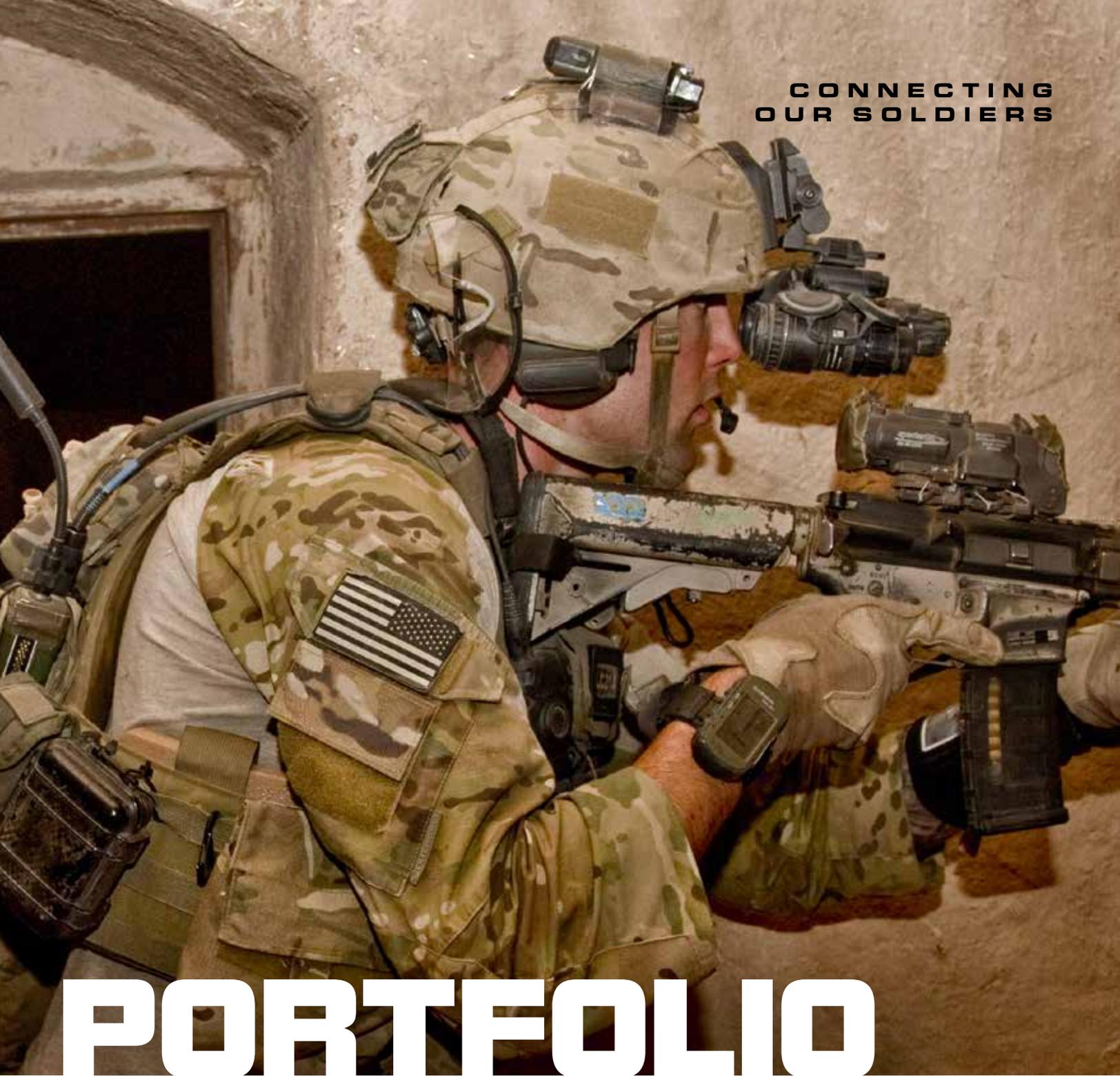


**CONNECTING
OUR SOLDIERS**



PORTFOLIO

PEO  CBT

PROGRAM EXECUTIVE OFFICE COMMAND CONTROL COMMUNICATIONS-TACTICAL



R
GAS
BEFORE

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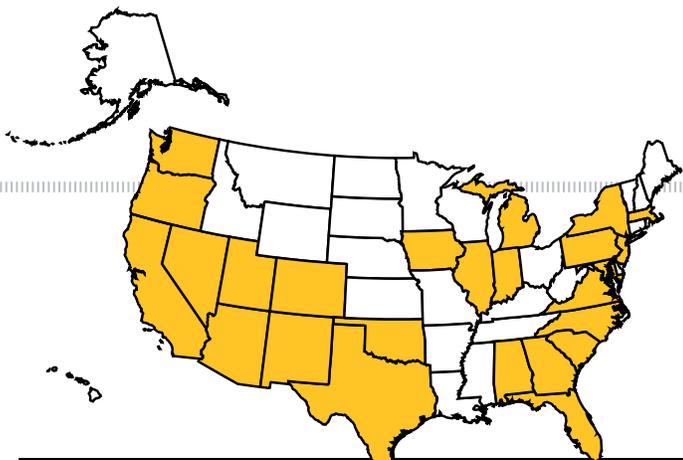
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ACRONYMS



PEO C3T

Headquartered at Aberdeen Proving Ground, Maryland, the Army's PEO C3T develops, acquires, fields and supports the Army's tactical network, a critical priority that brings information dominance to current and future Soldiers. The mobile tactical network delivered by PEO C3T provides secure and reliable communications that allow commanders and Soldiers to stay connected and informed at all times, even in the most austere and hostile environments.



The reach of government and contractors of PEO C3T throughout the United States.





Our goal is to deliver a pervasive, integrated network that provides Soldiers the information they need from garrison to the foxhole, while simplifying the tactical network so it is easier to use, train, maintain and sustain. A simplified network will also continue to drive cost savings by combining hardware and other infrastructure, reducing software development efforts and decreasing the field support required to train Soldiers, troubleshoot systems and sustain equipment.

PEO C3T's first priority remains supporting deployed forces. We have seen the power of the network in the field, where Soldiers have relied on advanced communications technologies to stay connected, exchange voice, data and video, and execute their advise-and-assist missions in vast, challenging terrain. Our equipment and personnel support overseas operations, including Operated United Assistance, Operation Resolute Support, Operation Inherent Resolve, Operation Atlantic Resolve and Pacific operations.

PEO C3T technologies allow Soldiers in tactical

vehicles to plan and execute their missions while on the move across the battlefield, tracking friendly and enemy force locations on a digital map. Capabilities fielded by PEO C3T allow Soldiers to digitally call for fires, accurately engage their targets, send text messages reporting enemy locations or requesting medical help, and track unit readiness and equipment availability.

In Fiscal Year 2016 we fielded new capabilities to more than 75 Army, Army Reserve and Army National Guard units through the integrated Capability Set Fielding and Unit Set Fielding processes. Capability Sets, currently fielding to Army-prioritized infantry and Stryker brigade combat teams, extend mobile network connectivity from the brigade command post all the way down to the dismounted Soldier.

Now, in support of the operational priorities of Force 2025 and Beyond, which calls for versatility, mobility and interoperability with joint and coalition partners, we are preparing for the future. PEO C3T is focused on four key mission areas to enable an expeditionary, scalable and simplified network that provides users with a

common, intuitive experience across locations, formations and operations. PEO C3T is building an efficient and robust network that provides both path diversity and the ability to rapidly adapt to unique warfighting challenges. We are also preparing the network with cyber defense, able to operate in degraded environments, while also identifying and adapting to malicious threats. We must also ensure we provide the warfighter with access to advanced mission command capabilities for all warfighting functions to enable decisive operations in any environment. Lastly, we will focus on fielding a network that is intuitive and simple to initialize, plan, use, maintain and train.

The PEO C3T staff supports more than 23 key acquisition programs and efforts with expertise in the areas of computer science, program management, engineering, information technology, security, logistics, contracting, procurement, accounting and budgeting. At any given moment, you can find us at the Soldier's side, whether in combat training centers and remote within the continental U.S. locations around the world.



To ensure interoperable, secure, and affordable waveform and wireless communications by recommending standards, conducting compliance and certification analyses in accordance with DoD policies, and maintaining a DoD Waveform Information Repository (IR).



- G2 Software Systems
- Booz Allen Hamilton



DESCRIPTION

The Joint Tactical Networking Center (JTNC) supports the DoD's goal of ensuring interoperable, secure, and affordable waveforms and wireless communications products (WCPs) by recommending standards, conducting compliance and certification analyses, and maintaining the DoD Waveform IR. The JTNC concurrently supports the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD (AT&L)), DoD Chief Information Officer (DoD CIO), and Service initiatives by providing technical expertise to facilitate standardization of key waveform interfaces. The intent is to minimize duplication of waveform developments, increase wireless communications software reuse, promote effective information sharing, and integrate command and control (C2) capabilities.

CAPABILITIES

The JTNC provides coordinated technical support to USD(AT&L) and DoD CIO-related policy initiatives and governance processes aimed at ensuring interoperable, secure, and affordable waveform and wireless communications. To achieve its vision and execute its mission, the JTNC is organized into three functional entities: DoD Waveform IR, DoD Waveform Standards, and DoD Waveform

Compliance and Certifications. At the heart of the JTNC are the enduring, core functions as defined in the JTNC Charter: **DoD Waveform Standards and Software Communications Architecture (SCA)**

- Provides a validated open architecture framework that separates waveform/network manager from the radio set
- Permits common waveform software to be deployed across multiple vendors' radio sets

DoD Waveform IR Management & Configuration Control

- Provides a cyber-hardened, DoD-wide waveform library and controlled access for waveforms and associated network managers, operating environment software, models, architectural standards, and Application Program Interfaces (APIs) based on legal agreements between Government and software developers

Technical assessments of DoD Waveform IR products

- Compliance: preliminary characterizations regarding meeting government standards for interoperability and security
- Analyses: facilitate preparation for participation in Service-level test events
- Certification: comprehensive characterization of DoD

Waveform IR products as to whether they meet DoD standards and policies for interoperable and secure joint tactical networking

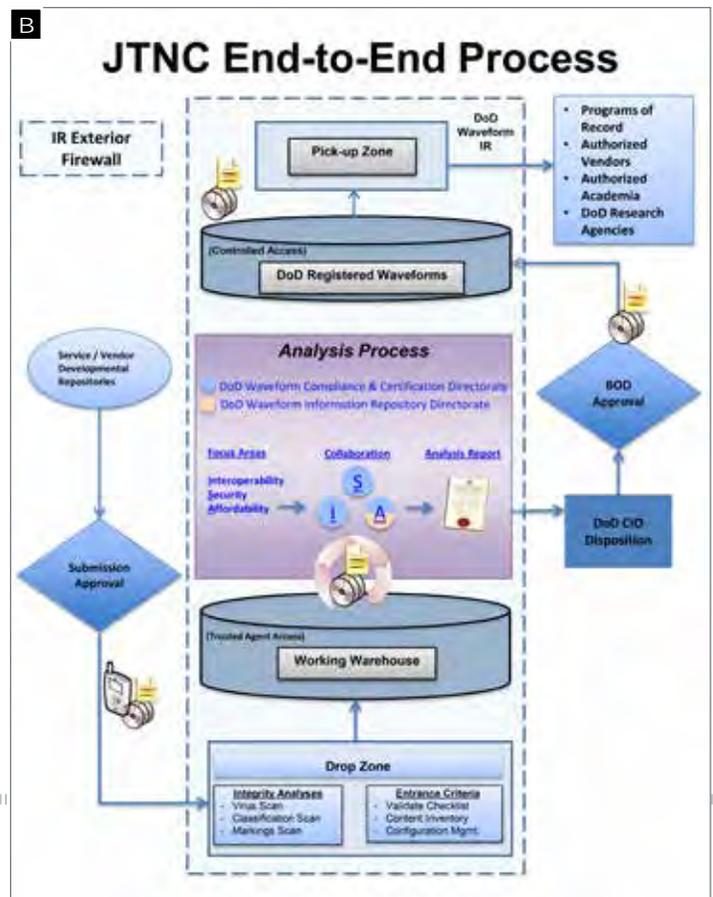
Technical advisor to the JTNC Board of Directors (BoD)

- Provides subject matter expertise on waveforms and wireless communications as requested or identified in support of DoD, the Services, Program Offices, and stakeholders.



A | A soldier communicating via an industry developed, JTNC Compliant, software defined radio.

B | The JTNC End-to-End Process provides an enterprise view of how the JTNC performs the task of analyzing a waveform in a DoD CIO Stage Review.



* Tri-Service Funded Organization: The Army Acquisition Executive is the Lead Acquisition Executive for the Joint Tactical Networking Center and has delegated executive oversight to PEO C3T.

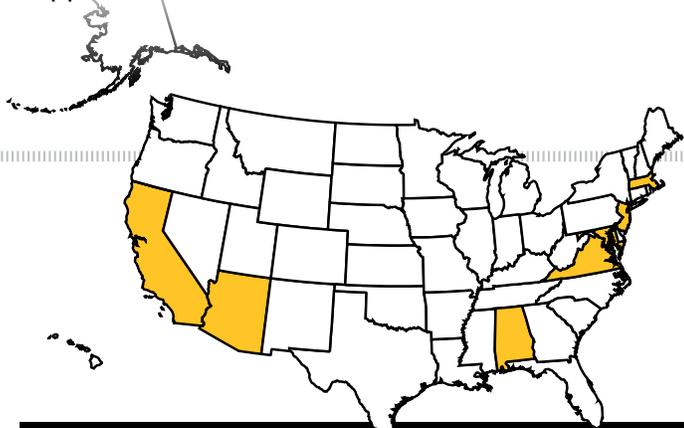
ACQ PHASE*

1. Technology Development
2. Engineering & Manufacturing Development
3. Production & Deployment
4. Operations & Support



CP CE

The Command Post Computing Environment (CP CE), under the direction of Tactical Mission Command (TMC), develops, integrates, and fields the Army's next generation core mission command, situational awareness (SA), and command and control (C2) collaborative environment as well as the movement and maneuver warfighting functional applications to enable operating force commanders to make timely and effective decisions. TMC will provide CP CE, a common, scalable, integrated mission command architecture and infrastructure (hardware, services, and applications) aligned with the Army's Common Operating Environment (COE) to deliver a common map, a common server and a common operating picture to support the Command Post and Mounted environments.



- AASKI
- CACI
- ESP
- Future Skies
- General Dynamics
- ManTech
- SEC
- SED
- WSEC



CONGRESSIONAL LOCATIONS

KEY CONTRACTORS

DESCRIPTION

CP CE transforms the command post by consolidating the capabilities for missions related to fires, logistics, intelligence, airspace management and maneuver into a single, common environment. CP CE will address the current challenges that commanders face to “mentally fuse” the digital information displayed across multiple standalone maps and systems. CP CE consolidates these disparate capabilities and displays them in a single Common Operational Picture (COP) and on a single common, geospatial map. CP CE also provides common messaging, common chat, and common email service for the command post. Capabilities will be provided via simple, intuitive applications with a common look and feel. TMC is developing the common set of data and services, the Core Utilities, the converged hardware solution, as well as warfighting functional applications of movement and maneuver.

CAPABILITIES

- The CP CE Common Information Services (CIS) enables distinct warfighting function systems/services to share a common set of data and services and coordinates information distribution, increasing efficiency, and enabling enhanced functionality. It will provide improved cyber security by reducing “seams” between current systems and increases the ability to provide

relevant and fused mission data to inform decision making. Additionally, leveraging newly developed Command and Control Integration Ultra Lite (C2IUL) mediation capabilities, CP CE provides interoperability with Joint Interoperability Multinational (JIM) and Unified Action Partners.

- The core utilities will provide a simple, intuitive COP, significantly reducing training burden and improving information availability, thereby enabling commanders’ decision making. Core utilities improve situational awareness across the command post and mounted environments. The modularity of design establishes a framework allowing future applications to rapidly and easily integrate new capabilities. The utilities will automate the Military Decision Making Process and Course of Action analysis process, further reducing the burden on commanders and staff. They also provide the core capabilities that all other warfighting function application users can leverage (chat, alerts, messaging, etc), thereby reducing interoperability constraints and development redundancies and costs. This includes an Interactive Training Module, to significantly reduce classroom training burden.
- Applications: TMC is developing a suite of applications designed specifically to support

the movement and maneuver warfighting function. Applications will leverage the common infrastructure and services and will all be developed following Google Material Design resulting in a simpler, more intuitive user interface.

- Tactical Server Infrastructure (TSI) replaces disparate server hardware by merging all operational functions, followed by intelligence functions, onto one common set of servers. TSI enables more server capability and delivers a consistent approach for installation and configuration, creating efficiencies in fielding, training and sustainment.

A | Soldier using CP CE
B | TMC systems inside a Command Post

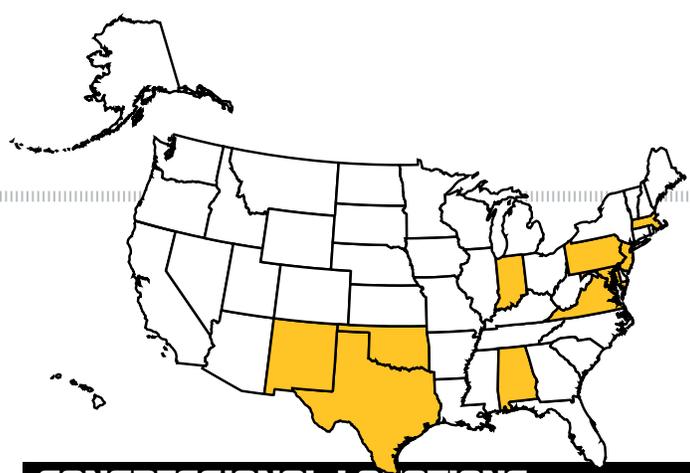


ACQ PHASE

1. Technology Development
2. Engineering & Manufacturing Development
3. Production & Deployment
4. Operations & Support



Fire Support Command and Control (FSC2) empowers commanders to plan and execute the delivery of lethal and non-lethal fires by providing capabilities to visualize fires, situational awareness and increase collaboration among fires staff.



