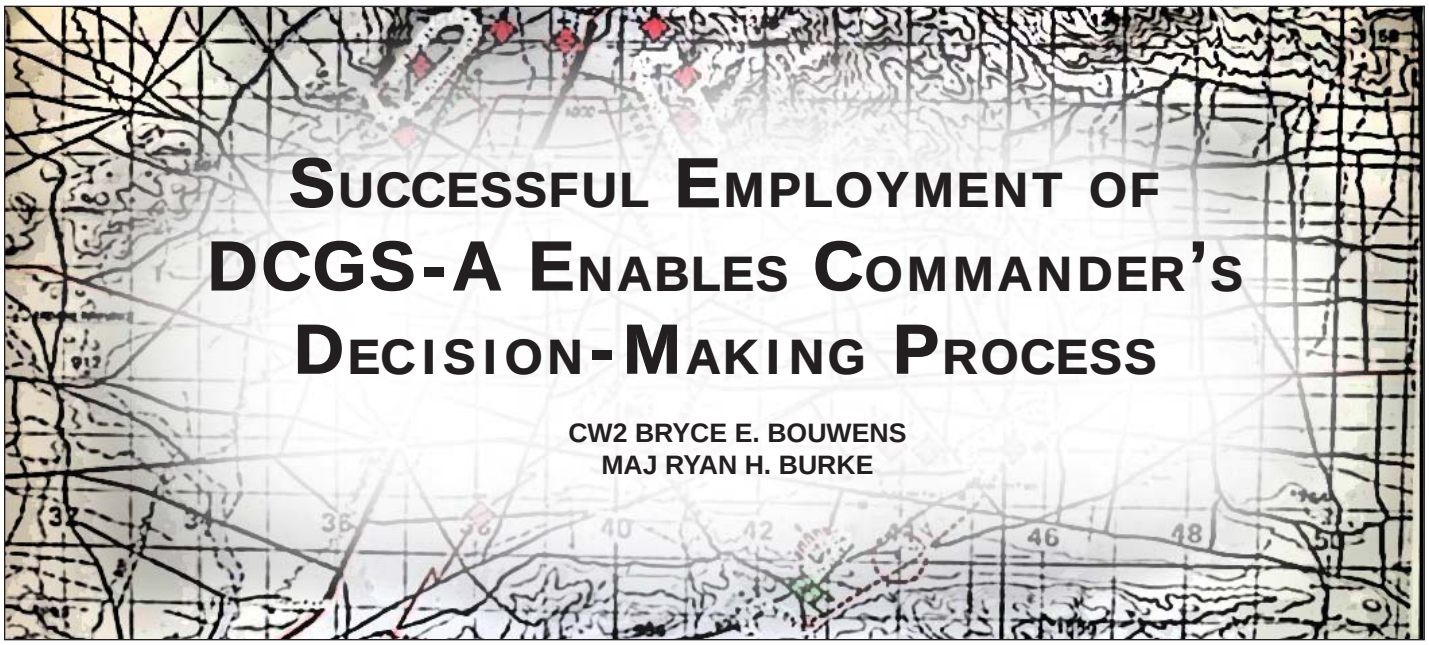

Successful Employment of DCGS-A Enables Commander's Decision-Making Process

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Throughout the history of armed conflict, military commanders have wrestled with the difficulties of what we currently call mission command. The tenets, components, and philosophy of this aspect of warfare have varied over the years, but the core dilemma has remained relatively constant: how to create shared understanding and purpose in a large diverse organization. Continual improvements in military hardware and software technologies have presented the opportunity to use the advances in the science of control to better address this dilemma — particularly in a geographically dispersed formation on the move.

The 2nd Armored Brigade Combat Team (ABCT), 4th Infantry Division took advantage of a welcome confluence of training and experience on the part of subordinate commanders, technical expertise in our staff, and adequate training time and resources to deliberately focus on applying the capabilities of the Army Battle Command System (ABCS) to this problem. In particular, we sought to improve the ability of commanders throughout the brigade combat team (BCT) to understand, visualize, and then describe all aspects of the operational environment: terrain, friendly, enemy, etc. For this purpose, we spent a great deal of time and energy to realize the full capability of the BCT's digital systems. In essence, we sought to become a "digital" unit — not just digitally equipped.

