THE NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY

PATHFINDER

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January/February 2007

Global Partnerships Support GEOINT Community and Beyond

Collaborative GEOINT Enhances NATO Summit Security

Building a Global GEOINT Community

On My Mind

Why Building International Relationships is an NGA Focus Area

Last year the Executive Leadership Group established 12 focus areas to influence NGA's strategic direction as well as enable our Agency to better accomplish its objectives and align with our nation's larger intelligence and defense objectives. One of the 12 focus areas we established is to "build new and enhance enduring international partnerships."

You may ask why this focus area is so important and how it will influence NGA's strategic direction, enable our Agency to better accomplish its objectives, and align with our nation's larger defense objectives. The answer is the natural outcome of much experience, recent developments and the collective insights of many minds.

Past Is Prologue

First, let's look at the record. NGA and our predecessor agencies have been engaged in the international arena for decades. During World War II many American photo interpreters deployed to the Allied Central Interpretation Unit at Medmenham, United Kingdom, and elsewhere, supporting aerial reconnaissance efforts that made a critical difference in the outcome of the war.

Combined efforts to analyze and produce geospatial information continued during the Cold War. Over the decades, NGA and its predecessor agencies entered into countless geospatial-sharing and co-production agreements with our counterparts in many nations. As NGA made our products available through these bilateral agreements, we obtained access to foreign-produced data and maps that often contained valuable ground truth.

In recent years, our international agreements have centered on digital file sharing, resulting in mutual efforts to extract geospatial intelligence (GEOINT) from burgeoning amounts of information. Many of our partners now have mature capabilities, sometimes the result of past NGA assistance. At the same time, commercial firms from around the world have followed U.S. firms as providers of imagery and related services.

The GEOINT Revolution

The "globalization" of intelligence data has come just in time to enable intelligence organizations around the world to operate as partners in the fight against violent extremism, as well as support international relief efforts. NGA has a world-class mapping capability, but our resources are finite. By sharing the effort with international partners, NGA gets more out of its taxpayer dollars while improving relations with foreign governments.

Our work as a part of the Multinational Geospatial Co-production Program (MGCP) is a prime example of a solid international partnership whose ultimate goal is to provide participating nations and their GEOINT customers with the most timely, relevant and accurate data available.

NGA's international projects are a win-win effort, allowing all parties to share production burdens. Already, more than a quarter of NGA's standard product line comes from its sharing and co-production agreements. With NGA analysts spending less effort on creating this baseline data, they can shift their focus to creating tailored products for customers.

Strategic Relationships

Our Director of National Intelligence has emphasized the need for the Intelligence Community to "take stock" of its foreign-intelligence relationships and establish valuable, new partnerships that will help address 21st century intelligence challenges. For our part, NGA is providing both thought and leadership toward shaping and building what can be called a "global GEOINT community." NGA is a strong voice for international standards in geospatial production. Recognized standards allow countries to share seamless data, knowing that both foreign and domestic-produced products will have the same accuracy and format. By acting in concert with other nations, we are better able to protect Americans, at home and at war, while at the same time sharing and promoting the values that make our nation strong.

Robert B. Murrett
Vice Admiral, USN
Director

celebrating 10 years of GEOINT
NGA

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On the Cover

The computer, the Internet and the Global Positioning System have enabled the globalization of geospatial intelligence (GEOINT). Many nations, large and small, as well as commercial providers in many countries, have an unprecedented opportunity to share GEOINT quickly as they respond to threats, both natural and manmade. To this end, NGA's International Affairs and Policy Office is leading an Agency-wide effort to build new and enhance enduring international partnerships—to build a global GEOINT community. The effort takes many forms: working with Europeans and Africans on an airborne gravity survey in Ethiopia, sharing information with Guatemalans to bring relief after a devastating hurricane, supporting security alongside Latvians for a NATO Summit, and many more. The possibilities are exciting and they promise humankind a great reward.

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Letter to Our Readers

Building a Global GEOINT Community

Digital capabilities, the Internet and the Global Positioning System (GPS) have laid the foundation for building a community of nations to share geospatial intelligence (GEOINT) for the benefit of all. In the current Pathfinder, we look at progress we've achieved in building this global GEOINT community and direct results of these endeavors.

But sometimes the situation calls for us to "hold the press," as they say. We did so to provide information about the National System for Geospatial Intelligence (NSG) Senior Managers Council, which took place Jan. 8-10. An article about this important event leads off this issue. The DIrector of International Affairs and Policy, Regina Genton, follows with an article explaining why international partnerships matter to NGA and our stakeholders.

Concrete examples of why international partnerships matter include J.P. Roa and Craig Ackermann's article about the recent NATO Summit in Latvia. The local knowledge of the Latvians and new technology introduced by NGA were crucial to ensuring security, he writes.

The new Chief of the International NGA Support Team Asia-Pacific, Joe Obermeier, introduces readers to one of our enduring partners, the Defence Imagery and Intelligence Organisation of Australia. At the same time, he discusses his focus areas for the entire region, involving 32 international agreements.

NGA's Regional Officer in Guatemala, Ron Bowers, gives a dramatic and explicit example of how international partnerships make a difference in a story about NGA's response to Hurricane Stan. This disaster of proportions comparable to Hurricane Katrina occurred about the same time 1,500 miles to our south.

Ethiopia is center stage for an article by Steve Kenyon, who shows how an airborne gravity survey can have important long-range benefits for a developing country, as well as the United States and the entire global GEOINT community.

And don't miss the article by Air Force Lt. Col. Yanghee Choi-Pawlowski, who deftly explains how the Foreign Military Sales program is an important tool for building the global GEOINT community. Among our departments, be sure to catch the update on the Multinational Geospatial Co-Production Program. This is the program involving 28 nations that will provide high-resolution mapping data on a global basis for the first time.

In the next Pathfinder, we spotlight NGA's partnerships in the Intelligence Community and federal government. Look for articles about our NGA Support Teams and other initiatives that show how this Agency continues to ensure that GEOINT is absorbed into our many partners' decision space.

Paul R. Weise
Director, Office of Corporate Relations

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GETTING PUBLISHED
All members of the geospatial intelligence community are welcome to submit articles of community-wide interest. Articles are edited for style, content and length. The copy deadline is the last Friday of the third month before publication. For details on submitting articles, send an e-mail to pathfinder@nga.mil.

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NSG Senior Managers Council Strengthens Community Partnerships

By Thomas A. Ferguson

Leading the National System for Geospatial-Intelligence (NSG) requires the ability to deftly balance requirements from multiple agencies and services with vastly different needs and priorities. These needs range from immediate, direct support to the warfighter on the front line to counterproliferation activities of global interest. They range from disaster relief and recovery activities, both domestic and abroad, to initiatives vital to U.S. homeland security. Always underlining these dramatic mission requirements is the ongoing, steady and necessary foundational priority to map the world.

As Functional Manager for the NSG, the NGA Director Vice Adm. Robert B. Murrett ensures that the NSG meets its primary mission to provide "timely, relevant and accurate GEOINT in support of national security." He ensures that geospatial intelligence (GEOINT) gets to those who need it, when and where they need it, to support our nation. Increasing resource demands and mission requirements necessitate that the NSG do more—smartly.

