 allows

JFCs to access and plan COAs, make timely and accurate decisions, adapt to changes in the operational environment, and quickly achieve desired effects to include dispersed C2 and disconnected operations. Key enablers of Agile C2 are cohesive teams, shared high-quality information, and a network-based distributive collaborative environment. For a further attribute discussion, see the Joint C2 Functional Concept. NECC attribute parameters are documented in Linked Extension H.

7 Family of System and System of System (SoS) Synchronization

GCCS FoS and other current C2 system capabilities will migrate to a single integrated joint C2 architecture comprised of NECC MCPs built on common GES. GCCS-J (Joint), Service GCCS variants, and Common Operating Environment (COE) 4.X systems will remain operational during the migration. GCCS-J and Service variants will continue to comply with COE 4.X interoperability standards until they migrate to NECC. The NECC FoS and SoS synchronization table is documented in Linked Extension H.

8 Information Technology and National Security Systems (IT and NSS) Supportability

As implementation of a net-centric environment increases the number of touch points enabled by data/ information-sharing capabilities vertically and horizontally linked through the NECC mission space, a logical expectation is an increase in bandwidth requirement(s). The pragmatic approach to solving bandwidth issues is to attack the problem from the supply and demand standpoints. This is done by constantly working to insert advancing capabilities to expand available bandwidth on the supply end and by mandating bandwidth efficient NECC design and selectable options for bandwidth-constrained warfighting tactical edge users. This approach will produce a strategy aiming for dynamic equilibrium as supply and demand needs ebb and flow. NECC IT development strategy will leverage DoD “best practices” guidance such as Net-Centric Enterprise Solutions for Interoperability (NESI), a US Navy Program Executive Office (PEO) for C4I and Space, United States Air Force (USAF) Electronic Systems Center, and Defense Information Systems Agency collaboration, and the Assistant Secretary Defense Networks and Information Integration (ASD NII) Net Centric Checklist to facilitate the design, development and usage of common information systems that support Net-Centric Warfare.

8.1 NSS Supportability

Intelligence integration into a COP for receiving, displaying, and re-transmitting correlated information is one of the highest priorities to support CCDR and JFC/JTF ability to exercise C2 of forces. In addition, the integration of appropriate intelligence data into the CTP at the JFC/JTF levels establishes the linkage between the collection, sharing, processing, and exploitation of operational information and employment of operational firepower, thereby underpinning the commander’s commander mission and

situational awareness. This requirement is reflected in the Increment I development and fielding priority for Situational Awareness capabilities.

8.1.1 Intelligence Tasks

Intelligence tasks support all functional areas. Intelligence objectives focus on improving availability and functions necessary to satisfy the needs of the commander and his staff for integrated data from all airborne, overhead, maritime, and ground reconnaissance/surveillance systems to provide RT and NRT joint force and Service/functional component level information.

8.1.2 Automated Access

Commanders and their battle staffs require automated access and visibility into national and theater Collection Management (CM) information within the COP. Past, current, and projected CM information and plans must be available in graphical, tabular, and text forms from within the COP. The capability to access and assess performance parameters of the networks comprising the CTP, evaluate the quality and integrity of data being transported on the network, identify net loading conditions, and implement automatic user-defined doctrine statements will permit rapid operator response to changing battlefield conditions. This will provide insight into collection operations, enabling optimization of limited theater, joint force, and Service/functional component ISR assets and satisfaction of information needs. An automated ISR Asset Battle Management (BM) capability is required within NECC to effect optimization and dynamic management of ISR assets in support of, and synchronized with, the Commander's intent, national requirements, and campaign objectives. Commanders, their battle staffs, and supporting intelligence analysts require automated access to Signal Intelligence (SIGINT), Human Intelligence (HUMINT), Measurement and Signatures Intelligence (MASINT), Open Source Intelligence (OSINT), Geospatial Intelligence (GEOINT) data/products and analytical tools to create, retrieve, update and delete records in local IC databases in RT and visualize this data within the COP.

