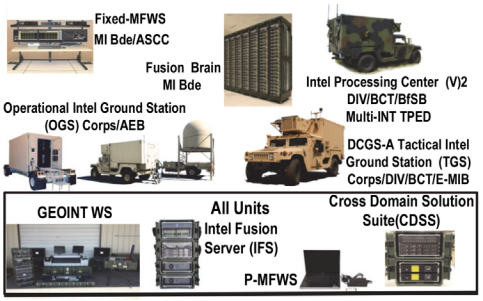
Distributed Common Ground System – Army (DCGS-A)

Executive Summary
- The Army conducted FOT&E of the Distributed Common Ground System – Army (DCGS-A) Increment 1, Release 2 at Fort Bliss, Texas, from May 2 – 14, 2015, during Network Integration Evaluation 15.2.
- The Program Office conducted additional laboratory testing in September 2015 to supplement the FOT&E evaluation of DCGS-A Release 2.
- The DCGS-A Increment 1, Release 2 is operationally effective. System availability and training were adequate, but the users rated the usability low-marginal. The system is not survivable against cybersecurity threats due to the vulnerability of the Army network.

System
- The DCGS-A provides an organic net-centric Intelligence, Surveillance, and Reconnaissance (ISR) capability from Battalion to Echelons Above Corps by combining 16 stove-piped legacy systems of record into one comprehensive network, including the capability to process Top Secret/Sensitive Compartmented Information.
- To resolve shortcomings discovered during the IOT&E in 2012, the Army reconfigured the system as Release 1 with only the Secret-level components. The Defense Acquisition Executive approved the full deployment of this configuration.
- The Army developed Release 2 to improve the capabilities that did not work effectively with Release 1. Release 2 is intended to provide enhanced capabilities to include:
  - Top Secret/Sensitive Compartmented Information capability
  - Workflows that aligned with how an intelligence section would employ the system
  - Methods for transferring data within the system and between systems more efficiently
  - Improved database structure
  - Enhanced fusion software for correlation of intelligence data
  - New materiel solution for transfer of information across security domains



AEB – Area Exploitation Battalion
ASCC – Army Service Component Command
BCT – Brigade Combat Team
Bde – Brigade
BfSB – Battlefield Surveillance Brigade
DIV – Division
E-MIB – Military Intelligence Battalion, Expeditionary
GEOINT – Geospatial Intelligence
MFWS – Multi-Function Work Station
MI – Military Intelligence
P-MFWS – Portable Multi-Function Work Station
TPED – Task, Process, Exploit and Disseminate
WS – Work Station

- In December 2014, USD(AT&L) approved modification to the acquisition strategy to end Increment 1 with completion of Release 2 deployment. Requirements that were allocated to Release 3, to include a cloud-computing capability to support worldwide intelligence analysis; database synchronization; and operations in disconnected or low-bandwidth environments, will now be allocated to Increment 2.

Mission
Army intelligence analysts use DCGS-A to perform: receipt and processing of select ISR sensor data, intelligence synchronization, ISR planning, reconnaissance and surveillance integration, fusion of sensor information, and direction and distribution of relevant threat, non-aligned, friendly and environmental (weather and geospatial) information.

Major Contractors
- Lockheed Martin – Gaithersburg, Maryland
- ManTech – Belcamp, Maryland
- Textron – Austin, Texas
- Northrop Grumman – Sacramento, California

Activity
- On December 4, 2014, USD(AT&L) issued an Acquisition Decision Memorandum (ADM) that ended the acquisition of Increment 1 with completion of Release 2 deployment. Previously, the DCGS-A Increment 1 was composed of three releases.
- The Full Deployment Decision ADM, dated December 14, 2014, required a plan for a developmental test with a representative operational test network structure using the scenarios and data collection/reduction tools expected to be used for the operational test. The Army planned and conducted Developmental Test 2 (DT2) at Fort Huachuca, Arizona, from September 13 – 27, 2014, to fulfill the ADM requirement.

- The U.S. Army Test and Evaluation Command (ATEC) conducted an FOT&E at Fort Bliss, Texas, during the Army's Network Integration Evaluation 15.2 in May 2015.
- ATEC failed to adequately collect, reduce, and analyze FOT&E test data in accordance with the DOT&E-approved test plan.
- The Program Office conducted a laboratory test September 14 – 24, 2015 to provide data for more rigorous evaluation of DCGS-A Release 2 data synchronization.
- DOT&E will issue a report on the DCGS-A Release 2 FOT&E in early FY16.

Assessment

- DT2 data were not sufficient for DOT&E to evaluate DCGS-A system performance. The Army's data collection, reduction, and analysis process failed to provide adequate quantitative answers to the key measures of performance.
- During the FOT&E, the test unit successfully employed DCGS-A to locate and take actions on all of the injected terrorist activities. The unit also accurately tracked the enemy troops and equipment movements, but did not always attribute the troops and equipment to the correct enemy unit. The Army injected supporting intelligence data for 10 intelligence vignettes into the test database, which also contained terabytes of other operationally representative intelligence data. During the test, the test unit successfully discovered and exploited the supporting data for all 10 vignettes and drew appropriate conclusions from the data within hours.
- FOT&E data collected by ATEC were not adequate to quantitatively evaluate fusion, targeting, and database synchronization. The program manager conducted a test of data synchronization in an operationally realistic laboratory facility in September 2015 and provided data to supplement the evaluation of data synchronization. Positive results of the vignettes indicate the fusion capability was adequate to support the mission during FOT&E.
- The data from the excursion showed that DCGS-A data synchronization can work effectively if the most efficient method is used. Users can choose from four different ways of synchronizing the data. During the FOT&E, the unit chose to use the ad-hoc Datamover method because they perceived this to be the most flexible method. The lab test showed using this method with a large number of entities (about 900 entities; the number emulates the database used during the FOT&E) could take about 2 hours, whereas moving the same data with a scheduled Datamover can be completed in less than 20 minutes. The Army plans to modify training to use the scheduled Datamover to synchronize large numbers of entities.
- DCGS-A availability was 0.99, satisfying the requirement of 0.90. Reliability, in terms of Mean Time Between Failure, ranged from 16 to 360 hours depending on the location and functions. Reliability and maintainability were sufficient to conduct the mission, but improvement in reliability would improve DCGS-A suitability.
- The system usability scale indicated system usability to be low-marginal.
- The system was not survivable against cybersecurity threats because of the vulnerabilities in the Army's tactical network.

Recommendations

- Status of Previous Recommendations. The Army did not successfully implement the FY14 recommendation to incorporate lessons learned from DT2 to conduct the FOT&E; the FOT&E data collection, reduction, and analysis had significant systematic shortfalls similar to those experienced during DT2.
- FY15 Recommendations. The Army should take the following actions:
  1. Institutionalize the training provided to the FOT&E test unit, so that all DCGS-A equipped units receive intensive, scenario-driven, collective training.
  2. Maintain DCGS-A unit readiness via continuous use of DCGS-A in garrison.
  3. Improve the cybersecurity posture in all Army tactical networks.
  4. ATEC should resolve systematic shortfalls with data collection, reduction, and analysis during testing.
     - Demonstrate the end-to-end process of collecting, reducing, and analyzing the data before an operational test.
     - Conduct a developmental test with operationally representative networks and the operational test instrumentation before an operational test of complex networked systems.
     - Attribute all performance anomalies to system performance, test process, or data collection and reduction before the test ends.
     - Analyze data sufficiently to identify and resolve anomalies and inconsistencies during the test.