To best meet the NSG's primary mission, Vice Adm. Murrett hosted the 2007 NSG Senior Managers Council (NSMC) Jan. 8-10, 2007 in Warrenton, Va. Senior leaders representing the offices of the Secretary of Defense, Director of National Intelligence, Joint Staff, national intelligence agencies, military services and commands, and civil agencies, as well as Commonwealth partners, attended the council session to openly discuss the GEOINT needs of today and the future.

NGA's forward deployed analysts provide robust GEOINT to ensure mission success.

Army photo by 2nd Lt. Paul Fisher

The council session was designed to encourage open and candid dialogue specific to issues and strategies that affect both the production and consumption of GEOINT. NSG partners shared their candid perspective on NGA collaboration, its success stories, and its areas for emphasis and improvement. NGA Key Components reflected back on the first council session in November 2005 and provided council participants with a report card on NGA's progress against last year's promises and goals. Overall, NGA has made significant strides in improving analysis and production, moving toward a service-oriented architecture, and establishing GEOINT standards. Additionally, organizations from across the NSG shared their perspectives specific to: 1) GEOINT and the national intelligence mission, 2) unified GEOINT operations, 3) source strategies and 4) GEOINT to the last tactical mile.

The critical mission impact of NGA's forward deployment of analysts was another key message that resonated across the NSG during the council session. Both Vice Adm. Murrett and NSG participants stressed the important role that analysts embedded with operational teams play in providing robust GEOINT and in ensuring mission success and pledged their continued support of the NST model. To be effective in this NST role, Vice Adm. Murrett emphasized, "We have to be in the same time zone as the commander we are supporting."

Many NSMC participants recognized NGA for its commitment to proactive communication and transparency in process, policy and product—evidenced through the NSMC structure and the consistent emphasis on open and candid dialogue.

NSG Areas for Improvement

As with any enterprise, identifying areas for improvement is the road map to success, and the NSG is no exception. NSG areas for improvement revolve around the urgent need to establish consistent GEOINT standards. The areas for improvement include metadata tagging, naming conventions and product-posting conventions. Moving to a service-oriented architecture and ensuring that technology changes occur are initiatives critical to allowing GEOINT users to more easily access the products they need, when they need them.

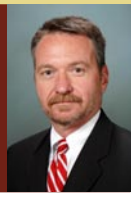
NSG Challenges

Releasability of intelligence information and information sharing with our Commonwealth partners and allies emerged as a challenge vital to the success of the global war on terror. Current policy makes fast and easy dissemination of information to our allies difficult. With the transition of both of the NSG's oversight providers, the Undersecretary of Defense for Intelligence, and the Director of National Intelligence, Vice Adm. Murrett believes the NSG is in an era of opportunity to significantly influence positive policy change.

NSG's Way Ahead

As the NSG looks to the future, it must do what it takes to ensure that when our national leaders are faced with critical decisions or our warfighters are in harm's way, the NSG is prepared to support their GEOINT requirements. To this end, Vice Adm. Murrett pledged to regularly facilitate meetings of the NSG and demonstrate results. NGA will actively communicate, actively listen and actively strive to make changes when needed. Full participation of the Agency and its partners in the NSG will ensure success.

Thomas A. Ferguson
is the Director of Geospatial Intelligence Management. He leads NGA's activities that constitute and support the National System for Geospatial-Intelligence.



NGA Exercise Improves Coalition Intelligence

By Marshall Hudson

NGA's third annual Empire Challenge exercise ad-vanced ways for U.S. and allied military organizations to identify and correct issues related to the interoperability of their intelligence, surveillance and reconnaissance systems. The lessons learned in this exercise will translate to improved operations by combat forces in Iraq and Afghanistan.

Conducted Sept. 5-28 at the Naval Air Warfare Center, China Lake, Calif., the exercise included personnel, aircraft and equipment from Australia, Canada, the United Kingdom and the United States. Units throughout these countries as well as others in Europe were electronically connected to the exercise.

Realistic exercise scenarios were developed based on issues encountered by combat forces in the global war on terrorism. Efforts were focused on having an up-to-date picture of the battlefield to increase combat effectiveness and save coalition lives. For example, collecting imagery that revealed insurgents placing improvised explosive devices and then analyzing the images in real time was used to prove information and data could be passed successfully across networks.

According to Navy Cmdr. Joseph A. Smith, Deputy Director of the NGA Airborne Integration Office and Empire Challenge, the exercise has improved the military's capabilities and effectiveness for the war on terrorism as well as homeland-defense efforts.

"Empire Challenge 2006 included groundbreaking demonstrations of military capability," Smith said. "For the first time, we can downlink live data from a British aircraft directly to a U.S. ground station and then send it via satellite to another allied country to be analyzed. Capabilities like this will enable the United States and our allies to share each other's intelligence data and build a timely, more accurate picture on today's battlefield."

During Empire Challenge, convoys and special operations teams operated on a simulated desert battlefield populated with insurgents. Unmanned aerial vehicles and manned aircraft such as the British Tornado GR4 jet with the Raptor Imagery Pod flew overhead capturing high-resolution imagery. The video was viewed in real time by imagery analysts and targeteers from the four participating countries, who exploited the data.

Air Force Lt. Col. Jill Singleton, Deputy Director of Interoperability Demonstrations for the U.S. Joint Forces Command (JFCOM) Joint Systems Integration Command, said the strength of the communication network proved allied imagery experts in Australia, Canada and Europe could "participate from their home countries as their assets flew over China Lake. This allows us to more fully leverage our allied capabilities and improve the timeliness of intelligence information," she said.

Empire Challenge is part of a series of exercises sponsored by the Undersecretary of Defense for Intelligence and conducted in concert with the Joint Chiefs of Staff and JFCOM. Plans are already under way for Empire Challenge 2007. P

Marshall Hudson is a Public Affairs Staff Officer in the Office of Corporate Relations.

The Empire Challenge Exercise demonstrated groundbreaking military capabilities.

US. Navy photo by Joy Lewis

Up Front

NGA Presents Maps to Afghanistan

By Air Force Maj. Dayle Pieper

In October NGA presented key officials in the Afghan Ministry of Defense with the first set of a new series of maps in English and Dari.

NGA created the maps to support the Afghan National Army and Police. Dari is one of the languages of Afghanistan. Completion of the large- and medium-scale maps covering all of Afghanistan is scheduled for 2008. A geospatial analyst assigned to NGA's Joint Imagery Operations Center in Kabul also created a coverage chart that shows which parts of Aghanistan were covered by the maps.

The maps were presented to Lt. Gen. Sher Mohammad Karimi, Director of Operations, Maj. Gen. Abdul Khaliq, Director of Intelligence, and Engineer Abdul Rauf Yari, General President of the Afghan Geodesy and Cartography Head Office. The office is the Afghanistan central government organization responsible for the production and management of mapping activities. Their products include geographic, topographic, cadastral, tourist, thematic, image, land-use and land-coverage maps. The office is also responsible for geodetic surveying, aerial photography and remote sensing.

The Ministry of Defense is reviewing the NGA maps and will provide updates and corrections as needed.

