

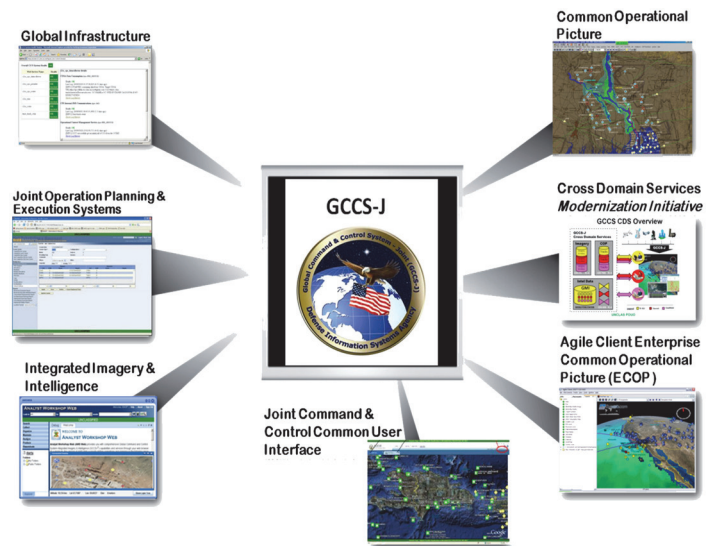
# Global Command and Control System – Joint (GCCS-J)

## Executive Summary

- Defense Information Systems Agency (DISA) development focused on implementing high-priority capability enhancements, infrastructure improvements, and software defect corrections to both the Global Command and Control System – Joint (GCCS-J) Global (referred to as Global) and Joint Operation Planning and Execution System (JOPES).

## Global

- DISA developed Global v4.2.0.9 Update 2 and Update 2 Emergency Release to correct remaining defects discovered during Air Operations Center – Weapons System (AOC-WS) Recurring Event (RE)12 testing.
  - The AOC-WS RE12-1 operational testing, which included fixes to defects from RE12, concluded that all Category I deficiencies had been adequately resolved, except for a Category I deficiency with the software build and upgrade process. After corrective action, the Air Force executed the RE12-1 build and upgrade process with acceptable levels of interaction with the Tier II help desk and the documentation showed improved maturity.
- DISA developed Global v4.2.0.10 to implement the initial phase of Pedigree Security Data Tagging, which identifies the originator and classification level of each track, allowing releasable tracks to be passed between U.S. and coalition partners.
  - Global v4.2.0.10 testing confirmed the system is operationally effective, suitable, and secure.
- DISA developed Global Lite v1.0 to provide a desktop computer-based software platform for situational awareness and intelligence capabilities. Global Lite v1.0 includes select features of situational awareness, intelligence, and cross-functional/infrastructure capabilities provided in fielded versions of Global. Global Lite v1.0 also supports the Public Key Enabling hardware token requirements for Public Key Infrastructure authentication and single sign-on capabilities.
  - Global Lite v1.0 testing confirmed the system is operationally effective, suitable, and secure.
- DISA developed Global v4.3 to implement changes to the infrastructure of the Global products and move the baseline towards a more flexible and service-oriented architecture. The release also provides high-priority updates to the Integrated Command, Control, Communications, Computers, and Intelligence System Framework; Joint Targeting Toolbox (JTT); and Modernized Integrated Database (MIDB).
  - The Global v4.3 operational test was not adequate to stress the system, but demonstrated that the system would not be effective in an operational environment involving current and legacy versions of Global and



associated versions of the MIDB requiring the use of the T-Sync system to achieve MIDB data synchronization. DOT&E concluded that critical defects, primarily with the MIDB, would substantially degrade U.S. capabilities with respect to situational awareness, targeting, weaponing, and intelligence information. DOT&E recommended follow-on operational testing of Global v4.3 with MIDB synchronization using realistic operational loads in an environment using current and legacy versions of Global. This testing should include an operationally representative T-Sync system.

## JOPES

- DISA developed JOPES v4.2.0.2 Update 1 to implement Transportation Tracking Account Number (TTAN) capabilities in the Joint Forces Requirements Generator (JFRG) II, enabling commanders to track personnel and equipment through the planning and deployment process. This release also provides upgrades to JOPES Data Network Services (JDNETS) software supporting Deliberate Crisis Action Planning and Execution Segments (DCAPES) v5.0.0.1 ability to pull Unit Type Codes (UTCs).
  - JOPES v4.2.0.2 Update 1 testing showed TTAN capabilities were successfully implemented within JFRG II and all Category I problems were resolved. While changes to the JDNETS web services did not support the ability of DCAPES v4.2.2.2 to pull UTCs, these changes did not degrade current operations. The results of the OT&E demonstrated that JOPES v4.2.0.2 Update 1 remains operationally effective, suitable, and secure.

