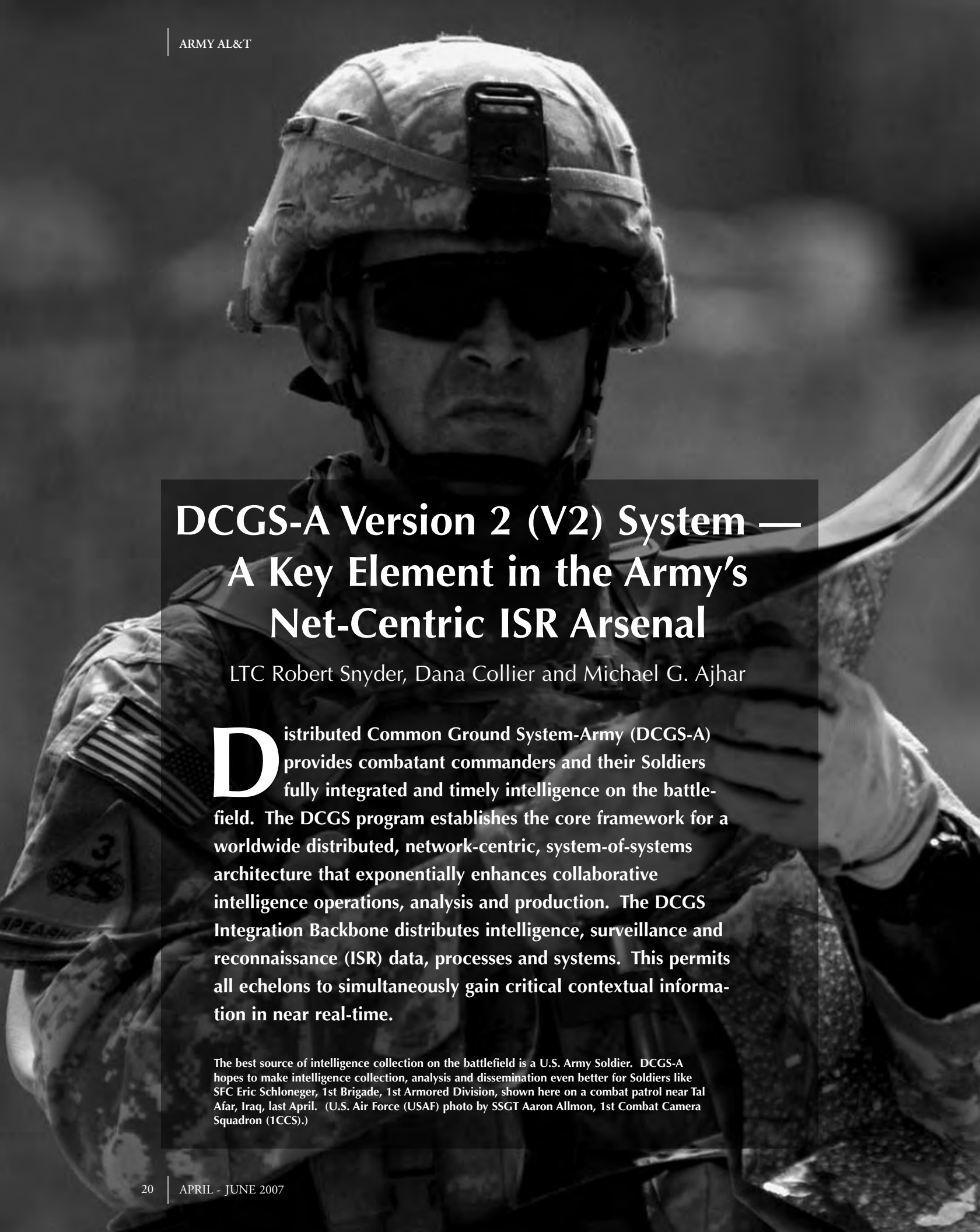


DCGS-A Version 2 (V2) System — A Key Element in the Army's Net-Centric ISR Arsenal

LTC Robert Snyder, Dana Collier and Michael G. Ajhar

Distributed Common Ground System-Army (DCGS-A) provides combatant commanders and their Soldiers fully integrated and timely intelligence on the battlefield. The DCGS program establishes the core framework for a worldwide distributed, network-centric, system-of-systems architecture that exponentially enhances collaborative intelligence operations, analysis and production. The DCGS Integration Backbone distributes intelligence, surveillance and reconnaissance (ISR) data, processes and systems. This permits all echelons to simultaneously gain critical contextual information in near real-time.