Photo by Chris Sperry

Air Force Maj. Dayle Pieper, Imagery Functional Manager in the NGA Office of Geospatial Intelligence Management, center, presents one of the new NGA Afghan maps to Maj. Gen. Khaliq. A translator is at right.

Air Force Major Dayle Pieper is the Imagery Functional Manager in the NGA Office of Geospatial Intelligence Management.

Photo by Susan Meisner

Global Partnerships Support GEOINT Community and Beyond

By Regina Genton

Forging relationships with our foreign partners has become more important now than ever before as the globalization of geospatial intelligence (GEOINT) continues to expand, as the international community gains ground in imagery collection and analysis capabilities, and as coalition activities grow in response to current world situations. The value of NGA's relationships can be measured on many levels, from direct contributions to NGA's core mission to supporting the broader objectives of defense, intelligence and foreign policies. One thing is certain: NGA's global partnerships support our nation in the GEOINT community and beyond.

The Defining Imperatives

To understand the importance of the contributions made by our international partners, we must first explore the defining imperatives that have been set before us as an Agency.

The National Intelligence Strategy and Defense Security Cooperation Guidance set the stage for NGA's thinking in the intelligence and defense spheres. National-level strategies—the National Security Strategy, National Defense Strategy and National Military Strategy—provide the context. These documents acknowledge the centrality and urgency of effectively addressing the threat posed by terrorism, hostile states and hostile alliances, as well as the spread of weapons of mass destruction.

These documents emphasize the need to expand and deepen our international relationships. Addressing a conference of our NGA Support Teams, the Director, Vice Adm. Robert B. Murrett, said it best: "We do not do anything anymore by ourselves."

NGA looks to the National Intelligence Strategy with the objective of engaging others to form a common threat assessment. Another objective is to ensure that insights gained from our foreign-intelligence relationships inform intelligence judgments and are used in developing options for an effective response.

As an agency, we have the opportunity, through the discipline of GEOINT, to add texture, context, insight and meaning when we exchange views in an effort to come to a common understanding of a particular threat. We may not always see the world in the same way, yet it is as important to understand how others view the same threat and more importantly, why. Challenging our own thinking helps draw us to new discoveries and sharpens existing theories.

The objectives articulated in the Defense Security Cooperation Guidance touch virtually every country we work with. Here the dominant themes are transformation, interoperability and building capacity to enable our foreign partners to operate in a coalition environment—either with or without U.S. involvement—to protect common interests. Central to the implementation of these objectives are NGA's bilateral agreements, NATO agreements and engagement through the Partnership for Peace, a program for bilateral cooperation between partner countries and NATO.

A Tapestry of Alliances

The totality of NGA's relationships is significant, broad and diverse. We have hundreds of geospatial agreements, including hydrographic cooperative agreements and exchanges of aeronautical information. We participate in the International Hydrographic Organization, and we maintain long-standing relationships with the Commonwealth nations. Multinational agreements include sharing geospatial data with NATO and through the Multinational Geospatial Co-production Program (MGCP). The MGCP is an innovative agreement involving 28 nations that will produce the world's best high-resolution digital vector data over much of the world, something that no country could do alone. The variety and scope of these engagements allow NGA to bring unique value to further our nation's national security goals.

Why International Partnerships Matter

When we look at our international engagements, we almost always have multiple objectives. These objectives must be mutually beneficial—there is give and take on the part of all parties.

Our international partnerships matter in at least five distinct ways:

NGA's global partnerships support our nation in the GEOINT community and beyond.

First, they matter enormously to NGA. The United States does not have a lock on all sources of data and information or even in some instances the "best source." That's why U.S. policy supports buying foreign data when it is consistent with national security objectives. Joint analysis, co-production and learning from other experts also enrich our own production and analysis, adding to our collective intellectual capital.

Second, they are critical enablers in the global war on terrorism. Partners are empowered to operate in a coalition environment with common standards, interoperability and expanded GEOINT capacity. They are better able to work with our Department of Defense and better able to support their own warfighters.

Third, they increase NGA's significance to the Intelligence Community. By visually displaying information and showing what only GEOINT analysts "see," NGA makes a strong contribution to the analysis of hard and seemingly intractable problems. The wide acceptance and accessibility of GEOINT enables our analysts to see more and increases the Agency's value as an intelligence asset.

Fourth, they provide new ways to address specific and enduring intelligence issues. National security objectives focus on what foreign partnerships can bring to bear on the war on terrorism and other global threats.

Finally, they bring collateral benefit to NGA in serving broader foreign policy objectives. Issues affecting navigation, communication, trade, humanitarian aid and the environment are all involved.

The Payoff: Lasting Change

The GEOINT sector is maturing rapidly and growing in importance. In the coming five years, we will see nine nations launch new electro-optical and radar satellites. We will see these nations invest in the ground architecture to process this data, and we will see these nations invest in the human capital needed to analyze the imagery in an effort to make sense of our world and build geospatial data sets to model it. We will increasingly see competitive analysis based on independent imagery sources. We are not alone.

Our active engagement on many levels can enrich our mutual understanding of the threats we face and position us to act in concert with one another to bring about lasting change.

Regina Genton
is the Director, Office of International Affairs and Policy.

Steering Group Manages Foreign Partnerships

By Anita Davis

NGA's International Program provides unified, deliberate direction in building and maintaining meaningful international partnerships. Through this program, NGA collaborates across the Agency with centralized management and decentralized execution.

Established a year ago, an International Affairs Steering Group provides senior-level oversight to ensure that international activities comply with the objectives of the Office of the Director of National Intelligence and Department of Defense (DoD), as well as underpin mission-specific needs of NGA.

Trans-NGA Collaboration

To support the decision-making process, NGA has developed country strategies through collaboration across the Intelligence Community, DoD and NGA. Country strategies build on current initiatives and anticipated needs, both analytical and informational. With the approval of the Steering Group and NGA Director, country plans focus NGA resources on specific partnerships over the next five to seven years.

Country teams assemble expertise from across NGA directorates. The teams are responsible for developing detailed partner-specific plans and programs to achieve the goals for that partnership.

NGA must rely on the broad knowledge and skill base from many different offices and disciplines in order to make the country team concept work successfully. These multi-disciplinary teams create a seamless integration of geospatial intelligence (GEOINT) policy, production and systems support for each international partnership. The key to success lies not only in NGA's International Program but in the Agency's key components, bringing all of the Agency's abilities and skills to the table.

Foreign Partnerships Critical

As the NGA customer base broadens and mission needs expand and evolve, the contributions from our international relationships become more important. Policies and objectives outlined by the Director of National Intelligence and the Secretary of Defense also focus on increased information sharing and international collaboration—particularly in support of the global war on terrorism, combating weapons of mass destruction, and counterproliferation.

Foreign partnerships are critical as NGA strives to improve the quality, timeliness and cost of our GEOINT products, and data and analytic exchanges enhance the effectiveness of coalition activities. In the complex and frequently volatile world of international affairs, there is a factor that does not change: the need to deepen existing relationships and explore new ones as the globalization of GEOINT continues to spread.

Anita Davis is an NGA Staff Officer in the Office of International Affairs and Policy, Strategy Cell.