8.2 Information Technology Systems Supportability

The GIG is a key enabler of Net-Centric Operations and Warfare (NCOW) and is essential for information and decision superiority. It will enable C4I integration of joint forces, improve interoperability of systems, and increase optimization of bandwidth capacity. Integration of current, modified, and new software capabilities will follow applicable DoD 5000 series guidance. For operations on SCI networks, NECC will comply with applicable Intelligence Community Directives (ICD)/Director of Central Intelligence Directives (DCID) and TSABI/Defense Intelligence Communication Accreditation Support Team (DICAST) certification and accreditation requirements. NECC interoperability and supportability certification and accreditation testing shall be performed IAW Chairman of Joint Chiefs of Staff Instruction (CJCSI) 6212.01, DoD Directive (DoDD) 4630.5 and DoDI 4630.8.

9 Intelligence Supportability

NECC shall conduct C4I supportability, sustainability, affordability, and interoperability analysis and document the needs/deficiencies/solutions in an ISP. To receive Military Intelligence Requirements Certification, analysis shall address conformance to applicable DoD integrated architecture and associated behavioral models in accordance with CJCSI 3312.01. (See Linked Extension E, for Threat Summary and Assessment).

9.1 C4I Standardization, Interoperability, Commonality, and Integration

NECC will be interoperable with the GIG infrastructure. NECC users will utilize the Defense Information Systems Network (DISN), JWICS, commercial, host-nation, and joint/Service/functional component communications networks for secure connectivity in garrison/deployable networks and shared access to Service/Agency/joint-provided data sources. NECC shall identify and use DoD standards for data and metadata as defined in the appropriate DoD directives and shall comply with DoDD 8320.2. This action will help business processes operate in a seamless, interoperable environment.

9.2 Joint and Multinational Interoperability

NECC architecture will be interoperable to support secure vertical/horizontal information exchange between NMCS, JFCs, and multinational components, to include interagency and NGO when applicable. Connectivity to multinational components will comply with applicable agreements, communications publications, technical security interoperability standards, and CJCSI 5714.01.

9.3 Data Requirements

NECC users will access Service/Agency/joint-provided C4ISR data sources utilizing NCES services and GES. NECC capabilities will comply with DoD Data Strategy and DoDD 8230.

9.4 Joint Technical Architecture

NECC will comply with information technology standards in the DISR.

9.5 Information Assurance

IA protects and defends NECC and its shared data sources by ensuring availability, integrity, authentication, confidentiality, and non-repudiation. It provides for NECC restoration by incorporating protection, detection, and reaction capabilities. IA involves assessment of operational risk and assurance that DIACAP certification and accreditation requirements are met through informed Designated Approving Authority (DAA) risk acceptance and approval. IA and information interoperability capabilities must be fully integrated to include implementation of DoD trust authority infrastructure, as available. Approval of cross-domain services to exchange information across multiple security domains will occur by using processes (e.g. SABI, TABI, TSABI) approved by the CJCS (CJCSI 6211.02B).

10 Electromagnetic Environment Effects (E3) and Spectrum Supportability

NECC shall be mutually compatible and operate compatibly in the electromagnetic environment. Any hardware fielded due to this requirement shall not produce electromagnetic emissions interfering with or degrading the performance of existing platform/dismounted soldier instrumentation, weapons, and sensors or communications subsystems. NECC shall not be operationally degraded or fail due to exposure to electromagnetic effects, including high intensity radio frequency (HIRF) transmissions or high altitude electromagnetic pulse (HEMP). Electromagnetic Control (EMC) performance requirements are specified in MIL-STD-464A (platform level) and MIL-STD-461E (equipment and subsystem/system level) for all electromagnetic disciplines. NECC equipment will comply with the DoD, National, and International spectrum management policies to include obtaining spectrum supportability in all host nations where deployment of the capability is planned. Spectrum supportability includes spectrum certification, frequency assignments, and host nation coordination. DD Form 1494 will be submitted to the Military Communications Electronics Board (MCEB) Joint Frequency Panel. Wherever possible, protection will be afforded to NECC elements in facilities meeting MIL-STD-188-125.

