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Letter from the Program Executive Officer

BG N. Lee S. Price

In present day operations, our adversaries continually challenge us with new threats in varied environments and terrains. The Acquisition, Testing, Signal, Science and Technology, and Research and Development communities have converged to technologically meet requirements which emerge from these threats, while simultaneously preparing for those of the future.

In order to enhance our adaptability to evolving circumstances and requirements, C4ISR has transitioned its headquarters to a Center of Excellence at Aberdeen Proving Ground, Md. We now work in closer proximity with our aforementioned partners to develop, field, support and sustain the networked battle command solutions for the deployed forces of today and the Warfighters of tomorrow.

Since the inception of the Program Executive Office for Command, Control and Communications-Tactical (PEO C3T), process improvements have allowed us to cost-effectively support a technologically dominant force. During our journey to this Center of Excellence, Unit Set Fielding (USF) was critical in allowing us to maintain our support to deployed forces, while fielding integrated sets of capabilities. Since it began in 2005, the USF process has placed equipment in Warfighters' hands at the right time and place, so they can train, deploy and Reset as they progress through the Army Force Generation (ARFORGEN) cycle. They can become familiar with capabilities early in the cycle, long before battle. When it began to digitize its forces prior to USF, the Army could only field its capabilities to between two to three brigades per year. We are now fielding and Resetting close to 100 units a year.

From the central hub at APG, our developmental efforts and support will be global. The Marine Corps will remain an equal partner as we develop future iterations of Force XXI Battle Command Brigade-and-Below/Blue Force Tracking (FBCB2/BFT). We continued to field the present iteration of FBCB2/BFT to the Army and Marines and began fielding the software-enhanced version, Joint Capabilities Release (JCR) to operational units in January.

In response to requirements for faster position location information reports, the BFT 2 network will be significantly faster than its predecessor, allowing users to simultaneously transmit and receive data. Joint Battle Command-Platform (JBC-P) will empower Soldiers on the ground with further situational awareness and the command and control capability to make effective decisions, know where to turn



and where to go. Ground combat Commanders will lead their own forces effectively with less dependence on higher headquarters.

JBC-P software on a dismounted handheld, will similarly share situational awareness and command and control messaging. To leverage emerging capability, third party applications may be developed and then hosted on a common operating environment, similar to today's "apps" marketplace for Smartphones.

To evolve the Army and Joint force's command and control strategy, PM Battle Command will consolidate stand alone infrastructures and applications and collapse the fires, sustainment, air defense, and airspace product lines onto a common workstation.

Speaking of PM BC, its Product Manager, Tactical Battle Command was a first place winner of this year's Institute of Defense and Government Advancement's Network Centric Warfare Award in the category of "Outstanding Government Program" for its efforts in streamlining the collaborative environment on the battlefield. PM BC also recently received two DoD Systems Engineering Awards for the Advanced Field Artillery Tactical Data System (AFATDS)

and the Defense Readiness Reporting System-Army (DRRS-A) systems.

Program Directorate, Counter-Rockets, Artillery and Mortar (PD C-RAM) expanded the radar network among separate Forward Operating Bases (FOBs) and received a 2010 Army Acquisition Excellence Award. MilTech Solutions' milBook received the 2010 Army Knowledge Management (AKM) Award in the technology category, for facilitating the implementation and expansion of Knowledge Management principles and practices within the Army.

When the nature of operations in Afghanistan called for data sharing across the Coalition, the Allied Mission Network (AMN) was the solution. Today, Commanders throughout the region use AMN as a centralized network where they can share data from their respective secure networks. Independent discussions and planning efforts between separate Commanders of different nations have been replaced by data sharing across AMN.

With our partners in PEO Intelligence, Electronic Warfare and Sensors (IEW&S) and U.S. Central Command (CENTCOM) J2/J3/J6, we migrated all appropriate mission-critical United States Command and Control and Intelligence, Surveillance, Reconnaissance systems from the Secure Internet Protocol Router network (SIPRnet) to CX-



Low Rate Initial Production (LRIP) decision for WIN-T Increment Two. Prior testing phases have already placed this equipment in the hands of engineers and users. For the first time, we can evaluate this equipment in dynamic, operational conditions.