- General Dynamics
- Raytheon
- CACI
- CSRA
- Engility Corp
- Chenega Technology Services Corp.



DESCRIPTION

FSC2 provides the U.S. Army, joint and coalition commanders with the capability to plan, execute and deliver both lethal and non-lethal fires. Many FSC2 capabilities are transitioning to web-based applications that can be accessed via a secure internet as part of the Army's Command Post Computing Environment (CP CE). The CP CE is consolidating and simplifying the separate capabilities commanders use for missions related to all of the warfighting functions and will provide the commander with a consolidated readiness picture on a singular workstation, lessen the logistics trail for the Soldier, reduce the training burden and save taxpayer dollars.

CAPABILITIES

- Advanced Field Artillery Tactical Data System (AFATDS) provides fully automated support for planning, coordinating, controlling and executing fires and effects such as mortars, field artillery cannons, rockets and missiles, close air support, attack aviation and naval surface fire support systems.
- Pocket-Sized Forward Entry Device (PFED) is used by forward observers and fire support teams to transmit and receive fire support messages over standard military line of sight, high frequency and satellite communications radios.

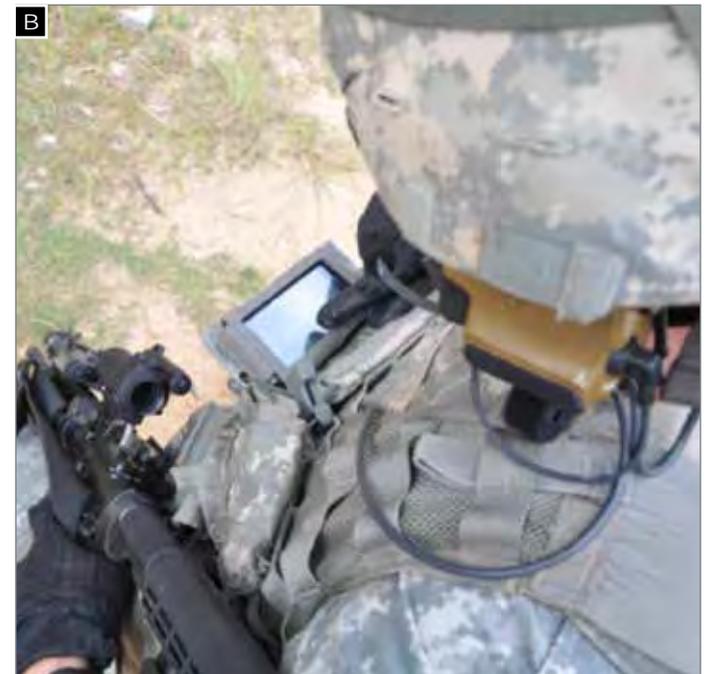
- Lightweight Forward Entry Device (LFED) hosts the Forward Observer System (FOS) software, which enables mounted forward observers and fire support officers to plan, control and execute fire support operations at maneuver platoon, company, and battalion and brigade levels.
- CENTAUR is the lightweight technical fire direction system that provides an automated cannon ballistic firing solution to the Fire Direction Centers (FDCs). Its primary function is a secondary technical calculation check for AFATDS or manual calculations.
- Gun Display Unit-Replacement (GDU-R) digitally receives firing commands from the FDC, which are then forwarded down to the crews of non-digitized Howitzers.
- Profiler weather system improves artillery accuracy by providing Meteorological (MET) data, which is one of five requirements for accurate predicted fires. Profiler provides MET information to field artillery assets via AFATDS. Weather information is received via the Weather Data download site or the Global Broadcast Satellite (GBS) and computations provide correction information along the projectile trajectory and within the target area.



A | Soldier completes a practical exercise at a new field artillery military occupation specialty course hosted by the Wisconsin Army National Guard's 426th Regional Training Institute at Fort McCoy, Wis., Jan. 21

B | Soldier using a PFED Inc II

C | Soldier using a LFED



ACQ PHASE

1. Technology Development

2. Engineering & Manufacturing Development

3. Production & Deployment

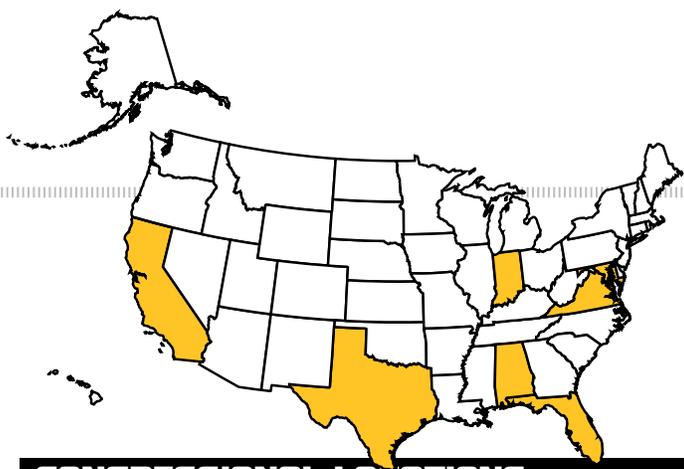
4. Operations & Support





JBC-P

Joint Battle Command-Platform (JBC-P) is the Army's next generation friendly force tracking system, equipping Soldiers with a faster satellite network, secure data encryption and advanced logistics.



- CMDC
- CSRA
- DRS Technology
- General Dynamics
- Northrup Grumman
- MITRE
- SCCI
- SAIC
- ViaSat



CONGRESSIONAL LOCATIONS

KEY CONTRACTORS

DESCRIPTION

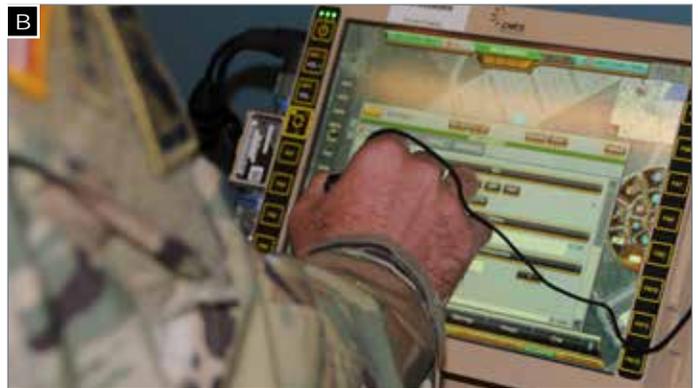
JBC-P, fielded to the first unit equipped in May 2015, is the Army's next generation friendly force tracking system, equipping Soldiers with a faster satellite network, secure data encryption and advanced logistics. JBC-P includes an intuitive interface with features like touch-to-zoom maps and drag-and-drop icons. JBC-P will be interoperatable with the Nett Warrior handheld device, managed by PEO Soldier, delivering situational awareness capabilities to dismounted Soldiers. JBC-P incorporates the common hardware solution known as the Mounted Family of Computer Systems (MFoCS), standardized tactical computers that are scalable and tailorable to the mission and vehicle. Ranging in options from a detachable tablet to a fully-loaded, vehicle-mounted workstation, MFoCS runs not only JBC-P but can also run other software applications, reducing size, weight and power demands. JBC-P builds on the situational awareness capability known as Force XXI Battle Command Brigade and Below/Blue Force Tracking (FBCB2/BFT), which is integrated on more than 120,000 platforms and is fielded or authorized to every brigade combat team in the Army.

CAPABILITIES

- Increased accuracy and density of situational awareness to further mitigate risk of fratricide
- TIGR provides Areas, Structures, Capabilities, Organizations, People, and Events (ASCOPE) data for mapping the human terrain that allows commanders to plan, anticipate and mitigate operational risk
- Orders, graphical overlays, friendly, hostile, neutral, unknown, non-combatant SA
- Free Draw, Free Text, Chat and combat messages
- Sensor integration to enable capability to pinpoint location
- Hybrid network
- Improved user interface
- Electronic Causality Report (ECR)
- Improved route planning



- A** | A Soldier uses JBC-P to send messages and increase situational awareness.
- B** | MFoCS hardware
- C** | Soldiers will be able to operate the Army's primary situational awareness capability, JBC-P, as well as other command, control, communications, computers, intelligence, surveillance and reconnaissance applications.



ACQ PHASE

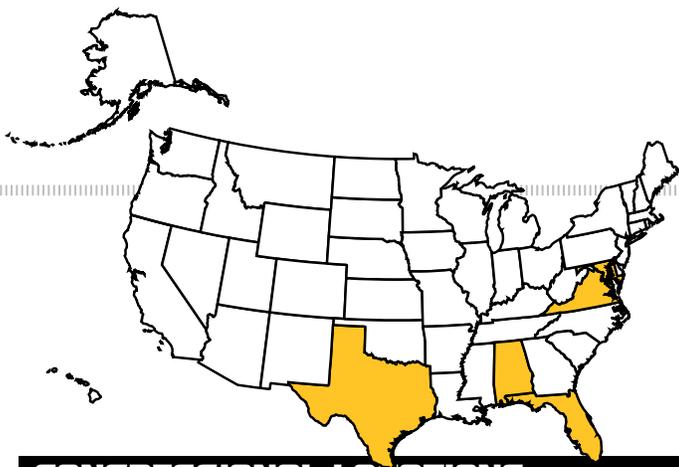
- 1. Technology Development
- 2. Engineering & Manufacturing Development
- 3. Production & Deployment
- 4. Operations & Support





MCE

The Mounted Computing Environment (MCE) will provide a common set of applications and services as part of the Army's Common Operating Environment (COE) to enable mission command on ground platforms. MCE will enable modular and scalable solutions allowing for the convergence of current software systems and the agile development and certification of new on-the-move capabilities.



- DRS Technologies
- General Dynamics
- MITRE
- SAIC



CONGRESSIONAL LOCATIONS

KEY CONTRACTORS

DESCRIPTION

One of six Computing Environments that make up the Army-wide Common Operating Environment (COE), the Mounted Computing Environment (MCE) embraces a commercially based set of standards, a common understanding of data, and a common map to enable integrated applications for development by government and industry partners. MCE also provides data services that work on the Army's tactical radio networks, to enable mission command data to flow between vehicles and command posts, and extends the MCE to the dismounted soldiers.

This strategy keeps today's tech-savvy Soldier in mind, while addressing the need for greater solution simplicity and interoperability across the force. MCE apps will work seamlessly with the Command Post Computing Environment (CP CE) applications, similar to how programs are interoperable between standard computers, tablets, and smartphones.

CAPABILITIES

- Provides operating systems, common applications, software development kits, and standards to implement mission command
- Establishes secure applications that are interoperable with existing mission command systems and allows seamless information exchange across all echelons for a complete situational awareness picture down to the tactical edge
- Enables mission command on-the-move by providing an environment for an integrated suite of platform-based mission command applications and services
- Eliminates redundant hardware, streamlines product development, and consolidates capabilities
- Optimized for use on the existing Mounted Family of Computer Systems (MFOCS)
- Provides standard interfaces to meet the Vehicle Integration for C4ISR/EW Interoperability (VICTORY) technical specifications



- A** | JBC-P serves as the core of the MCE
- B** | MCE is one of the six Computing Environments within the Common Operating Environment
- C** | MCE establishes a common foundation for computer software on mounted platforms.



* Non-Program of Record

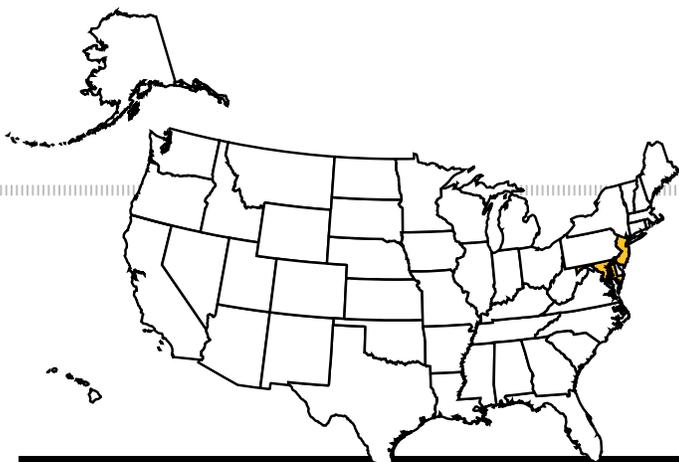
ACQ PHASE*

1. Technology Development
2. Engineering & Manufacturing Development
3. Production & Deployment
4. Operations & Support



SMC

Strategic Mission Command (SMC) develops, integrates, fields, and supports the Army's core mission command collaborative environment and maneuver applications to enable operating force commanders to make timely and effective decisions within the Army and joint/coalition environments.



- CSRA
- ESP
- Future Skies



CONGRESSIONAL LOCATIONS

KEY CONTRACTORS

DESCRIPTION

SMC provides interoperable hardware and software solutions to the Army, joint and coalition partner communities.

CAPABILITIES

- Global Command and Control System-Army (GCCS-A) is the Army's strategic and theater Command and Control (C2) system. It fulfills the need for critical automated command and Commanders to enhance the Soldier's capabilities throughout the spectrum of conflict during joint and combined operations.
- Multilateral Interoperability Programme (MIP) is an interface/gateway/common language definition that facilitates the automatic exchange/translation of the Common Operational Picture (COP) digital information between C2 systems of two or more nations.
- Joint Command and Control (JC2) Initiative - provides intergovernmental, interagency, and multinational cross-Component coordination, synchronization and integration of command and control capabilities with and among the Joint C2 Family of Programs (FoPs).
- Common Software (CS) is a suite of 13 individual products that, when combined, provide the binding agent for interoperability between the Army's C4ISR systems.

- The Command Post of the Future (CPOF) is a decision support system, providing situational awareness and collaborative tools for tactical decision making, planning, rehearsal and execution management from Corps to Company level.
- WAVE – is a commercial-off-the shelf (COTS) Voice over Internet Protocol (VoIP), providing interoperable voice support to CPOF.
- Command Web (CW), is an extensible web framework environment that houses various command and control light-weight web applications called "widgets" to facilitate the fusion of operations information and engineer capabilities to provide a more complete situational awareness picture and engineer staff capabilities.
- Battle Command Common Services (BCCS) and Tactical Server Infrastructure (TSI) provides powerful and capable server suite for virtualizing mission command focused applications while ensuring commonality to the command post hardware infrastructure.
- Joint Automated Deep Operations Coordination System (JADOCS) is a joint mission management software application that provides a suite of tools and interfaces for integration across battlespace functional areas focusing on

the Joint Targeting Cycle. JADOCS provides a timely, accurate, detailed battlespace view for Target Nomination and Vetting, Target Execution & Coordination, Air Operations Information, Intelligence Operations Information, Battle Damage Assessment (BDA) and Campaign Plan.

A | Soldier using GCCS-A
B | Polish army Capt. Lukasz Lacki, left, and U.S. Army Chief Warrant Officer 2nd Class Samuel Tillery help reconfigure the mission network system at U.S. Army Garrison Grafenwoehr (U.S. Air Force photo by Tech. Sgt. Kenya Shiloh/Released)



ACQ PHASE

1. Technology Development
2. Engineering & Manufacturing Development
3. Production & Deployment
4. Operations & Support



TDM

To provide the Army a state-of-the-art, standardized and resourced set of capabilities for the collection and processing of digital media and visual information products within a tactical network operations environment.



• CSRA



CONGRESSIONAL LOCATIONS

KEY CONTRACTORS

DESCRIPTION

In today's operating environment, public affairs teams are often dispatched with combat patrols and small units that deploy to remote locations not supported by current Army networks. Tactical Digital Media (TDM) packages allow these teams to gather, process and deliver audio files, digital imagery and visual media in austere environments. TDM operations rely on U.S., allied and coalition common tactical networks available at the supported unit. The TDM packages include cameras and video equipment, ruggedized laptops, night vision devices and audio capabilities. TDM aids globally deployed Combat Camera (COMCAM) teams, public affairs detachments and Military Information Support and Operation teams operating from Tactical Command Posts, Forward Operating Bases, combat outposts and forward deployed combat patrols. Commanders supported by TDM capabilities are provided timely imagery and multimedia information products that facilitate operational analysis, planning, training and documentation, as well as the digital media content essential to informing and influencing activities to support strategic engagement. TDM products are designed to communicate information, record historical events, support decision-making, and provide accurate information.

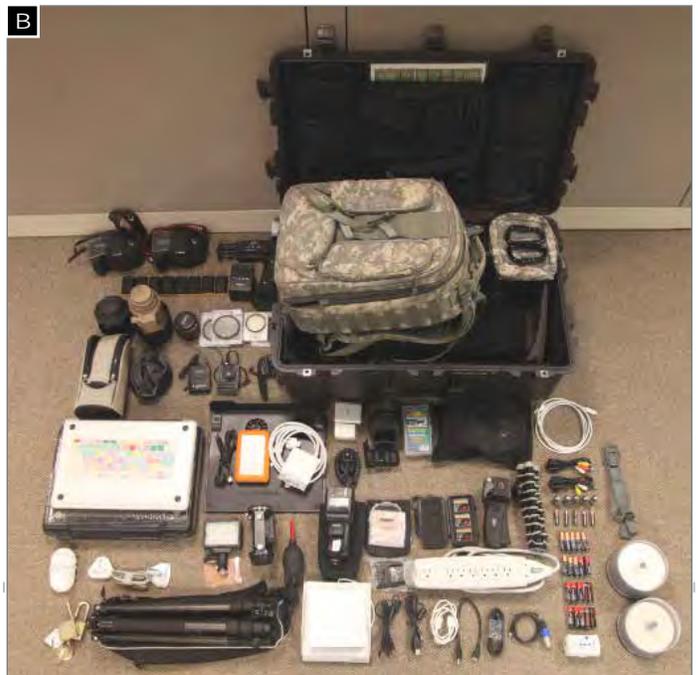
CAPABILITIES

- Tactical Media Acquisition Kit (TMAK) includes hybrid photo/video devices including high definition lens, providing the user with a broad range of versatility and adaptability in capturing photographs and video, as well as processing ability.
- Digital Video Acquisition Kit (DVAK) includes audio/visual products such as a hand-held camcorder to provide digital recording and peripherals to support versatility and adaptability in a tactical operational environment.
- Advanced Acquisition Kit (AAK) include a components added to the TMAK as needed by COMCAM to provide flexibility and agility for Soldiers to accomplish their mission. This includes a remote control for time-lapse, wireless flash, wireless microphone, headphones and stabilizing systems.
- Night Vision Device (NVD) to enable images to be produced in a range of low-light levels in support of a full spectrum of military operations.