11 Assets Required to Achieve Initial Operational Capability (IOC)

Execution of Command and Control requires the use of open systems that are interoperable and available to the NMCS/C/S/A. NECC will use a spiral development process to field capability modules via continuous non-traditional spiral capability implementation concepts. NECC will not have a traditional Initial Operational Capability (IOC), but will deliver capabilities as they are certified for fielding via a succession of spirals and therefore IOC is event-driven and not tied to a specific date.

Increment I development will commence in FY08 with IOC estimated for 4QFY09. Although Increment I capabilities will not support all operational and tactical users beyond the NMCS, JFC and Service/Functional Component levels, NECC will provide services those users can access. To support expanded services to this critical community, it is expected that Increment II activities will commence prior to completion of Increment I. Since future increments will build upon and be shaped by Increment I, it is imperative that NECC provide early delivery of capabilities to support commencement of Increment II development.

The number of capabilities modules to be developed in System Design and Development (SDD) phase will be determined during the Technology Demonstration (TD) phase in conjunction with the JCCD process. With the GCCS FoS as its starting point, the program will regularly and frequently field spirals that provide subsets of the capabilities specified in this Capability Development Document (CDD). NECC Increment I will be

fielded and accessible by NMCS, all CCDR and Service Components, as well as applicable U.S governmental agencies, DoD COIs, allied and coalition forces, and NGOs.

11.1 Open Systems

NECC uses standards-based or COTS open-designed systems to insert new and emerging technologies. NECC will leverage existing C2 systems as they expose systems data consistent with NECC architectures. Use of open systems/architectures by Service/Agency/joint functional components is required to permit seamless information exchange. Seamless information access and exchange allows analysis of shared data (e.g. modeling and simulation), projection of needs, and time-sensitive decision-making. Use of open systems enables distributive collaborative and interactive information exchange necessary to develop accurate BA. Modular Open Systems Architecture (MOSA) is the Department of Defense implementation of "open systems." The NECC joint program manager should incorporate MOSA principles into the acquisition strategy to ensure access to the latest technologies and products, and to facilitate affordable and supportable system development and modernization of fielded assets. The chosen acquired services and applications shall be properly tested and screened to reduce the risks of attacks e.g. malicious code insertions

11.2 Interoperability Certification

Service/Agency/joint component systems must demonstrate they meet interoperability certification requirements as verified through testing and as delineated in the most current versions of DoDI 5000.2, CJCSI 3170.01, DoDD 4630.5 and DoDI 4630.8, and CJCSI 6212.01. The Joint Interoperability Test Command (JITC) will be the primary interoperability certification agency for NECC.

11.3 Shared Data Sources

Service/Agency/Coalition-unique applications are based on GES enabling shared access to Service/Agency/joint-provided data sources. Shared data sources are the Service/Agency/joint-provided databases essential to the NMCS and JFCs' ability to plan, execute, monitor, and assess joint and multinational operations. Achieving seamless information exchange requires the establishment of a vocabulary across domains. The cross component shared authoritative data sources will be clearly identified in the data vocabulary guide generated by the NECC community.

12 Schedule and IOC/Full Operational Capabilities (FOC) Definitions

NECC will not have a traditional IOC and Final Operational Capability (FOC). With the GCCS FoS as its starting point, the program will regularly and frequently field spirals that provide subsets of the capabilities specified in this CDD. Increment I IOC is currently defined as providing users with selectable capabilities to conduct mission tasks supporting command capability and C2 activities from the NMCS through the JFC and Service/Functional components to include Standing Joint Force Headquarters (SJFHQ). The traditional FOC concept is problematic for NECC. A services/software intensive,

evolutionary acquisition program continually develops and delivers new, incremental capabilities in defined spirals and increments. Therefore, an evolutionary acquisition program will attain FOC only at such time as the user determines that Increment I has met all threshold capabilities. NECC is estimated to reach IOC in 4QFY09.

Delivery of capability spirals will require testing and certification of each spiral prior to fielding to ensure no loss of existing capability, mission performance, safety certifications, IA certification and accreditation, interoperability and compliance with data and net-centricity standards. The Commander's overall capabilities will be improved with each additional capability spiral. Individual capability spirals may not meet all NECC Increment I KPP threshold requirements but will contribute to the aggregate improvement of NECC with the sum of all capability spiral testing/certification culminating in an IOC determination.