Beginning in June, we will participate in a six week Network Integration Evaluation with our partners in the Army Test and Evaluation Command; its Operational Test Command; the 2/1 Armored Division; and the Army's Program Executive Offices. The primary goal will be

Since the inception of the Program Executive Office for Command, Control and Communications-Tactical, process improvements have allowed us to cost-effectively support a technologically dominant force

I. The Combined Enterprise Regional Information Exchange System (CENTRIXS)- ISAF (CX-I) secure network is the U.S. component of AMN. For this effort, PEOs C3T and IEW&S received the 2010 David Packard Award for Acquisition Excellence. PEO C3T's Project Manager, Mobile Electric Power received this award in 2009.

Future enhancements to the Warfighter Information Network-Tactical (WIN-T) and the integration of separate radio waveforms will empower Company Commanders to effectively Command and Control their subordinate troops who will be capable of sharing intelligence with higher headquarters.

On February 3, the Army and PEO C3T moved one step closer to fielding satellite communications on-the-move to the company level in austere environments when the Defense Acquisition Board approved a Milestone C

to conduct parallel Limited User Tests of several Army programs, with a secondary goal of evaluating capabilities of the current network, the theater provided network and the emerging network. The exercise will also assess developmental networked and non-networked capabilities. It will be the first of a series of four events leading to executing a fully integrated BCT Network Evaluation at the end of 2012. The 2012 Integrated Network Test (INT) will be the culminating event to solidify the 2013-2014 Network Capability Set.

In closing, we look forward to a bright future with our partners within and beyond C4ISR, as we set the stage to support the future innovation by some of our nation's brightest engineers. These individuals will play a critical role in networking the battlespace for our brave, talented and dedicated men and women in uniform.

PEO C3T Programs & Capabilities

Below are brief descriptions of PEO C3T's main programs and capabilities.

- **Project Manager Battle Command's (PM BC)** products allow Warfighters to plan and execute fires, disseminate intelligence, plan logistics and collaborate and share battlefield information in a whiteboard-like environment. That includes Army Battle Command Systems (ABCS) Version 6.4, a suite of computer applications supporting Soldiers who direct specific functional area operations. In the future, PM BC's collapse strategy will combine the fires, maneuver, sustainment, air defense and airspace management product lines onto a common Battle Command Workstation. This new approach will enhance the ability of Commanders and staff members to conduct collaborative mission planning and execution across the full spectrum of military operations.
- **Project Manager Force XXI Battle Command Brigade-and-Below (PM FBCB2)** provides capabilities so Soldiers in separate vehicles can share one another's visual perspective of the battlefield through Global Positioning System (GPS) technology. The terrestrial FBCB2 and the satellite version, Blue Force Tracking, track and display friendly vehicles and aircraft. The future version of FBCB2/BFT, the Joint Battle Command-Platform (JBC-P), will extend those capabilities to handhelds for dismounted Soldiers and Marines while delivering increased security, bandwidth and data.
- **Project Manager Warfighter Information Network-Tactical (WIN-T)** provides the satellite communications network backbone that allows the Warfighter to send and receive information in order to execute the mission. No matter how austere the environment, WIN-T will provide a robust, secure network to connect brigade combat teams to the Army's digitized systems, voice, data and video.
- None of PEO C3T's capabilities – or those across the Joint services – can function without power. **Project Manager Mobile Electric Power (PM MEP)** provides tactical electric power to the Defense Department and environmental control to the Army. In addition to developing a fleet of increasingly fuel-efficient small, medium and large generators, PM MEP continues to meet Secretary of Defense objectives to diminish fuel consumption through the use of solar and wind energy and holistic methods of power generation.
- Last year, the Office of the Secretary of Defense and the Army decided to transition **Project Manager Network Systems Integration (PM NSI)** from PEO Integration to PEO C3T along with three of its products – Common Controller, Battle Command Software and the Network Integration Kit. Bringing these capabilities into the PEO C3T portfolio will allow for greater synergy between current and future force systems.
- **Project Director Communications Security (PD COMSEC)** was established within PEO C3T in 2010 to secure the Army's networks across the enterprise – from garrison to the tactical edge. PD COMSEC serves as a single management office to procure Army cryptographic and key management materiel, ensuring Warfighter communications are not compromised.
- **Project Director Tactical Network Initialization (TNI)** was renamed from Product Director Crypto and Networking Initialization (PD C&NI) under a change of charter in October 2010. PD TNI delivers mission-related data products and IP addresses to units, enabling digital communication and interoperability across tactical systems.
- **The Special Projects Office (SPO)** plans, implements and manages temporary, special and/or extraordinary communications, networks and applications support for DOD and non-DOD organizations. Among the capabilities under evaluation by the SPO is Wireless Network after Next (WNaN), an intelligent, self-healing tactical radio technology. Through foreign military sales, the SPO also provides system of systems engineering and project management expertise for foreign customers to achieve C4ISR modernization goals.
- **The MilTech Solutions** office provides web-based tools and technologies that improve workforce collaboration and enable faster, more effective support to the Warfighter. Among these tools are the Army Team C4ISR Knowledge Center (KC), the Single Interface to the Field (SIF) portal and SharePoint. MilTech Solutions also provides milSuite, a collection of secure knowledge management tools that mirror popular social media platforms. The sites, which include milBook, milWiki, milBlog and milTube, provide safe, yet open avenues of communication for more than 150,000 users across the active services and DOD civilian and contractor workforces.
- **One of the deadliest threats** in conflicts within Iraq and Afghanistan is an unforeseen mortar or rocket attack. Since its inception, Program Director Counter-Rockets, Artillery and Mortar (PD C-RAM) has countered these attacks with integrated systems that successfully protect and warn Warfighters of incoming fire. In April, PD C-RAM transitioned from PEO C3T to PEO Missiles and Space.



