

# Cloud services expanding

*By Kathryn Bailey*

Less than 10 years ago, Army unit commanders planned battles using topographic paper maps overlaid with information written onto clear plastic acetate. This process was bulky, slow to update and every command post's picture was slightly different.

In response to these limitations, the military developed new technologies that provide shared data on digital maps, displayed on several screens in the commander's tactical operations center.

First introduced in

Operation Iraqi Freedom as stand-alone systems, today's digitized maps use web-based, three-dimensional geospatial technology that pulls in data from various systems onto a single map. This comprehensive, common picture of the battlefield enables collaboration between the commander, Soldiers in the field and higher headquarters for optimal operational planning.

"This real-time pace is an invaluable capability for commanders on the battlefield," said COL Jonas Vogelhut, the Army's project manager for Mission Command. "What used to take a day to plan can now be accomplished in 20-30 minutes."

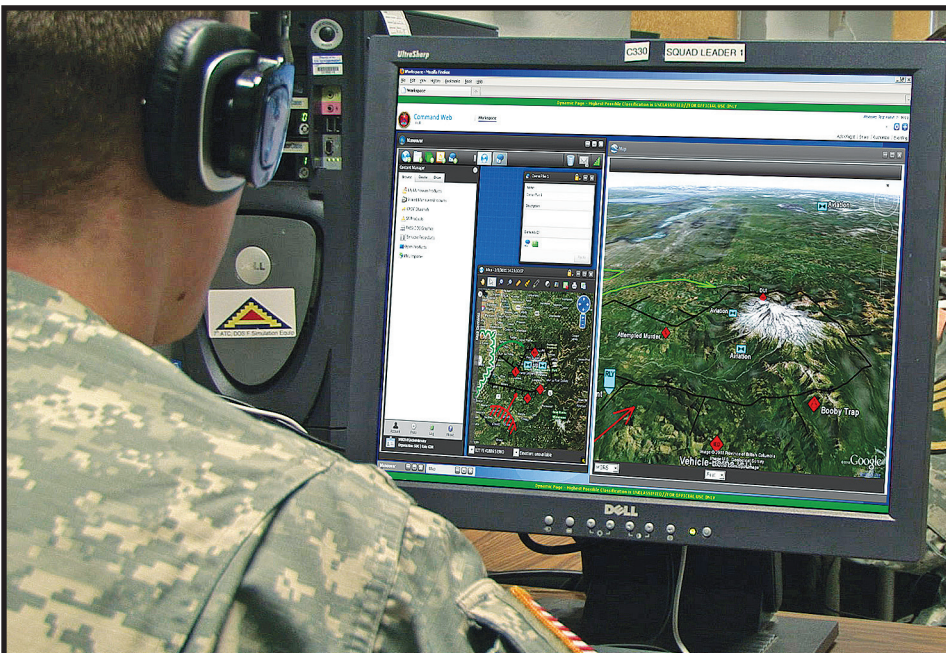
Although some units and situations still rely on paper maps with acetate overlays, the military has embraced the steady evolution of digital map technology, including Command Post of the Future.

CPOF is fielded by PM MC, which is assigned to the Program Executive Office for Command, Control and Communications-Tactical. Since 2005, CPOF has provided collaborative TOC technologies through a Common Operating Picture up and down the chain of command, delivering situational awareness for the commander.

"I was juggling multiple overlays of acetate on a map to successfully battle track current operations," said MSG Kevin Hanly, non-commissioned officer in charge of Tactical Mission Command, assigned to PM MC. "We got the job done, but with our mission command systems today, like CPOF, we're able to simplify the process and give the commander a more accurate and robust situational report."

CPOF pulls in feeds from other map-based, mission command systems, including PEO C3T's Joint Capabilities Release and Tactical Ground Reporting. JCR, which is located in TOCs and mounted inside tactical vehicles for "on the move" battle planning, and its successor Joint Battle Command-Platform form a two-part upgrade to the

(Continued on page 32)



Command Web is a web-enabled environment developed to meet the Army's direction for a Common Operating Environment for the Command Post Computing Environment. With Command Web, users access applications over the Internet instead of through software installed on a computer to display war fighting functions on a common, geospatial map.

| Report Documentation Page                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                    |                                     |                                                           | Form Approved<br>OMB No. 0704-0188                  |                                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|-------------------------------------|-----------------------------------------------------------|-----------------------------------------------------|---------------------------------|
| Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. |                                    |                                     |                                                           |                                                     |                                 |
| 1. REPORT DATE<br><b>2013</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                    | 2. REPORT TYPE                      |                                                           | 3. DATES COVERED<br><b>00-00-2013 to 00-00-2013</b> |                                 |
| 4. TITLE AND SUBTITLE<br><b>Cloud services expanding</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                    |                                     |                                                           | 5a. CONTRACT NUMBER                                 |                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                    |                                     |                                                           | 5b. GRANT NUMBER                                    |                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                    |                                     |                                                           | 5c. PROGRAM ELEMENT NUMBER                          |                                 |
| 6. AUTHOR(S)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                    |                                     |                                                           | 5d. PROJECT NUMBER                                  |                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                    |                                     |                                                           | 5e. TASK NUMBER                                     |                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                    |                                     |                                                           | 5f. WORK UNIT NUMBER                                |                                 |
| 7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)<br><b>U.S. Army Signal Center of Excellence,Signal Towers (Building 29808), Room 713,Fort Gordon,GA,30905-5301</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                    |                                     |                                                           | 8. PERFORMING ORGANIZATION REPORT NUMBER            |                                 |
| 9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                    |                                     |                                                           | 10. SPONSOR/MONITOR'S ACRONYM(S)                    |                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                    |                                     |                                                           | 11. SPONSOR/MONITOR'S REPORT NUMBER(S)              |                                 |
| 12. DISTRIBUTION/AVAILABILITY STATEMENT<br><b>Approved for public release; distribution unlimited</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                    |                                     |                                                           |                                                     |                                 |
| 13. SUPPLEMENTARY NOTES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                    |                                     |                                                           |                                                     |                                 |
| 14. ABSTRACT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                    |                                     |                                                           |                                                     |                                 |
| 15. SUBJECT TERMS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                    |                                     |                                                           |                                                     |                                 |
| 16. SECURITY CLASSIFICATION OF:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                    |                                     | 17. LIMITATION OF ABSTRACT<br><b>Same as Report (SAR)</b> | 18. NUMBER OF PAGES<br><b>3</b>                     | 19a. NAME OF RESPONSIBLE PERSON |
| a. REPORT<br><b>unclassified</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | b. ABSTRACT<br><b>unclassified</b> | c. THIS PAGE<br><b>unclassified</b> |                                                           |                                                     |                                 |