A | Tactical Digital Media provides Army public affairs teams the tools needed to produce digital imagery and visual media in austere environments.

B | Tactical Media Acquisition Kit (TMAK)



ACQ PHASE

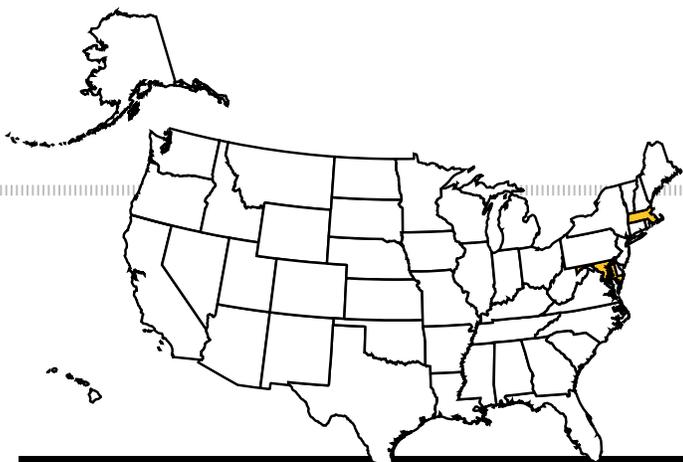
1. Technology Development
2. Engineering & Manufacturing Development
3. Production & Deployment
4. Operations & Support



CHS

A

Common Hardware Systems (CHS) acquires and sustain highly flexible, cost effective, common, and simplified non-developmental Command, Control, Communications, Computers, Cyber, Intelligence, Surveillance, and Reconnaissance (C5ISR) solutions that improve interoperability and connectivity on the battlefield while garnering efficient competition to enable the latest commercial technology solutions to be integrated onto the Army tactical network



- General Dynamics
- Northrop Grumman
- Cobham Intercoms



CONGRESSIONAL LOCATIONS

KEY CONTRACTORS

DESCRIPTION

The CHS program office enables the Army's Operating Force through a holistic approach to acquiring modified commercial off-the-shelf information technology (COTS IT) hardware across the battle space, utilizing the most effective and efficient means to meet tactical program offices' fielding requirements. CHS also enables the Army's crew-served tactical tracked and wheeled vehicles and command posts to gain the decisive edge on the battlefield by providing a reliable, robust, and scalable command, control, and communications intercom system. The CHS-4 and VIC-5 contracts provide the procurement mechanisms to meet Army and DoD requirements.

CAPABILITIES

- Streamlined Rapid Acquisition Process: CHS provides a "one-stop shop" consolidated, rapid acquisition capability for all requirements including engineering support, hardware and sustainment services. CHS works with stakeholders to facilitate the rapid execution of technology insertions, delivery orders, and task orders.
- Configuration Management: The CHS-4 contract provides a mechanism to preserve hardware configurations, including designs for integrated solutions and kits. Enables repeated procurements of a

specific hardware configuration to ensure continued interoperability and information assurance compliance.

- End of Life Management: CHS works with its prime vendor, with OEMs, and with programs to manage technology obsolescence and identify next generation replacement configurations.
- Emerging Technologies: CHS works with programs and with industry to coordinate new commercial information technologies onto the Army's tactical network.
- Better Buying Power: CHS works across programs and with stakeholders of the Common Operating Environment (COE) Computing Environments (CEs) to meet consolidated requirements for common hardware platforms. Programs benefit from quantity pricing discounts achieved through economies of scale and from vendor price reductions.
- Web-Based Customer Interface: Allows CHS customers to search the CHS item catalog and initiate hardware orders.
- Vehicular Intercommunications System: VIS coordinates across stakeholders to identify and consolidate requirements to provide a common solution that meets the Army's operational need.

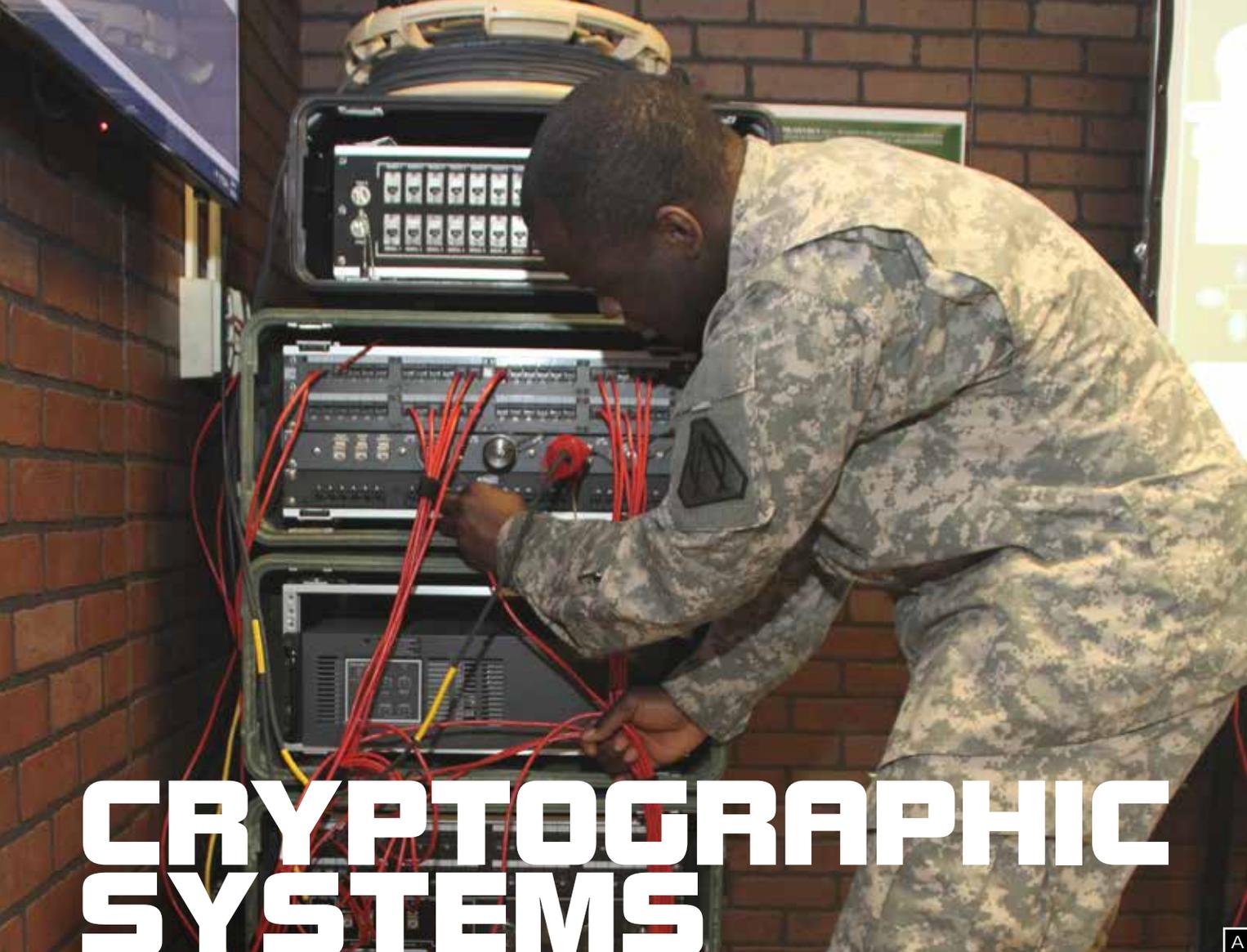


- A** | A Soldier uses a CHS rugged handheld device in the field
- B** | The Tactical Control Console is the primary interface for the AN/VIC-5 system
- C** | A unit executes its mission using CHS equipment in a Tactical Operations Center (TOC)
- D** | Soldiers configure operational transit cases for use in a Command Post (CP)



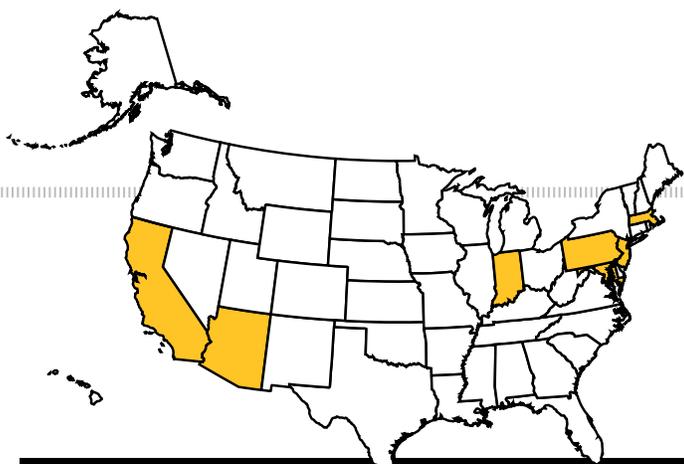
ACQ PHASE

- 1. Technology Development
- 2. Engineering & Manufacturing Development
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CRYPTOGRAPHIC SYSTEMS

Comsec Cryptographic Systems (CCS) procures, tests and fields COMSEC solutions to secure the Army's Information Infrastructure against all cyber threats to increase the Soldier's survivability and lethality on the battlefield, and enable Mission Command activities



- L3
- General Dynamics
- ViaSat
- Raytheon
- BAH



CONGRESSIONAL LOCATIONS

KEY CONTRACTORS

DESCRIPTION

The COMSEC Cryptographic Systems Program procures, tests and fields COMSEC solutions to secure the Army's Tactical and Enterprise Networks. New and emerging architectures, cease key dates and DoD/Army policy are driving the need to replace the current inventory of legacy systems with technologically advanced (network centric/GIG compliant) modern devices that incorporate Chairman of the Joint Chiefs of Staff and Joint Requirements Oversight Council directed cryptographic standardization, Key Management Infrastructure (KMI) and network centric performance capabilities. This enables the Army to equip the force with critical crypto solutions and services during peacetime, wartime and contingency operations.

CAPABILITIES

- In-Line Network Encryptor Family: Encryption systems that provide secure data and voice communications over Internet Protocol (IP) networks.
- Link/Trunk Encryptor Family: Encryption systems that provide secure data and voice communication over point-to-point data links.
- Secure Voice Family: Encryption systems that provide secure voice and limited data communication over radio frequency nets and unsecured IP and public switched telephone networks.
- In-Line Media Encryptors Family: Encryption systems that provide secure data encryption capabilities for data at rest.
- Embedded Cryptographic Modernization Initiative: Retrofit of existing systems with embedded cryptographic capability to ensure they will be able to accept and utilize modern keying material.
- Commercial Solutions for Classified: Commercially available products that when used together in a layered fashion are approved by NSA for protecting classified information.

A | Soldier using Cryptographic Systems

B | Examples of the In-Line Network Encryptor (INE) Family of Cryptographic Systems

C | Examples of the Secure Voice Family of Cryptographic Systems

D | Examples of the Link/Trunk Encryptor (LEF) Family of Cryptographic Systems

E | Embedded Cryptographic Modernization Initiative (ECMI)



* Non-Program of Record

ACQ PHASE*

1. Technology Development

2. Engineering & Manufacturing Development

3. Production & Deployment

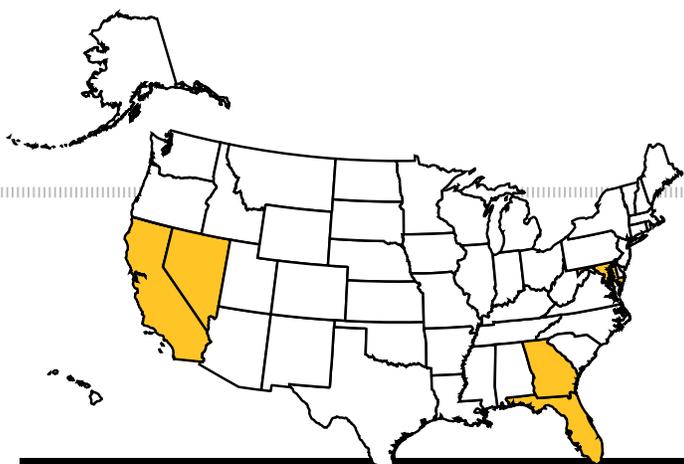
4. Operations & Support





KEY MANAGEMENT

Key Management (KM) develops, procures, tests, fields, and sustains the AKMI program, which automates the functions of COMSEC key management, control, and distribution from the Enterprise down to the tactical edge



- CACI
- Booz Allen Hamilton
- Sierra Nevada Corp



CONGRESSIONAL LOCATIONS

KEY CONTRACTORS

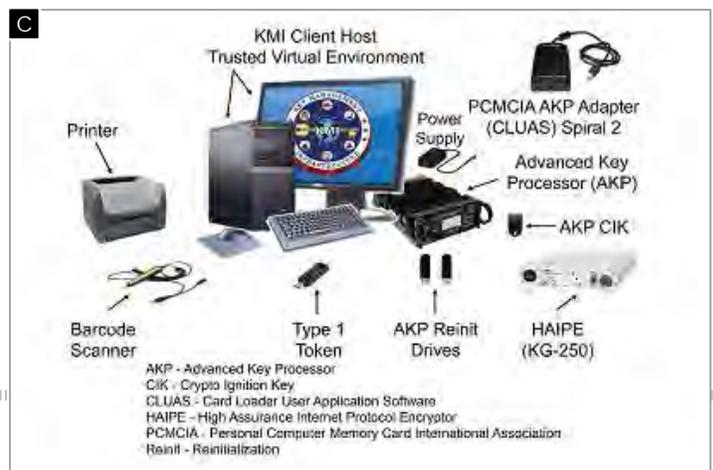
DESCRIPTION

Under the umbrella of the National Security Agency (NSA) PM Key Management Infrastructure (KMI), the Army KMI provides users from the Enterprise down to tactical units with an organic key generation capability and an efficient, secure, electronic key distribution means. AKMI consists of 3 subcomponents: Management Client (MGC), Automated Communications Engineering Software (ACES) and Next Generation Load Device (NGLD). AKMI provides a system for distribution of COMSEC, electronic protection and SOI information from the planning level to the point of use in support of current, interim and objective force at division and brigade levels. It introduces capabilities and processes to transform operations from manual to secure automated distribution of keys and firmware directly to IA devices and End Crypto Units (ECNs). AKMI also expands operations to the DoD unclassified network to reach a broader DoD user base, expands operations to NATO and coalition users to support combatant commanders' needs, and provides flexibility and agility to support dynamic communities of interest.

CAPABILITIES

- MGC: Automates COMSEC management/accounting; electronically generates/distributes keys; and reduces hardcopy files use.
- ACES/JACS: Provides Crypto network planning; generates SOI data; creates COMSEC key tags; supports emerging requirements.
- SKL: Loads keys into ECUs; small and ruggedized design allows easy key transfer; interface between LCMS/MGC (Key Generation), ACES and ECUs.

- A** | A Soldier programs a Simple Key Loader to allow their radios to communicate securely between vehicles
- B** | ACES is a software application that can be employed and operated on a Workstation (Laptop), or in a virtual environment.
- C** | Key Management Infrastructure (KMI) Components



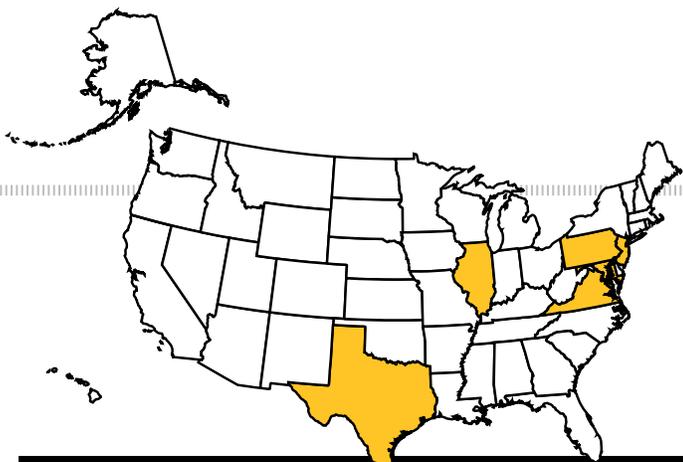
ACQ PHASE

1. Technology Development
2. Engineering & Manufacturing Development
3. Production & Deployment
4. Operations & Support



MILTECH SOLUTIONS A

Military Technical (MilTech) Solutions provides innovative collaboration and information sharing IT services and products that increase the efficiency and operational performance of the diverse DoD workforce



- DSA, Inc.
- IDS
- ManTech
- PKMM



CONGRESSIONAL LOCATIONS

KEY CONTRACTORS

DESCRIPTION

Military Technical (MilTech) Solutions is a fully reimbursable Non-Program of Record that provides collaboration technologies in order to connect the DoD community and close the gap between enterprise and tactical IT. MilTech uses a customer-funded approach that allows partnered organizations to pool resources and co-invest in technologies, reducing each partner's individual costs while addressing critical organizational IT challenges.