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New collaborative environment synchronizes Warfighter support

Leslie Roop and Amy Walker

With boots on the ground at its new location, the Program Executive Office Command, Control, and Communications –Tactical (PEO C3T) is collaborating in a new environment designed to enhance its support to the Warfighter and ability to better resolve issues in theater.

“As we synchronize efforts with our partners on post, our proximity will become closer, which will enhance our ability to support Warfighters located in vast regions across the globe,” said Brig. Gen. N. Lee S. Price, PEO for C3T.

With a force of more than 1,900 active duty military, civilian and on-site contractors supporting 41 key acquisition programs, PEO C3T has successfully transitioned to its new home at Aberdeen Proving Ground (APG), Md. During this complex process, the PEO has provided uninterrupted, transparent support to deployed, deploying and returning forces. By Sept. 15 of this year, it projects that more than 1,000 employees will be transferred from outlying locations including Fort Monmouth, N. J. and Fort Belvoir, Va., with the remainder of the workforce to be made up of new hires.

The relocation to APG will not be business as usual. The C4ISR Materiel Enterprise has been reorganized in a revolutionary mission-related domain structure that will greatly improve collaboration and efficiency. These domain structures are built around missions versus organizations, so the concept has placed personnel working on similar projects in the same locations. The Command, Control, Communications Network Transport (C2/CNT) domain, which is the primary mission of PEO C3T, is also its central location. All of the organizations supporting this mission – PEO C3T as well as other C4ISR Materiel Enterprise elements – have been consolidated into two buildings, instead of each organization and smaller sub-organization residing in their own buildings. Research and development, and contracting communities will reside in the same space as PEO C3T engineers.

“Co-location allows them to rapidly share ideas and lessons learned, while efficiently executing processes to increase the delivery of products to the Warfighter,” Price said.

As it builds partnerships with corporations outside APG’s gates, PEO C3T will also synchronize efforts with its testing, logistics, intelligence, surveillance and reconnaissance, and research and development partners on post.

The main intent for the move and the creation of this collaborative environment was to achieve faster, more



coordinated and cost-effective support to the Warfighter, said Stan Niemiec, PEO C3T’s product director for Base Realignment and Closure (PD BRAC).

“We have the opportunity now to speak with one voice, a more coordinated voice,” Niemiec said. “We are going to be in daily contact with each other and as a result that should increase synchronized responses to the Warfighter.”

