NETWORKING THE SOLDIER

"YOU GIVE A SOLDIER A MISSION, YOU GIVE A LEADER A MISSION AND THEY'VE GOT TO HAVE TOOLS, AND THEY'VE GOT TO HAVE YOUR TRUST AND CONFIDENCE TO EXECUTE AND THEY'VE GOT TO PROVIDE YOU THE CONTEXT FOR YOU TO UNDERSTAND WHAT'S GOING ON - A COMPLETELY DIFFERENT PARADIGM THAN WHEN I WAS GROWING UP. THAT'S WHY WE NEED THE NETWORK."

GEN. MARTIN E. DEMPSEY
CHAIRMAN OF THE JOINT CHIEFS OF STAFF
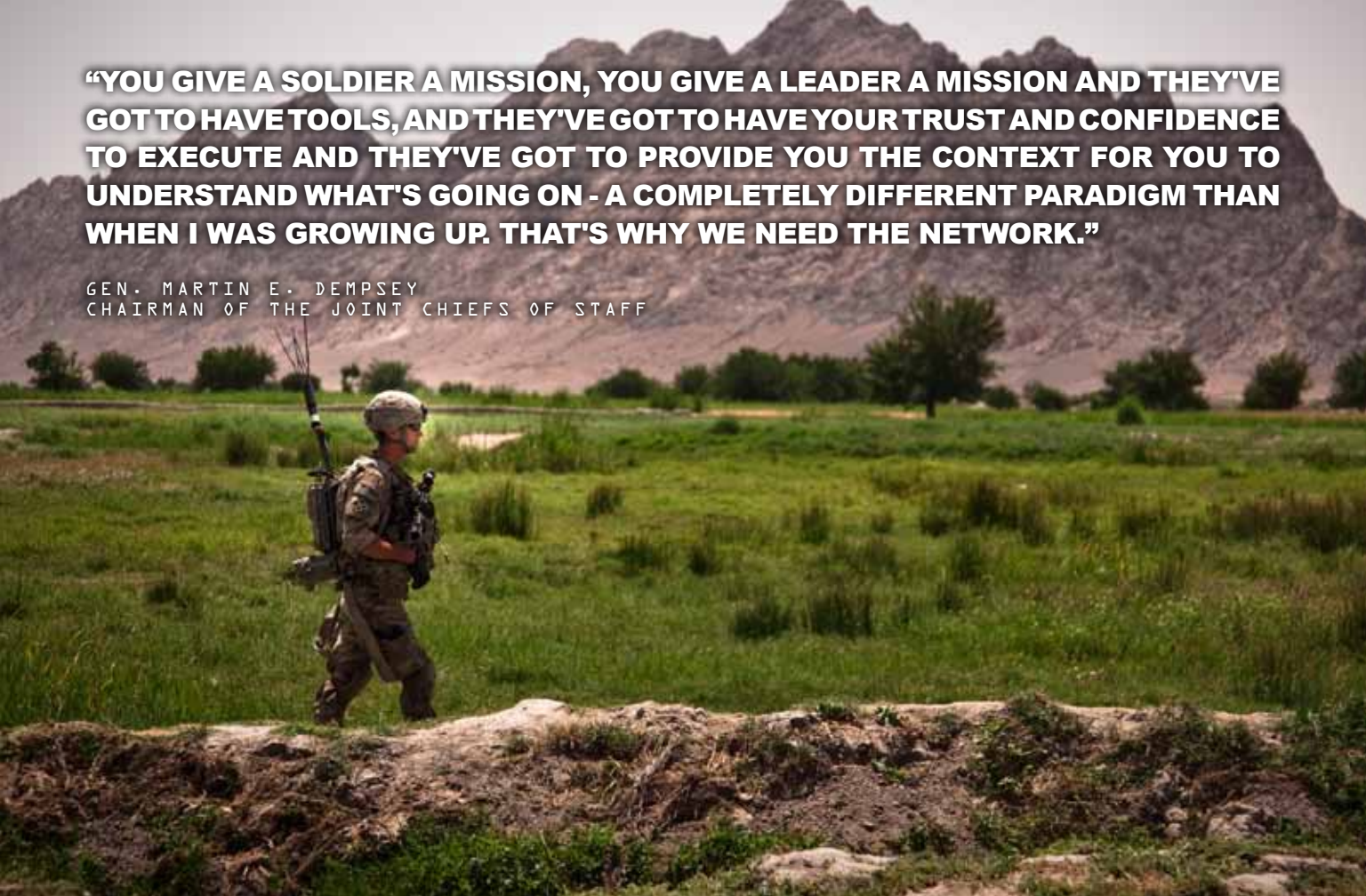
To ensure network capabilities are fielded in an integrated and synchronized fashion while ensuring Army acquisition practices keep pace with emerging technology, the Army has developed a Network Strategy that fundamentally changes how it develops, acquires and fields capabilities. For the first time, the Army is delivering network systems not on an individual basis, but as an integrated communications package that spans the entire formation, connecting the home station, the fixed command post, the commander on the move and the individual soldier.