The best source of intelligence collection on the battlefield is a U.S. Army Soldier. DCGS-A hopes to make intelligence collection, analysis and dissemination even better for Soldiers like SFC Eric Schloneger, 1st Brigade, 1st Armored Division, shown here on a combat patrol near Tal Afar, Iraq, last April. (U.S. Air Force (USAF) photo by SSGT Aaron Allmon, 1st Combat Camera Squadron (1CCS).)

The DCGS-A will consolidate the functions of 12 Programs of Record (PORs) into a unified, integrated ISR capability:

- All Source Analysis System-Light.
- Analysis and Control Team-Enclave.
- Block II Analysis and Control Element.
- Common Ground Station.
- Counter- and Human-Intelligence Management System.
- Prophet Control.
- Integrated Meteorological and Environmental Terrain System-Light.
- Digital Topographic Support System-Light.
- Guardrail Ground Processing.
- Tactical Exploitation System.
- Ground Control System.
- Enhanced Trackwolf.

DCGS-A's V2 configuration is specifically tailored to have a regional focus capable of continuous collection/analysis to provide direct support and overwatch to operationally engaged units.

Origins of DCGS-A V2 Capability

The DCGS-A V2 capability was significantly accelerated by the preliminary work done on the Information Dominance Center (IDC) and, more recently, the Joint Intelligence Operations Capability-Iraq (JIOC-I). The IDC concept involved IDC nodes or extensions, deployed and manned by U.S. Army Intelligence and Security Command (INSCOM) in theater (Iraq and Afghanistan) or established in INSCOM Theater Intelligence Brigades and Groups and other non-INSCOM units located worldwide. These worldwide extensions are continuously linked to the IDC via a number of communications means — common user circuits, strategic communications links and dedicated satellite terminals — to provide access to INSCOM's dollar database and CONUS-based analysts. Tailored analytical products are generated, frequently on a quick-response basis, to meet a deployed team's immediate needs. The IDC also provides tactical overwatch (TO) on current and potential trouble spots worldwide, providing direct support to contingency operations with intelligence support and intelligence operations-related products should the need arise.

The IDC provides TO on current and potential trouble spots worldwide, providing direct support to contingency operations with intelligence support and intelligence operations-related products should the need arise.

Collectively, the ability to communicate worldwide permits the small number of analysts resident in the IDC to provide intelligence support and tailored intelligence assessments and products rapidly and efficiently. The Project Morning Calm initiative that began in late 2003 validated the new technology and techniques from the Korean peninsula operational environment. In response to the acute needs of *Operation Iraqi Freedom* (*OIF*), the critical IDC capabilities proven in Korea were further developed into the JIOC-I, which acts as a virtual data repository ingesting information from a comprehensive network of sensors and data sources, regardless of echelon. The JIOC-I, as a quick-reaction capability, was assembled from commercial-off-the-shelf (COTS) and government-off-the-shelf (GOTS) hardware and software intended to rapidly augment and dramatically improve ISR capabilities in the *OIF* area of operations. The evolving threat and nature of the counterinsurgency fight necessitated a quick-reaction augmentation of existing ISR capabilities and systems residing in theater.

The JIOC-I goals were to:

- Improve the overall effectiveness of all-source intelligence fusion and information sharing in support of *OIF*.
- Enable tactical elements below division level to report information and receive alerts at tactically useful classification levels.
- Improve agility of collection cuing, tasking and integration of theater assets.
- Serve as a foundation for collaborative overwatch, including tipping/cuing, indications and warnings, and effects-based targeting at all levels.

The JIOC-I also increased situational awareness and transitional memory by providing a consolidated, theaterwide data repository with "institutional memory" between incoming and outgoing units and provided historical context and linkages for operational planning. The IDC's evolution laid the foundation for the JIOC-I, which in turn has laid the foundation for the DCGS-A V2. DCGS-A V2 will leverage the U.S. information technology advantage by consolidating disparate data sets and applying advanced data retrieval and visualization tools available at every echelon, thereby ensuring timely, deliverable and actionable intelligence where and when it is needed most. The dynamic nature of theater intelligence plays a significant role in DCGS-A V2, which is why new databases, data sources and tools are continually being updated.