One of the strongest successes in this effort was our ability to link the intelligence digital systems to the maneuver digital systems across the BCT. This was especially significant in our ability to connect from the upper tactical internet to those systems on the lower tactical internet through our terrestrially-based Force XXI Battle Command Brigade and Below (FBCB2) systems. Accomplishing this allowed us to share data while on the move — an essential and illusive aspect of modern mission command. In essence, leaders at all levels had near instantaneous access to situation templates (SITEMPS), spot reports (SPOTREPs), and analyst assessments across the BCT footprint.

While we still have room for improvement, the significant accomplishments of the Warhorse Brigade in leveraging the organic digital capabilities were a large component of our success at the National Training Center (NTC), Fort Irwin, Calif.

— COL Omar Jones
Commander, 2/4 ABCT

This article focuses on 2/4 ABCT's successful use of the Distributed Common Ground System-Army (DCGS-A) during decisive action (DA) and wide area security (WAS) training in preparation for the theater response force mission Spartan Shield. The purpose is to highlight how the Warhorse Brigade capitalized on DCGS-A's tools, products, and capabilities to increase commanders' common operational picture (COP) and situational awareness. The brigade's successful use of DCGS-A was the result of tenacious work from the field support representatives (FSRs), embedded trainers, and our intelligence tech during unit-level reset — specifically Mission Command System Integration team events at Wilderness Training Area, a brigade field training exercise (FTX) at Pinion Canyon Maneuver Site (PCMS), and NTC rotation 13-08. Incorporation of DCGS-A throughout the training plan required "buy in" from all the commanders. Initially, it was a challenging sell. However, once the benefits of the system became evident, support increased. Fortunately, commanders encouraged an aggressive approach to intelligence collection and the use of all available digital systems. This nature reinforced our insistence on using the system to maximize our capabilities.

The DCGS-A Commander's Handbook describes the DCGS-A as the "Army's primary intelligence system deployed across the Army in support of ground Army commanders. It is the Army's

primary intelligence system for ISR (intelligence, surveillance, and reconnaissance) tasking, processing, exploitation, and dissemination...” DCGS-A reduces the overall tactical risk throughout the brigade’s battlespace by providing the BCT commander with the tools to visualize, analyze, and understand the threat. This resulted in the Warhorse Brigade leveraging vast amounts of analyzed data at various classification levels and disseminating to all commanders throughout the ABCT.

During 2/4 ABCT’s decisive action training environment (DATE) rotation at NTC in June 2013, the brigade intelligence support element successfully employed DCGS-A for dissemination of graphics and correlated enemy data on both upper tactical infrastructure and lower tactical infrastructure. This is the first successful employment of the capability at NTC by a rotational unit and validated multiple DCGS-A system capabilities.

Efforts to accomplish these achievements began months earlier during unit collective training events. The brigade’s FTX at PCMS allowed the unit to identify configuration and coordination requirements between intelligence (S2) and communication (S6) sections, system capabilities, and additional training task objectives during the unit’s NTC rotation. It validated the DCGS-A suite of intelligence systems in enabling the commander’s decision-making process on both the upper tactical infrastructure and the lower tactical infrastructure at all tactical echelons through robust communications architecture.