This section establishes support objectives for NECC increments of operational capability. NECC will evolve over time through ongoing concept development and experimentation. Based on a three-year Increment I beginning in FY08, followed by projected two two-year increments, the content of each fielding increment will be determined by the maturation of key technologies. Because this CDD specifies capabilities for both Increment I and future increments, it will be regularly reviewed and revised to ensure that the program's spirals are meeting current warfighter needs. Synchronization of C2 FoS and other related program baseline schedules with NECC spiral acquisition schedule is critical to sustainment of C2 system interoperability and vertical/horizontal collaboration for warfighters at all command and control levels throughout NECC development and fielding process.

12.1 Evolutionary Acquisition

NECC will employ evolutionary acquisition and spiral development to speed delivery of advanced joint C2 capabilities to its users. The evolutionary acquisition process is designed to develop and field demonstrated technologies to the warfighter while providing for follow-on improvements. It focuses on providing NECC users time-phased increments of capabilities less than the full requirement as a trade-off for earlier delivery, affordability, and risk reduction. Executive Agents, CCDRs, Services, and Agencies will contribute to the evolution of capabilities to meet warfighter needs, to include capability spirals for MCP development and life cycle support. NECC will be the product of an iterative process including innovation and experimentation.

12.2 Initial Operational Capability (IOC)

IOC (forecasted for 4QFY09) for Increment I shall be considered attained when users at the NMCS through the JFC and Service/Functional components to include SJFHQ have been provided with selectable capabilities to conduct mission tasks supporting command capability and C2 activities, the Commanders have determined personnel are adequately trained and judged to be mission ready; maintenance and support personnel, facilities and supporting infrastructure are in place to support the JFC/JTF/SJFHQ [to include required spares/repair parts, Test, Measurement, Diagnostic Equipment (TMDE), etc.]; and

selected capabilities are certified as interoperable by the JITC prior to IOC. JITC and test organizations will certify each spiral in series. Each spiral will be tested in the most current operating environment resulting in an iterative testing and certification process and a cumulative IOC determination to maintain joint command and control integrity and NECC user trust.

12.3 Full Operational Capability (FOC)

FOC for Increment I (projected for 4QFY10) will be achieved when NECC fielded to the NMCS, CCDRs, JTFs, JTF Service and Functional Component Commanders has met threshold Increment I capabilities. Increment I FOC requires positioning for long-term life cycle management. Change, alteration, and modification to available technology will be the order of the day as NECC progresses toward FOC. Increment I FOC is event-driven and not tied to a specific date.

12.4 Ready for Training (RFT)

RFT is when all elements (e.g. training capability, logistics support, maintenance support, training syllabus and lesson plans, and instructors) are verified available for training, the performance of the training device conforms to needs, and the user community accepts the training capability.

13 Other Doctrine, Organizational, Training, Materiel, Leadership and Education, Personnel, and Facilities (DOTMLPF) Considerations

Other DOTMLPF considerations supporting NECC incremental objectives are annotated in post-CDD detailed requirement documentation and delivered to the materiel developer or other applicable organizations to best support the capability under development. An overview of DOTMLPF considerations is documented in Linked Extension G.

14 Other Attributes

Associated attributes are detailed in the following subsections.

14.1 Drivers

The key elements related to drivers include design, cost, and risk. Each is described in the following subsections.

14.1.1 Design

NECC's open systems design approaches (using standards-based or COTS systems) enable insertion of new and emerging technologies while maintaining interoperability with existing C2 and other GIG capabilities. Use of open systems by Service/Agency/joint components permits seamless information exchange. Use of open systems enables distributive, collaborative and interactive information exchanges necessary to develop accurate BA. Service/Agency/joint component systems must demonstrate they meet interoperability certification requirements, as verified through

testing. Service/Agency/Coalition-unique applications based on GES enable shared access to Service/Agency/joint-provided data sources. Shared data sources are the Service/Agency/joint-provided databases essential to NMCS, JFC and component(s) ability to plan, execute, monitor, and assess joint and multinational operations.