The Network is a core enabler of allowing the Army to produce a force that is smaller but still highly capable. To support this vision, the Network will be treated as a single entity, unified from the Global Information Grid to the installation to the farthest tactical edge, providing the same basic capabilities from home station to the lone dismounted Soldier in theater.

The Army will use the Capability Set Management construct to design, develop, acquire and field the network in a comprehensive, synchronized manner. This construct will cut across functional areas and focus on three primary objectives: building capacity, improving security and delivering enterprise services to the entire force.

Capability Set Management has adapted acquisition practices and is aligning programs, doctrine, testing practices and technology insertion so that units receive synchronized and integrated network capability. This entails an overarching network architecture that connects all echelons from squad to joint task force to ensure our leaders have the right information at the right time to make the best possible decisions.

"THE ARMY NETWORK PROVIDES THE OVERARCHING ARCHITECTURE CONNECTING SOLDIERS AND THEIR EQUIPMENT WITH THE DATA VITAL TO CREATING OVERWHELMING SYNERGY. IMPROVEMENTS TO THE ARMY NETWORK ENSURE SOLDIERS HAVE THE RIGHT INFORMATION FROM A RANGE OF SENSORS AT THE RIGHT TIME TO MAKE THE BEST POSSIBLE DECISIONS."

GEN. RAYMOND T. ODIERNO
CHIEF OF STAFF OF THE ARMY

Ability to access key information anytime, anyplace.

Sharing of information to facilitate fire and maneuver, and survive in close combat.
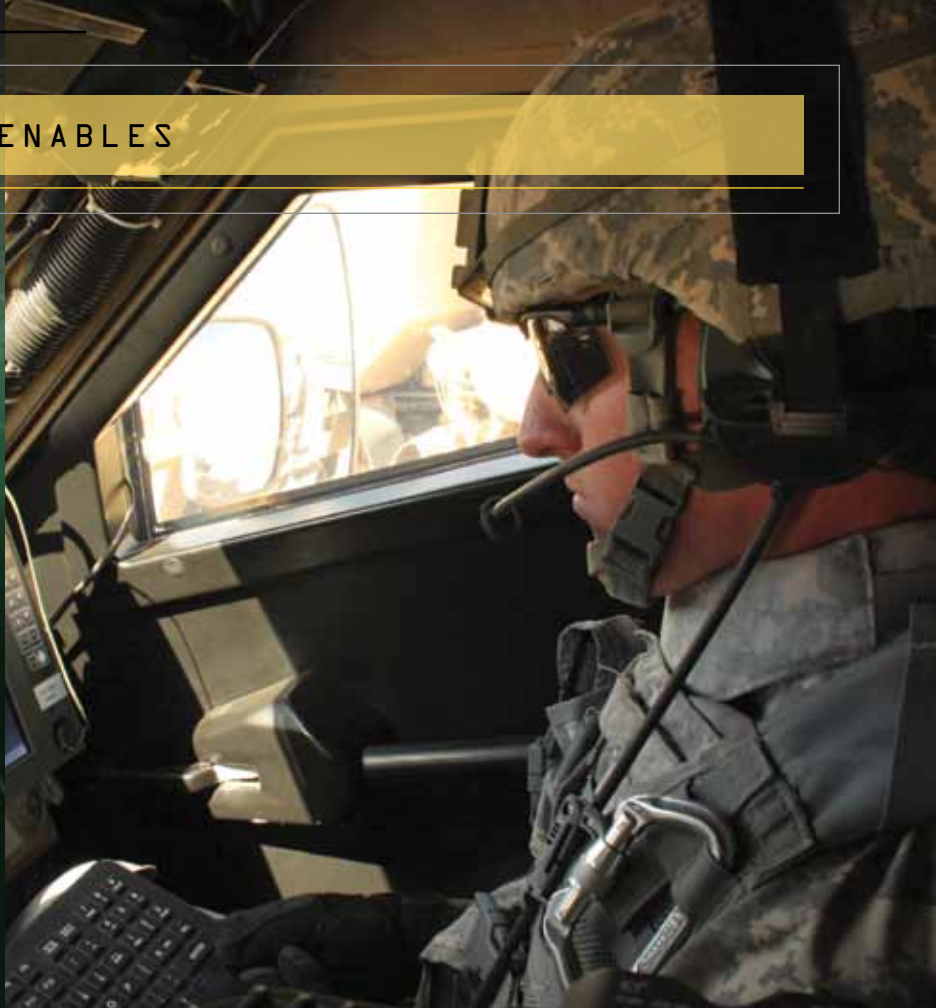
Collaboration capability to aid in seizing and controlling key terrain.

