

MGCP

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THE MULTINATIONAL GEOSPATIAL CO-PRODUCTION PROGRAM IS MAKING BIG STRIDES TOWARD GETTING GLOBAL HIGH-RESOLUTION DATA COMMON ACROSS THE BOARD.

Since its inception in November 2003, the Multinational Geospatial Co-Production Program (MGCP) has been working toward bolstering international cooperative production and coordination of high-resolution digital vector data in high-interest regions where inadequate data currently exists.

The project represents the most current evolution of a 10-year, global vector-map level 1 (VMAP1) effort that began in 1993 and was revamped in 2003. In the new ideation, the program was created to be not only more international, but also more streamlined in terms of data analysis and user access.

MGCP national membership includes Australia, Belgium, Bulgaria, Canada, Czech Republic, Denmark, Estonia, Germany, Greece, Hungary, Italy, Latvia, Lithuania, Moldova, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Slovakia, Spain, Sweden, Turkey, the United Kingdom and the United States.

“The MGCP is a great example of international cooperation that will not only result in a significant improvement in geospatial coverage for each of our nations, but will also advance standards, technology, and interoperability for all of us,” said the director of the National Geospatial-Intelligence Agency, retired Air Force Lieutenant General James R. Clapper Jr.

According to Marzio Dellagnello, chair of the MGCP plenary group, the MGCP’s work is important to ensure current and high-resolution data is available for areas throughout the world.

“For tactical purposes, we needed more current, higher-resolution data,” Dellagnello said “The data needs to be the most accurate possible with a good foundation layer so that nothing has to be redone when we are updating.”

A number of industry partners assist in that effort. Among them is Intergraph Corp., based in Madison, Ala. According to Robert Mott, vice president of business development for Intergraph’s division for security, government and infrastructure, the company’s strong focus on validation and verification helps provide assurances that MGCP customers have reliability and efficiency in the deliverables they produce.

“Intergraph provided map production technology and technical support to many nations involved in the earlier VPF Co-Producer program (VaCWG) and continues that tradition in our work with MGCP,” explained Mott. “Intergraph’s offering for MGCP participants is our Geo-Intelligence Production System GIPS. GIPS is a collection of tools for geospatial intelligence production that provides end-to-end capabilities, from image processing—including orthorectification—to final product generation.”

According to Mott, GIPS contains many useful tools and commands that streamline data collection processes, including a validation function that validates data at the point of entry.

One MGCP goal is to work globally at the scale of 1:50,000 or 1:100,000 with the production to be divided into one-degree-square cells (a one-degree-square cell is 3,600 square nautical miles at the equator, diminishing slightly as one moves away from the equator). Previous multinational efforts sought a digital vector scale of 1:250,000, said Dellagnello.

An early priority, according to Dellagnello, was to determine the data density. The group settled on having either 50K or 100K density, in addition to having all data collected reflect the same 25-meter accuracy.

A second goal was to create a working international geospatial warehouse (IGW) from which members could easily deposit and withdraw data from a common, webbased holding area and exchange mechanism that would enable rapid data exchange from a protected site.

The IGW, Dellagnello added, is now a reality, with an initial operating capability target date of January 2006. The IGW was developed under NGA’s “GeoScout.”

According to Clapper, GeoScout is NGA’s principal contract vehicle for supporting NGA’s national, military and civil customers. GeoScout’s evolutionary “block and increment acquisition strategy,” said Clapper, will be able to accommodate changing GEOINT sources, technology and customer intelligence demands.

“There are three major ‘blocks’ to GeoScout,” explained Clapper. “Block one focuses on infrastructure modernization and expanded data access. Block two, which we are now developing, is the modernization program for what I would call the ingestion of data. Block two focuses on integrated source and information management.”

According to Clapper, GeoScout's block three will build on previous blocks with a focus on upstream processing of source information, including analysis and an integrated information environment.

"The focus in block three is tools," said Clapper. "Each of the blocks overlap and each is divided into specific increments, or capabilities."

While ease of data access was a priority in creating IGW, so was data security.

"The IGW is housed outside of the NGA firewall," said Dellagnello. "The software calculates data deposits and withdrawals so that each participant is credited appropriately."

According to Dellagnello, MGCP data should not be considered a "finished product" similar to a 1:100,000 topographic land map. Rather, it is data that end users will modify according to their needs. Needs may extend to a variety of activities, from war fighting to peacekeeping to disaster relief.

"MGCP data is better suited as a source for tailored products to support the warfighter or national decision-makers of the participants," Dellagnello explained. "For example, as a contingency arises, the participants download data from the IGW, ingest it into a national production environment, add value-added information (i.e, temporal or intelligence information), and create products specifically to meet the requirements of the end users."

Expected uses for the data are applicable to military operations as well as a number of potential humanitarian efforts, such as helping with logistics after natural disasters.