14.1.2 Cost

As the roadmap for NECC acquisition structure is determined, affected Services and Agencies will build program and budget estimates to execute their respective responsibilities. They will also build program and budget estimates to execute NECC-specific responsibilities in concert with GES definitions, and build program and budget estimates to execute their lifecycle management responsibilities. Table 15.1 details the “current” estimates for FY and total program costs.

14.1.3 Risk

NECC mitigates security risks and meets all current security provisions articulated in appropriate DoD and IC policies, procedures, and instructions, including DoDD 8500.1. All process failures and processing exceptions of NECC shall be handled through error handling and recovery mechanisms consistent with threat and risk levels associated with the processing task.

14.2 Human Systems Integration (HSI)

HSI considerations must be based on a review of the mission need, HSI requirements of the previous system(s), and available information for existing analytical processes. HSI will be considered in all NECC design and development phases. Interaction of these domains will be addressed in the HSI Plan. The HSI domains (e.g. environmental, safety, health, human factors engineering, and personnel survivability) will be optimized to support manpower, personnel, and training needs (e.g. ISP, Product Support Management Plan) with the goal of minimizing operational cost.

14.3 Embedded Training Support

NECC training concept and plan incorporates an embedded, organic computer-based training capability.

NECC will provide the embedded capability to access and use both organic (i.e., on-platform) or web-based tools/systems in the training support arena that apply to human-machine interface, modeling and simulation tools and training management tools which facilitate training support to the warfighter. NECC will include alerts to notify training managers of training updates and new capability, to include updates and new capabilities pertaining to training support software or systems. NECC will embed help tools and access, through the GIG, to 24/7 human help desk support designed to facilitate ease of use for users and units and minimize institutional training. It will also embed modeling and simulation tools that facilitate Live, Virtual, and Constructive training as well as training management tools that assist warfighters in connecting to a JNTC.

14.4 Information Protection

NECC will leverage the NCES information assurance capabilities to provide information protection for all NECC shared data sources, ensuring their availability, integrity, authentication, confidentiality, and non-repudiation. NECC will leverage the NCES information assurance capabilities to provide for restoration of NECC data sources by incorporating protection, detection, and reaction capabilities.

14.5 Nuclear, Biological, and Chemical Contamination

NECC will be deployed to host sites providing an un-hardened or hardened physical structure to house NECC operations. Conventional, initial nuclear weapons effects and Chemical, Biological, Radiological, Nuclear, and High Yield Explosives (CBRNE) survivability is equivalent to the host site in which it is installed. NECC and its sub-components must be able to operate in a CBRNE contaminated environment. An Environmental Control Unit (ECU) will facilitate the addition of CBRNE filtering equipment. Personnel shall be able to set-up, tear down, maintain, and operate NECC while wearing Mission Oriented Protection Posture (MOPP IV) ensemble. Equipment shall be designed or procured to enable operators to perform tasks with no more than 15 percent degradation (time) while in MOPP IV ensemble. It shall also allow for performance of mission tasks in an operational environment without suffering more than a 50 percent degradation (time) considering environmental (internal heat) stress conditions.

14.6 Physical and Operational Security Needs

Security needs for NECC are detailed in the following directives:

Protection of Classified Information. The handling, storage, and destruction of all classified information must be done IAW DoD 5200.1-R, DoD Information Security Program Regulation, 14 January 1997, and applicable service regulations supplementing DoD 5200.1-R.

NECC Security Operations. NECC will ensure access to and leverage of NCES provided IA/Security services for authentication, confidentiality, integrity, and access control. NECC shall maintain minimum IA Defense-in-Depth standards, including certification and accreditation in accordance with the DIACAP process. NECC will interoperate with security management and the DoD public key infrastructure. NECC will provide proof of information origin and receipt as required.

Computer Security. NECC shall maintain IA Defense-in-Depth standards and be certified and accredited at the system and subsystems level IAW DIACAP. Connectivity must take into account the classification level of each system, apply appropriate controls to every system and interconnecting network, and comply with DCID 6/3 Protecting SCI within Information Systems. Protected distribution system or NSA-approved encryption must be used for all classified communications outside controlled areas.