Lethal and non-lethal capabilities, coupled with sensors, to effectively engage targets at extended ranges.

Ability to distinguish among friend, enemy and noncombatant.
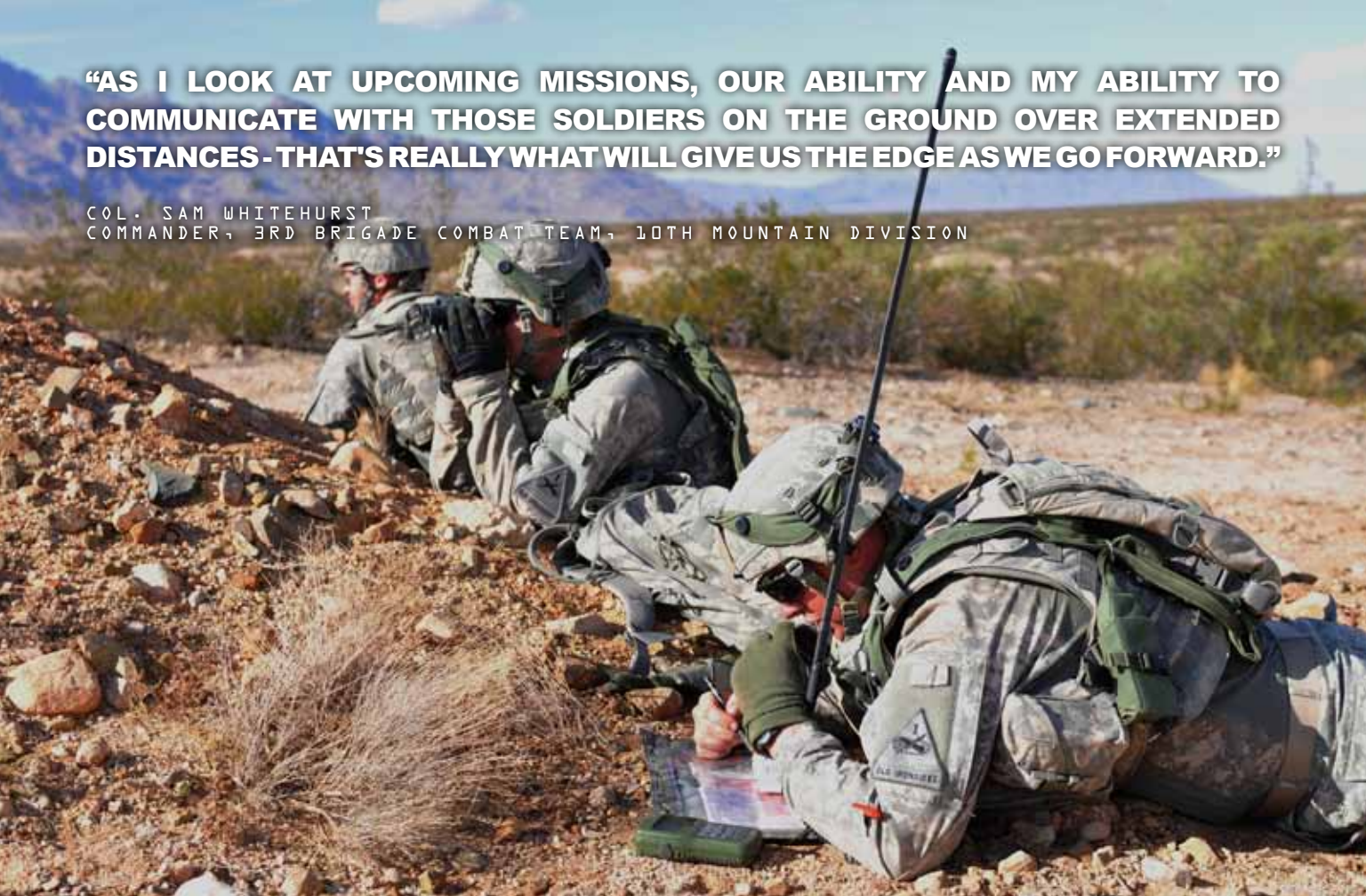
Integration of indirect fires.