Training Progression

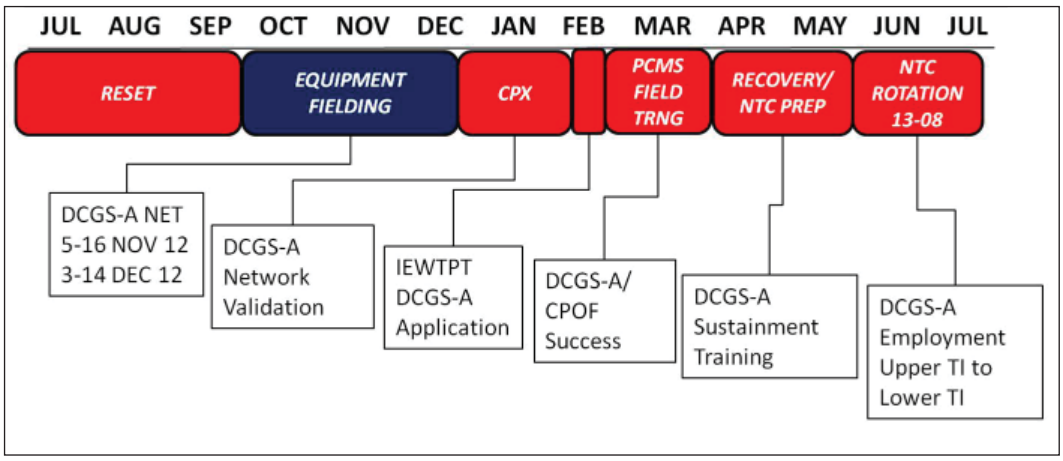
Following post-deployment reset, all available Warhorse Brigade intelligence analysts attended new equipment training events during November and December 2012. The emphasis of the training centered on the Soldier Training Package applicable to DCGS-A, version 3.1.6 SP2. This training covered basic user functions and configuration, and also provided limited instruction on use of the publish and subscribe server (PASS) to transfer graphics and enemy situational data from DCGS-A to other Army Battle Command Systems. Additionally, the training provided no instruction on passing messages from DCGS-A on the upper tactical infrastructure to FBCB2 platforms on the lower tactical infrastructure. The communication infrastructure resident in the training facility influenced both issues listed above. Separately, training emphasized employment of the system in counterinsurgency (COIN) or WAS scenarios rather than supporting combined arms maneuver (CAM). The Warhorse Brigade continued training with the DCGS-A platform in February 2013 during an event involving brigade analysts and the military intelligence company (MICO). It allowed collaborative intelligence processing of human, signal, and imagery intelligence (HUMINT, SIGINT, IMINT) as well as all source intelligence facilitated by the 4th Infantry Division foundry site. The training introduced intelligence Soldiers to CAM; however, the exercise also identified the need to train all intelligence personnel throughout the brigade on the employment of DCGS-A.

The next training event was the FTX at PCMS, which consisted of approximately two weeks of maneuver company situational training exercise (STX) lanes and one week of CAM lanes for each combat arms battalion. The weather conditions during the exercise presented a significant challenge as the unit faced a blizzard and two winter storms as well as an austere environment requiring organic network capabilities. A WAS intelligence scenario developed by the Training Brain Operations Center (TBOC) allowed incorporation of exercise information, enemy significant activity, and basic enemy data for intelligence analysts to exercise procedures and methods of analytical development throughout the exercise. The scenario allowed the analysts to employ the intelligence preparation of the battlefield (IPB) functionality of the DCGS-A, develop enemy SITEMPs, and correlate data using the DCGS-A. Separately, a command decision to establish and utilize all exercise traffic and ABCS platforms on the secure internet protocol router network (SIPRNET) facilitated upper tactical infrastructure communication. Ultimately, this command decision reinforced and emphasized the “train as we fight” mentality and established the foundation of digital efforts throughout the training at PCMS and NTC.

During the PCMS exercise, the brigade intelligence support element successfully developed enemy graphics consisting of named area of interest (NAI) overlays and doctrinal, situational, and event templates. These overlays, developed through the multi-function workstation (MFWS) 2D map functionality, were sent through the PASS maintained by the S6 section on SIPRNET and successfully plotted by S2 operations and plans personnel on the Command Post of the Future (CPOF) platform. This action formed a fundamental step in enabling the brigade’s and subordinate battalions’ initial transition from a “digitally capable unit” to a “digitally operational unit.”

Additional considerations discovered during the

Figure 1 — 2/4 ABCT DCGS-A Post Deployment Training Progression



development and transfer of these overlays was the requirement to use correct symbology resident in the symbol palette of the 2D mapping system rather than the drawing tools available to the MFWS. Failure to use the resident symbology resulted in rejected items in the PASS topic manager. Ultimately, the graphics drawn outside of the symbol palette did not transfer or display on other ABCS.

While each of these efforts focused on enabling the commander's decision-making process at each tactical echelon, the brigade intelligence warfighting function identified that alternative communications methods must be employed if a battalion lacked connectivity to the brigade's upper tactical infrastructure. This led efforts to identify software programs resident in the DCGS-A suite and develop procedures that would allow direct dissemination from DCGS-A platforms to each battalion's organic FBCB2 equipment on the lower tactical infrastructure.