Nearing its return to normal operations after several years of split-operations, PEO C3T will continue its dedicated support to theater in a more close-knit environment. The PEO’s components that were relocated to APG were consolidated into four large administrative buildings, a drastic change from the 30 smaller buildings it inhabited at Fort Monmouth.

“Being co-located with the project and product manager (PM/PdM) organizations facilitates situational awareness, coordination and issue resolution,” said Joe Hollenbeck, PEO C3T’s Readiness Management Division director. “In particular, this co-location allows us to synchronize efforts in a manner that strengthens our collective ability in providing the right support at the right time and place to the Warfighter.”

“A more collaborative work environment and close physical proximity closes gaps in information, knowledge and -- most importantly -- trust,” said Cecilia Burrus, deputy for PD BRAC. “There are more opportunities for personnel across the project manager offices to interact face-to-face with each other.”

Leslie Roop is a government civilian who supports the Program Executive Office Command, Control and Communications-Tactical (PEO C3T).

Amy Walker is a staff writer for Symbolic Systems, Inc. supporting the Army’s Program Executive Office Command, Control and Communications-Tactical (PEO C3T).

A consolidated approach enhancing collaboration on the battlefield

Col. David M. Moore and Laura V. Lind

Since 2009, **Project Manager Battle Command**, part of Program Executive Office Command Control Communications-Tactical, has been moving toward collapsing its critical fires, maneuver, sustainment, airspace management, and air defense capabilities onto a consolidated Battle Command product line. PM BC is dedicated to supporting rapid delivery of capabilities to the joint land component Warfighter and ensuring units are effectively fielded, trained and supported.

Taking the goal of delivering rapid, relevant capabilities a step further, PM BC obtained feedback from system users to further understand limitations and challenges of the line of Battle Command systems. Current primary Battle Command products include: Command Post of the Future, Advanced Field Artillery Tactical Data System (AFATDS), Battle Command Common Services (BCCS), Joint Automated Deep Operations Coordination System (JADOCS), Defense Readiness Reporting System-Army (DRRS-A), Battle Command Sustainment and Support System (BCS3) and Global Command and Control System-Army (GCCS-A). PM BC also procures a common hardware computing baseline used by a broad range of Army products and maintains oversight of the Single Interface to the Field, an uninterrupted field support service available to Warfighters.

PM BC has found that although each individual system performs well in the field, provides needed critical capabilities, and shares data with other systems, there are opportunities for improvement. Staff officers remain largely isolated, primarily due to the systems with which they operate. Interoperability and collaboration is typically achieved when Soldiers manually extract data from one system and physically re-enter this data into another system, which can be time consuming and inefficient. In addition, previously all software was blocked for a

significant period while a collective capability was built, meaning that battle command software could be irrelevant at the time of delivery.

THE BATTLE COMMAND COLLAPSE STRATEGY

To rectify these issues, PM BC launched the Battle Command Collapse Strategy to shift the disparate Battle Command family towards a consolidated Battle Command product line. This strategy is identified by two major efforts. The first major effort is consolidating tactical server infrastructure and unifying the tactical solution with the Defense Department's enterprise approach. The second major effort is to develop two core software architecture frameworks that provide an "architecture of record" from which future battle command applications can be built. Within the application effort, the two key components are development of a Battle Command Workstation and integration of capabilities into a Battle Command Web. These two major efforts, referred to collectively as "lines of operation," are vital to significantly enhancing the ability of commanders and their staffs to effectively conduct collaborative mission planning and execution across a range of operations and the spectrum of conflict.

Also, as part of this strategy, PM BC found it imperative to deliver operationally relevant capability to the field in a timely manner. Thus, PM BC implemented a quarterly release process that informs Army decision makers when emerging capability is expected to be mature, its impact on interoperability, and the organization's method of force upgrade. By implementing 24 quarterly upgrades over the past three years across its product lines, PM BC assures relevant and operational capabilities are delivered to Warfighters while ensuring interoperability and synchronized fielding.