Anti-tamper and Technology Protection. NECC configuration must have integrated, interoperable, and supportable system security able to prevent tampering critical weapon

system components, information, and technologies and maintenance of Technology/Program Protection. Threat appropriate, cost-effective countermeasures shall protect Critical Program Information, technologies, and equipment throughout the life of NECC. Security and unscheduled security retrofit costs will be minimized through maturation.

14.7 System Safety

Required by DoD Directive 5000.1 of 12 May 03 (The Defense Acquisition System) and MIL-STD-882 Series. DoD Instruction 5000.1 states: “Safety shall be addressed throughout the acquisition process. Safety considerations include human/system interfaces, toxic/hazardous materials and substances, production/manufacturing, testing, facilities, logistical support, and weapons.

Every attempt will be made to prevent NECC from introducing new hazards to personnel, equipment, or facilities. If new hazards are introduced, their risk shall be identified, tracked, and mitigated to the lowest possible level.

A NECC system safety program will be established in accordance with the MIL-STD-882D of 19 Jan 93 (DoD Standard Practice for System Safety) and Service unique system safety requirements. The NECC system safety program will also address hazards created by any source such as software and interoperability issues.

An NECC Software System Safety Program will be established in accordance with the guidelines of MIL-STD-498 of 05 Dec 94 (Software Development and Documentation) and the “Joint Software System Safety Handbook.” The program shall address the development of software architecture, software, and firmware within weapons, weapons systems, and the weapon control System.

14.8 Logistics and System Availability

To deliver capabilities necessary to transform DoD command and control, NECC is capabilities and service-centric (SOA), not systems-centric. Therefore, NECC essential performance requirements are mission capability specific and must be tailored for each individual NECC capability during the spiral development and test process.

Availability: NECC Increment I systems operate and are available twenty-four hours per day, seven days a week to support operations at the NMCS, JFC and Functional/Service component level. NECC must be able to address and compensate for the loss of a single major component, such as servers, databases, applications, services, infrastructure or other major peripheral on any of the capability sets.

The key hardware, operating systems, and software applications are available to support tasks and functions of the individual NECC elements under the highest traffic loading over the projected NECC support systems' operational life cycle.

Reliability/Maintainability: NECC will field capability in spirals via Capability Modules, therefore traditional logistical standards are difficult to apply as each traditional logistics

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standard cannot be fully verified and tested within the spiral testing/certification process. Specific reliability/maintainability for each capability will be identified and tailored via warfighter input for each individual NECC Capability Module during the spiral development and test process.

Due to the progressive and continuous test and certification process planned for NECC, "final" test is not complete until last Capability Module to be delivered in Increment I is tested against the baseline capability plus all previously fielded Capability Modules. Individual Capability Module test event results evaluating certain nodes, services, components, modules and/or databases, may be extrapolated to derive overall NECC system results; but it would be impossible to test the entire NECC system to traditional logistics standards such as MTBF, MMTR, etc., based on a single Capability Module test/certification spiral. Initial NECC services, application, data and infrastructure reliability/availability/sustainability will be influenced by hardware and bandwidth/connectivity already in place; therefore values for current systems shall provide the baseline metrics that NECC must meet or improve upon.

Equipment: NECC shall, to the maximum extent, consider COTS, GOTS, and non-developmental items (NDI) to minimize total ownership life-cycle costs, leverage greater reliability and maintainability, and assist the technology refresh of systems and their components.

15 Program Affordability

The estimated research, development, test, and evaluation (RDT&E) cost to develop NECC (as currently defined in the NECC CDD) is approximately \$2.7 billion over the long term. The PB08 cost estimate for the total NECC program is depicted in Table 15-1.