CAPABILITIES

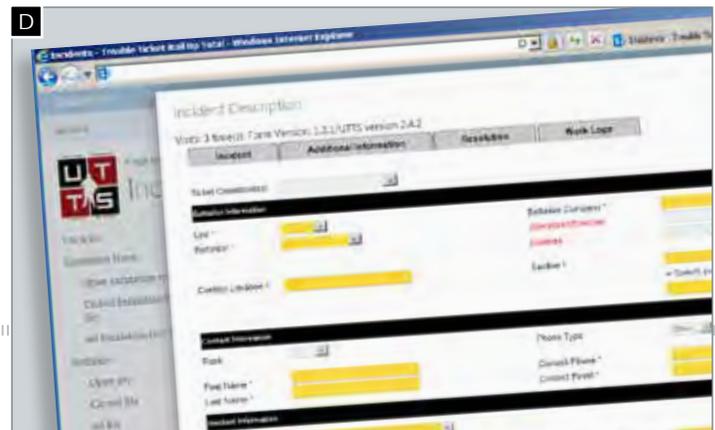
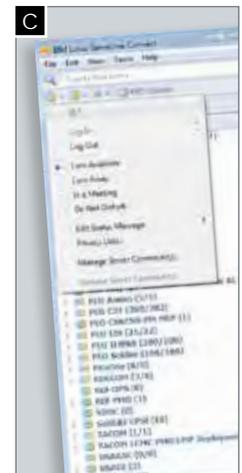
- milSuite: a collection of secure, web accessible online tools based on popular and highly used collaborative sites from the commercial web to provide social networking and collaboration behind the DoD firewall. The milSuite applications - milBook, milWiki, and milTube allow communities to build, share and connect across the DoD community.
- Knowledge Management: a collection of GOTS and COTS tools that includes a Microsoft SharePoint Collaboration Services environment that partners can use and build upon, Green Force Tracker Chat/Instant Messaging and Presence/Awareness capability, and Manpower Information Retrieval and Reporting System

(MIRARS) for managing personnel accountability in emergency situations.

- Single Interface to the Field (SIF): provides reachback capabilities to both the field and enterprise support communities for C4ISR fielded systems. The backbone of SIF is the COTS BMC Remedy ITSM product, used as a hub that can be fed by the Unified Trouble Ticketing System (UTTS), a SharePoint front-end data collection site available to all Army Units at all echelons.
- Business Intelligence and Decision Support: provides capabilities aimed at transforming data into actionable information and facilitating data-driven decision making via big data/ data warehousing to identify trends, costs, outcomes and risks via ad-hoc end-user reporting capabilities and data visualization.
- While MilTech primarily adapts COTS products to solve business challenges via a Software as a Service Model, MilTech also offers custom development and configuration services to include: website, portal, program and project management and knowledge management systems development.



- A** | milSuite has more than 700,000 registered users from across the DoD with 15,000 users onboarding each month
- B** | Over 23,000 SharePoint 2013 users from across the Army Acquisition Community
- C** | Surpassed 50 million chat session on Green Force Tracker
- D** | Unified Trouble Ticketing System (UTTS) linking the tactical SharePoint users to Remedy IT Service Management, enabling Soldiers to manage issues locally and escalate as needed



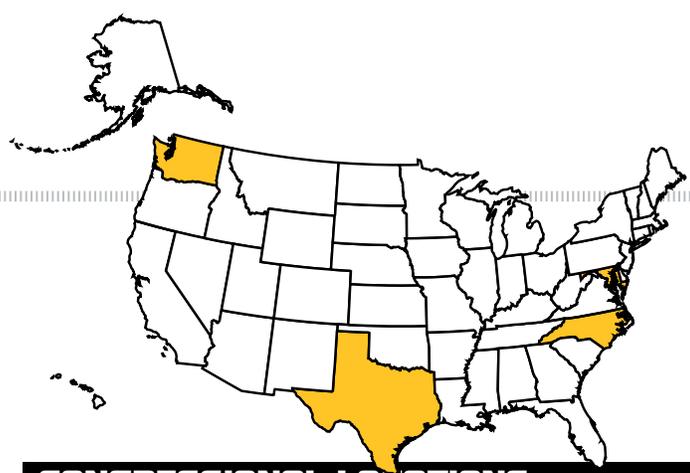
* Non-Program of Record

ACQ PHASE*

1. Technology Development
2. Engineering & Manufacturing Development
3. Production & Deployment
4. Operations & Support



Tactical Network Initialization & Configuration (TNIC) rapidly deliver relevant network initialization products and solutions to the Warfighter in support of evolving Army directives



- Booz Allen Hamilton
- MITRE



DESCRIPTION

TNIC Initialization Products, commonly known as Data Products, include the information required to enable end-to-end network centric connectivity and interoperability across the Tactical Internet (TI) via Warfighter Information Network – Tactical (WIN-T). They enable the Common Operational Picture (COP)/ Situational Awareness (SA) and Variable Message Format (VMF) / United States Message Text Format (USMTF) Command and Control (C2) messages for Mission Command, Joint Capabilities Release (JCR) / Joint Battle Command-Platform (JBC-P), Maneuver, Fires, Aviation, and selected Intelligence, Electronic Warfare & Sensors (IEW&S) and Enterprise Information Systems (EIS) products. In accordance with Unit Set Fielding (USF) Conferences, Data Product schedules are synchronized to meet the USF requirements, such as Product Acceptance Tests (PAT2), Validation Exercises, PM Fieldings, Initial Capabilities Development (ICD) and deployment events. Baseline Data Products are developed according to Modification Table of Organization and Equipment (MTOE), Network Basis of Issue (NBOI), Business Rules and ICD authorizations.

CAPABILITIES

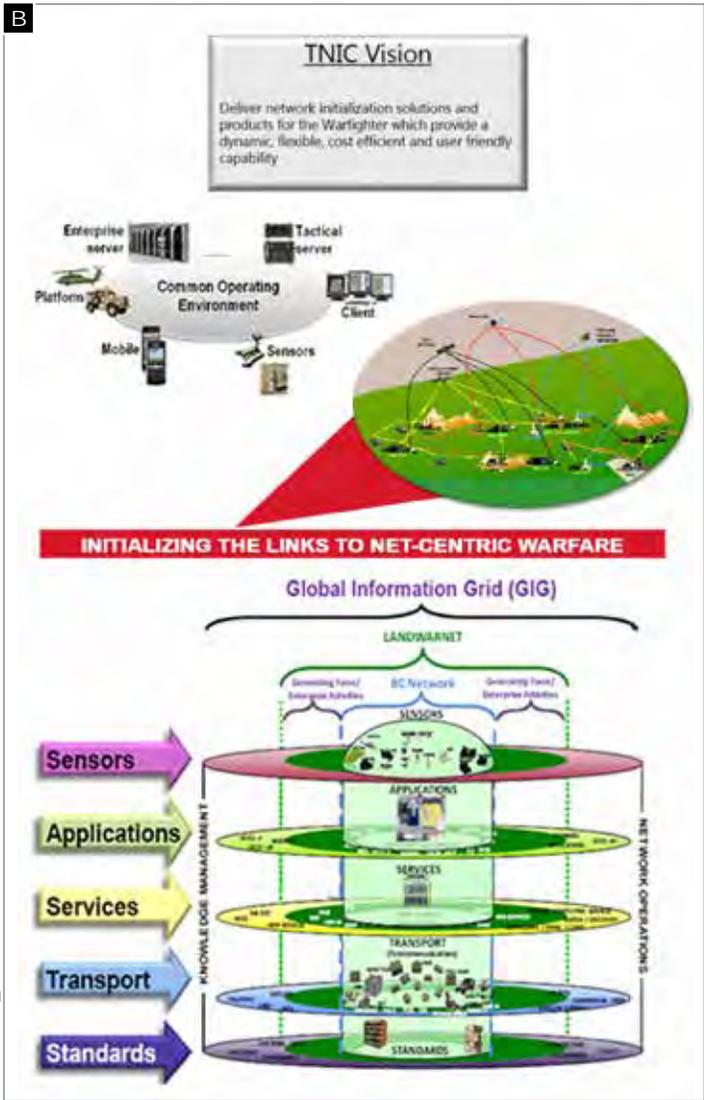
TNIC Initialization Products:

- Enable C2 and application messaging
 - Software Block 2 (SWB)
 - BFT Database(s) and Global
 - SWB 11-12 / Capability Set (CS) Baselines
 - adam.lidif
 - Address book to support Air and Missile Defense Workstation (AMDWS)
 - Simulation To Mission Command Interoperability (SIMCI) Files
 - Lightweight Directory Interchange Format (LDIF) Versions
 - Unit Task Organization (UTO) Report and Warfighter Initialization Tool Files (WIT) Unit Reference File (URN) Files
 - Tactical Radio Report (TRR) for CS units
 - Initialization Tool Suite (ITS)
- Enable IP connectivity and end-to-end network communications
 - IP Address Templates
 - Telephony Numbering Plans
 - Multicast Addressing / Autonomous System Numbering
 - Network Device Configurations
 - Interconnectivity Diagrams
 - Engineering Field Notices
 - Configuration Management/ SharePoint Portal



A | Initialization Products provide the technical glue to ensure the components of the overall network are able to function together in a manner consistent with current and future Warfighter requirements

B | TNIC visual overview



* Non-Program of Record

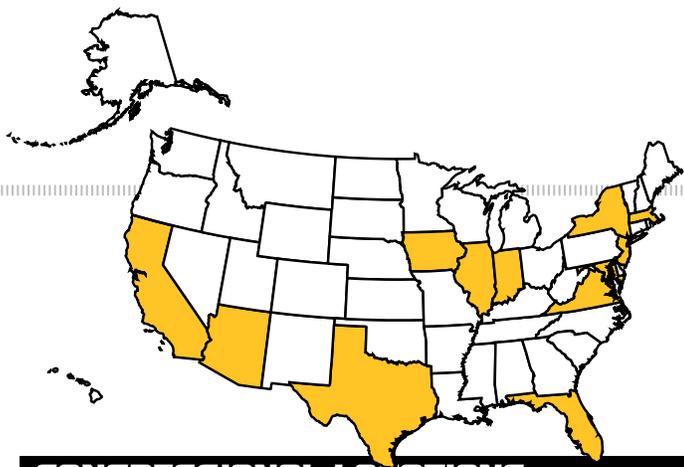
ACQ PHASE*

1. Technology Development
2. Engineering & Manufacturing Development
3. Production & Deployment
4. Operations & Support



AMF

Airborne, Maritime & Fixed Station (AMF) will provide Army Aviation platforms the ability to link with and expand integrated tactical networks. AMF ensures Army Aviators' ability to communicate both horizontally and vertically via voice and data within all mission areas and in all combat operational environments.



- Booz Allen Hamilton
- CSC
- Mitre
- SRA



CONGRESSIONAL LOCATIONS

KEY CONTRACTORS

DESCRIPTION

The Airborne, Maritime & Fixed Station (AMF) Small Airborne Networking Radio (SANR) is a software programmable, multi-band, multi-mode, mobile ad hoc networking radio that provides simultaneous voice, data and video communications. The radio will support the Common Operational Picture (COP), Situational Awareness (SA) and interoperability of Mission Command (MC) systems throughout the battlefield. AMF must ensure the Soldier's ability to communicate both horizontally and vertically via voice and data within all mission areas. The SANR will help close capability gaps by extending data networking to company and below echelons, enabling network services to the platform and connecting Army aviation platforms to Army ground and joint air network domains. Per Milestone Decision Authority (MDA) direction, the redefined AMF Program will procure the SANR as a Non-Developmental Item (NDI).

CAPABILITIES

- SANR will provide support to the Apache, Chinook, Black Hawk and Unmanned Aircraft System Gray Eagle aircraft.
- SANR will provide a multi-channel networking radio capable of using Soldier Radio Waveform (SRW) and Wideband Networking Waveform (WNW) in addition to legacy Single Channel Ground and Airborne Radio System (SINCGARS) capability to interoperate with ground forces for seamless connectivity for combat operations.
- Maintains air-ground interoperability between maneuver ground forces and aviation.
- Enable aviation combat elements (Combat Aviation Brigades (CAB)), Theater Aviation Brigades (TAB), and Special Operations Aviation Regiment (SOAR), to better utilize the inherent versatility of Aviation as a complement to the unique capabilities of the other Combat Arms.
- Provide commanders enhanced Situational Awareness (SA) and Mission Command (MC) in a package that provides a more responsive means of directing aircraft to match changing maneuver forces situations and missions.



- A** | AMF ensures air-to-ground and air-to-air interoperability for Army Aviation Platforms
- B** | AMF NDI Operational Concept



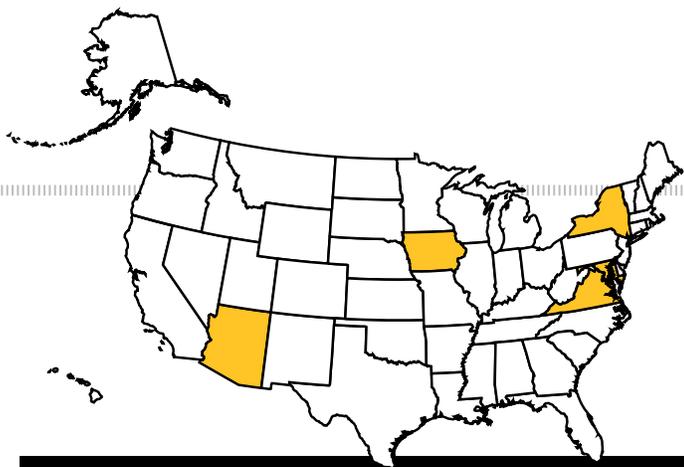
ACQ PHASE

1. Technology Development
2. Engineering & Manufacturing Development
3. Production & Deployment
4. Operations & Support



HMS

Handheld, Manpack and Small Form Fit (HMS) develops and produces affordable networking tactical radio systems that meet the requirements of the Army, Marine Corps, Navy, Air Force and Special Operations Command (SOCOM) and are interoperable with specified radios in the current forces.



- Booz Allen Hamilton
- Engineering Solutions and Products
- General Dynamics Mission Systems
- Harris Corporation
- MITRE Corporation
- Rockwell Collins
- Thales Communications



DESCRIPTION

Handheld, Manpack and Small Form Fit (HMS) is a family of networking tactical radio systems that are interoperable with specified radios in the current forces. HMS provides joint interoperable connectivity to the tactical edge/most disadvantaged warfighter with an on-the-move, at-the-halt and stationary Line of Sight (LOS)/Beyond Line of Sight (BLOS) capability for both dismounted personnel and platforms. The radios are scalable and modular Software Communications Architecture (SCA) compliant, enable net-centric operations, operate multi-band and multi-mode and deliver reliable, secure tactical communications.

Limited Rate Initial Production (LRIP) Rifleman Radio (General Dynamics and Thales):

- AN/PRC-154, 1 Channel SRW only, Sensitive But Unclassified (SBU)
- AN/PRC-154A, 1 Channel SRW only, Secret and Below (SAB) Full Rate Production (FRP) Rifleman Radio, 1 Channel SRW only, SAB:

- AN/PRC-159 (Harris)
- AN/PRC-154B (Thales) LRIP Manpack, 2 Channel, Type 1 (General Dynamics and Rockwell Collins): AN/PRC-155

- FRP Manpack, 2 Channel, Type 1:
- General Dynamics

- Harris Corp.
- Rockwell Collins Manpack (MP), 2 Channel, Type 1 (SAB) (2 Channel Type 1): SRW, SINCGARS, UHF SATCOM, Mobile User Objective System (MUOS) Small Form Fit: Embeddable 1 and 2 channel radios (currently deferred)

CAPABILITIES

- Simultaneous Voice, Data and Video Communications
- Increased Throughput Using Networking Waveforms
- Interoperability with currently fielded radios operating with Single Channel Ground and Airborne (SINCGARS), Ultra High Frequency (UHF) Satellite Communications (SATCOM), as well as new radios using Soldier Radio Waveform (SRW) and Mobile User Objective System (MUOS)
- Manpack Routing and Retransmission (Cross-banding)
- Manpack Multi-Channel and Multi-Waveform operations
- Non Developmental Item (NDI) FRP competition driving increased functionality to include Size Weight and Power (SWaP) improvements, addition of a display for the Rifleman Radio, and additional waveforms (e.g., TACSAT IW) for the Manpack



- A** | Soldiers assigned to 1-505th PIR, 3rd BCT, 82nd Airborne Division conduct live fire rehearsal using Manpack
- B** | AN/PRC-154 Rifleman Radio
- C** | AN/PRC-154A Rifleman Radio
- D** | AN/PRC-155 Manpack
- E** | A Soldier from 1-327th IN, 1st BCT, 101st ABD conducts live fire rehearsal with rifleman Radio for communications



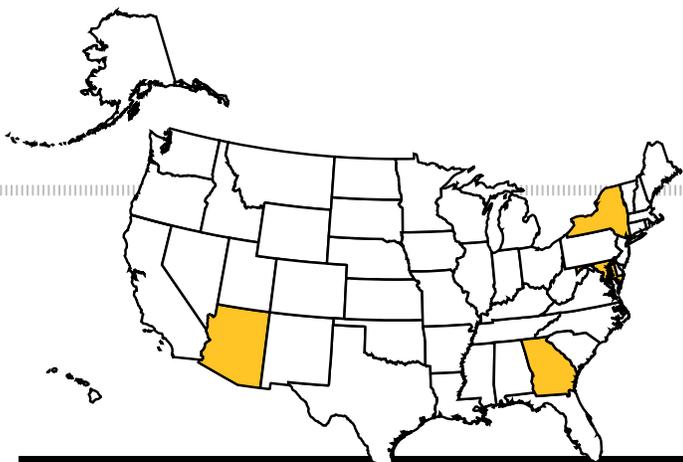
ACQ PHASE

1. Technology Development
2. Engineering & Manufacturing Development
3. Production & Deployment
4. Operations & Support





Mid-tier Networking Vehicular Radios (MNVR) provides the terrestrial backbone for the Army's tactical network enabling the extension of mission command through seamless integration of the upper and lower tiers. MNVR provides software-defined, two channel networking radios for a wide variety of Army tactical vehicles to meet the Army's requirement for the Mid-tier Wideband Networking capability.