Exercise Conditions for NTC

Our training rotation at NTC consisted of four days of reception, staging, onward movement, and integration (RSOI); eight days of STX lanes; 10 days of CAM/WAS operations; and eight days of recovery/redeployment.

During the RSOI portion of the rotation, brigade analysts, the MICO all source intelligence technician, and DCGS-A FSRs worked with brigade communications personnel to conduct a validation exercise to verify basic connectivity between all portable MFWS, the ISR fusion server, and the network. The validation exercise included all brigade and most battalion intelligence leadership, analysts, and the FSRs to establish, develop, and maintain DCGS-A communications procedures across the formation. Hindsight showed the need to have all battalion intelligence Soldiers and their hardware present. Guidance reflecting specific messaging requirements for DCGS-A was not thoroughly defined from NTC. Therefore, the Warhorse Brigade developed an ad-hoc requirement for DCGS-A to send and receive applicable messages (enemy situation messages, graphics messages, etc.) through the PASS to other ABCS platforms. During this period, the brigade successfully sent multiple enemy situation messages, graphics including NAI overlays and enemy SITEMPs to multiple ABCS platforms. This included the Advanced Field Artillery Tactical Data System (AFATDS), Air and Missile Defense Workstation (AMDWS), CPOF, and Tactical Airspace Integration System (TAIS). This enabled each staff section to integrate enemy SITEMPS into the planning process and allowed the brigade staff to refine operational plans and orders for the rotation. During the RSOI period, the transmission of these products from the upper tactical infrastructure to the lower tactical infrastructure (DCGS-A to FBCB2) was not exercised due to issues resulting from a information assurance update.

As the unit transitioned into STX lanes, personnel reestablished connectivity in an austere environment and prepared for CAM/WAS training. During this eight-day period, analysts continued to submit messages through the PASS to ABCS and subscribed through the PASS subscription manager to messages from those same systems. Additionally, analysts configured the entity extraction and auto plot configuration interfaces of the MFWS to receive and display friendly graphics from other brigade systems. This allowed the portable MFWS to receive and display friendly graphics transmitted from other platforms.

Additionally, when analysts subscribed to the appropriate PASS feeds, position reports and observation reports sent from the FBCB2 network were extracted, displayed, and synchronized on each workstation in the brigade tactical operations center (TOC). Approximately halfway through the rotation, the 52nd Infantry Division (NTC higher control) directed personnel operating AFATDS to switch from the PASS to the division Data Distribution Service to facilitate transmission of 52nd ID graphics between brigade and division AFATDS. This action effectively severed the ability to transfer graphics and enemy situation messages using the PASS between DCGS-A and AFATDS at the brigade level.

FSRs resolved the update issue and reestablished the pathway that allowed the common message processor to activate during the closing days of the STX portion. This allowed analysts to generate and send variable message-formatted data to selected FBCB2 platforms. Initial tests consisted of Freetext messages, entity data messages, NAI, and enemy SITEMP graphics were sent to the brigade S2 operations FBCB2 who verified receipt. Once verified, these messages were sent to various FBCB2 platforms resident in tactical vehicles across the brigade formation and verified through Freetext message responses received by the DCGS-A journal entry viewer.

During the tests, analysts discovered that the number of FBCB2 platforms selected to transmit the data affected the transmission speed of the data. To circumvent delays, internal protocols were established; these included transmitting graphic messages to only the brigade S2 FBCB2 platform initially and then further transmission across the tactical footprint. Entity data messages were transmitted to the brigade FBCB2 platform manned by the TOC radio operator for transmission to subordinate units.

Although highly successful, the transmission of enemy SITEMP and NAI overlays resulted in some minor confusion. For example, some enemy graphics such as battle positions and operational graphic control measures displayed in black and with small text consisting of "ENY." Additionally, the development of these communication procedures and capabilities occurred in a relatively short time. This resulted in knowledge gaps and communication issues that presented a challenge for portable MFWS operators and the FBCB2 operators. At times, enemy SITEMP graphics were not displayed due to the FBCB2 operator misunderstanding or error. Also, DCGS-A operators misunderstood the requirement to use the MFWS journal entry viewer to view and plot incoming messages.