Second increment of network keeps the Army moving

Amy Walker

In preparation for the fielding of the second increment of the Army's tactical communications network, a \$2.8 billion Low Rate Initial Production (LRIP) contract was recently finalized, allowing for continued production of the network.

Once fielded, Warfighter Information Network-Tactical (WIN-T) Increment 2 will bring mobile communications to the Army, a new capability that will reach down to the company-level Warfighter for the first time.

"This significant step brings WIN-T Increment 2 from the conceptual stage to the tactical training and operational employment environment," said Brig. Gen. N. Lee S. Price, Program Executive Officer for Command, Control and Communications-Tactical (PEO C3T). "For the first time, we can evaluate this equipment in dynamic, operational conditions."

Similar to a home Internet connection, WIN-T provides high-speed, high-capacity voice, data and video communications. Building on the success of WIN-T Increment 1, currently fielded to 80 percent of the total force, WIN-T Increment 2 will provide the initial On The Move (OTM) network communications down to the company level. It is currently undergoing a series of pre-fielding tests and evaluations and is expected to reach the first unit by the end of 2012.

WIN-T Increment 2 will establish a moving communication grid that eliminates the need to stop in order to communicate, allowing Soldiers and Commanders to stay connected even in high intensity conflicts.

One of the key strengths of WIN-T Increment 2 lies in its ability to adapt to changing mission conditions in real time, without the pre-planning and configuration required of traditional networking infrastructure. By taking advantage of both satellite and line of sight communications, units in austere environments such as mountainous regions, can still connect and communicate through this self-forming, self-healing network. Should a component of the network become inoperable, it will restructure itself and continue providing the seamless communication needed to complete dynamic operational missions.

Traditionally, the WIN-T network has been at the battalion level and above, but the Soldier Network Extension (SNE) of Increment 2 will now extend that network down to the company level. In the past, terrain features often fractured the radio component of the network, but the SNE has the capability of healing the network using satellite communication as an alternative. With the SNE extended down to the lower echelon radio nets, such



as the Wideband Networked Waveform (WNW), Soldier Radio Waveform (SRW), Enhanced Position Location Reporting System (EPLRS), and Single Channel Ground and Airborne Radio System (SINCGARS), radios can now "touch" the WIN-T network backbone, increasing the scope of the Army's entire communications network.

"Instead of an 'air gap' existing between those lower echelon systems and the WIN-T Tactical Operations Center network, we now have on the move platforms at company level forward that have those radios in them and tie the whole network together," said Pat DeGroodt, deputy Product Manager (PdM) for WIN-T Increment 2/3.

WIN-T Increment 2's LRIP contract was finalized in December 2010. With a ceiling of \$2.8 billion, the contract supports roughly 20 maneuver units and includes two years of LRIP and an option for one year of Full Rate Production. An earlier contract portion was awarded in April 2010 and has allowed Project Manager (PM) WIN-T to produce the initial equipment sets for a series of upcoming qualification tests. These tests will lay the groundwork for the Initial Operational Test and Evaluation in the second quarter of fiscal year 2012.

"This critical milestone allows the Army to continue the modernization of its current technologies and to provide the network which will bring future capability sets earlier to the battlefield," said Lt. Col. Robert M. Collins, product manager for WIN-T Increment 2/3. "As the Army modernizes current software capabilities and integrates its stand alone technologies into a system of systems, WIN-T Increment 2 will provide the additional bandwidth to enhance Army Modernization."

Amy Walker is a staff writer for Symbolic Systems, Inc. supporting the Army's Program Executive Office Command, Control and Communications-Tactical (PEO C3T).

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THALES

PM MEP pioneers efficient power systems

Claire Heining

With a clear need to cut fossil fuel consumption on the battlefield, Project Manager, Mobile Electric Power (PM MEP) has steadily modernized its generator fleet while exploring alternative energy sources and innovative future power generation systems.

In the field, power is the lifeblood of communications gear, weapons systems, tactical operations centers and much more. With enemies frequently targeting the supply convoys that carry fuel to troops, reducing fuel consumption can be a matter of life and death.

“During peacetime, generators are the lowest consumer of fuel because no one has to take their power with them – they’re operating out of installations with power from the local utility grid,” said Paul Richard, acting project manager for MEP. “But going into war – especially Afghanistan, which has very little infrastructure as compared to Iraq – units have to take their power with them.”