Mission Command on the Move (MCOTM) and Soldier connectivity.

"AS I LOOK AT UPCOMING MISSIONS, OUR ABILITY AND MY ABILITY TO COMMUNICATE WITH THOSE SOLDIERS ON THE GROUND OVER EXTENDED DISTANCES - THAT'S REALLY WHAT WILL GIVE US THE EDGE AS WE GO FORWARD."

COL. SAM WHITEHURST
COMMANDER, 3RD BRIGADE COMBAT TEAM, 10TH MOUNTAIN DIVISION

> LANDWARNET

A 21st century expeditionary Army cannot succeed without a robust network. In order to prevent conflict in support of national objectives, shape the environment, and win in operational engagements, Soldiers in combat, deployed forces at all echelons, and both the Operational and Institutional Army rely on the network and the information and capabilities it stores, hosts and carries.

The Army's portion of the Department of Defense (DoD) network, LandWarNet, will provide Soldiers, civilians and mission partners the information they need, when they need it and in any environment. LandWarNet will be a completely integrated and interoperable network, from the highest to the lowest echelon.

The Army is pursuing critical initiatives to build an enterprise capability, including Enterprise Email, calendar-sharing and directory services, and ID and data center consolidation. Enterprise Network initiatives will increase warfighting effectiveness, improve network security, save hundreds of millions of dollars and greatly reduce infrastructure. Additionally, the Army is transforming business systems IT to better support our business operations and strategic decision making. The Army's enterprise concept requires a Common Operating Environment (COE), which is an approved set of technical standards to which all network applications and systems must adhere.