- Booz Allen Hamilton
- Harris Corporation
- Janus Research



CONGRESSIONAL LOCATIONS

KEY CONTRACTORS

DESCRIPTION

The MNVR system provides an extension of data services from the upper tier (brigade and battalion) to the lower tier (company and platoon) of the tactical network. The advanced networking waveforms provide rapid distribution of data and imagery with increased information assurance protection and automatic routing across complex terrain. The MNVR capability consists of modular radios capable of running software-defined waveforms, which operate as nodes in a network to ensure secure wireless communication and networking services for mobile and stationary forces. This supports Mission Command, sensor-to-shooter, sustainment and survivability applications through the full range of military operations on tactical platforms.

CAPABILITIES

- Communications between Battalion and Company levels and between Companies in a satellite denied environment
- High bandwidth communications between Battalion and Company levels
- Unit Task Reorganization (UTR) – MNVR is the first radio to field enterprise Over The Air Management (eOTAM)
- Digital Fires– MNVR is the only radio with Wideband

Networking Waveform (WNW) needed to operationalize Digital Fires

- Aerial – Ground High BW Communications (Future) – Enabled by MNVR’s WNW waveform.

ADDITIONAL CAPABILITIES:

- MNVR SRW Voice - Combat Net Radio (CNR) and Voice over Internet Protocol (VoIP)
- MNVR WNW Voice - VoIP
- MNVR’s new Internet Protocol (IP) based networking waveforms offer increased data throughput through self-forming, self-healing and managed communication networks.
- Dynamic, scalable, on-the-move (OTM) network architecture, connecting the Soldier to the mission command network; enhances capability to exchange voice and data simultaneously and faster than current systems.

Advanced network waveforms provide rapid distribution of data and imagery with increased information assurance protection and automatic routing across complex terrain.

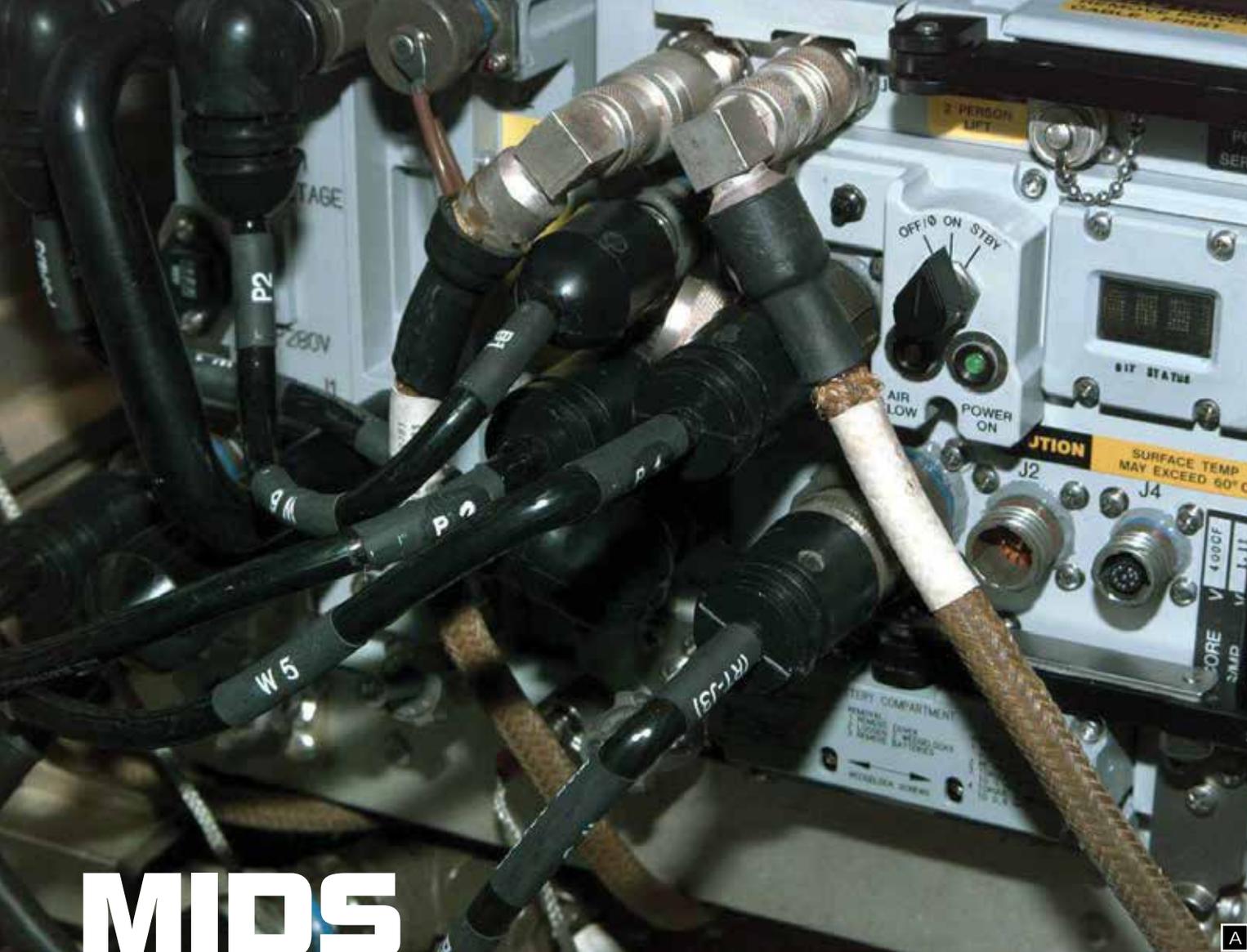


A | Soldier using MNVR at NIE 16.1.
B | MNVR radio system



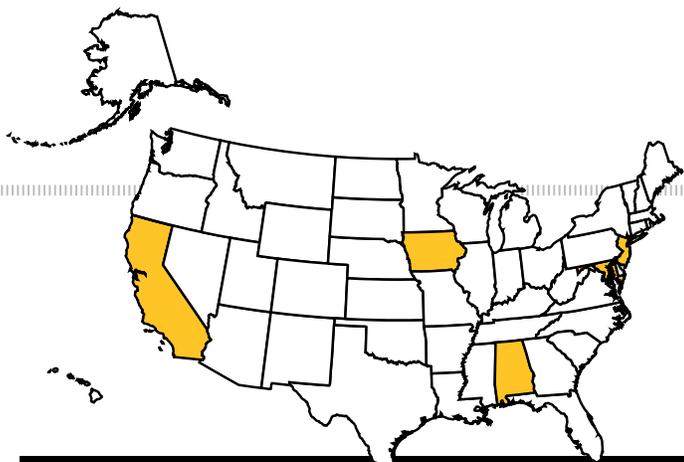
ACQ PHASE

1. Technology Development
2. Engineering & Manufacturing Development
3. Production & Deployment
4. Operations & Support



MIDS

Multifunctional Information Distribution System Low Volume Terminal 2/11 (MIDS LVT 2/11) terminals provide tactical data link (Link 16) connectivity integrating communication, navigation and identification capabilities in support of airborne, land-based and maritime tactical operations. The United States Army MIDS system primarily supports air defense platforms such as the Patriot, Air Defense and Airspace Management (ADAM) Cell, Forward Area Air Defense Command and Control (FAAD C2), Terminal High Altitude Area Defense (THAAD) and Joint Tactical Ground Station (JTAGS).



- DLS LLC
- VIA SAT



CONGRESSIONAL LOCATIONS

KEY CONTRACTORS

DESCRIPTION

MIDS (Link-16) is the Department of Defense's primary tactical data link. It provides multiservice/NATO interoperability and situational awareness and supports air and missile defense engagement operations. The MIDS LVT 2/11 is composed of three Line Replaceable Units which are characterized by unique power supply and blower system. The MIDS LVT 2/11 uses a 200-watt power amplifier enabling a range of up to 300 nautical miles.

CAPABILITIES

- Near Real Time Distribution of Air & Missile Tracks
- Nets Air Defense Control Centers
- Control Air/Missile Defense Operations
- More affordable Link-16 terminal vice JTIDS terminal
- Secure /Jam Resistant Communications
- High Data Throughput
- Time Division Multiple Access (TDMA)
- 300nm (Normal)/500 nm (Extended) Range

* Non-Program of Record



- A** | Close-up of a MIDS
- B** | MIDS-LVT(2/11)
- C** | An engineer installs the MIDS during a test



ACQ PHASE*

- 1. Technology Development
- 2. Engineering & Manufacturing Development
- 3. Production & Deployment
- 4. Operations & Support





WAVEFORMS

Army portable and interoperable waveforms provide mobile ad hoc networking and network enterprise services to enhance tactical warfighting capabilities. Waveforms enable the Army's tactical data radios to transmit voice and data across the operational area.



- General Dynamics
- Harris Corporation



CONGRESSIONAL LOCATIONS

KEY CONTRACTORS

DESCRIPTION

Waveforms is responsible for sustaining, testing and improving the Soldier Radio Waveform (SRW), Wideband Networking Waveform (WNW), Single Channel Ground and Airborne Radio System Crypto Modernization and Enterprise Over The Air Management. By drawing on available spectrum, waveforms provide secure wireless networking services for mobile and stationary forces to transmit information, including voice, data, images and video. The waveforms are Internet Protocol (IP) based, so they can interoperate with other IP based networks, which allows Soldiers to connect to other networks outside their range. Each waveform undergoes a rigorous process to become National Security Agency certified, which provides Soldiers with secure and encrypted information that cannot be broken by the enemy.

CAPABILITIES

Soldier Radio Waveform

- The SRW, which is used by individual Soldiers, small units and very small sensors enables communication without a “fixed” infrastructure such as a cell tower or satellite network.
- The SRW provides critical tactical edge connectivity through Combat Net Radio (CNR) Voice and Position Location Information, as well as mission command applications

to dismounted units and disadvantaged users at the lower tier – battalion and below.

- By connecting via gateways to the mid-tier backbone (WNW), the SRW extends the range of communications.
- The SRW’s CNR voice pre-emption feature allows commanders and other leaders with higher authority to actively pre-empt an active talker with lower authority on the same group call. This enables critical information to be conveyed more quickly.
- The SRW’s duplicate node detection Identification (ID) warns users when a duplicate ID had been configured in the network, decreasing network planning related issues.
- The SRW has been fielded to thousands of Handheld, Manpack and Small Form Fit: Manpack and Rifleman Radios.

Wideband Network Waveform

- The WNW provides high bandwidth network connectivity and enterprise network services for aircraft and ground vehicles at the mid-tier – battalion and above.
- With its mobile ad-hoc networking capabilities, the WNW reroutes and re-transmits communications beyond-line-of-sight.
- The WNW is designed to work well in urban landscape such as Iraq or terrain-constrained environments like Afghanistan,

since it can locate network nodes and determine the best path for transmitting information.

- Both the SRW and WNW provide a seamless network interface with existing Department of Defense network infrastructures, such as the Army’s tactical network backbone, Warfighter Information Network-Tactical.



A | Soldiers from 1-237th IN, 1st BCT, 101st ABD conduct live fire exercises with Manpack and Rifleman Radio for communications

B | Paratroopers of the 2nd Battalion, 325th Airborne Infantry Regiment, 2nd Brigade Combat Team, 82nd Airborne Division, using Rifleman Radio during a field training exercise (FTX) on Fort Bragg, N.C.



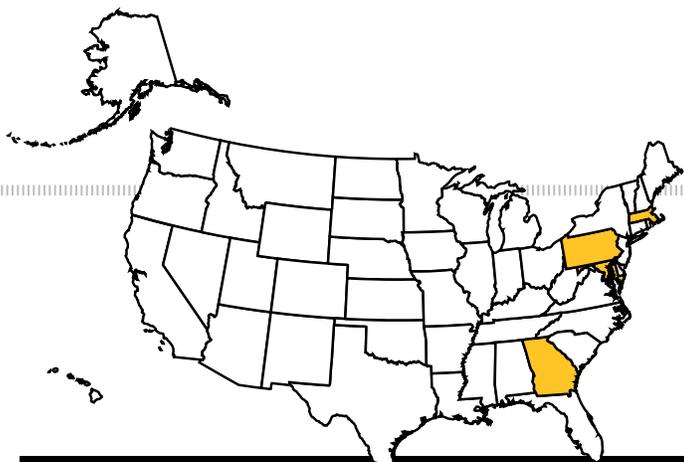
ACQ PHASE

1. Technology Development
2. Engineering & Manufacturing Development
3. Production & Deployment
4. Operations & Support



ACUS MOD

To support the Army's WIN-T Increment 1 modernization efforts and recapitalize on current force systems, the Area Common User System Modernization (ACUS MOD) program efficiently provides planned network upgrades through technology insertions. Feeding the Army's increasing need for high-speed data, voice, video and imagery, ACUS MOD improves network services and management, information assurance, reach-back, transport speed and bandwidth.



- General Dynamics
- CACI
- Engineering Solutions & Products
- Janus Research



CONGRESSIONAL LOCATIONS

KEY CONTRACTORS

DESCRIPTION

ACUS MOD provides Internet network management capabilities, as well as integrated voice, video and data services, both line-of-sight (terrestrial) and beyond-line-of-sight (satellite/tropo). It provides increased situational awareness to unit commanders, improved throughput and joint and coalition interoperability at battalion and above. Additionally, ACUS MOD implements commercial-based technology insertions into the current force for smooth technology upgrades and enhanced capability.

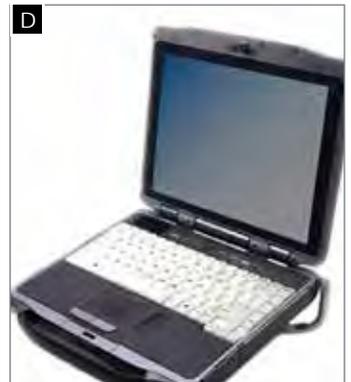
CAPABILITIES

- The Single Shelter Switch (SSS), designed for rapid deployment and small footprint, provides “first in” capability and is the building block for network expansion on the battlefield. The SSS provides communication officer (S6) functionality in a single vehicle shelter.
- The High Capacity Line of Sight (HCLOS) radio, integrated into a sheltered mounted HMMWV, provides the high data rates required to transport the increasing volume of data on the digital battlefield.

- Battlefield Video Teleconference (BVTC) provides the commander with access to accurate, timely situational information and is interoperable with the existing communication Local Area Network (LAN) infrastructure across a multi-platform backbone network. The BVTC will also assist the commander in coordinating and interacting with different echelons and adjacent units.
- The legacy Tropospheric Scatter (TROPO) Radio, AN/ TRC-170(V)3 provides BLOS communications, reduces SATCOM demands and offers an alternative long-haul communications method. It provides greater distance and bandwidth than the LOS terminals found in tactical theater signal battalions.
- Tactical Network Operations (NetOps) Management System (TNMS) is a scalable, modular NetOps capability that operates on multiple client or server platforms. The TNMS will facilitate decision making necessary to quickly identify network problems, shift resources, change configurations and coordinate the management of the critical network infrastructure supporting mission command functions.



- A** | Soldier conducts a radio functions check on the AN/TRC-190 High Capacity Line of Sight (HCLOS) radio terminal during the unit’s HCLOS training at Tower Barracks located in Grafenwoehr, Germany
- B** | Battlefield Video-Teleconferencing Center (BVTC)
- C** | Single Shelter Switch (SSS)
- D** | Tactical Network Operation Management System (TNMS)
- E** | The TROPO Radio, AN/TRC-170(V)3 provides BLOS communications, reduces SATCOM demands, and offers an alternative long haul communications method.



* Non-Program of Record

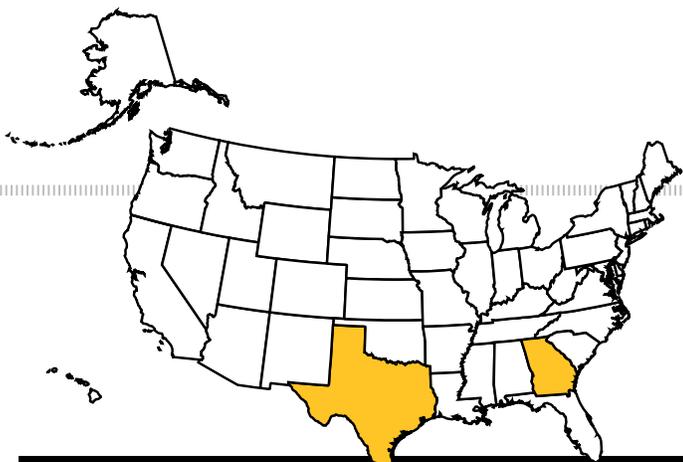
ACQ PHASE*

1. Technology Development
2. Engineering & Manufacturing Development
3. Production & Deployment
4. Operations & Support



DKET

Deployable Ku band Earth Terminals (DKETs) are used at brigade and higher headquarters elements to augment the Warfighter Information Network-Tactical (WIN-T) tactical communications network infrastructure. Some of the DKETs take on dual roles as hubs, providing inter- and intra- theater satellite links at brigade and higher and linking multiple regional command headquarters. The DKET reduces the traffic load on the Army's five worldwide WIN-T Regional Hub Nodes by providing network hub services for disadvantaged forward operating bases.



- Datapath
- General Dynamics



CONGRESSIONAL LOCATIONS

KEY CONTRACTORS

DESCRIPTION

DKETs are satellite terminals designed for use at larger hub locations. They support commercial Ku-band frequencies, and have been certified for Ka and X band capability to take advantage of U.S. military satellites. They are transportable and self-contained, and can establish headquarters-level, network-hub connectivity anywhere a mission dictates.