The JIOC-I formally transitioned to the DCGS-A POR in June 2006 for management and sustainment. The Program Executive Officer (PEO) Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance and the Program Manager (PM) DCGS-A

INSCOM and the JIOC-I are providing strategic communications links and dedicated satellite terminals through the IDC to ensure battlefield commanders and their troops are receiving intelligence analyses quickly. Here, 1LT Michael Campbell, 4th Squadron, 14th Cavalry Regiment, 172nd Striker Brigade Combat Team (BCT), leads a combat patrol through Sinjar, Iraq, last summer. (USAF photo by SSGT Jacob N. Bailey, 1CCS.)

adopted and will continue to enhance the architecture that permitted the JIOC-I functionality as a proven practical initial system to be readily assimilated into DCGS-A and launched within the available budget. Ultimately, DCGS-A will satisfy critical warfighter ISR needs.

> The JIOC-I was assembled from COTS and GOTS hardware and software intended to rapidly augment and dramatically improve ISR capabilities in the *OIF* area of operations.

DCGS-A V2 Benefits

Operationally, DCGS-A is already reaping huge benefits for combatant commanders and their Soldiers as follows:

- *Rapid Fielding to Tactical Units.* By the end of calendar year 2006, the INSCOM/DCGS-A fielding teams had fielded DCGS-A V2 to 11 BCTs and three theater-level units in Iraq as well as 7 of the 10 Army divisions and 3 of 4 Army corps. The mobile training team, consisting of contractors and non-commissioned officers, trained more than 200 Soldiers at the various fielding locations in Iraq. Each training event was tailored to the individual unit's specific unit missions. In many cases, trainers performed one-on-one training to ensure any and all specific requirements were met.
- *Servers Down to Bridgade Level.* The fielding package included database and application servers on Secure Internet Protocol Router (SIPR) and Joint Worldwide Intelligence Communications System to each BCT. This allowed the BCT and subordinate battalion (on the same BCT forward operating base (FOB)) to quickly access the V2 services and databases without the latency associated with inter-theater communications. The BCT servers also served as complementary backups to each other. As an example, if a BCT's SIPR server went down, the BCT could reach the same services and information from the division server on the same FOB without incurring any latency constraints.
- *Rapid Response to Theater Requirements.* Static and dynamic database sources were quickly added to the V2 database and discoverable by all users.
- *Increased Analyst Speed.* Most analysts valued the time V2 saved by consolidating sources discoverable by one search process and the corresponding mentor support provided at BCT level.

Lessons Learned From DCGS-A V2 Configuration

There were several major benefits resulting from the leading-edge work undertaken by INSCOM in DCGS-A V2 development.

- Because of the significant amount of real-life research conducted in developing the IDC/JIOC-I capabilities and the PM DCGS-A's implementation of sound acquisition principles early in the program, supportability issues were addressed up front and this investment will yield greatly reduced life-cycle ownership costs.
- The choice convergence on a service-oriented architecture system as the base of the DCGS-A architecture ensured that highly reliable COTS products could be effectively used in the program. This helped to ensure that the high-mission profile operational requirements and equipment sustainability was maintained with a minimum of contractor support.
- The purchase of spares along with the procurement of end items again aided in the reduction of life-cycle costs and eased cross-leveling responsibilities.
- The importance of the information assurance effort cannot be overstated or overlooked. Because JIOC-I was a quick-reaction capability, the documentation effort had to play catch-up to the fielding effort and individual units were responsible for the accreditation process. PM DCGS-A is developing type accreditation documentation to speed up the process and take the burden off the receiving units.

> The dynamic nature of theater intelligence plays a significant role in DCGS-A V2, which is why new databases, data sources and tools are continually being updated.