Identified Challenges

Additional challenges impeded the full utilization of DCGS-A communication capabilities. These originate from a lack of understanding across the Army of DCGS-A networking

requirements, individual sustainment training on functionality, and FSR support. The single most severe challenge to DCGS-A functionality observed was the failure of some units and organizations to segregate portable MFWS into a separate operator/user group, protecting the platforms from automatic updates. These updates often stripped DCGS-A user accounts and FSR administrative accounts from each laptop. Additionally, S6 sections must enable battalion command post network servers to recognize or allow portable MFWS and DCGS-A IFS server's internet protocol addresses, as well as allow these addresses access to the network. A solution is the designation and training of an ABCS knowledge manager within all Army echelons from tactical to strategic. The knowledge manager needs to know the requirements and capabilities of each ABCS including required updates and communication methods.

Second, intelligence analysts attended new equipment training (NET) approximately six to seven months prior to the NTC rotation. However, Soldiers did not conduct sustainment training on the system. Their lack of training and consistent use of the system resulted in them failing to retain the basic functionality and knowledge of the system. An emphasis on digital training and sustainment training for low density military operational specialties (MOS) and unit staffs will mitigate DCGS-A user knowledge loss.

Finally, lack of consistent support from FSRs and embedded trainers restricts consistent use of the system. Fortunately, the Warhorse Brigade enjoyed full, unwavering, and energetic support from level one and level two FSRs throughout the training cycle. Peer-to-peer dialogue indicates a lack of support or contractor accountability. Possible solutions to this issue include a detailed screening process to identify the most capable applicants and involving the supported unit in contractor performance evaluations.

Training Recommendations

Employing additional training opportunities across the Army will enable full use of our digital systems. A four-tiered model that includes new equipment training, advanced equipment training, integrated ABCS training, and unit sustainment training will encourage consistent use of the DCGS-A system. Additionally, units should identify platform subject matter experts for each ABCS and send them to applicable training (such as the currently suspended master analyst program for DCGS-A at Fort Huachuca, Ariz.) to further enable unit capability and use of each digital system.

Training could initially occur utilizing a centralized, on-post training facility that incorporates all ABCS platforms including the FBCB2. Units need to identify personnel requiring training on specific systems based on duty position and send them to a course allowing them to train on their selected systems. The training should concentrate on the basic use of each system, transition to advanced training, and culminate with the integration of all systems in a CAM/WAS scenario that requires Soldiers to communicate between ABCS platforms on both upper and lower tactical infrastructures. Many of these training centers exist across the Army; however, they are likely underutilized and require a command emphasis in order to further develop these capabilities across the Army. Unit sustainment training should follow a similar track. As units prepare for deployments or FTXs, they should incorporate mobile training teams (MTTs) for equipment fielding and software updates.

Identification of subject matter experts enables units to identify individuals responsible for systems integration and identification of training requirements to develop the use of digital systems. Soldiers identified should attend specific training to enable knowledge proficiency and use of each system. The development and use of additional skill identification codes will aid the assignment and personnel management of these Soldiers across the Army.

Despite extensive contention that what the Warhorse Brigade attempted was not possible, the brigade successfully employed the DCGS-A network. The brigade proved that the system works and is effective. It provided unparalleled situational awareness for commanders and battalion staffs by providing the ability to transmit enemy templates, enemy unit locations, and additional intelligence from DCGS-A portable MFWS on the upper tactical infrastructure to tactical systems like the FBCB2. It enabled the commander's decision-making process at all tactical echelons in the event subordinate units were unable to establish upper tactical infrastructure networks.

Ultimately, tenacious Soldiers and civilians contributed to the success. Reluctant commanders eventually embraced the system once they witnessed the benefits. All commanders embraced digital systems and encouraged aggressive intelligence collection. The unit's training plan incorporated multiple field exercises in austere environments allowing operators to test and adjust the system in deployment conditions. The plan required persistent use of the system that maintained operator knowledge. Finally, none of it was possible without reliable and consistent support from FSRs and embedded trainers, full coordination and cooperation between the Warhorse Brigade intelligence and communication warfighting functions, patient commanders, and persistent Soldiers and officers.

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