CAPABILITIES

- DKETs are currently deployed in three configurations: Light (3.7 – 3.9M), Mobile (4.5M) and standard (4.6M – 7M), with the majority being the light design. This lighter design has a tri-fold antenna and a smaller shelter to make redeployment and setup faster and easier.
- The robust DKET network makes for a seamless transition to backup equipment or terminals, eliminates long outages and minimizes impact to the Soldier.
- DKETs operate on Ku, Ka and X-band frequencies.
- Electronics are housed in separate shelters



- A** | DKETs support commercial Ku-Band frequencies and their electronics are housed in separate shelters. They are highly transportable, self-contained and can establish headquarters-level, network-hub connectivity anywhere a mission demands.
- B** | A DKET is shown in March 2011 as part of Project Manager Warfighter Information Network-Tactical's Ka and X-band frequency certification effort that enables earth satellite terminals to utilize military satellites.



* Non-Program of Record

ACQ PHASE*

- 1. Technology Development
- 2. Engineering & Manufacturing Development
- 3. Production & Deployment
- 4. Operations & Support



Photo by Army, Alabama National Guard

DIRECT

A

The new Disaster Incident Response Emergency Communications Terminal (DIRECT) system provides interoperable communications support to National Guard response forces and local first responders in support of civil missions and domestic emergencies.



- Booz Allen Hamilton
- Janus Research
- Engineering Solutions & Products



CONGRESSIONAL LOCATIONS **KEY CONTRACTORS**

DESCRIPTION

DIRECT provides collaboration and communication services at incident sites, linking local first responders and emergency managers with state and federal authorities. Without compromising the secure military network, the system leverages the National Guard's organic Warfighter Information Network-Tactical (WIN-T) equipment to provide Commercial 4G/ Commercial Wi-Fi, commercial phone and internet access, and the ability to connect the disparate radios that various responders bring to the incident site. The system also enables interconnection between telephones, military radios, first responder radios and cell phones for improved collaboration.

Although the legacy Joint Incident Site Communication Capability (JISCC) aided first responder communications, it did not enable the military and first responders to directly communicate over the WIN-T network. DIRECT is a major upgrade that will replace the legacy Army JISCC capability and will be fielded under the Army's WIN-T Increment 1 program to all 50 states and four territories with a National Guard presence.

CAPABILITIES

- The Joint Network Node (JNN) is a transportable network node that provides high-speed wide area network capability for secure voice, video and data exchange.

- The Satellite Transportable Terminal (STT) is highly transportable and mobile satellite system that operates in conjunction with the JNN and is designed to establish secure voice, video and data communications virtually anytime and anywhere.
- Commercial Wi-Fi and Commercial 4G LTE Cellular capability will support Soldier wireless and cellular handheld requirements. Wi-Fi covers a limited footprint and is used inside the 'skin' of the incident site tent, while 4G LTE is used with smartphones and eventually tablets to extend coverage to an entire base radius.
- Commercial Coalition Equipment (CCE), which fits into a single man-portable transit case and provides the tactical access to commercial internet and telephone services. Integrated into the CCE, the radio-bridging and voice cross-banding module enables interconnection between cell, landline and Voice Over Internet Protocol calls, military radios and first responder radios. It enables seamless interoperability among disparate radio networks without supplying common radios to all the users, as was done in the past.
- The DIRECT package also includes a towed generator, towed equipment trailer with communications equipment, tent and support supplies.



- A** | People and their pets evacuated by high clearance Army truck in Boulder County.
- B** | At the DIRECT training and risk reduction event, the unit's WIN-T equipment can be seen the background, and the deployable DIRECT Commercial Wi-Fi tower is seen left.
- C** | The Army held a DIRECT training and risk reduction event (RRE) in Georgetown, Delaware, in August 2016 supported by the Delaware Army National Guard 198th Expeditionary Signal Battalion, 261st Theater Tactical Signal Brigade. During the event, senior leaders from the National Guard Bureau and Army National Guard were able to link up their personal cell phones and communicate via the DIRECT system.



*Non-Program of Record

ACQ PHASE*

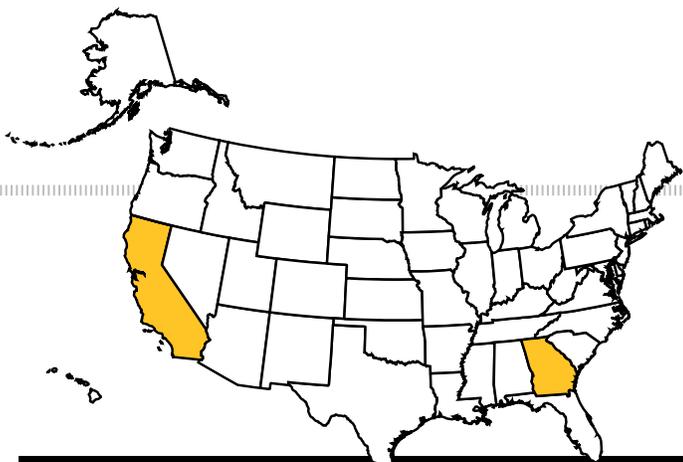
1. Technology Development
2. Engineering & Manufacturing Development
3. Production & Deployment
4. Operations & Support



EMC

A

Enroute Mission Command (EMC) enables Commanders of Global Response Force (GRF) units to plan missions in the air, while their Soldiers receive operational updates and watch full motion video of upcoming drop zones before their parachutes ever open. It arms Soldiers with real-time situational awareness en route so they can be more effective the moment boots hit the ground. The system's suite of plane-to-plane, plane-to-ground network communications capabilities provide GRF Commanders with the same mission command and communications capabilities they would use in a command post on the ground, in essence turning the plane into a "flying command post."



- ViaSat
- Boeing



CONGRESSIONAL LOCATIONS

KEY CONTRACTORS

DESCRIPTION

The GRF must rapidly deploy anywhere in the world with little notice and they need as much situational awareness as possible. By leveraging technologies similar to those used by today's commercial airlines to provide inflight internet access, EMC enables the GRF of the XVIII Airborne Corps and 82nd Airborne Division to access the mission command capabilities, such as Command Post of the Future, and secure reliable voice, video and data communications provided by the Army's common tactical communications network, Warfighter Information Network-Tactical (WIN-T), all from a C17 aircraft. Because of the increased bandwidth the system provides, GRF commanders can now tap into mission command applications and utilize services such as Secure Voice Over Internet Protocol (SVOIP) phone calls, chat and email. Unmanned Aerial Vehicle (UAV) feeds can be displayed throughout the aircraft on LED screens, which also have an integrated scrolling marquee and intercom system that provides status updates. The comprehensive real-time situational awareness and operational understanding provided by EMC can be critical to the effectiveness of the unit in the initial stages of early entry operations.

CAPABILITIES

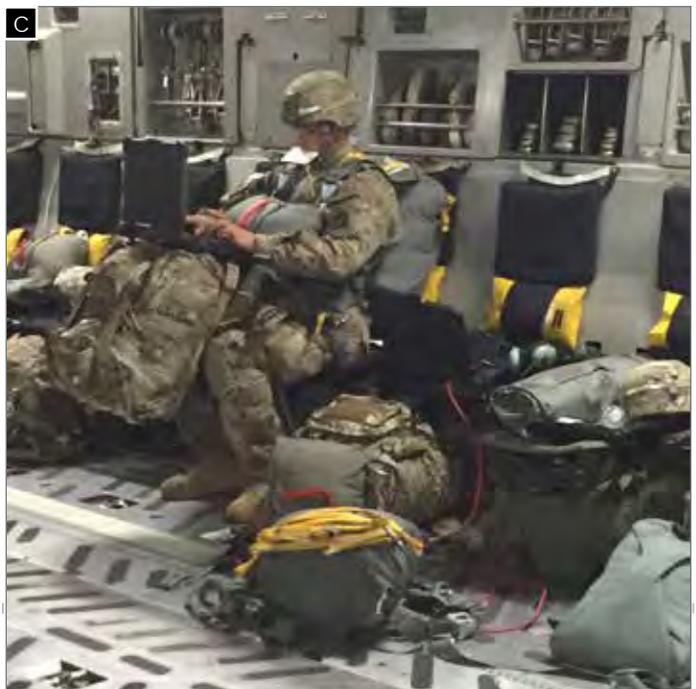
- The Fixed Installed Satellite Antenna (FISA) provides WIN-T Network connectivity for the C17 aircraft. This satellite antenna also initially provides a fourfold increase in bandwidth, with additional increases coming in the follow-on capability, enabling a new host of services to be employed on board, increasing capability for GRF units to plan and maintain critical situational awareness in the air.
- The roll-on Key Leader Enroute Node (KEN), and later the Dependent Airborne Node (DAN) and Command And Staff Palletized Airborne Node (CASPER), provide airborne units with broadband reach-back data capability; SVOIP plane-to-plane and plane-to-ground communications between task force commanders and combatant commanders.
- LED screens, integrated marquees and an intercom system



A | Airborne Soldiers from the XVIII Airborne Corps and 82nd Airborne Division successfully utilized EMC2 during the Joint Forcible Entry (JFE) exercise at Fort Irwin, Calif.

B | EMC2 provides in-flight network communications and mission command to increase the situation awareness of the GRF.

C | Paratroopers are well prepared to jump during the large-scale joint Army/Air Force Joint Forcible Entry exercise in December 2015, where Soldiers successfully employed EMC, while en route from Fort Bragg, N.C. to Nellis Air Force Base, Nev.



*Non-Program of Record

ACQ PHASE*

1. Technology Development
2. Engineering & Manufacturing Development
3. Production & Deployment
4. Operations & Support



GBS

A

Global Broadcast Service (GBS) provides high-speed broadcast of large-volume information products such as video, imagery, maps and weather data to deployed tactical operations centers (TOCs) and garrisoned forces worldwide. The system provides critical situational awareness, decreases decision times and increases combat agility. GBS also provides a capability to inform and educate Soldiers through streaming video or transfer of large data files.



- General Dynamics
- Northrop Grumman
- Raytheon
- VIA SAT



CONGRESSIONAL LOCATIONS

KEY CONTRACTORS

DESCRIPTION

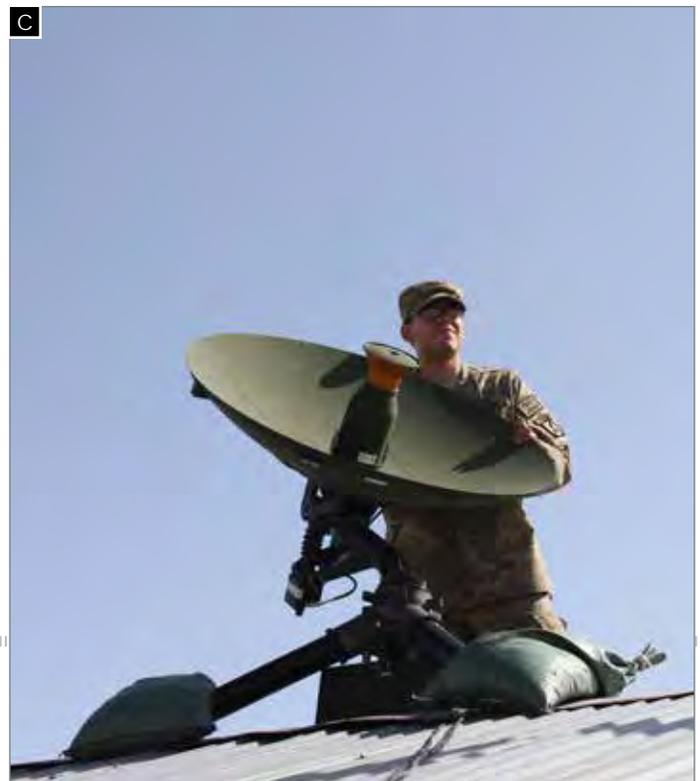
GBS consists of a Satellite Broadcast Manager (SBM) co-located with the Defense Enterprise Computing Centers (DECC), a small number of Theater Injection Points (TIP) and a variety of receive suites owned and operated by services and Other Government Agencies (OGA). Deployed users can subscribe to large-volume national products such as intelligence data, Unmanned Aerial System video and biometric data. The DECC SBM connects to a variety of national sources through the Defense Information Systems Network and generates broadcasts for transmission over Wideband Global SATCOM/Ultra High Frequency Follow-on (WGS/UFO) satellites through worldwide Teleport/STEP sites. The TIPs combine a Transportable Satellite Broadcast Manager (TSBM) with a Phoenix terminal. TIPs can be deployed worldwide to generate theater-specific broadcasts. Receive suites in various configurations are owned and operated by Services and OGAs. They operate as receive-only and provide the user with a broad range of bandwidth-intensive products, including commercial and Unmanned Aircraft System video as well as large data files, without loading the command and communication networks.

CAPABILITIES

- Operates over the UFO Ka band military satellites and the WGS system, augmented as required by commercial Ku band satellites
- Transportable Ground Receive Suites allow deployed forces to directly receive two channels of national level data and full motion video and distribute to TOC local area network users
- The Theater Injection Point provides the combatant command and combined joint force command an in-theater uplink capability that broadcasts live unmanned aerial vehicle and other video feeds as well as data products generated in theater
- Transitioning to joint internet protocol modem will provide transmission security capability.



- A** | Soldier on GBS
- B** | Transportable Ground Receive Suites (TGRS)
- C** | Soldier setting up a GBS



* Non-Program of Record

ACQ PHASE*

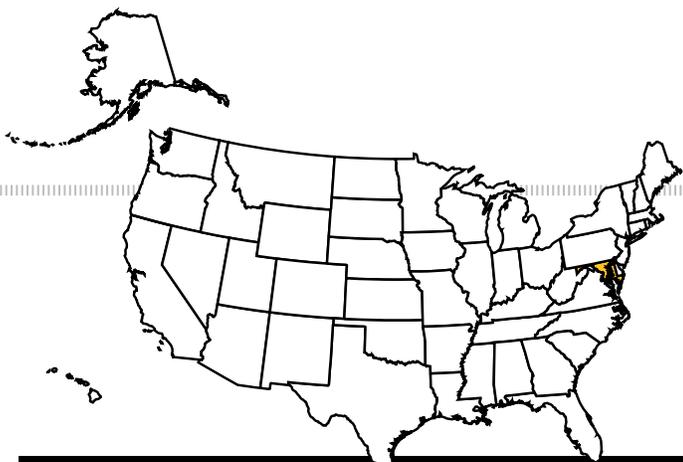
- 1. Technology Development
- 2. Engineering & Manufacturing Development
- 3. Production & Deployment
- 4. Operations & Support





GRRIP

Fitting into a single handheld transit case for rapid mobility, the satellite network communications kit known as the Global Rapid Response Information Package (GRRIP) provides secure, beyond-line-of-sight voice, video and data communications without the need for local network infrastructure, so Soldiers can communicate anytime and anywhere on the planet. The versatile GRRIP provides early entry capability and situational awareness in air-to-land missions so Soldiers can stay connected and informed. GRRIPs can also support special small team elements that require high bandwidth network capability in austere environments in later phases of operations. The GRRIP is also an excellent system for use by first responders.



- KLAS Telecom Services



CONGRESSIONAL LOCATIONS

KEY CONTRACTORS

DESCRIPTION

The GRRIP is small enough to fit into the overhead bin of commercial aircraft and sets up rapidly. The system provides access to Defense Information Systems Network (DISN) services, which enables early entry elements to transfer critical information (data/voice/video) to commanders. GRRIP provides classified and unclassified communications to forces operating in austere and demanding environments, such as embedded training teams and other small units that do not have access to the network equipment and infrastructure of established forward operating bases. This commercial-off-the-shelf terminal is designed for small teams entering locations where the infrastructure has either been dismantled, destroyed or is non-existent.

CAPABILITIES

- Network communications from anywhere on the planet
- Fits into a single handheld transit case for rapid mobility and force scalability
- Continued communications and situational awareness from early entry to the tactical edge in more mature operations
- Can be configured for use on Secure Internet Protocol Router Network (SIPR) Non-secure Internet Protocol Router (NIPR) or coalition networks



- A** | GRRIP enables the Soldier or first responder to communicate anywhere in the world by using SIPR/NIPR or coalition voice and data capability without electricity or an existing infrastructure.
- B** | GRRIPs provide secure and non-secure communications to forces operating in austere and demanding environments such as embedded training teams and other small units that do not have access to the network equipment and infrastructure of established forward operating bases.



*Non-Program of Record

ACQ PHASE*

- 1. Technology Development
- 2. Engineering & Manufacturing Development
- 3. Production & Deployment
- 4. Operations & Support

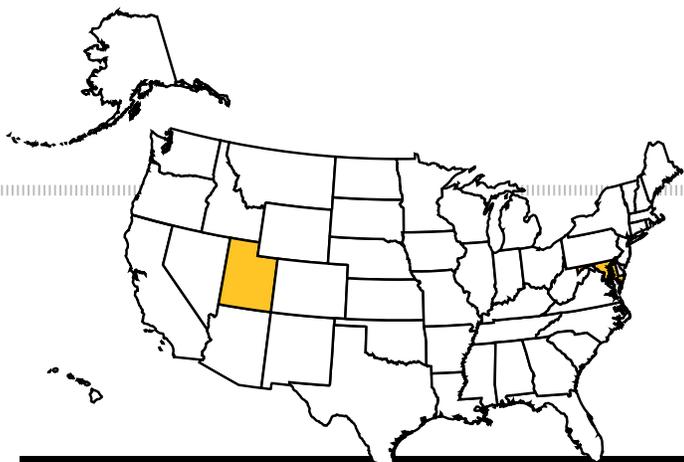




PHOENIX

A

Phoenix/Super High Frequency (SHF) terminals provide Expeditionary Signal Battalions (ESBs) with high capacity, inter- and intra-theater range extension for networked battle command and control information, including logistical, operational, intelligence, and administrative data.



- Booz Allen Hamilton
- JANUS Research
- L3 Communications



CONGRESSIONAL LOCATIONS

KEY CONTRACTORS

DESCRIPTION

The Phoenix/SHF terminal is a transportable, quad-band, tactical satellite terminal that operates in the SHF band over military and commercial satellites. Phoenix/SHF terminal is mounted on an expanded capacity vehicle. It provides ESBs assured access to satellite communications and operational flexibility in a tactical environment by providing a rapidly deployable capability to operate over military X/Ka and commercial C/Ku satellite bands. It is designed to operate 24 hours per day, seven days per week and provides reliable communications throughout the world.