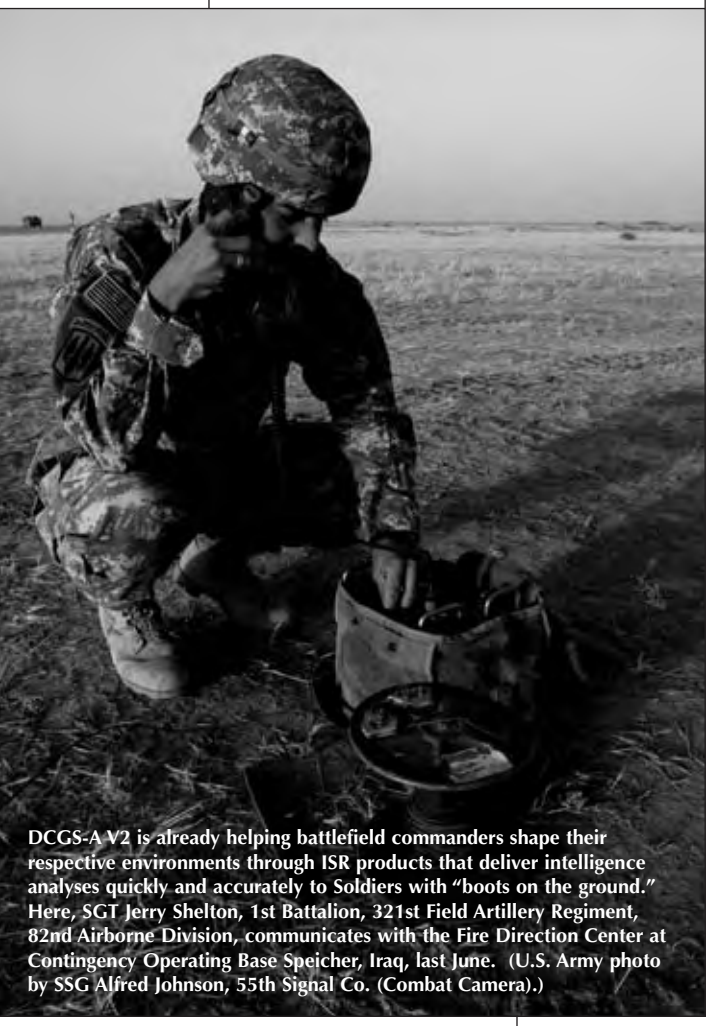
The INSCOM IDC and JIOC-I initiatives provided incredible intelligence value and were great successes in their own right. Cumulatively, they formed the basis for the DCGS-A V2 program and their value to the intelligence community continues. INSCOM and PM DCGS-A should both be justifiably proud of their productive and effective partnership during transition of the JIOC-I to the DCGS-A POR, an effort that will benefit the intelligence community for years to come.

Theater Operations Co.

INSCOM, the PEO Intelligence, Electronic Warfare and Sensors executive agent for DCGS-A (Fixed), has been instrumental in addressing the requirements of the DCGS-A (Fixed) configuration. Since 2002, INSCOM has accelerated, by 5 to 10 years, fielding of the DCGS-A (Fixed) site to its organic military intelligence brigades (MIBs).

The 513th MIB, the 66th MI Group and the 500th MIB configuration are the most mature. As such, the Theater Operations Co. of those units considers DCGS-A as its primary enabler to support BCT demand for information while setting conditions for theater engagement and security cooperation, early warning, precision action and collateral damage reduction. The Theater Operations Co. leverages DCGS-A in the fixed facility to produce actionable intelligence that provides commanders and Soldiers a unique level of shared situational understanding delivered with the speed, accuracy and timeliness necessary to operate at the highest potential.

The actionable intelligence paradigm includes eight initiatives: Every Soldier a Sensor, Human Intelligence Revitalization, TO, DCGS-A, Red Teaming, IDC, Pantheon Project and Project Foundry. The MIB, enabled by DCGS-A (Fixed), manages five of the eight initiatives: TO, DCGS-A, Red Teaming, IDC and Project Foundry. These precepts require a



DCGS-A V2 is already helping battlefield commanders shape their respective environments through ISR products that deliver intelligence analyses quickly and accurately to Soldiers with "boots on the ground." Here, SGT Jerry Shelton, 1st Battalion, 321st Field Artillery Regiment, 82nd Airborne Division, communicates with the Fire Direction Center at Contingency Operating Base Speicher, Iraq, last June. (U.S. Army photo by SSG Alfred Johnson, 55th Signal Co. (Combat Camera).)

mindset and culture change relative to intelligence collection and Soldier placement to change the current system of vertical echelons to a single integrated network with relevant information accessible by all Soldiers.