At the 2005 GEOINT Symposium held in San Antonio, Texas, Clapper noted that while NGA is heavily engaged in supporting U.S. military forces overseas and in homeland security efforts, the peacetime, disaster relief effort is increasing. Relief efforts are benefiting from not only the new, more accurate data, but also from the spirit of international cooperation applied in gathering and analyzing it. He cited the NGA's contribution to logistics following the 2004 Pacific tsunami, Hurricane Katrina and the 2005 earthquake in Pakistan.

"The environment is emerging as another adversary," Clapper said.

According to Dellagnello, some the military uses are non-combatant evacuation operations, peace support operations, stabilization operations, tactical land operations, logistical operations, tactical air operations, supporting arms operations, urban operations and embassy support operations.

"The breadth of uses for MGCP data is as deep as the mind of the end user," suggested Dellagnello.

Future disasters notwithstanding, as with VMAP1, the MGCP data will also be used as a source to support national military systems, said Dellagnello. Highresolution vector data can be integrated into command and control, surveillance, reconnaissance or weapons systems operated by allies.

“As of 2001, VMAP1 accounted for 31 percent of all vector data used in national military systems,” he explained. “We anticipate that the higher resolution and accuracy of the MGCP data may allow for increased use in this capacity. The U.S. military uses large scale (1:100K and larger) data to support many operational and tactical contingencies.”

Although high-resolution data has been the goal, Dellagnello said many of the initial organizational MGCP steps were more “down to earth.” For example, some procedural steps are still being hammered into shaped or being ironed out even as the work gets done. Also a memorandum of understanding among the membership is nearly completed.

According to Dellagnello, the MGCP is structured in three groups: the MGCP plenary group, responsible for program issues such as developing the production plan; a steering group, responsible for policy issues such as developing the MOU; and a technical group, responsible for production support such as developing the extraction guidance.

The plenary group meets twice a year and the steering groups three times per year. The technology group had been meeting most frequently—five times per year—because of the technical issues it was tasked to resolve. Currently, that group meets three times per year.

Once more, the technical groups benefit from workshops that provide updates on increasing efficiency in collecting, validating, maintaining and distributing MGCP data. Intergraph hosted an MGCP three workshop October 17, 2005, at the MGCP Technical Committee meeting in Hoofddorp, Netherlands.

“Participants at the workshop got a chance to work hands-on with GIPS,” said Mott. “They were able to see and learn about the full potential of the suite with respect to its MGCP requirements.”

Part of the hands-on experience, said Mott, was the use of GeoMedia Topographer—the data collection machine within GIPS—to collect sample data according to the latest MGCP specifications.

“GeoMedia Topographer streamlines the data collection process while simultaneously improving the quality of the data,” said Mott.

When contrasted with earlier efforts, it may be the degree of cooperation within MGCP that spells out differences in quality and data delivery.

“We saw good results with the earlier VMAP1 program,” said Dellagnello. “I think we are going to be able to provide muchneeded GEOINT coverage with this kind of cooperation.”

The VMAP1 database was built on a 1:1,000,000 scale and was an update of the National Imagery and Mapping Agency’s Digital Chart of the World.

The original VMAP1 cooperation was a good concept, and the MGCP has built on lessons learned from the previous activity,” Dellagnello said. “But we are now in a greater position to share

production and minimize duplication.”

Early in the life of MGCP there were some data release restrictions, said Dellagnello, but as technical issues are ironed out the release restrictions have been lessened. Also, as areas of responsibility among the members have been finalized and a newly conceptualized “exchange rate” among the members has been determined.

The exchange rate is built on the idea that those members who contribute more data should reap more benefits, receiving a high return on investment, or ROI. According to Dellagnello, the high ROI is an incentive for club members to step up and contribute more with the promise of the return of more data.

“We have also minimized third-party release restrictions to streamline and open data release among the participants,” explained Dellagnello. “This allows each participant to increase their focus on analysis.”

According to Dellagnello, MGCP product specification is now based on International Standards Organization/TC211 and Digital Geographic Information Working Group standards. Both organizations oversee standards for collecting geographic data. The ISO is a network of national standards institutes comprised of 156 countries, while the DGIWG was established in 1983 to develop standards for the exchange of digital geographic information among NATO nations.

Based with a central secretariat in Geneva, Switzerland, the ISO is a nongovernmental organization with no legal authority. Its standards are voluntary, but the organization has a unique niche between public and private sectors.

Masami Tanaka, of Japan, who was installed in January 2005 as ISO president for 2005-2006, called for expanding “... our work in new areas such as services, sustainable development, security and information technologies ...” and “... making sure that our processes and deliverables are optimized and that we make the best of our collaboration with other international and global organizations.”

As geospatial intelligence continues to emerge with an important security assistance role in the broader picture of national intelligence, the MGCP will likely contribute greatly to the effort as it moves into its third year.

As GeoScout meets its projected goals, the data emerging from MGCP will realize its full potential. According to Clapper, GeoScout is just finishing block one, the delivery of infrastructure upgrades, and moving into block two, integrated source and information management capabilities. Block two capabilities are projected to be reached during 2006 to 2010.

The MGCP is scheduled through December 31, 2011. ♦

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