Table 15-1 NECC Funding (\$M)

| PE0303158K,A,F,N,M (\$ in Millions / Then Year) | Increment I | | | Increment II | | | Increment III | | INCR I TOTAL | FYDP TOTAL |
|--|-------------|-------|-------|--------------|-------|------|---------------|------|-----------------|---------------|
| | FY08 | FY09 | FY10 | FY10 | FY11 | FY12 | FY12 | FY13 | | |
| RDT&E | | | | | | | | | | |
| Current \$ (POM 08+PDM III) | 92.5 | 168.1 | 223.1 | TBD | 93.3 | 75.6 | TBD | 87.5 | 483.7 | 740.1 |
| Required \$ | 92.5 | 168.1 | 223.1 | TBD | 93.3 | 75.6 | TBD | 87.5 | 483.7 | 740.1 |
| Delta \$ (Current - Required) | 0.0 | 0.0 | 0.0 | TBD | 0.0 | 0.0 | TBD | 0.0 | 0.0 | 0.0 |
| PROCUREMENT | | | | | | | | | | |
| Current \$ (POM 08+PDM III) | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Required \$ | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Delta \$ (Current - Required) | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| O&M | | | | | | | | | | |
| Current \$ (POM 08+PDM III) | 7.3 | 1.2 | 5.8 | TBD | 7.6 | 9.2 | TBD | 9.2 | 14.3 | 40.3 |
| Required \$ | 7.3 | 1.2 | 5.8 | TBD | 7.6 | 9.2 | TBD | 9.2 | 14.3 | 40.3 |
| Delta \$ (Current - Required) | 0.0 | 0.0 | 0.0 | TBD | 0.0 | 0.0 | TBD | 0.0 | 0.0 | 0.0 |
| TOTAL | | | | | | | | | | |
| Current \$ (POM 08+PDM III) | 99.8 | 169.3 | 228.9 | TBD | 100.9 | 84.8 | TBD | 96.7 | 498.0 | 780.4 |
| Required \$ | 99.8 | 169.3 | 228.9 | TBD | 100.9 | 84.8 | TBD | 96.7 | 498.0 | 780.4 |
| Delta \$ (Current - Required) | 0.0 | 0.0 | 0.0 | TBD | 0.0 | 0.0 | TBD | 0.0 | 0.0 | 0.0 |
| QUANTITIES | | | | | | | | | | |
| Current \$ (POM 08+PDM III) | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Required \$ | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Delta \$ (Current - Required) | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

This cost estimate is based on preliminary information used and developed during the FY08 budget review process by an OSD issue team. An independent cost estimate will be conducted to meet NECC program Milestone B requirements; this will provide a more refined and detailed cost estimate.

15.1 Implementation Costs

The Executive Agents, CCDRs (via Service sponsor), Services, and Agencies need to assess the impact of NECC on their implementation costs and to plan for and fund those implementation costs in subsequent budget submissions through the FY08-13 budget cycle.

15.2 Way Ahead

As the way ahead is determined for NECC acquisition structure, affected Executive Agents, CCDRs (via Service sponsor), Services, and Agencies will build program and budget estimates to execute their respective responsibilities to execute NECC-specific responsibilities in concert with CES definitions.

Services and Agencies will build program and budget estimates to execute assigned Executive Agents' responsibilities for life cycle management.

Linked Extensions

The following evolving linked extensions are maintained and managed separately by the JCCD after initial JROC validation. They will reside on the JCCD Defense Online (DOL) website (see Page ix) and will ultimately migrate to a single Secret Internet Protocol Router Network (SIPRNet) site co-located with the NECC NRiD repository.

JCCD Defense Online (DOL) website at:

<https://gesportal.dod.mil/sites/necc/JCCD/default.aspx>. The CDD is posted in the "Coordination Cell" link under "Shared Documents," "NECC Capability Documents/NECC Capabilities Development Document and Extensions

Extension A - Integrated Architecture Products

Extension B - References

Extension C – Glossary

Extension D - MCP List and Description

Extension E - Threat Summary and Assessment

Extension F - GCCS FoS to NECC Transition

Extension G - DOTMLPF Considerations

Extension H – C2 Shortfalls, NECC Attributes, FoS Synchronization, JCA Linkage, GEOINT

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Extension I – JC2 Joint Functional Concept, C2 Joint Integrating Concept, and the C2 Capabilities Based Assessment

Extension J – NECC Requirements Identification Database (NRiD) – to be developed

Extension K: United States Army Annex to the NECC CDD

Extension L: United States Navy Annex to the NECC CDD

Extension M: United States Marine Corps Annex to the NECC CDD

Extension N: United States Air Force Annex to the NECC CDD