- DISA developed JOPES v4.2.0.3 to implement the required framework for interoperability and synchronization between JOPES and Defense Readiness Reporting System – Strategic (DRRS-S). This release also contains the infrastructure needed for the Joint Planning and Execution System Framework to begin connecting to JOPES using web services, rather than via a direct database connection.
  - The Joint Interoperability Test Command (JITC), in conjunction with DISA, was scheduled to conduct a combined System Acceptance Test (SAT) and operational test of the JOPES v4.2.0.3 release from September 25 through October 24, 2013. Testing has been delayed due to the shutdown of the Federal Government and the lack of a Defense Appropriation.
- To link the National Command Authority to the Joint Task Force, Component Commanders, and Service-unique systems at lower levels of command
- To process, correlate, and display geographic track information integrated with available intelligence and environmental information to provide the user a fused battlespace picture
- To provide Integrated Imagery and Intelligence capabilities, which integrate imagery and other relevant intelligence into the common operational picture and allow Commanders to manage and produce target data using the Joint Targeting Toolbox
- To provide a missile warning and tracking capability

## System

- GCCS-J consists of hardware, software (commercial off-the-shelf and government off-the-shelf), procedures, standards, and interfaces that provide an integrated near real-time picture of the battlespace necessary to conduct joint and multi-national operations. GCCS-J consists of a client/server architecture using open systems standards, government-developed military planning software, and an increasing use of World Wide Web technology.
- GCCS-J consists of two components:
  - Global v4.3 (Force Protection, Situational Awareness, Intelligence applications) to include the Global Lite v1.0 variant (Situational Awareness, Intelligence, and Cross-functional applications)
  - JOPES v4.2.0.3 (Force Employment, Projection, Planning, and Deployment/Redeployment applications)

## Mission

- Joint Commanders utilize the GCCS-J to accomplish command and control.

### Global

- Commanders use Global:

### The AOC uses Global:

- To build the air picture portion of the common operational picture and maintain its accuracy
- To correlate or merge raw track data from multiple sources
- To associate raw Electronics Intelligence data with track data
- To perform targeting operations

## JOPES

- Commanders use JOPES:
  - To translate policy decisions into operation plans to meet U.S. requirements for the employment of military forces
  - To support force deployment, redeployment, retrograde, and reposturing
  - To conduct contingency and crisis action planning

## Major Contractors

- Government Integrator: DISA
- Software Developers:
  - Northrop Grumman – Arlington, Virginia
  - SAIC – Arlington, Virginia
  - Pragmatics – Arlington, Virginia

## Activity

### Global

- DISA developed Global v4.2.0.9 Update 2 and Update 2 Emergency Release to correct remaining defects discovered during AOC-WS RE12 testing.
- DISA developed Global v4.2.0.10 to implement the initial phase of Pedigree Security Data Tagging, which identifies the originator and classification level of each track, allowing releasable tracks to be passed between U.S. and coalition partners.
- DISA developed Global Lite v1.0 to provide a desktop computer-based software platform for situational awareness and intelligence capabilities. Global Lite v1.0 includes select features of situational awareness, intelligence, and

cross-functional/infrastructure capabilities provided in fielded versions of Global. Global Lite v1.0 also supports the Public Key Enabling hardware token requirements for Public Key Infrastructure authentication and single sign-on capabilities.

- DISA developed Global v4.3 to implement changes to the infrastructure of the Global products and move the baseline toward a more flexible and service-oriented architecture. The infrastructure changes include migration to Solaris 10 08/11, Windows 7®, and Windows Server 2008® R2 operating systems. Global v4.3 will automate software deployment and installation to support both full installation and update without dedicated install teams. The

release also provides high-priority updates to the Integrated Command, Control, Communications, Computers, and Intelligence System Framework; JTT; and MIDB.

- JITC and the Air Force conducted Global testing at multiple echelons. JITC led testing at the higher Combatant Command echelon to support DISA Global fielding decisions. The Air Force led testing at the lower echelon to support AOC-WS fielding decisions.
- Combatant Command-level testing included the following events:
  - JITC, in conjunction with DISA, conducted a combined SAT and operational test of Global v4.2.0.10 from October 22, 2012, through March 27, 2013.
  - JITC, in conjunction with DISA, conducted an operational test of Global Lite v1.0 from March 13 through April 2, 2013.
  - JITC conducted the Global v4.3 Operational Assessment from June 5 – 13, 2013.
  - JITC conducted a Global v4.3 operational test from August 7 – 16, 2013.
- AOC-level testing included the following events:
  - The Air Force performed developmental testing of AOC-WS RE12 from December 3 – 8, 2012, at Langley AFB, Virginia. A significant portion of the testing involved additional testing of the Global v4.2.0.9 Update 2.
  - The Air Force performed regression testing of RE12-1 from July 8 – 19, 2013, at Langley AFB, Virginia. A significant portion of RE12-1 involved additional testing of the Global v4.2.0.9 Update 2 Emergency Release.
  - The Air Force performed operational testing of RE12-1 in August 2013 at Langley AFB, Virginia.