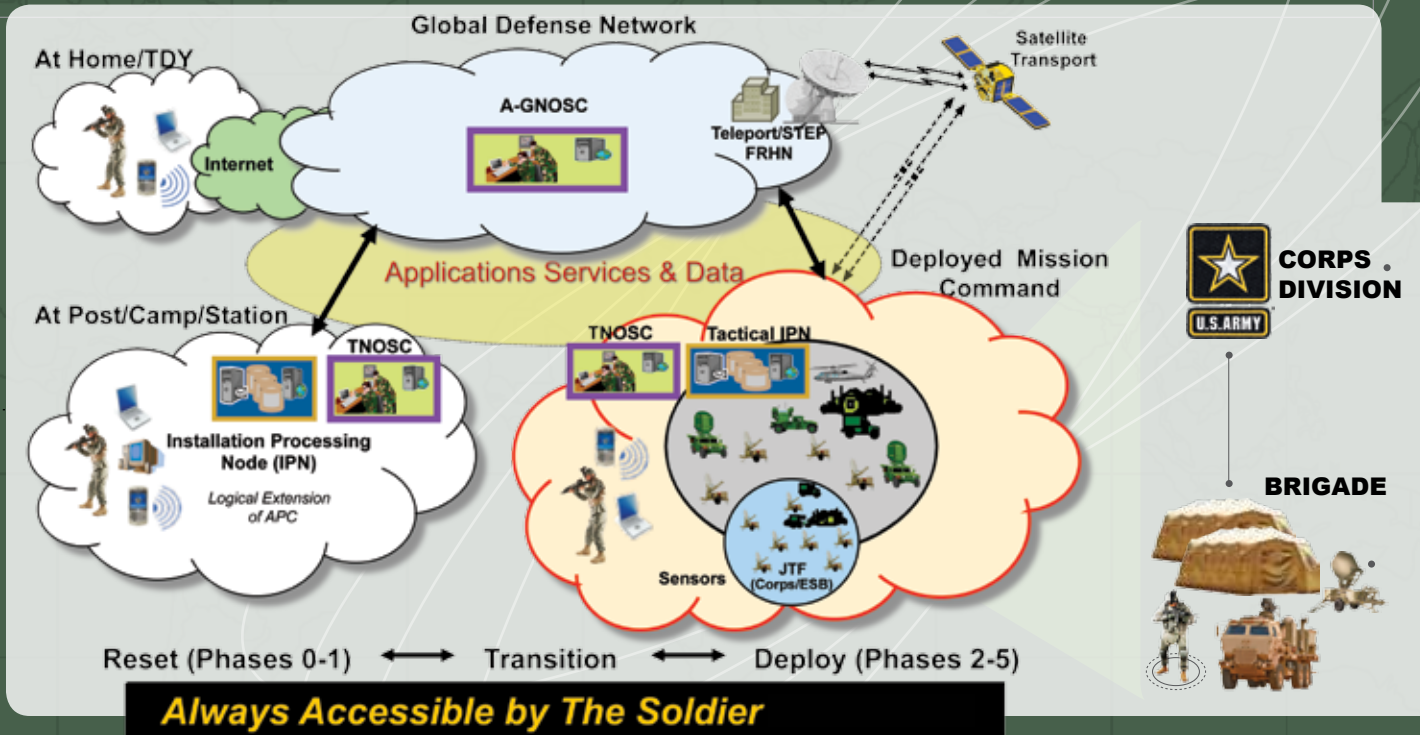
The Army has changed the way it supplies network systems and capabilities to operational units by incrementally aligning the delivery of new technology with the Army Force Generation (ARFORGEN) process. This effort will drive networked capabilities down to the small unit and Soldier level — those at the tactical edge who need these critical capabilities the most.
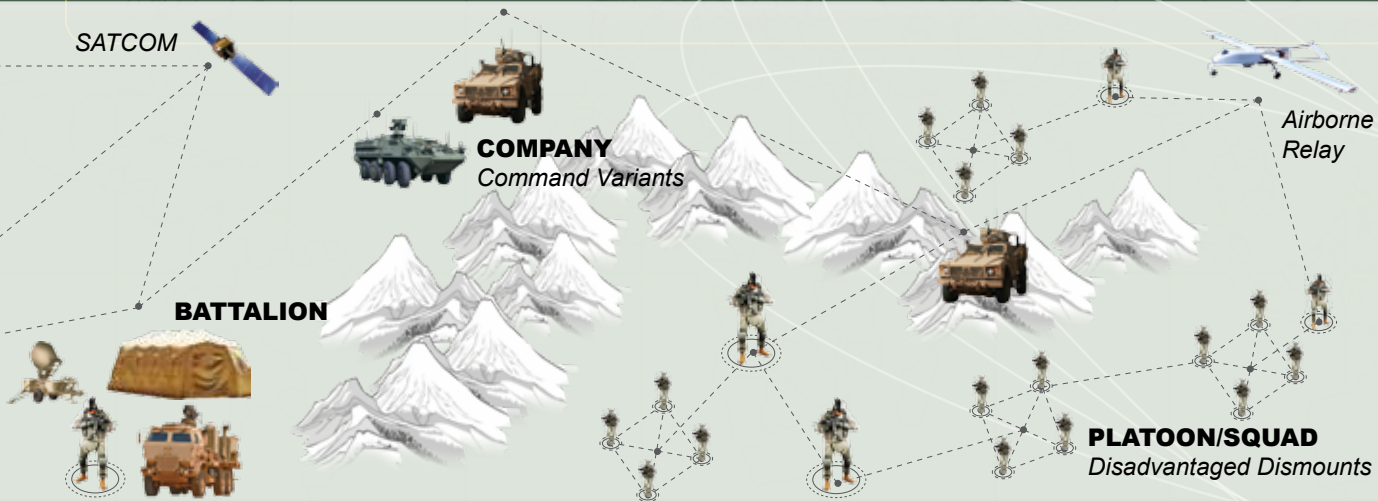
Through a process known as Capability Set Management, the Army has adapted acquisition practices and is aligning programs so that operational units receive better capabilities more quickly through integrated and sustainable network Capability Sets. The Capability Sets will enhance vertical and horizontal connectivity, and provide an integrated network baseline from the static Tactical Operations Center (TOC) to the dismounted Soldier. Fielding the Network as an integrated Capability Set throughout a brigade, rather than fielding individual pieces of equipment, provides Soldiers with the best capability gap solutions, and dramatically reduces/eliminates the integration burden on deployed troops.

The Army is designing and implementing the Network as a holistic enterprise system — not individual piece-parts — with three interconnected blocks.

• <u>Enterprise-Level Activities:</u> the common services that span the Army Network, whether in garrison, en route or deployed, and the technical standards and directives that synchronize activities and ensure seamless information transfer across the Network. Enterprise-level activities serve as the bridge between the installation and deployed environments.