Collaborative GEOINT Enhances NATO Summit Security

By John P. Roa and S. Craig Ackermann

Geospatial intelligence (GEOINT) can help identify and mitigate possible threats to critical protective operations. Planners and operators responsible for security at the NATO Summit in Latvia last November relied on GEOINT, including valuable products provided through NGA's Handheld GEOINT Program (HGP). In advance of the event, five NGA analysts deployed to Riga, the capital, with a suite of HGP equipment to collaboratively collect digital video and photography with the Latvian National Armed Forces (LNAF) Joint Headquarters Geographic Information Branch.

Hosting the NATO Summit was another milestone in Latvia's post-Cold War history. Latvia gained its independence from the former Soviet Union in 1991. Its transformation from a Soviet Socialist Republic to an independent democracy reached a new stage when it joined both the European Union and NATO in 2004. The recent geopolitical alignments have also benefited the relationship between the United States and Latvia, to include their respective national GEOINT communities.

NGA and the Latvian Ministry of Defense signed a bilateral agreement in 2004. Under the agreement, NGA's Global Foundation Office exchanged geospatial data with the LNAF. The acquisitions yielded several layers of feature data, which the Department of Homeland Security NGA Support Team (DHS NST) used in a GEOINT database for the NATO Summit. Analysts expanded the database with the HGP data collected with the LNAF through an agreement brokered by NGA's Office of International Affairs and Policy.

White House photo by Paul Morse

President George W. Bush stands with President Vaira Vike-Freiberga of Latvia and NATO Secretary General Jaap de Hoop Scheffer during a photo opportunity at the start of the 2006 NATO Summit in Riga, Latvia.

Handheld GEOINT Program

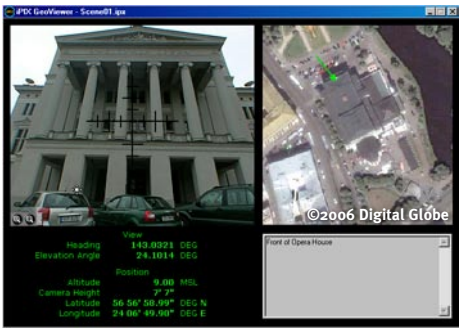
The HGP provided expertise and equipment. The suite of HGP equipment, formerly known as the Digital Mapping and Reconnaissance Tool, supports collection, data processing and product generation. Assembling the Riga HGP team was a collaborative effort, drawing from analysts assigned to the HGP Office, the Office of Eurasia and Africa, the Office of Counterterrorism and the DHS NST. Three members were from NGA St. Louis and two were from the Washington, D.C. area.

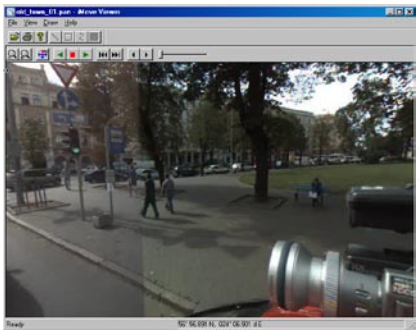
The HGP equipment includes a digital still camera equipped with a 185-degree fisheye lens. Two hemispherical images are stitched together to create a seamless 360-degree photo. The HGP equipment also includes a 360-degree video camera to collect data on routes of interest. The camera collects 360-degree motion video and allows for visual route-threat assessments. In addition, a Red Hen System is used to fuse digital video with input from the Global Positioning System, giving users random spatial access to the collected video.

Collaboration with Latvians

The HGP team had four days to collect, process and produce the finished datasets before departing Riga. Coordination with the LNAF personnel was critical to building a collection plan and ensuring access to the venues identified for collection. The LNAF's excellent logistical support enabled the HGP team to divide into two mobile units, maximizing the efforts to concurrently work at two locations at once.

Most of the NATO 2006 Summit venues required that several immersive 360-degree photos be shot from perimeter and interior locations. All of these locations were linked together, allowing the customer to "move" from one location to another within the immersive photo. Also included were 360-degree immersive still images with





Handheld GEOINT Program (HGP) equipment and products provided by NGA were critical to security efforts at the NATO Summit in Latvia.

GPS information and a location indicator displayed on top of commercial imagery. The route collection involved processing of 50 gigabytes worth of raw 360-degree video, which was eventually refined down to become most of the 24 gigabytes worth of handheld GEOINT delivered on a six-DVD set within a 72-hour period. The NGA team presented, demonstrated and delivered its HGP products to LNAF customers on their final afternoon in Riga.

All of the HGP data was fused with addit ional NGA GEOINT to produce the final products. When combined with overhead imagery and feature layers, the dynamic ground perspectives captured by NGA's HGP technology and methodology give shared GEOINT databases an added dimension.

Many Customers Supported

The DHS NST provided the NGA's HGP products to U.S. Secret Service customers as they prepared to deploy to Riga in advance of President George W. Bush's travel to the NATO Summit.

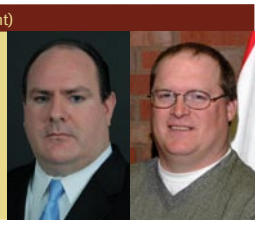
At the LNAF's request, the HGP products were released to each of NATO's 26 member nations to support their respective Summit security preparations. NGA also tasked and purchased high-resolution commercial satellite imagery over Riga, collected in September, to update the shared GEOINT database. The pan-sharpened, orthorectified imagery was also provided by NGA to the LNAF and NATO Joint Force Command Headquarters in Brunssum, the Netherlands, to enhance their Summit security planning.

NATO Summit security was enhanced by the Latvian Ministry of Defense-NGA bilateral agreement, NGA's expertise with emerging GEOINT technologies like the Handheld GEOINT Program, and the LNAF's excellent collaborative efforts with the HGP team. These initiatives gave security planners and operators a common operational picture, allowing simulated fly-throughs and walk-throughs of the mission space and common tracking of assets and threats.

J.P. Roa (Left) **and S. Craig Ackermann** (Right)

J.P. Roa is assigned to the Department of Homeland Security NGA Support Team as an NGA Representative to the U.S. Secret Service.

S. Craig Ackermann is the Handheld GEOINT Program (HGP) Manager. He was the technical lead for the NGA HGP team that deployed to Latvia last August.



Motto Says Much About Australia's Challenge and Ours

By Joe Obermeier

I arrived in Canberra, Australia, last Sept. 1 as the new Chief of the International NGA Support Team (INST) Asia-Pacific. My responsibilities include oversight of NGA's government-to-government relationships in the Asia-Pacific region to include the management of 32 international agreements. There have been recent Pathfinder articles highlighting some of our new partnerships in Asia, but Australia remains one of our most trusted long-time relationships.

"Intelligence with Vision" is the motto of the Australian Defence Imagery and Intelligence Organisation (DIGO) here in Canberra. It is a motto that says a lot about DIGO's mission, goals and organizational values. It speaks not only to the challenge of providing timely, accurate and relevant geospatial intelligence (GEOINT) to global planners and decision-makers today but also to the goal of expanding and continuing to improve their capabilities in the future.