Soon, the generators currently in theater will be replaced by Advanced Medium Mobile Power Sources (AMMPS). Ranging in size from five kilowatts (kW) through 60 kW, the AMMPS are part of the next generation of Defense Department standard mobile electric power sources. The full rate production decision for the AMMPS program is scheduled for May 2011, with fielding expected to begin possibly later Fiscal Year (FY) 2011 or early in FY 2012.

When fully fielded, the fleet is expected to save the Army more than 50 million gallons of fuel a year. AMMPS will also be 50 percent more reliable than its predecessor, and greatly improve maintainability while lowering total ownership cost over the full spectrum of tactical operations.

“On average, they’re 21 percent more fuel efficient and cost only 82 percent of the unit cost of the Tactical Quiet Generators they’re going to replace,” said Michael Padden, former project manager for MEP.

PM MEP is also working on the Large Advanced Mobile Power Sources (LAMPS) program, which will replace the current Tactical Quiet Generators in the 100 kW and 200 kW sizes. Improvements are expected in fuel consumption, size and weight, reliability and maintainability.

Beyond creating better power sources, PM MEP is also developing methods to use them more efficiently through the use of power distribution equipment to create “power islands” that service several different loads. This work

has greatly reduced the logistical footprint of power on the battlefield, and has helped lay the groundwork for development of deployable microgrids, which would link together power sources and intelligently manage the supply by autonomously switching generators on and off, according to demand.

To capitalize on alternative energy sources, PM MEP is developing hybrid systems that use solar and wind power to offset traditional fuel consumption. Some smaller power sources can run entirely off the solar capability “with minimal or no generator power required,” Richard said.

Research is also ongoing to evaluate the prospects of a larger hybrid system that could power a Brigade level Command Post, as well as fuel cell technology and other initiatives.

In addition to tactical electric power, PM MEP is making strides in environmental control. Improved Environmental Control Units (IECU) provide cooling, heating and dehumidification to Soldiers and materiel systems so they can function in harsh environments.

A Full Rate Production Ceremony for the 60 K British Thermal Units per Hour (BTUH) IECU was held in February 2011 and fielding began in March. The Army expects about 1,400 60 K IECUs will be in operation by the end of the year.

The 60 K IECU fleet offers a 16 percent fuel savings over comparable military-standard units, representing an annual savings of more than one million gallons of fuel over the entire fleet, said Cory Goetz, who served as the lead engineer on the 60 K program and is now Product Director, Batteries.

“The 60 K IECU, in addition to being a more efficient consumer of battlefield power, is going to be installed, operated and maintained by Soldiers using the tools and training that they receive in Army schoolhouses,” said Lt. Col. Ed Taylor, United States Marine Corps, Small Power Sources Product Manager for PM MEP. “It’s going to be a significant improvement over the status quo.”

Claire Heining, Symbolic Systems Inc., is a contractor supporting the Army's Program Executive Office Command, Control and Communications – Tactical (PEO C3T).

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PD COMSEC synchronizes network security

Leslie Roop

Project Director, Communications Security (PD COMSEC) was established within the Program Executive Office Command, Control, and Communications-Tactical (PEO C3T) in 2010 to secure the Army's networks across the enterprise — from garrison to the tactical edge. PD COMSEC will eliminate stovepipes by integrating network encryption and security efforts across Army organizations.

“What that will do, hopefully, is become a good example of a system of systems approach,” said Lt. Col. Eric Betts, deputy project director for COMSEC. “Everybody has to be secure. Instead of everybody trying to [secure information] in a stovepiped fashion, you have a single program office that will manage all of these different components.”

The PD's objective is to secure content against access from unauthorized interceptors before it reaches its intended recipients.

Previously, multiple Army organizations procured crypto and key management equipment through a process that lacked strategic planning and execution. Now, PD COMSEC serves as the single “door” between the National Security Agency (NSA) and the Army for cryptographic materiel, bringing consistency and efficiency to the process.