• <u>Installation Infrastructure:</u> consists of the hardware, applications, and services that support units and organizations at the installation level. The Army manages installation connectivity to the Global Information Grid (GIG) as an enterprise-level activity.

• <u>Deployed Mission Command:</u> consists of the Mission Command hardware, applications, and services that support units and organizations while deployed. The tactical level leverages Fixed Regional Hub Nodes for connectivity to enterprise-level services, systems, and applications.

SATCOM

COMPANY
Command Variants

Airborne Relay

BATTALION

PLATOON/SQUAD
Disadvantaged Dismounts

" THE SOLDIERS IN THE 10TH MOUNTAIN DIVISION ARE TRAINING ON PIECES THAT ARE ALREADY PUT TOGETHER. THE COMMANDERS OF THE UNITS DON'T HAVE TO WORRY ABOUT INTEGRATING SYSTEMS – THEY GET TO THINK ABOUT WARFIGHTING. "

BRIG. GEN. DANIEL HUGHES
DEPUTY COMMANDING GENERAL, U.S. ARMY RESEARCH, DEVELOPMENT AND ENGINEERING COMMAND

To support Capability Set Management and to ensure that the Army can keep pace with rapid industry and government lab network technology maturation, the Army has implemented the Agile Capabilities Lifecycle Process. The Agile Process provides an opportunity to introduce and evaluate commercial and developmental government technologies in an effort to maintain technological relevance. The evaluations provide the Army with the relevant technical, Soldier, and integration observations and data to make an informed decision on a path forward for procuring and integrating these technologies into Capability Sets. The semi-annual Network Integration Evaluation (NIE) is helping shape "agile" capability integration by assessing Soldier provided and technical operational test data to influence not only how the Army should procure capability, but also how integrated network capability requirements should be validated and refined. NIEs inform the ways the Army will field, train, sustain and continuously improve capability acquisition and life cycle management.

The Network Integration Evaluation (NIE) is an enduring component of the Agile Process. During the evaluations, the Army integrates network capability and uses a full Brigade Combat Team to assess both networked and non-networked capability in order to determine their implications across Doctrine, Organization, Training, Material, Leadership and Education, Personnel and Facilities (DOTMLPF). The NIE events are managed by a TRIAD of organizations – the Brigade Modernization Command (BMC), the Army Test and Evaluation Command (ATEC) and the System of Systems Engineering and Integration Directorate (SoSE&I).

NIEs bring Soldiers, material developers and engineers together to assess potential network capabilities in a robust operational environment to determine whether they perform as needed, conform to architecture and are interoperable with existing and emerging systems. NIEs now incorporate operational energy and base defense systems, and future NIEs will begin to evaluate Joint Task Force networked operations.

By executing two NIEs per year, the Army will conduct the first evaluation to assess broad industry capability gap solutions, and then use feedback to validate and refine the requirement prior to additional targeted gap industry solicitation for participation in the second NIE. Lessons learned from the NIEs have been applied to the process of producing, fielding and training units on Capability Set 13, the first integrated network package to emerge out of the NIE process, and to align several key Army network Programs of Record.

Placing new and emerging technologies into the hands of Soldiers during the NIE process provides critical feedback needed to guide materiel development, while providing valuable Training, Techniques and Procedures (TTPs) lessons that are applied to Capability Set fielding. During the first four NIEs, the Army evaluated more than 140 systems from government and industry, leveraging the 3,800 Soldiers of the 2nd Brigade Combat Team, 1st Armored Division (2/1 AD), who executed realistic mission threads in the punishing terrain of White Sands Missile Range, N.M., and Fort Bliss, Texas. Test data and Soldier feedback from the NIE—each iteration building on the results from the previous—enabled the Army to establish an integrated network baseline that has become the foundation for Capability Set 13, currently being fielded to deploying brigades. Today, government and industry capabilities are being added to the network baseline, and continued brigade-level assessments of these enhancements are taking place as the Army formulates Capability Set 14.

Unlike urgent fielding efforts, which often lack capability integration and robust developmental and operational test, the Agile Capabilities Lifecycle Process is an enduring process designed to align and influence capability requirements, incorporate Science and Technology initiatives and integrate mature industry technology into a package of network components that make up a Capability Set. The Process provides an opportunity to introduce and evaluate commercial and developmental government technologies in an effort to maintain technological relevance. Those evaluations will provide the Army with the relevant observations and data to make informed decisions on the path forward for procuring and integrating these technologies into Capability Sets.