CAPABILITIES

- Operates in military X and Ka band and commercial C and Ku bands
- Qualified for the military environment: temperature, shock, vibration
- High-capacity, inter- and intra-theater data range extension over commercial and military satellites
- Can interface with other strategic networks via standardized tactical entry points or strategic assets
- Transmits one Frequency Division Multiple Access (FDMA) link and receives up to four FDMA links simultaneously
- Supports point to point, mesh and hub-spoke networks



A | The Phoenix operates in a world-wide military tactical environment and provides baseband satellite communication signals

B | Phoenix at Network Integration Evaluation 14.1 at Fort Bliss, Texas in November 2013.



ACQ PHASE

1. Technology Development

2. Engineering & Manufacturing Development

3. Production & Deployment

4. Operations & Support





RHN

A

Regional Hub Nodes (RHNs) are the largest transport nodes for the Warfighter Information Network-Tactical (WIN-T) network. Strategically located at five Department of Defense Standard Tactical Entry Point (STEP) locations globally, they enable the Army's ability to deploy forces anywhere in the world in support of contingency operations, disaster relief or National emergency response.



- GD Mission Systems
- ITT



CONGRESSIONAL LOCATIONS

KEY CONTRACTORS

DESCRIPTION

The five RHNs are at the upper-most level of the WIN-T network architecture, and their innovative baseband and satellite communications capabilities enable regionalized reach-back to the Army's global network. They enable the transport of information across the WIN-T network in and out of theater and around the world. The RHNs operate out of the fight zone and give the Soldier in the field immediate access to secure and non-secure internet and voice communications anywhere in the globe. To provide tactical users with secure, reliable connectivity worldwide, the Army has positioned RHNs in five separate strategic regions: Continental United States (CONUS) East and CONUS West, Central Command, European Command and Pacific Command.

CAPABILITIES

- Currently used by both deployed Marine Corps and Army units
- Uses both commercial and military satellite bands, and is "plug and play" to accept additional military transmissions systems
- Customizable: contains spare racks to support unit equipment specific to their mission set
- Contains full Network Operations capabilities for network monitoring, management and trends analysis, as well as information assurance tools
- Commercial Internet and Phone (COM-IP) package supports contingency operations, disaster relief or National emergency response.



A | The extensive satellite communications capabilities of RHNs enable regionalized reach-back to the Army's global network.

B | RHN used for exercise with the 82nd Airborne Division, Fort Bragg.

C | A 58th Signal Battalion Soldier prepares to perform maintenance on the 9.2 Meter antenna located in Guam.



*Non-Program of Record

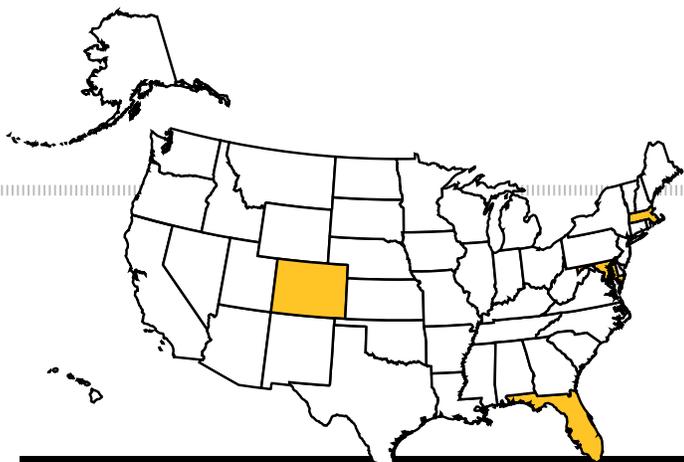
ACQ PHASE*

1. Technology Development
2. Engineering & Manufacturing Development
3. Production & Deployment
4. Operations & Support



SMART-T

The Secure, Mobile, Anti-Jam, Reliable, Tactical – Terminal (SMART-T) is the Army's protected satellite communications system, which enables commanders at brigade and higher to operate in an Electronic Warfare (EW) threat environment that includes both RF signal interference (jamming), signal detection and geographic location threats. Additionally, the SMART-T can also survive the effects of a High-Altitude Electromagnetic Pulse (HEMP) produced by nuclear detonations and can operate and survive in a biological and chemical environment.



- Booz Allen Hamilton
- MIT Lincoln Lab
- Raytheon



CONGRESSIONAL LOCATIONS

KEY CONTRACTORS

DESCRIPTION

SMART-T makes it possible for units to reliably and securely extend the range of their network in such a manner that communications cannot be jammed, detected or intercepted, enabling Soldiers to send critical text, data, voice and video communications beyond their area of operations.

CAPABILITIES

- Interoperable with AEHF satellite constellation
- Enhanced system interfaces
- Provides Low and Medium Data Rate (LDR/MDR) capability for voice and data transmission
- Interoperable with MILSTAR, UHF Follow-On, EHF MIL-STD 1582D and MIL-STD 188-136 compatible payloads
- Provides anti-jam and anti-scintillation (nuclear environment) communications



- A** | Soldiers train on SMART-T at the SMART-T centralized training and fielding facility, in Largo, Fla.
- B** | The first class of students, consisting of Soldiers from the 101st Air Assault Airborne Division, attended the Advanced Extremely High Frequency (AEHF) SMART-T New Equipment Training (NET) at the facility in Largo, Fla.



ACQ PHASE

- 1. Technology Development
- 2. Engineering & Manufacturing Development
- 3. Production & Deployment
- 4. Operations & Support

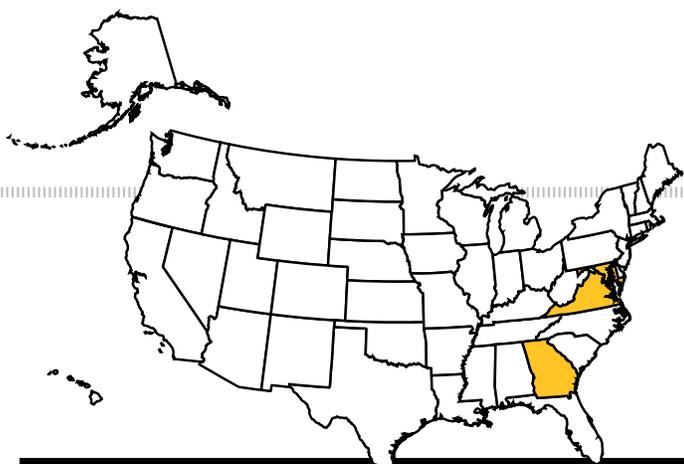




SIG MOD

A

The Signal Modernization (Sig Mod) program provides a scalable line-of-sight and beyond-line-of-sight tool kit of innovative network systems that increase the expeditionary nature of today's forces and their ability to deploy right-sized units to the right place at the right time. These commercial-off-the-shelf products augment and expand the transport capacity of the WIN-T network, delivering expeditionary network communication for early entry units and units at the furthest tactical edge of the battlefield, while reducing size, weight and power (SWaP) for increased agility.



- Booz Allen Hamilton
- Janus Research



CONGRESSIONAL LOCATIONS

KEY CONTRACTORS

DESCRIPTION

Operational requirements have pushed the need for communication capabilities lower in Army formations. Sig Mod will also extend the network to lower echelons via modular, scalable and interoperable nodes. This new network capability suite provides significant increases in throughput and situational awareness, while reducing footprint, enabling a more effective and rapidly deployable force.

CAPABILITIES

- Secure Wi-Fi uses a National Security Agency-approved Commercial Solutions for Classified solution to provide classified and unclassified Wi-Fi to the Command Post (CP). Following CP setup, units can turn on their Wi-Fi 'hotspot' and the network can come up first instead of last, as little as minutes instead of hours, and Soldiers can stay connected longer when jumping the CP.
- Secure 4G LTE supports a larger footprint surrounding the CP and will extend the communications flexibility of a CP and reduce the weight carried by Soldiers as they go from bulky radios to smartphones.
- Terrestrial Line Of Sight Radio (TRILOS), a new high-bandwidth WIN-T interoperable network radio, establishes a terrestrial link for a more robust network that can operate even in satellite contested environments. It provides a 12 times increase in bandwidth vs. the WIN-T

Increment 1 High Capacity Line Of Sight (HCLOS) radio.

- The new Interim Troposcatter (Tropo) provides beyond-line-of-sight (BLOS) capability without using expensive and limited satellite resources and it extends significantly network range. Both TRILOS and Tropo reduce the Army's over-reliance on satellites and enable Commanders to fight in satellite denied environments, while saving significant cost by reducing expensive satellite airtime leases
- Commercial Coalition Equipment (CCE), packed in small form-factor transit case, provides expeditionary network connectivity. It can be rapidly reconfigured to provide secure tactical access for the coalition, Non-secure Internet Protocol Router (NIPR), or commercial networks to support both civil and military operations.
- Using the same network agnostic hardware "box" as the CCE, the Modular Communications Node - Advanced Enclave (MCN-AE) augments the intelligence network, enabling intelligence users to simply plug into the MCN-AE enclave and, through the unit's high-bandwidth WIN-T "pipe", connect to all the same resources they had using the Trojan intelligence network.. The Army is looking to leverage MCN-AE to support the initial phase of network convergence.



A | Soldiers from the 1st Brigade, 82nd Airborne Division, exchange situational awareness with a geographically separated location using this interim capability Tropo Lite system during an expeditionary network demonstration at Fort Bragg, N.C. in 2016
B | With support from the 2nd Brigade Combat Team, 25th Infantry Division (2/25 ID), the Army conducted a Secure Wireless Risk Reduction Event at Schofield Barracks, Hawaii, in August 2016.
C | Soldiers from the 1st Brigade, 82nd Airborne Division erect a Terrestrial Transmission Line Of Sight (TRILOS) radio during an expeditionary network demonstration on March 9, 2016



*Program of Record /Non-Program of Record

ACQ PHASE*

1. Technology Development
2. Engineering & Manufacturing Development
3. Production & Deployment
4. Operations & Support



SNAP

Secure Internet Protocol Router Network/Non-secure Internet Protocol Router (SIPR/NIPR) Access Point (SNAP) ground satellite terminals are fielded to augment current network capabilities to extend network access to company and team level. Project Manager Warfighter Information Network-Tactical (PM WIN-T) is bridging gaps in C4ISR created by rugged-expansive terrain and sparse infrastructure by deploying these transportable commercial-off-the-shelf Very Small Aperture Terminal (VSAT) satellite terminals, which can deploy more quickly than larger satellite terminals.



• Telecommunications Systems Inc



CONGRESSIONAL LOCATIONS

KEY CONTRACTORS

DESCRIPTION

SNAPs are designed to provide satellite communications to small units at remote forward operating bases where they are unable to use terrestrial radios due to issues with terrain or distance. SNAP terminals provide reliable satellite communication access and take advantage of commercial equipment to expedite the fielding process. They provide access to the tactical and strategic networks for mission command, calls for fire, Medevac and information exchange. SNAPs are a key communications component for units, providing secure beyond-line-of-sight communications at the company level and below.

CAPABILITIES

- Works in concert with both increments of WIN-T
- Transit case design enables easy transport in the back of High Mobility Multipurpose Wheeled Vehicles or helicopters
- Modular design allows for varying dish and antenna sizes to appropriately satisfy mission requirements
- Easy to move around the battlefield, providing an expeditionary element to the force
- Certified Ka and X-band capability to take advantage of the Department of Defense's Wideband Global SATCOM satellites



- A** | SNAPs enable units in austere environments to pull down SIPR/NIPR-centric services and communicate with higher headquarters
- B** | SNAPs are designed for use at the company echelon and small combat outposts.
- C** | Soldiers from the 307th ESB practice troubleshooting procedures during new equipment training for SNAP bridging terminals, at Helemano Military Reservation, Hawaii, in June 2015.



*Non-Program of Record

ACQ PHASE*

- 1. Technology Development
- 2. Engineering & Manufacturing Development
- 3. Production & Deployment
- 4. Operations & Support





TCNO

Tactical Cyber and Network Operations (TCNO), formerly Warfighter Information Network-Tactical (WIN-T) Increment 3, delivers enhanced integrated/interoperable/standardized Cyber and Network Operations (NetOps) software packages, which make it easier for Signal Soldiers (S6/G6) from the tactical edge up through Corps to plan, configure, manage, monitor, control and secure/defend their tactical network assets. Newly enhanced and simplified NetOps/Cyber tools provide a holistic view across increments and systems, and increase the automation of tools and reporting, making it easier for communications officers to manage the extensive tactical mission command network. Current and future NetOps and Cyber enhancements will be delivered as technical insertion to WIN-T Increments 1 and 2 for fielding and support.



- G2 Software Systems
- Harris Corp
- Northrop Grumman
- SPAWAR



CONGRESSIONAL LOCATIONS

KEY CONTRACTORS

DESCRIPTION

TCNO also developed the enhanced Network Centric Waveform (NCW) version 10.x for increased throughput capability beyond-line-of-sight satellite communication and the Highband Networking Waveform (HNW) version 3.0 for line-of-sight (radio) communications. Both NCW and HNW provide significantly improved network capacity and robustness. The waveform improvements will be available for use in PM WIN-T and other Army and Department of Defense programs. TCNO's network and cyber management capabilities meet and support the Army's goals for Common Operating Environment (COE) interoperability, as well as network and NetOps convergence across the Army.

CAPABILITIES

- Integrated Tactical Network Operations (ITNO) delivers a comprehensive, holistic network management capability based upon an open framework, integrating multiple Network Operations (NetOps) and functions to seamlessly support Command Post, Mounted and Dismounted/mobile/hand-held tactical computing environments

- The Tactical Defense Cyberspace Operations-Infrastructure (TDCO-I) program delivers integrated capabilities that enable Cyber Network Defense teams to defend the Army's tactical communications network. It provides the infrastructure and tools for both local and remote cyber defenders to conduct DCO Mission Planning, DCO Internal Defensive Measures and DCO Response Actions
- The Joint Enterprise Network Manager (JENM) is a consolidated software application that plans, loads, manages and secures/defends mid and lower-tier software defined radios and associated waveforms
- The WIN-T Increment 3 program successfully delivered the NetOps Build 4/5, Net Centric Waveform (NCW) 10x software, and the Highband Networking (HNW) 3.0 software capabilities. Upon completion of its final Smart Shutdown requirements, which is expected in November 2016, the Army will change the status of the program to inactive.



A | 101st Airborne Division and 10th Mountain Division support the WIN-T Increment 3 Functional Qualification Testing of Network Planning and Management Software in December 2015

B | Soldiers from 2nd Brigade, 1st Armored Division trained in February with the JENM, a joint software application that plans, configures and monitors lower tactical radio networks. With JENM's new enterprise Over-the-Air Management (eOTAM) these tasks can now be performed rapidly from a remote location.

C | Soldiers from the 101st Airborne Division and 10th Mountain Division were trained on and supported the testing of the new network enhancements during the WIN-T Inc 3 Functional Qualification Test #3 at the contractor facility in Taunton, Mass., in December 2015, in preparation for NIE 16.2



ACQ PHASE

1. Technology Development
2. Engineering & Manufacturing Development
3. Production & Deployment
4. Operations & Support

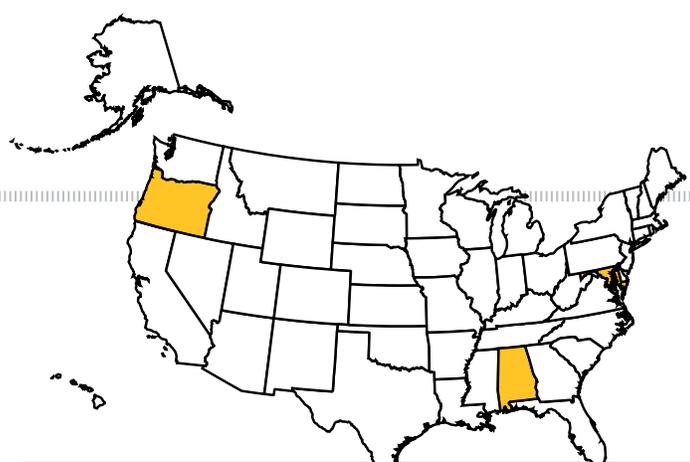


PHOTO CREDIT: JETT LOE, SUN-NEWS

T2C2

A

Transportable Tactical Command Communications (T2C2) is a new program of record that when fielded will provide agile robust voice and data communications in the early phases of joint operations and in later operational phases at the tactical edge. The jumbable T2C2 Lite and air-droppable T2C2 Heavy high-bandwidth satellite terminals will enable early entry forces access, via satellite, to the Warfighter Information Network-Tactical (WIN-T) network to obtain the situational awareness and mission command capabilities needed to conduct entry operations and set the stage for follow-on force.



- GATR
- PACSTAR



CONGRESSIONAL LOCATIONS **KEY CONTRACTORS**

DESCRIPTION

In more mature operations T2C2 Heavy will provide high bandwidth tactical network extension to company level and small forward operating bases and T2C2 Lite will support special teams in austere locations with high bandwidth requirements.

T2C2 provides satellite capability to small detachments and teams operating in remote locations without network infrastructure, enabling them to securely relay critical and time sensitive information, increasing the situational awareness for the entire operation. By taking advantage of military satellite capability, the system greatly increases throughput over currently fielded capability. Because the T2C2 solution is inflatable, it can provide a larger dish size, with increased capability and bandwidth efficiency, in a smaller package. These highly expeditionary inflatable satellite antennas provide the commander with increased operational flexibility and speed in maneuver.

Until T2C2 is fielded, reset and upgraded Secure Internet Protocol Router Network/Non-secure Internet Protocol Router (SIPR/NIPR) Access Points (SNAPs) and even smaller suitcase-sized Global Rapid Response Information Packages (GRRIPs), both with reduced SWaP and increased bandwidth, are being used as bridging capability.