**Soldiers from the 2nd Brigade, 1st Armored Division use digitized maps to collaborate inside the Tactical Command Post during a recent Network Integration Evaluation at White Sands Missile Range, N.M.**

(Continued from page 31)

widely fielded Force XXI Battle Command Brigade-and-Below/ Blue Force Tracking. These capabilities deliver accurate and timely situational awareness by enabling Soldiers to track friendly (blue) and enemy (red) forces on a geospatial imagery map.

TIGR is a web-based tool with a Google-Earth-like interface that empowers Soldiers to digitally collect, share and analyze information while on patrol, such as common incidents or data on residents and leaders of a village.

The latest technological leap supporting digital maps comes by way of cloud technology, which allows users to access applications over the Internet instead of through software installed on a computer. Warfighting functions can now be displayed on a common, geospatial map to provide both operational and intelligence data to the commander in real time. Instead of acetate layers, users open applications, or “widgets,” to digitally layer these functions, complete with icons to represent activities in the areas of movement and maneuver, fires, sustainment and air space management.

“With this technology I can use a web page to track fuel or ammunition deliveries; tie that information to where my assets are today and how that relates to my enemy picture of tomorrow; determine where the aircraft is going to be flying and plan an airstrike -- all on one map,” COL Vogelhut said. “It’s a comprehensive, real-time picture that is crucial for successful battlefield operations.”

The enhancement to real-time information sharing is particularly crucial when obtaining intelligence during fragmentary order development, where each passing minute can dramatically alter the entire intelligence picture.

“Our geospatial maps are compliant with the maps ‘intel’ agencies use,” said COL Charles Wells, PM for Distributed Common Ground System-Army, which is assigned to PEO Intelligence, Electronic Warfare & Sensors. “We used to have to sit around a table, discuss operations, and then manually pump information into CPOF to view our intelligence. Now we’re all working off the same set of data so when something changes everyone sees it at the same time, allowing for a high op [operations] tempo.”

The key software product used to converge these map technologies is a government-owned framework that enables rapid third-party widget development. The COP is viewed on Command Web, the web-enabled environment developed by multiple PMs, including PM MC and PM DCGS-A, to meet the Army’s direction for a Common Operating Environment and the Command Post Computing Environment.

Soldiers in Afghanistan and U.S. Army Europe are currently piloting Command Web’s collaborative mapping capabilities, and the COE with Command Web widgets has been evaluated by Soldiers during the Network Integration Evaluations at White Sands Missile Range, N.M. The NIEs are semi-annual field exercises designed to rapidly integrate and mature the Army’s tactical communications network, and provide an environment where all of the digital map technologies converge for Soldiers to experience realistic operational environment planning techniques.

Enhancing the commander’s ability to make

speedy yet accurate decisions, especially when mission objectives change, continues to drive the evolution of digital map technologies.

“I was trained to build and track the enemy situation utilizing paper maps and acetate layers,” said SFC (ret) Josh Bauer, a former senior technical intel analyst, 20th Support Command Chemical, Biological, Radiological, Nuclear and Explosive who now works for PM MC. “However, when we received orders to look closer at a particular village, we had to rescale our maps and redraw all the graphics to provide the desired view. Upgrading to digital maps not only shortened the process time significantly, it meant that the commander didn’t have to rely solely on the analyst’s ability to graphically display the battle by hand.”

Building upon existing technology, tomorrow’s commanders will gain an even greater situational understanding of the battlefield when future geospatial, operational and intelligence capabilities converge. From plastic overlays and grease markers to digitized, real-time maps, commanders and their staffs are much less likely to second-guess the physical environment standing between their mission launch and mission completion.

*Kathryn Bailey is the public communications advisor and staff writer for Project Manager Mission Command, which is part of Program Executive Office Command, Control, Communications-Tactical out of Aberdeen Proving Ground, Md. Ms. Bailey formerly held communications positions with Intelligence and DoD agencies.*

## ACRONYM QuickScan

**CBRNE** - Command Chemical, Biological, Radiological, Nuclear and Explosive

**COE** - Common Operating Environment

**COP** - Common Operating Picture

**CP CE** - Command Post Computing Environment

**CPOF** - Command Post of the Future

**DCGS-A** - Distributed Common Ground System-Army

**FBCB2/BFT** - Force XXI Battle Command Brigade-and-Below/Blue Force Tracking

**FRAGO** - Fragmentary Order

**JBC-P** - Joint Battle Command-Platform

**JCR** - Joint Capabilities Release

**NIE** - Network Integration Evaluation

**PEO C3T** - Program Executive Office for Command, Control and Communications-Tactical

**PEO IEW&S** - Program Executive Office for Intelligence, Electronic Warfare & Sensors

**TIGR** - Tactical Ground Reporting

**TOC** - Tactical Operations Center