“There's now a central point for interfacing with NSA for procurement of cryptographic and key management material for the Army,” Betts said. “We're the door between the Army and NSA for cryptographic material and technical aspects.”

ASA(ALT) created a single management office under PEO C3T to procure Army cryptographic and key management material.

This has yielded cost and process efficiencies while ensuring secure communications for Soldiers and systems.

“The point of (PD COMSEC) is to bring efficiencies and make the execution a little more consistent,” said Betts.

Cryptographic materiel is the “box” that is plugged into a system, and holds the “key” or algorithm that encrypts sensitive information. Key management is the infrastructure that passes that key from the NSA — which



sets the algorithm standards to achieve security — through the Army and down to the unit and “box” itself.

Over the long term, PD COMSEC aims to improve the acquisition process for cryptographic products by providing an interface to the NSA and industry for the Army's communications security requirements.

Leslie Roop is a government civilian who supports the Program Executive Office Command, Control and Communications-Tactical (PEO C3T).

FBCB2: More security, bandwidth, users and information

Claire Heining

During a recent tour in Afghanistan, Capt. Adam Taliaferro's unit had a lot of ground to cover — including remote areas that stretched beyond a reliable radio range.

At crucial moments, it relied on Force XXI Battle Command Brigade-and-Below/Blue Force Tracking (FBCB2/BFT) to communicate.

"After taking contact, we needed a Medevac [helicopter] outside of FM range, and we were able to use the free text message and Medevac report and immediately were able to get the bird in the air," Taliaferro said. "In Afghanistan, minutes are crucial. By sending all the specific information they needed, such as blood type and his pulse rate and heart rate, it saved his life because it was that much faster."

From text-messaging to plotting the locations of improvised explosive devices, Warfighters say FBCB2/BFT has changed the landscape for how lower echelons communicate and navigate. Now, the Army is in the midst of ongoing upgrades to increase the speed, accuracy and information available through FBCB2.

"The new network architecture will provide Warfighters with much greater bandwidth and vastly reduced latency," said Col. Tom Olson, Project Manager for FBCB2. "These next-generation capabilities will enable increased combat effectiveness and survivability for Army and Joint users in the years ahead."

FBCB2 is a digital command and control (C2) system that provides battle command and situational awareness (SA) information from the Brigade down to the Soldier level. FBCB2 paints a complete picture of the battlefield — including icons representing friendly forces, enemy combatants and landscape hazards — so units can synchronize operations and avoid fratricide.

"It gives you a pretty good picture of where your forces are," said Lt. Col. Mark Raschke, who used FBCB2 in Iraq. "That allows you to make some decisions as far as the timing of action — how you command and control, how your plan unfolds and how you execute."

The next iteration of FBCB2, known as Joint Capabilities Release (JCR), began fielding to operational units in January. Among the upgrades are a faster satellite network, secure data encryption and integration with historical information through Tactical Ground Reporting (TIGR), so users can better plan maneuvers while on-the-move.

The JCR upgrades are part of Capability Set 11/12, and Joint Battle Command-Platform (JBC-P) will replace JCR in Capability Set 13/14. There are more than 100,000 FBCB2/BFT units

already in the field.

JBC-P will allow two-way, beyond-line-of-sight communication of voice, data and images between handhelds, vehicles, aircraft and higher headquarters. As part of the JBC-P upgrade, the Army will deploy the high-tech, high-speed Blue Force Tracking 2 (BFT 2) — a satellite communications network that is significantly faster than the existing BFT system.

The faster, more accurate BFT 2 will also benefit Blue Force Tracking-Aviation (BFT-AVN), the air component of FBCB2. Installed in more than 3,000 Army, Joint and Coalition rotary and fixed-wing aircraft, Unmanned Aerial Systems, and lighter-than-air platforms, BFT-AVN FBCB2 provides near real-time, beyond-line-of-sight SA and C2 messaging for aircrews and their Commanders. With JBC-P, icons representing aircraft, vehicles and dismounted Soldiers will appear closer to their actual locations.

JBC-P will also introduce Soldiers to a new user interface, a product of direct feedback from Training and Doctrine Command (TRADOC)-led user juries with Soldiers and developers from the "video game" era.