CAPABILITIES

- T2C2 Lite is “jumpable” man-portable (carried by one Soldier), sets up rapidly and can be on the air in minutes. It supports military Ka and X band and commercial Ku band for integration into the WIN-T Tactical network.
- The slightly larger “air droppable” T2C2 Heavy supports military Ka and X band and commercial Ku for integration into the WIN-T Tactical network.



A | The Army will use two sizes of the inflatable satellite antenna for the Low Rate Initial Production of T2C2 Lite (v1) and T2C2 Heavy (v2). During Joint Forcible Entry operations at Network Integration Evaluation 16.1 in October 2015, the 82nd Airborne Division successfully utilized the capability to provide early entry network communications during the mission.

B | The “air droppable” T2C2 Heavy supports military Ka and X band and commercial Ku for integration into the WIN-T Tactical network.

C | T2C2 provides satellite capability to small detachments and teams operating in remote locations without network infrastructure, enabling them to securely relay critical and time sensitive information, increasing the situational awareness for the entire operation.



ACQ PHASE

1. Technology Development
2. Engineering & Manufacturing Development
3. Production & Deployment
4. Operations & Support





WIN-T INCREMENT 1

A

Warfighter Information Network-Tactical (WIN-T) is the Army's current and future tactical communications network backbone, delivering seamless, assured mission command, advanced communications and a comprehensive common operating picture in support of Joint, Coalition and Civil missions worldwide. As part of the Army's "ONE TACTICAL NETWORK," WIN-T Increment 1 establishes an at-the-halt network backbone that provides the full range of data, voice and video communications to command posts at the battalion and above echelons, using both line-of-sight (terrestrial) and beyond-line-of-sight (satellite/tropospheric) communications nodes.



- Booz Allen Hamilton
- ESP
- General Dynamics
- JANUS Research



CONGRESSIONAL LOCATIONS

KEY CONTRACTORS

DESCRIPTION

WIN-T Increment 1 comprises over 90 percent of the Army's tactical network. The Army began fielding WIN-T Increment 1, formerly known as the "Joint Network Node Network," in 2004 and completed fielding in 2012 to all units dedicated to receive the capability. To support expanding network requirements and improve the readiness of today's operational force, the Army is fielding several major upgrades to WIN-T Increment 1 that provide increased capability, throughput and interoperability, while hardening cyber security.

Recent upgrades added Network Centric Waveform (NCW) capability, which is a dynamic robust waveform that optimizes bandwidth and satellite utilization. One of the key attributes of NCW is that it facilitates communication between the at-the-halt WIN-T Increment 1 and the on-the-move Increment 2, increasing interoperability so the two generations of equipment can "talk" seamlessly on the battlefield. The Army will also be fielding an enhanced Network Operations (NetOps) tool suite across both increments of its tactical network to provide communications officers with a common operating picture of the network and enable units to simultaneously plan and manage across increments as one network. Providing a common set of NetOps tools is a unifying force that helps bring the network together holisti-

cally. The newly enhanced NetOps simplify and reduce the number of network management tools that communications officers (S6s and G6s) use to manage the tactical communications network.

CAPABILITIES

- WIN-T Increment 1 has three types of transportable network nodes that provide high-speed wide area network capability for secure voice, video and data exchange. The Tactical Hub Node (THN) supports division headquarters; the Joint Network Node (JNN) supports brigade level headquarters; and the Battalion Command Post Node (BnCPN) supports battalion level headquarters. The fourth type of node, the Regional Hub Node (RHN), is a fixed installation equivalent to three THNs and is used to support theater level operations.
- The Satellite Transportable Terminal (STT) is highly transportable and mobile satellite system, which operates in conjunction with the JNN and BnCPN, designed to establish secure voice, video and data communications virtually anytime and anywhere.



A | Soldiers from the 1st Brigade, 82nd Airborne Division, part of the Global Response Force, used this Warfighter Information Network-Tactical (WIN-T) Joint Network Node (JNN), left, and Satellite Transportable Terminal (STT), right, during an expeditionary network demonstration on March 9, 2016 at Fort Bragg, N.C. During the demonstration, Soldiers were able to connect to commercial, coalition and intelligence resources over the WIN-T network

B | Soldiers from the 1st Brigade, 82nd Airborne Division, used this WIN-T JNN, and STT, during an expeditionary network demonstration on March 9, 2016 at Fort Bragg, N.C.



ACQ PHASE

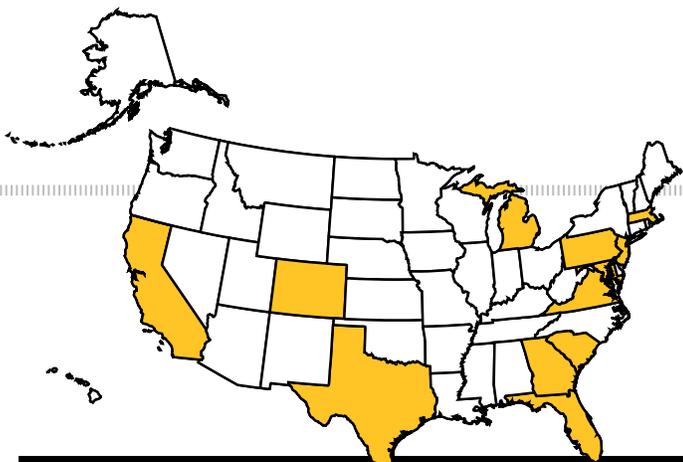
1. Technology Development
2. Engineering & Manufacturing Development
3. Production & Deployment
4. Operations & Support



WIN-T INCREMENT 2

A

Integrated into the Army's holistic tactical communications network, Warfighter Information Network-Tactical (WIN-T) Increment 2 provides interoperable mobile network connectivity to deliver dynamic networking operations to the entire battle space. The system provides robust on-the-move mission command capability enabled by a mobile network communications infrastructure employing military and commercial satellite connectivity and line-of-sight radios and antennas.



- General Dynamics
- Lockheed Martin
- L3 Communications
- Harris Corp



CONGRESSIONAL LOCATIONS

KEY CONTRACTORS

DESCRIPTION

Combat vehicles integrated with WIN-T Increment 2 provide the on-the-move communications, mission command and situational awareness that commanders need to lead from anywhere on the battlefield. WIN-T Increment 2 enables operations down to the company level in remote and challenging terrain while maintaining voice, video and data communications connectivity rivaling that found in a stationary command post. With WIN-T Increment 2, Soldiers can utilize applications for maneuver, fires and intelligence from inside vehicles, enabling commanders to make decisions on-the-move rather than being tied down to a fixed command post. In the Fires Battalions, the system improves the speed and reliability of the fires network while also extending range and increasing the survivability of artillery units. In support of expeditionary, quick reaction and Air Assault missions, the Army is providing lighter weight, more transportable alternatives to the current Tactical Communications Node (TCN). The new configurations provide the same support to commands posts and on-the-move operations as the current TCN but are integrated onto sling-loadable HMMWV platforms. WIN-T Increment 2 began fielding in October 2012. The Army will continue to provide the proven capability of WIN-T Increment 1

where unit requirements can be satisfied with at-the-halt networking capability. But those units where mobility is critical to mission success will receive WIN-T Increment 2.

CAPABILITIES

- The Tactical Communications Node (TCN) provides the principal backbone element and supports command post operations for the WIN-T Increment 2 network.
- The Point of Presence (PoP) is installed on select combat platforms at division, brigade and battalion echelons, enabling mobile mission command by providing on-the-move network connectivity, both line-of-sight and beyond-line-of-sight.
- The Soldier Network Extension (SNE) is installed on select vehicles to provide on-the-move network communications to extend the network from the brigade down to the company level. Using its on-the-move satellite communication systems, the SNE can also be used to heal and extend lower echelon tactical radio networks for geographically separated elements blocked by terrain features.
- The Vehicle Wireless Package (VWP) is a communications package for non-WIN-T Command and Control (C2) vehicles.
- The Network Operations (NetOps) and Security Center

(NOSC) provides network management and enhanced tactical network planning, administration, monitoring and response capabilities. The hardware is located on the vehicle and is connected by cables to the laptops and large display screens inside the tactical operations center where the communications officers manage the network.

- The Satellite Transportable Terminal Plus (STT+), a trailer-mounted ground satellite communications terminal with a generator, is used in conjunction with the TCN at-the-halt to provide relatively high throughput satellite communications.



A | This WIN-T Increment 2 SNE is on patrol in remote terrain during NIE 16.1 at Fort Bliss, Texas in October 2015

B | The Army is providing lighter weight, more transportable configurations of its tactical communications network backbone, WIN-T, including air transportable HMMWVs like the one used here by the 3rd BCT, 82nd Airborne Division during their recent JRTC rotations

C | The WIN-T Increment 2 PoP enables 2nd Stryker Brigade Combat Team, 2nd Infantry Division Soldiers to conduct mission command on the move during their rotation in 2016



ACQ PHASE

1. Technology Development
2. Engineering & Manufacturing Development
3. Production & Deployment
4. Operations & Support



ACRONYMS

- A** Acquisition Decision Memorandum (ADM)
Advanced Acquisition Kit (AAK)
Advanced EHF (AEHF)
Advanced Field Artillery Tactical Data System (AFATDS)
Advanced Tactical Optimized Map (ATOM)
Airborne Maritime Fixed Station (AMF)
Area Common User System Modernization (ACUS MOD)
Air Defense and Airspace Management (ADAM)
Air Operation Centers (AOCs)
Application Program Interfaces (APIs)
Area of Operation Responsibility (AOR)
Areas, Structures, Capabilities, Organizations, People, and Events (ASCOPE)
Army Battle Command System (ABCS)
Army Force Generation (AFORGEN)
Army Key Management System (AKMS)
Automated Communications Engineering Software (ACES)
- B** Battle Command Common Services (BCCS)
Battle Command Sustainment Support System (BCS3)
Battalion Command Post Node (BnCPN)
Battlefield Video Teleconference (BVTC)
Beyond Line Of Sight (BLOS)
Brigade Combat Team (BCT)
Battle Damage Assessment (BDA)
Beyond Line Of Sight (BLOS)
Blue Force Tracker (BFT)
Broadband Global Area Network (BGAN)
- C** Capabilities Development Document (CDD)
Capability Production Document (CPD)
Capability Set (CS)
Chief Information Officer (CIO)
Combat Camera (COMCAM)
Combat Net Radio (CNR)
Command and Control (C2)
Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR)
Command Post Local Area Network (CP LAN)
Command Post Computing Environment (CP CE)
Command Post of the Future (CPOF)
Command Post Platforms (CPPs)
Commercial-Off-The-Shelf (COTS)
Commercial Internet and Phone (COM-IP)
Common Hardware Systems (CHS)
Common Operating Environment (COE)
Common Operational Picture (COP)
Communications Security (COMSEC)
Commercial Coalition Equipment (CCE)
Computing Environments (CEs)
- D** Defense Readiness Reporting System-Army (DRRS-A)
Department of Defense (DoD)
Deployable Ku Band Earth Terminals (DKET)
Digital Video Acquisition Kit (DVAK)
Disaster Incident Response Emergency Communications Terminal (DIRECT)
Distributed Common Ground System - Army (DCGS-A)

- E** Early Infantry Brigade Combat Team (E-IBCT)
Electronic Casualty Report (ECR)
Electronic Key Management System (EKMS)
Enroute Mission Command Capability (EMC2)
Expeditionary Signal Battalion (ESB)
Extremely High Frequency (EHF)
- F** Fire Direction Center (FDC)
Fire Support Command and Control (FSC2)
First Unit Equipped (FUE)
Fiscal Year (FY)
Follow-on Operational Test & Evaluation (FOT&E)
Forward Entry Devices (FED)
Force XXI Battle Command Brigade and Below (FBCB2)
Forward Observer System (FOS)
Frequency Division Multiple Access (FDMA)
- G** Global Broadcast Service (GBS)
Global Command and Control System - Army (GCCS-A)
Global Command and Control System - Joint (GCCS-J)
Global Information Grid (GIG)
Global Rapid Response Information Package (GRRIP)
Global Response Force (GRF)
Gun Display Unit - Replacement (GDU-R)
- H** Hand Held (HH)
Handheld, Manpack, and Small Form Fit (HMS)
Harbormaster Command and Control Centers (HCCC)
High-Altitude Electromagnetic Pulse (HEMP)
Highband Networking Waveform (HNW)
High Capacity Line Of Sight (HCLOS)
High Frequency (HF)
High Mobility Multi-Purpose Wheeled Vehicle (HMMWV)
- I** Independent Initial Operational Test & Evaluation (IOT&E)
Information Assurance (IA)
Information Repository (IR)
Initial Operational Capability (IOC)
Initialization Tool Suite (ITS)
Information Systems Security Program (ISSP)
Integrated Tactical Networking Environment (ITNE)
- J** Joint Automated Deep Operations Coordination System (JADOCs)
Joint Battle Command-Platform (JBC-P)
Joint Capabilities Release (JCR)
Joint Convergence/Multilateral Interoperability Programme (MIP)
Joint Incident Site Communication Capability (JISCC)
Joint Network Node (JNN)
Joint Tactical Ground Station (JTAGS)
Joint Tactical Networking Center (JTNC)
JTRS Enterprise Network Manager (JENM)
- K** Key Management Infrastructure (KMI)
- L** Lightweight Forward Entry Device (LFED)
Line Of Sight (LOS)
Limited User's Test (LUT)
Local Area Networks (LANs)
Local COMSEC Management Software (LCMS)

Low Rate Initial Production (LRIP)
Low Volume Terminal 2 (LVT2)

M Manpack (MP)
Manpower Information Retrieval and Reporting System (MIRARS)
Materiel Development Decision (MDD)
Mid-tier Networking Vehicular Radios (MNVR)
Media Production Kit (MPK)
Military Specification (MIL SPEC)
Mission Command (MC)
Mounted Computing Environment (MCE)
Mobile Ad Hoc Networking (MANET)
Mobile User Objective System (MUOS)
Mounted Computing Environment (MCE)
Mounted Family of Computer Systems (MFoCS)
Movement Tracking System (MTS)
Multi-Frequency Time Division Multiple Access (MF-TDMA)
Multifunction Information Distribution System (MIDS)
Multiservice Operational Test & Evaluation (MOT&E)

N National Security Agency's (NSA)
Net Centric Waveform (NCW)
Network Operations (NetOps)
NetOps and Security Center (NOSC)
Night Vision Device (NVD)
North Atlantic Treaty Organization (NATO)
Non-Developmental Item (NDI)

O On-The-Move (OTM)

P Pocket-Sized Forward Entry Device (PFED)
Point of Presence (PoP)
Program Executive Office Command, Control and
Communication-Tactical (PEO C3T)
Program Management Office Network Enablers (PMO Net E)
Project Manager Mission Command (PM MC)
Project Manager Tactical Radios (PM TR)
Project Manager Warfighter Information Network-Tactical (PM WIN-T)
Program of Record (PoR)

R Range of Military Operations (ROMO)
Regional Hub Nodes (RHN)
Rifleman Radio (RR)

S Satellite Communications (SATCOM)
Satellite Transportable Terminal Plus (STT+)
SATCOM-On-The-Move (SOTM)
Secret and Below (SAB)
Secure Internet Protocol Router (SIPR)
Secure Internet Protocol Router Network (SIPRNET)
Secure, Mobile, Anti-Jam, Reliable, Tactical - Terminal (SMART-T)
Sensitive But Unclassified (SBU)
Signal Modernization (Sig Mod)
Signal Operating Instruction (SOI)
Single Channel Ground Airborne Radio System (SINCGARS)
Single Interface to the Field (SIF)
Simple Key Loader (SKL)
SIPR/NIPR Access Points (SNAP)

Situational Awareness (SA)
Small Airborne Networking Radio (SANR)
Software Communications Architecture (SCA)
Software Development Kit (SDK)
Soldier Network Extension (SNE)
Soldier Radio Waveform (SRW)
Size, Weight and Power (SWAP)
Special Operations Command (SOCOM)
Standardized Tactical Entry Points (STEP)
Strategic Mission Command (SMC)
Stryker Brigade Combat Team (SBCT)
Super High Frequency (SHF)
System Development and Demonstration (SDD)

T Tactical Communication Nodes (TCNs)
Tactical Digital Media (TDM)
Tactical Ground Reporting (TIGR)
Tactical Hub Node (THN)
Tactical Internet (TI)
Tactical Media Acquisition Kit (TMAK)
Tactical Mission Command (TMC)
Tactical Network Architectures and Configurations Current (TNACC)
Tactical Network Operation Management System (TNMS)
Tactical Operation Center (TOC)
Tactical Radio Report (TRR)
Terminal High Altitude Area Defense (THAAD)
Time Division Multiple Access (TDMA)
Transportable Tactical Command Communications (T2C2)
Trailer Mounted Support System (TMSS)
Tri-band Line of Sight (TRILOS)
Transportable Ground Receive Suites (TGRS)
Troposcatter transmission (Tropo)

W Wideband Global SATCOM (WGS)
Wideband Networking Waveform (WNNW)
Wireless Communications Products (WCPs)
Warfighter Information Network-Tactical (WIN-T)

U Ultra High Frequency (UHF)
Under Secretary of Defense for Acquisition, Technology, and Logistics
(USD(AT &L))
Unified Trouble Ticketing System (UTTS)
Unit Set Fielding (USF)
United States Message Text Format (USMTF)
Unmanned Aircraft System (UAS)

V Variable Message Format (VMF)
Vehicle Integration for C4ISR/EW Interoperability (VICTORY)
Very Small Aperture Terminal (VSAT)
Voice over Internet Protocol (VoIP)



FOR MORE INFORMATION

PUBLIC SITE: [HTTP://PEOC3T.ARMY.MIL](http://PEOC3T.ARMY.MIL)

FACEBOOK: [HTTP://WWW.FACEBOOK.COM/PEOC3T](http://WWW.FACEBOOK.COM/PEOC3T)

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