## JOPES

- DISA developed JOPES v4.2.0.2 Update 1 to implement TTAN capabilities in the JFRG II, enabling commanders to track personnel and equipment through the planning and deployment process. This release also provides upgrades to JDNETS software supporting DCAPEs v5.0.0.1 ability to pull UTCs.
- JITC, in conjunction with DISA, conducted an operational test of the JOPES v4.2.0.2 Update 1 from October 22, 2012, through March 27, 2013.
- DISA developed JOPES v4.2.0.3 to implement the required framework for interoperability and synchronization between JOPES and DRRS-S. DRRS-S is intended to replace the Status of Resources and Training System as the readiness reporting system of record. JOPES v4.2.0.3 also contains the infrastructure needed for the Joint Planning and Execution System Framework to begin connecting to JOPES using web services, rather than via a direct database connection.
- JITC, in conjunction with DISA, were scheduled to conduct a combined SAT and operational test of JOPES v4.2.0.3 from September 25 through October 24, 2013. Testing has been delayed due to the shutdown of the Federal Government and the lack of a Defense Appropriation.

- Global and JOPES operational testing did not require DOT&E-approved test plans due to their limited scope. This is in accordance with the DOT&E risk assessment policy, which JITC exercised. Operational test plans were approved by their respective test organizations and coordinated with DOT&E. JITC deviated from the Global v4.3 operational test plan due to T-Sync problems and limited user participation.

## Assessment

### Global

- Results from the Combatant Command-level testing include the following:
  - Global v4.2.0.10 testing confirmed the system is operationally effective and suitable, interoperable with conditions, and secure.
  - Global Lite v1.0 testing confirmed the system is operationally effective and suitable, interoperable with conditions, and secure.
  - The Global v4.3 Operational Assessment was conducted to characterize defects discovered during DISA-led developmental testing and assess readiness to proceed into operational testing. Multiple critical defects with the JTT, Generic Area Limitation Environment Interface, Defense Intelligence Agency's MIDB, and the T-Sync system (used to perform MIDB synchronization) remained open at the conclusion of testing.
  - Global v4.3 operational testing was not adequate because it did not include operationally representative stress levels. Specifically, it employed too few operational users to place operationally representative loading on the Global v4.3 applications, insufficient loading on the Global 4.3 MIDB test servers to stress the system, and a significantly undersized T-Sync system. Operational testing showed that Global v4.3 would not be effective in an operational environment involving current and legacy versions of Global and associated versions of the MIDB, thus requiring the use of the T-Sync system. Additionally, the remaining critical defects, primarily with the MIDB, would substantially degrade U.S. capabilities with respect to situational awareness, targeting, weaponeering, and intelligence information. DOT&E recommended follow-on operational testing of Global v4.3 with MIDB synchronization using realistic operational loads in an environment using current and legacy versions of Global. This testing should include an operationally representative T-Sync system.
  - DOT&E recommended to DISA that GCCS-J 4.3 not be fielded to any site until the critical defects that were found in recent testing are fixed and verified through additional testing.
- Results from the AOC-level testing include the following:
  - The AOC-WS RE12-1 developmental testing identified several software deficiencies in Global v4.2.0.9 Update 2, but concluded the system is a significant improvement from previous versions.

- The AOC-WS RE12-1 regression testing concluded that Global 4.2.0.9 Update 2, with fixes contained in Update 2 Emergency Release, provides the AOC-WS improved functionality over previously delivered versions of Global, with existing deficiencies, and is ready to proceed to operational testing.
- The AOC-WS RE12-1 operational testing concluded that all deficiencies against Global v4.2.0.9 Update 2 had been adequately resolved, except for a Category 1 deficiency with the software build and upgrade process. After corrective action, the RE12-1 build and upgrade was executed with acceptable levels of interaction with the Tier II help desk and the documentation showed improved maturity.

## **JOPES**

- JOPES v4.2.0.2 Update 1 testing showed TTAN capabilities were successfully implemented within JFRG II and all Category I problems were resolved. While changes to the JDNETS web services did not support the ability of DCAPES v4.2.2.2 to pull UTCs, these changes did not degrade current operations. The results of the OT&E demonstrate that JOPES v4.2.0.2 Update 1 remains operationally effective, suitable, and secure.

## **Recommendations**

- Status of Previous Recommendations. DISA partially addressed the previous recommendation for the Combatant Command and AOC communities to test Global v4.3. However, Global v4.3 operational testing did not include operationally representative stress levels.
- FY13 Recommendations.
  1. JITC should conduct adequate operational testing of Global v4.3 in accordance with a DOT&E-approved test plan to clearly demonstrate that the MIDB supports data synchronization in an environment with current and legacy versions of Global at the rates essential to the conduct of major combat operations.
  2. The Defense Intelligence Agency should use the follow-on testing as an opportunity to establish a standing test bed for subsequent releases of the MIDB synchronization software.