Shared Commitment

DIGO is the youngest member of the Australian Intelligence Community, formed only six years ago. DIGO's rapid growth and maturity in the discipline of GEOINT in a relatively short time reflect the strong commitment of our Commonwealth partners. Australia has heavily invested time, money, technology and personnel in a collaborative GEOINT environment.

DIGO is the Australian equivalent of NGA with a few exceptions. It does not manage the aeronautical and hydrographic safety of navigation missions related to the "now." The aeronautical safety of navigation mission for the Australian Defence Force is conducted by the Royal Australian Air Force Aeronautical Information Service in Melbourne. The hydrographic safety of navigation mission is conducted by the Royal Australian Navy's Australian Hydrographic Organisation located in Wollongong just outside of Sydney. In terms of the "next," DIGO is supported by the Australian Defence Materiel Organisation in Canberra for major systems acquisition. And finally, DIGO works with the Australian Defence Science and Technology Organisation in Adelaide to conduct the "after next" research and development activities.

DIGO's physical space is very much like NGA's with two primary locations, Canberra and Bendigo. Canberra, like Washington, serves as the headquarters component and is integrated physically into the Russell Complex, an equivalent of our Pentagon. Bendigo is DIGO's primary mapping organization located in an old Victorian mansion

The International NGA Support Team Asia-Pacific, shown on an outing for members and families, is based in Canberra, Australia.

built in the 1800s by a gentleman who made his fortune in the Australian gold rush.

DIGO is currently constructing a new facility in Bendigo that is scheduled for completion in December 2007. As part of this construction activity, DIGO plans to improve its overall communications capability across both locations. The new facility will also contain office space for NGA, as we have in Canberra.

Looking Ahead

I have been overwhelmed by the welcome that I have received, not just from the U.S. Embassy and DIGO but from all Australians. During my stay here, I intend to focus on:

- strengthening the NGA relationship with DIGO by increasing our ability to share information, access new sources, expand mission areas, improve tradecraft and invest in relevant technologies
- supporting and expanding NGA's current international collaboration through enduring relationships in the Asia-Pacific region
- ensuring that the INST Asia-Pacific continues to be manned by NGA's best and that their return to NGA truly reflects their performance and sacrifices while here
- improving the communication between NGA organizational elements that have an interest in the region in order to ensure a common understanding of our strategic focus while executing the day-to-day operations.

To be successful, the INST Asia-Pacific needs your support. Whether that support is direct in terms of our ability to reach back for products and services, or indirect in terms of understanding what is going on back at NGA, our success depends on NGA's dedicated individuals back in the United States. We exist in a world where we need to share more information with trusted partners, so give a second thought when you are preparing your reports to ensure they are able to be shared to the greatest extent possible. We in the field would be sincerely grateful for your cooperation.

The Defence Imagery and Intelligence Organization's primary mapping organization is located in an old Victorian mansion in Bendigo, Australia.

Joe Obermeier

is Chief of the International NGA Support Team Asia-Pacific in Canberra, Australia. He was Director of the Joint Operations Integration Office before going to Australia.

Airborne Gravity Survey of Ethiopia is International Effort

By Steve Kenyon

Ethiopia is Africa's oldest independent country. Mussolini's Army occupied it for five years, but other than then it has never been colonized. Today Ethiopia has good relations with the United States and has been supported by the West in its economic reforms and attempts to reduce poverty.

Last year NGA partnered with Ethiopia's Geophysical Observatory, Geological Survey and Mapping Agency, as well as the Danish National Space Center and a European consortium, to carry out an airborne gravity survey of Ethiopia. Completion is scheduled for 2007.

Providing satellite-based, all-weather navigation, the Global Positioning System (GPS) has become the tool of choice for national mapping agencies throughout the world. However, to get high-resolution height data needed for infrastructure development, the GPS must be supplemented by a precise geoid, only available if an accurate and complete coverage of gravity observations is available.

Ethiopia would be a significant challenge for any ground-based survey and mapping activities: It is one of the highest countries in the world, with mountains up to 15,000 feet high, large canyons and variations in topography. A high central plateau, split diagonally by the Great African Rift Valley, gradually slopes to the lowlands of Sudan to the west and the plains of Somalia to the southeast. With salt plains, active volcanoes and some of the hottest areas on the planet, Ethiopia is obviously a very difficult place for conducting field work.

Photo by Arne Olesen, Danish National Space Center

The Airborne Gravity Survey of Ethiopia is challenging, but the data gathered will be valuable to many.

The remoteness and mountainous nature of the terrain make it impossible to acquire the necessary gravity coverage with surface observations. In fact, of the more than 23,000 kilometers (14,300 miles) of all-weather roads in Ethiopia, only 15 percent are asphalt, which makes land transportation difficult and expensive. However, recent advances in airborne gravimetry now provide a proven capability to collect the necessary measurements in a timely and cost-effective way.

Advantages of Airborne Gravity Surveying

Over the past 15 years, the accuracy of airborne gravity surveying has become comparable with the accuracy of ground surveying, an advance due mainly to GPS. Airborne gravimetry is now the fastest and the most efficient technique for gravity-data acquisition, especially for remote and inaccessible areas, such as mountains, deserts and jungles. What might have taken many decades with traditional land-based gravity surveys can now be achieved within months at a fraction of the cost.

During this 15-year period, NGA has supported airborne gravity projects around the world. The airborne gravity survey of Ethiopia follows other cooperative efforts with Denmark in Greenland and the Arctic as well as with Mongolia, which have provided significant contributions to geospatial intelligence (GEOINT).

The goals of the project in Ethiopia are to compute a new vertical reference system for Ethiopia based on high-resolution data for its portion of the Earth's geoid. As the vertical reference surface that closely approximates mean sea level over land, the Earth's geoid provides the reference surface for the heights of all natural and manmade features.

Ethiopia and the U.S. Benefit

The geoid and vertical reference system developed from this effort will be important for Ethiopia's economic development. An accurate geodetic reference system, including a unified height system, is essential for the management of infrastructure projects involving water resources, power

and petroleum distribution, telecommunications and transportation, both road and rail.

The survey of Ethiopia satisfies NGA requirements to fill voids in its global gravity-data coverage for the new gravitational model of the Earth planned for completion in 2007. The model will be incorporated into World Geodetic System 1984 (WGS 84), the global coordinate frame provided by NGA for the GPS.

NGA is a key participant in the African Reference Frame Project (AFREF), which is attempting to unify the multitude of geodetic reference frames in Africa to one standard: WGS 84. This effort in Ethiopia is a part of AFREF as well as the larger effort to improve the vertical reference for WGS 84.

Project Off to a Successful Start

The airborne surveying in Ethiopia last year went smoothly, due in large part to the welcoming local Ethiopian authorities. The survey aircraft flew, in a seven-week period (September-November), nearly 160 hours (about 30,000 nautical miles) covering just less than 40 percent of Ethiopia's area at 10-nautical-mile spacing.

In the fall of 2007 the rest of the country is planned to be covered. This project is one example of how NGA's Office of GEOINT Sciences is continuing to lead the way to collect new GEOINT around the world to meet the needs of our customers.

Steve Kenyon
is the Deputy Technical Executive of the Office of GEOINT Sciences.

NGA personnel and international partners worked together to complete the survey.