AGILE PROCESS PHASES

The Agile Process consists of seven phases grouped in three basic areas.

• **Phases 0 and I** focus on identifying requirements and potential solutions. These phases are continuous in nature and react to external changes from ongoing operations, advances in information technology and traditional analysis the Army conducts to modernize the force for the future.

• **Phases II through V** focus on assessing potential solutions in both a laboratory and operational environment. Candidate systems are prepared through architectural development, systems integration and Soldier training prior to executing the Network Integration Evaluation (NIE).

• **The final phase, VI,** consists of HQDA analyzing NIE results to reach a decision point. Headquarters, Department of the Army (HQDA) collectively aligns requirements, programmatics, and funding to implement NIE recommendations in concert with capability set fielding and ARFORGEN alignment.
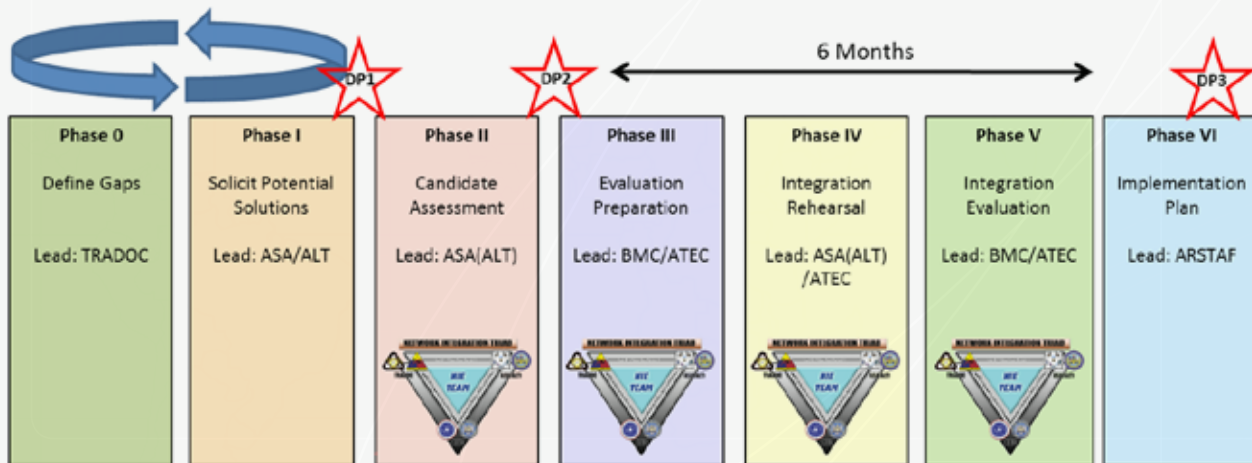
> CAPABILITY SET MANAGEMENT

Capability Set Management has adapted acquisition practices and is aligning programs, doctrine, testing practices and technology insertion so that units receive synchronized and integrated network capability. This entails an overarching network architecture that connects all echelons from squad to joint task force to ensure our leaders have the right information at the right time to make the best possible decisions. This is a significant departure from the previous practice of fielding systems individually and often to only one element of the operational force at a time. Capability Set Management is executed in a deliberate and disciplined process in accordance with the Army Force Generation Process, or ARFORGEN.

An outcome of the Agile Process, Capability Set 13 (CS 13) is the integrated fielding of a network baseline anchored on integration of satellite-based communications and terrestrial networking radios paired with handheld end user devices. The network baseline can be adjusted annually based on changing requirements, emerging technology and operational feedback from theater and through the NIEs. CS 13 provides integrated and interoperable Mission Command on the Move capability, through Warfighter Information Network-Tactical (WIN-T) Increment 2 and drives networking down to the squad level through a variety of tactical radios including Rifleman Radio and the Nett Warrior System.