"As linked in as digitized as our young Soldiers are, (FBCB2) is a fairly easy system to learn how to operate," said Maj. Ryan Kranc, who used the system in Iraq and has also served as an instructor for fellow Soldiers.

With JBC-P, users will drag-and-drop icons, touch-to-zoom maps, collaborate through chat and analyze the battlefield through TIGR, a software tool that uses a "Google Earth"-like interface, pictures and text to provide a searchable database of unit activities.

TIGR can be used in almost any environment to show historical data of occurrences in distinct locations, so users can plan future maneuvers. It also lets Soldiers track common incidents, residents and leaders of a village. TIGR is scheduled to transition from Defense Advanced Research Projects Agency (DARPA) program management to PM FBCB2 on October 1, 2011 — making FBCB2 even more versatile in its support for Warfighters right down to the platoon or squad level.

"If it did nothing more than the imagery, I would've been happy with it, but then I learned to use the messages and the different reach-back capabilities," Kranc said. "It's a great capability at the lowest level."

Claire Heining, Symbolic Systems, Inc., is a contractor supporting the Army's Program Executive Office Command, Control and Communications-Tactical (PEO C3T).

USF: One Team One Fight

Kyle Bond and Claire Heininger

As they prepare for deployment, Soldiers and their Commanders cannot be distracted by logistical tangles.

But in the past, the influx of sophisticated digital equipment and corresponding training did not always follow a set pattern. So-called “drive-by fieldings” – on the system representatives’ schedule, not the unit’s – could throw the battle rhythm off-kilter.

That has changed since the implementation of Unit Set Fielding (USF), a comprehensive process first implemented by the Army’s Program Executive Office Command, Control and Communications-Tactical (PEO C3T) to synchronize planning, fielding, training and reset of C4ISR capabilities. What began in fiscal year 2005 as an innovative, system of systems approach to fielding now has an established track record throughout the Army, aligning with the Army Force Generation process to support unit readiness and modernization.

At the end of the second quarter of fiscal 2011, more than two thirds of the active Army (134 of 198 units) had completed USF. Another 47 percent of the Army National Guard (67 of 143 units), 18 percent of the Army Reserves (17 of 93 units) and 35 percent of Multi-Component units (six of 17 units) had also finished the process.

Now, as senior leaders focus on instilling balance and versatility in the force, USF is supporting those goals. The five-phased USF method spends Soldiers’ limited time wisely, while also ensuring that training takes place in a logical sequence, so users thoroughly understand their equipment’s capabilities and interoperability as a system of systems.

Through USF, system representatives from the project management (PM) offices meet with the unit in coordinated events to tie fielding into regular operational training requirements. Fielding and training on various systems are then prioritized according to mission needs. When representatives from different PMs and commands come together with the unit to determine the schedule, the event is called a synchronization conference, or “synch conference” for short.

“Synch conferences allow us to expedite the training, preparation and coordination process,” said Maj. Curtis Sawyer, a planner with the Department of the Army G-3 at Fort Bliss, Texas.

That up-front planning paves the way for efficient execution, Sawyer said.

The five phases of USF and the operations they support are:



- **Phase I (planning):** During detailed fielding and new equipment training planning.
- **Phase II (execution):** During fielding and training operations.
- **Phase III (reset, staging, onward movement and integration):** While deploying, or at an Army combat training center where units receive their training prior to deployment.
- **Phase IV (deployment):** For support of units when they are deployed.
- **Phase V (reset):** During the unit’s reset upon return from deployment.

The phases of USF were originally managed entirely by PEO C3T. Today, PEO C3T leads the first three phases, and the Army’s Communications and Electronics Command leads the final two phases.

Key to providing consistent support throughout the phases of USF are Digital System Engineers (DSEs) and Field Service Representatives (FSRs), who deploy with the unit and handle requests for assistance in theater. They provide tiered support to system users and some on-the-ground training.

Most Army maneuver units have battle-rostered DSEs and FSRs. Experts can also be airlifted or transported to the site of a pressing issue.

Kyle Bond is a government civilian who supports the Program Executive Office Command, Control and Communications-Tactical (PEO C3T) as public affairs officer.

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