An Ancient Abode

Scientists think humankind may have originated in Ethiopia. Human bones discovered there are 3.2 million years old. Today the population of Ethiopia is very diverse with many ethnic groups, more than 75 languages spoken, and several religions. Christians, who make up 61 percent of the population, predominate in the Central Highlands. A third of Ethiopians are Muslims.

The Ethiopian economy is based on agriculture, with coffee being the major export. Located on the Horn of Africa, Ethiopia fought civil conflicts and border wars with Eritrea to the north and more recently against Somalia to the east. It is one of Africa's poorest countries, plagued with illiteracy, periodic droughts and famines.

Central and northern parts of Ethiopia have spectacular scenery. The capital, Addis Ababa, is at 7,500 feet.

Disaster Relief Doesn't Stop at U.S. Border: The Story of Hurricane Stan

By Ron Bowers

On Aug. 29, 2005 my home state of Louisiana was hammered by Hurricane Katrina and 26 days later by Hurricane Rita. While NGA scrambled to support relief efforts in the Gulf Coast region, NGA's Regional Office in Guatemala City, Guatemala, was also supporting relief efforts about a thousand miles to the south. Hurricane Stan had struck Guatemala.

Making landfall on Oct. 4, Hurricane Stan, along with higher-than-normal seasonal rains, caused severe flooding and deadly landslides in the southern part of the country. In some cases, whole villages were washed away, and Guatemala's infrastructure was severely eroded. The death toll was estimated to be 2,800 to 3,000, tens of thousands of people were cut off from the rest of the country, and over 1.5 million people were directly affected.

As part of the U.S. Southern Command (SOUTHCOM) NGA Support Team (NST), the Regional Office manages NGA's geospatial co-production programs in Guatemala, El Salvador, Honduras, Nicaragua and the Dominican Republic. Operational since 1946, it also coordinates and facilitates geospatial intelligence (GEOINT) support to the U.S. Embassies and U.S. customers in Central America, the Caribbean and Mexico.

Urgent Requirements

The NGA Regional Office urgently required maps to support ongoing rescue and relief operations due to the catastrophic flooding. U.S. Army helicopters and other U.S. military aircraft needed the maps to fly rescue and relief support over the disaster areas. Although the Regional Office soon exhausted its supply of maps, it was quickly re-supplied by the SOUTHCOM NST and NGA's map library in Bethesda.

During Oct. 6-12 the office provided the U.S. Military Group in Guatemala and the U.S. Army's Joint Task Force Bravo with nearly 800 maps covering devastated areas at the scales of 1:50,000 and 1:250,000. Among them were hundreds of large-scale Topographic Line Maps that NGA co-produces with the Guatemala National Geographic Institute. The maps were used to fly search and rescue as well as to deliver food, medicine, clothing and other essential supplies to the desperate people impacted by the disaster.

NGA's Regional Office in Guatemala City provided maps used in search and rescue efforts in the aftermath of Hurricane Stan.

Delivering maps was only the beginning of NGA's relief effort. Within days it was clear that the Regional Office needed more help. To provide GEOINT to a growing list of U.S. and Guatemalan agencies, SOUTHCOM's NST and Enterprise Services personnel in St. Louis took action to deploy a Remote Geospatial-Intelligence System (RGS) from Florida. The system reads digital files and scans hardcopy to create custom maps and digital media on site. Thanks to a National Guard crew from Puerto Rico, an RGS team, supplied with geospatial data, arrived in Guatemala aboard a C-130 within 72 hours. Once on site, the RGS team used local source and NGA data to create hardcopy and digital geospatial products for the U.S. military, U.S. agencies, Guatemalan authorities and humanitarian-aid groups.

Close Cooperation

The NGA RGS operator from the SOUTHCOM NST, technical contractor and Regional Office staff in Guatemala worked extremely well together to provide GEOINT to the full range of customers. The RGS was plugged directly into the U.S. Military Hurricane Stan Tactical Operations

Spc. Ryan Becker, from Joint Task Force Bravo, U.S. Southern Command, unloads food, water and medicine from a Black Hawk helicopter during a relief mission for victims of Hurricane Stan in Guatemala.

Command (TOC) at the Guatemala Air Force Base, located at Guatemala City's Aurora International Airport.

The NGA Guatemala Regional Office provided collaborative support to the United Nations, U.S. Agency for International Development (USAID), Defense Attaché's Office, U.S. Ambassador, SOUTHCOM and its in-country Military Group, and all Guatemalan agencies involved in the crisis. The Guatemalan agencies included the Guatemalan Army, Agricultural Ministry and Foreign Affairs Ministry, as well as agencies that deal with disaster relief, roads and bridges and meteorology. Knowing the language and culture and working directly with the Guatemalans and their U.S. counterparts enabled the NGA Guatemala Regional Office to obtain timely and relevant GEOINT from the Guatemalans that was used by the NGA RGS team and by the U.S. military relief crews. It also enabled the development of synergies between all the geospatial producers and providers involved in the relief effort.

The U.S. Defense Attaché asked for help in identifying damaged roads and bridges. Working directly with the Guatemalan agency responsible for roads and bridges, the NGA Regional Office was able to provide precise coordinates of critical infrastructure and coordinate the collection of airborne imagery. The RGS team then fused this imagery with commercial imagery and other data to create geospatial products for the entire relief community, including U.S. Army Engineers and their Guatemalan counterparts involved in reconstruction. These products provided a current, accurate assessment of the damage and provided the foundation to develop a recovery plan.

One unusual support activity was to collaborate with the Guatemalan Agricultural Ministry to produce plots of

crop locations and crop damage. Much of Guatemala's economy is based on agriculture, especially coffee, which grows in mountain areas that were hardest hit by the hurricane.

Commenting on NGA's support, the U.S. Ambassador to Guatemala, James Derham, said, "I am really glad that NGA is plugged into this."

A Lasting Impression

NGA's RGS support made a lasting impression on all, from the enlisted in our military, USAID employees and Guatemalan federal agencies to SOUTHCOM leadership and the U.S. Embassy. Wherever there was a gap in geospatial information, the RGS produced and/or provided a geospatial product to fill it. The team earned nothing but praise from customers.

Guatemala continues to recover from Hurricane Stan. No doubt Hurricanes Katrina and Rita will long be remembered in the United States, but some NGA personnel will not forget Hurricane Stan, the support we received and the support we gave, the spirit of international goodwill, and the satisfaction of helping people in crisis. P

Ron Bowers
is Chief of the NGA Regional Office in Guatemala City.

SOUTHCOM Praises NGA Support

By Liam P. O'Brien

NGA's Regional Office in Guatemala is one of two NGA hubs in Latin America under the U.S. Southern Command (SOUTHCOM) NGA Support Team. The other is located in Lima, Peru. The offices focus on international co-production and geospatial intelligence (GEOINT) support to the U.S. mission. The two offices work closely with the U.S. Embassy interagency group, and the office chiefs are members of the Ambassador's Country Team.