Synchronized fielding of Capability Sets takes prototype designs that have proven technical and operational merit during the NIE and matures them into producible products, while ensuring final system integration, training and sustainment plans prior to fielding to an operational unit. The Army is implementing this fielding approach to Capability Set 13. As part of the fielding effort, network systems are developmentally tested and technically integrated using robust Army laboratories, where they undergo integration and system-of-systems network verification and validation to ensure interoperability within the Brigade Combat Team framework. Synchronized fielding also applies NIE lessons from how network systems are installed onto a vehicle, to which training approach is most effective, to the role and management of Field Service Representatives (FSRs).
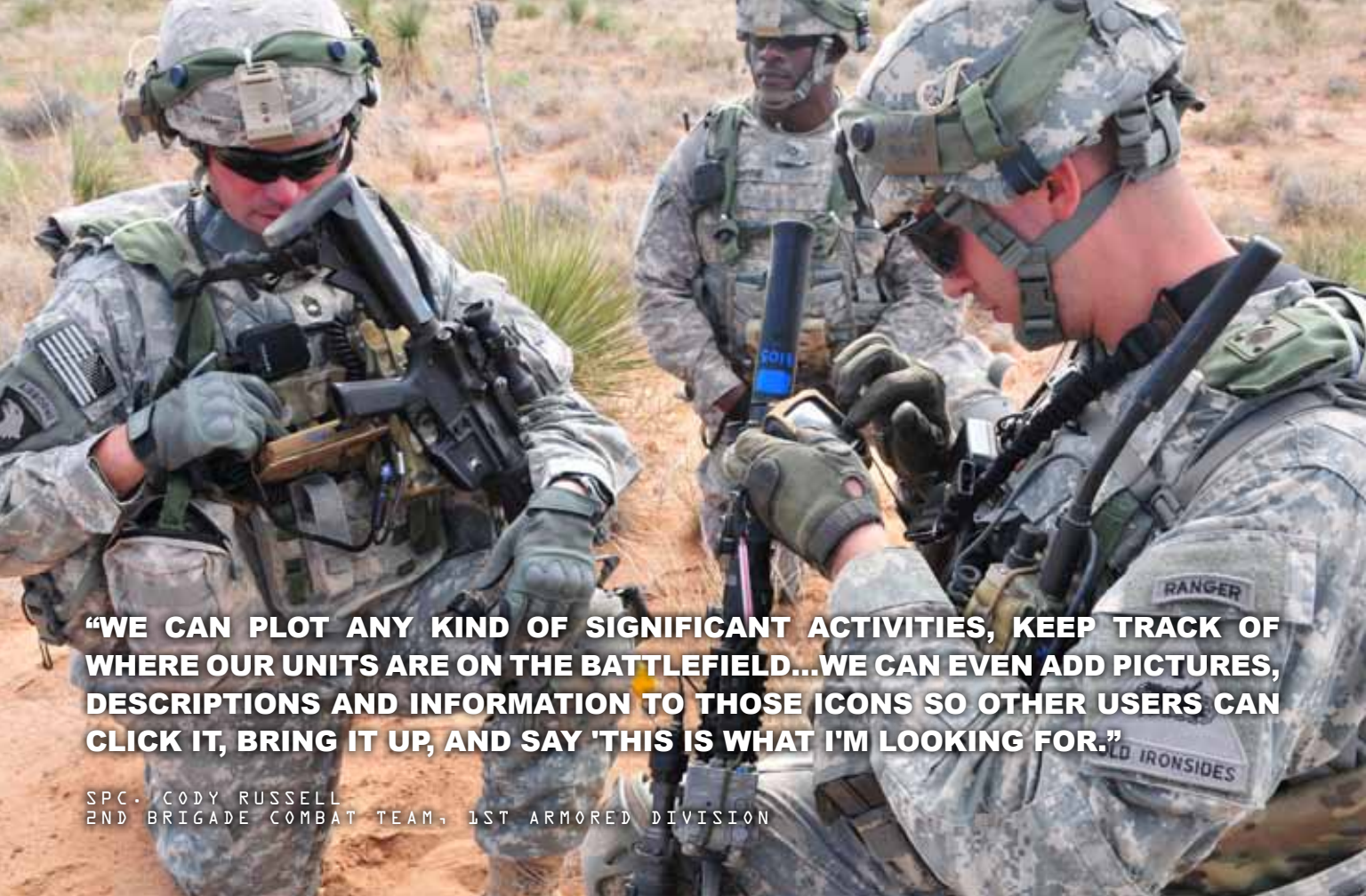
"WE CAN PLOT ANY KIND OF SIGNIFICANT ACTIVITIES, KEEP TRACK OF WHERE OUR UNITS ARE ON THE BATTLEFIELD...WE CAN EVEN ADD PICTURES, DESCRIPTIONS AND INFORMATION TO THOSE ICONS SO OTHER USERS CAN CLICK IT, BRING IT UP, AND SAY 'THIS IS WHAT I'M LOOKING FOR."

SPC. CODY RUSSELL
2ND BRIGADE COMBAT TEAM, 1ST ARMORED DIVISION