The Theater Operations Co. supports the warfighter with multidisciplined, full-spectrum intelligence activities that result in relevant data and on-demand support to improve warning and reaction time, provide situational understanding in support of theater engagement and security cooperation, force protection operations and precision action by engaged forces. Operationally responsive, the Theater Operations Co., through TO, uses DCGS-A to convey all intelligence disciplines as one intelligence apparatus to provide sustained recognition in order to identify threats and provide indications and warnings, prevent battlefield ambiguity and cover-down on tactical and operational intelligence gaps, and support emerging requirements and engaged forces. Additionally, the Theater Operations Co.'s principal mission focus in support of engaged forces includes: ISR operations, indications and warning, ground order of battle, precision engagement, mobility and information security. Regionally focused operations enable day-to-day interaction and process refinement with engaged forces and provide extensive synergy in Joint and combined operational environments.

> Because of the significant amount of real-life research conducted in developing the IDC/JIOC-I capabilities and the PM DCGS-A's implementation of sound acquisition principles early in the program, supportability issues were addressed up front and this investment will yield greatly reduced life-cycle ownership costs.

The Theater Operations Co. supports engaged forces using DCGS-A with a detailed set of refined business practices currently in place within the organization's single-source intelligence production sections. Each section (Measurement and Signals Intelligence, Imagery Intelligence, Signals Intelligence and Counterintelligence/Human Intelligence) has developed, or is developing, a set of procedures that build credibility with the unit on the ground, streamline the requirements process and are Web-enabled to reduce dissemination time.

The single-source production sections are tied together by the collection manager through the command and control visualization center responsible for maintaining focus on the engaged forces' requirements and battle rhythm. This Battle Captain Visualization center is also directly responsible for the cross-queuing of requirements among the individual single-source producers, enabling requirements managers to quickly identify the intelligence gaps,

An M2A2 Bradley Fighting Vehicle crew from 1st Battalion, 36th Infantry Regiment, 1st Brigade, 1st Armored Division, moves into overwatch position during a combat patrol in Tal Afar, Iraq. DCGS-A V2 is helping Soldiers on point identify potential enemy threats more quickly and with greater reliability. (USAF photo by SSGT Aaron Allmon, 1CCS.)

UH-60 Black Hawk helicopters from 2nd Squadron, 6th Cavalry Regiment, lift off from FOB McHenry, Iraq, carrying Soldiers from 2nd Battalion, 27th Infantry Regiment, for an aerial patrol over the Hawijah District of Kirkuk Province, Feb. 12, 2007. (U.S. Army photo by SFC Michael Guillory.)

and adjust taking and production requirements to support emerging battlefield requirements for engaged forces.

INSCOM's goal is to achieve DCGS-A (Fixed) Early Capability at the five MIBs by the end of FY07. That goal will be mitigated by funding and schedule constraints. However, capabilities at the 513th MIB and 66th MI Group are mature enough to allow for the next phase of operationalizing the system, which includes installation of DCGS-A V4 and the operational instanciation of DCGS-A V2.

LTC ROBERT SNYDER is the Deputy Director of Futures, Headquarters INSCOM. He was the Lead Project Officer for JIOC-I DCGS-A V2. Prior to this assignment, he was the Current Analysis Chief on the U.S. Forces Korea J2 Staff where he was introduced to many of these intelligence capabilities through Project Morning Calm. He holds a B.S. in criminal justice from the University of Nebraska.

DANA COLLIER is the Government Lead for the INSCOM DCGS-A (Fixed) Program Management Office. PM DCGS-A has been delegated as the Executive Agency for DCGS-A (Fixed) to INSCOM at Fort Belvoir, VA. She has a B.S. in psychology from California State University. Collier is an Army Reserve lieutenant colonel with more than 23 years in the MI Combat Development and Materiel Development arenas.

MICHAEL G. AJHAR is a General Dynamics contractor and the Systems Integration Manager at the 513th MIB, Fort Gordon, GA, where he is responsible for DCGS-A integration. Ajhar is a retired Army Signals Intelligence Chief Warrant Officer with more than 27 years of experience in intelligence production, collection management and systems integration.