In response to Hurricane Stan, Guatemalan President Oscar Berger Perdomo requested international support from U.S. Ambassador James Derham and Army Gen. Banz Craddock, then Commander of SOUTHCOM. Within 24 hours over 50 U.S. servicemen and women and seven U.S. Army helicopters arrived from SOUTHCOM's Joint Task Force Bravo based at Soto Cano Air Base in Honduras. More rotary and fixed wing aircraft soon followed.

The Commander of SOUTHCOM and the SOUTHCOM Director of Intelligence held up the NGA response to Hurricane Stan as a model of proactive combat-agency support to a natural disaster in the SOUTHCOM area of responsibility.

From the provision of maps and geospatial data to guide multinational relief and rescue teams to the production of current products to assess damage and build a recovery, NGA had a major part in the disaster response. These results were achieved because the entire SOUTHCOM NGA Support Team and its Regional Office in Guatemala, backed by the Agency at large, worked outside the parameters of their normal duties to do what needed to be done.

Foreign Military Sales Empower Allies

By Air Force Lt. Col. Yanghee (April) Choi-Pawlowski

"Security assistance—the transfer of arms and services for warfare—has been part of international relations as long as societies have been preparing for and engaging in wars," notes a publication of the Defense Institute of Security Assistance Management.

Security assistance comes in a variety of forms. Department of Defense (DoD) programs include Foreign Military Sales (FMS), Foreign Military Financing and International Military Education and Training. In accordance with the Foreign Assistance Act and the Arms Export Control Act, the President authorizes security assistance through the Department of State only when it is in the best interest of the nation. The State Department further delegates this mission to DoD.

Within DoD, the Defense Security Cooperation Agency oversees the security assistance activities of nine implementing agencies (IAs). NGA, as an IA and combatant command, provides geospatial intelligence (GEOINT) assistance through the sale of geospatial products, services and training to foreign military entities and international security organizations like NATO. NGA's security-assistance objective is GEOINT interoperability as well as making GEOINT a force-multiplier for our allies.

NGA currently services 52 countries and two international organizations, totaling over 215 FMS cases worth over $500 million. NGA has provided support for as little as a couple of hundred dollars' worth of maps and charts to over $100 million in GEOINT systems.

Types of Foreign Military Sales

The FMS Support Team, composed of key component representatives, services several types of FMS cases, which can be best explained by examples:

Systems support. For the last 10 years, NGA has performed technical assessments of existing capabilities in over 10 countries, most of them new members of NATO. The capabilities assessed have included system integration, standardization, data-basing and interoperability.

National GEOINT systems have been funded through host-nation funds or through a grant from Foreign Military Financing. Deliveries have included five-color presses with the capability to print from "computer to plate" and state-of-the-art workstations for digital production. Many of these countries are participating in the Multi-National Geospatial Co-Production Program (MGCP) initiated by NGA. This program will map the world at a scale of 1:50,000, allowing NATO countries to quickly support forces such as the International Security Assistance Force (ISAF) in Afghanistan. U.S. security assistance also helped the Moldovan Topographic Services to single-handedly support all of the participants in the NATO/Partners-for-Peace exercise, Longbow/Lancer 2006, held in Moldova Sept. 11-20, with high quality map products.

Product sales. NGA sells Flight Information Publications (FLIPs) through FMS to countries friendly to U.S. government policies. FLIPs are critical to the day-to-day air operations of these countries as well as to their air control

The author in front of the National Art Museum in Sofia, Bulgaria.

Representatives from the Bulgarian Ministry of Defense and NGA gather in the site of the future press room.

operations centers for safety of air navigation. Over 20 countries and NATO purchase FLIPs because they trust NGA's aeronautical data and its timeliness. For some countries, it is cost-prohibitive to establish the infrastructure necessary to collect, exploit and publish as frequently as NGA does. In addition to FLIPs, aeronautical products such as Operational Navigation Charts, Jet Navigation Charts, Tactical Pilotage Charts and Joint Operations Graphics have supported joint exercises. These products are also used by allies as operational stock items.

NATO support. While many of our allies are on their way to being GEOINT self-reliant, international organizations like NATO do not have an indigenous mapping capability. NGA sells unclassified, public-sale products and some marked for limited distribution to NATO joint task forces based on a bilateral agreement between NGA and NATO. Primary geospatial products supporting NATO-led forces in the Balkans are from NGA FMS cases. NGA products have also supported NATO pre-mission planning, like the recent sale for ISAF in Afghanistan.

Training. The last form of FMS NGA supports is in-residence training at the NGA Geospatial-Intelligence College. Foreign students who attend in-residence training obtain hands-on GEOINT fusion and integration experience. In addition to GEOINT training, the foreign students obtain a taste of American culture. They have an opportunity to tour our judicial systems, observe the peaceful transition of authority of political leaders, and witness other venues showing the democratic way of life.

The combined FMS activity—development of national GEOINT systems, distribution of products and training—enables NGA to help our allies attain increased production capacity, obtain GEOINT data in a cost-effective way, and achieve standardization and interoperability. In short, FMS activity helps our allies realize their GEOINT integration goals. As our allies acquire advanced weapons systems, they will increasingly demand digital GEOINT capability. And empowering our allies through FMS will mean fewer U.S. combat boots on the ground.

Air Force Lt. Col. Yanghee (April) Choi-Pawlowski

is the Foreign Military Sales Program Manager for NGA in the Office of International Affairs and Policy.

28 Nations Embark on High-Resolution Data Production

By Jill Kieswetter and Marzio Dellagnello

Twenty-eight nations including the United States have embarked on a massive project to meet the worldwide demand for high-resolution geospatial data. Known as the Multinational Geospatial Co-production Program (MGCP), it calls for the cooperative production of over 3,000 one-degree cells of high-resolution digital vector data. A one-degree cell is 3,600 square miles at the equator.

Completion of the project—covering high-interest regions of the world where inadequate data currently exists—is scheduled for 2011.

Many Nations Are Contributing

Multinational cooperation increases the return on data investments for all participants, and because no single partner has all the answers, the MGCP provides a much-needed collaborative environment.

The United States, through NGA, chairs the MGCP Plenary Group, which is responsible for program issues and the production plan. The United States also chairs the Steering Group, responsible for policy and planning. Germany recently took over from France the helm of the Technical Group. This group is responsible for technical production support, including the development of data extraction guidance and production standards. Meetings of these groups give member nations the opportunity to showcase their country and their agency, as well as ensure that all nations are involved in the planning and decisions affecting the program.

The examples of cooperation through the MGCP are many. Canada has taken an active role testing quality-assurance software. The United Kingdom developed the extraction guide. Denmark is leading the Quality-Assurance Subgroup. France delivered the feature catalog. Sweden generated the semantic information model. Spain produced edge-matching guidance.

What the Program Will Deliver

Although MGCP data is not considered a finished product, such as a 1:50,000 Topographic Line Map, one of NGA's standard products, the data will provide a source for producers of both standard and tailored products. Under the agreement, which took effect last year after two-and-one-half years of negotiations, many nations have begun work on their production commitments. Completion of the first data cell is anticipated about the time you read this article.

Member nations will have access to the program data through an International Geospatial Warehouse that resides on a secure, Web-based server where they can easily deposit and withdraw data. The site also provides a friendly working environment where members of the Plenary Group, Steering Group and Technical Group can access working documents. There is also a section that will be accessible to contractors, allowing them to download production documents.

With high return on investment, minimal duplication of effort and, most importantly, streamlined and open-data release among the participants, the MGCP is a substantial program of the global geospatial enterprise. P

The 28 nations taking part in the Multinational Geospatial Co-Production Program are:

Australia	Lithuania
Belgium	Moldova
Bulgaria	Netherlands
Canada	New Zealand
Czech Republic	Norway
Denmark	Poland
Estonia	Portugal
France	Romania
Finland	Slovakia
Germany	Spain
Greece	Sweden
Hungary	Turkey
Italy	United Kingdom
Latvia	United States

Jill Kieswetter (Left) **and Marzio Dellagnello** (Right)

Jill Kieswetter assisted in the formation of the Multinational Geospatial Co-production Program (MGCP). Now Chair of the MGCP Steering Group, she works in the Office of International Affairs and Policy as Chief of Multinational Issues and Programs.

Marzio Dellagnello led the formation of the Multinational Geospatial Co-Production Program. He works international co-production issues for the Source Operations and Management Directorate's Global Foundation Office.

Partnerships

Leveraging NGA Co-Production Agreements

By Gregory Davis

Since NGA's mission can touch on any area and event in the world, our requirements always exceed in-house and contractor capabilities. Fortunately many of our allies have production capabilities and geospatial databases that are as accurate as or more current than NGA data holdings. Quid pro quo exchange of data and co-production are ways of leveraging the capabilities of NGA's partners for mutual benefit. NGA international co-production programs supply approximately 25 percent of our data holdings around the world.

Geospatial agreements provide NGA with topographic, geodetic, aeronautical, hydrographic and geospatial data through co-production and exchange. The Source Global Foundation Office (SG) is responsible for the execution of agreements with foreign partners and managing and assessing co-produced data submitted to NGA. SG works with international partners to obtain data through co-production, exchange or purchase to support the requirements of the Department of Defense and Intelligence Community. As part of this responsibility, SG manages all NGA technical and production aspects of the 28-nation Multinational Geospatial Co-production Program (MGCP).

Evolution of Co-Production

The evolution of international programs such as the MGCP is quite impressive. In the 1980s eight nations created a medium-scale product from cartographic sources over Europe called the Digital Land Mass System. In the 1990s the Vector Map Co-production Working Group, consisting of 19 nations, created a medium-scale product from cartographic sources over the entire world. Today the MGCP consists of 28 nations creating high-resolution data from imagery sources over areas of high interest.

Every international exchange and co-production program is unique and based on the needs, capabilities and priorities of each country. An exemplary NGA bi-lateral exchange/geospatial agreement managed by SG is the co-production program with South Korea. NGA provides source packages to the Korean Army Geospatial-Intelligence Agency (KAGA). The South Koreans produce an updated map and send the digital print files and attributed feature data back to NGA to print and to populate the Geospatial Information Feature Database (GIFD). SG monitors the quality and consistency of the data and ensures that it meets NGA data standards. This program meets priority data requirements and provides a large cost savings to NGA.

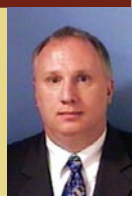
NGA and our bilateral partners negotiate production responsibilities for regions of common concern. Once the partners reach an agreement, the nation responsible performs all production tasks and shares the output with the mission partner. SG manages this effort for NGA. For production needs outside what was negotiated, SG approaches the partner and attempts to negotiate a revised schedule. If this is not possible, then SG works within NGA (in-house or contractor) to accomplish the requirement. This is referred to as "right of first refusal": Since the work falls over a country or region assigned to an international partner, the partner has the opportunity to complete or refuse the requirement.

Partnerships Are Dynamic

SG attends conferences and symposia throughout the year to learn what our international partners are working on, where their technological capabilities and capacities are, and what data is available. SG also conducts partner site assessments to evaluate the potential for data interoperability and to evaluate tradecraft capabilities.

SG leverages the bilateral agreements it manages to support special events, such as Presidential visits, NATO Summits and G8 Summits. (G8 Summits are meetings of the heads of government of eight major trading partners.) SG also supports large world events (World Cup, Olympics, America's Cup, etc.). The data obtained by SG is of high quality, accuracy and density and represents a significant return on investment to the U.S. government and the Intelligence Community. P

Gregory Davis works in the Source Global Foundation Office as Chief of the International Co-Production and MGCP Management Branch.



Working for NGA

My Life as an International NGA Liaison

By Christine Lamers Somer

Here I am, back at NGA headquarters in the Office of International Affairs and Policy (OIP) Strategy Cell after three great years as the OIP representative to the International NGA Support Team (INST) Europe. While overseas, I served as Primary NATO/European Union Regional Liaison operating out of Stuttgart, Germany, at U.S. European Command (EUCOM) headquarters.

I was collocated with the EUCOM NGA Support Team (NST) and coordinated daily with the staff regarding NATO, internal NGA and greater U.S. government foreign-affairs issues.

My primary mission was to ensure that one NGA message is conveyed to our international partners and serve as the "field office" for all of NGA's international activities. My responsibilities included coordinating NATO, European Union and U.S. government requests for NGA products and data; approving data releases to meet Foreign Military Sales requests; providing operational support to NATO operations in Afghanistan, the Balkans and Iraq; negotiating the NATO geospatial-sharing memorandum of understanding; and supporting NATO's core geographic information system. I was fortunate enough to support special events like the 2004 Summer Olympics in Athens and the 2006 Winter Olympics in Turin. The geospatial data we received from our international counterparts was invaluable in creating a common operational picture.

NATO Joint Forces Command Brunssum conference.

My husband, who is also an NGA employee, worked as a geospatial analyst with the EUCOM NST. He supported numerous activities, such as the Winter Olympics, Azerbaijan humanitarian de-mining project, and EUCOM's Google™ Earth implementation. So, both of our careers had the opportunity to blossom, as we learned more about the interactions in EUCOM and Europe. Our young son learned how to speak a little German and became very fond of Gummie Bears, Kinder Eggs and Ritter Sport chocolate.

And now that I'm back in the Washington, D.C. area, I really miss my 8-kilometer commute.

No matter what your field of expertise is, an overseas assignment provides a rewarding experience. Being forward-deployed, supporting a variety of foreign and U.S. customers, was exciting and challenging. Viewing the Agency from outside really changes your perception and gives you a greater appreciation for the complexity and variety of geospatial intelligence support that NGA provides to our international and U.S. government partners.

My recent overseas experience and the professional contacts I've made have given me insight into the strategic potential of NGA international activities in helping the United States meet global security challenges. Working and living overseas was a wonderful experience, but I have to admit there's no place like home.

Christine Lamers Somer

returned to the Office of International Affairs and Policy, Strategy Cell, after serving in Germany as the NGA's Primary NATO/European Union Regional Liaison.

Interlaken, Switzerland

How the World Has Changed Through GEOINT Partnerships

By Anita Davis and William Trzyzewski

Geospatial intelligence (GEOINT) has taken the world by storm. Today top-quality GEOINT is produced around the globe by military and civilian organizations aiming to provide the best insight into the physical and manmade features of our Earth.

Then

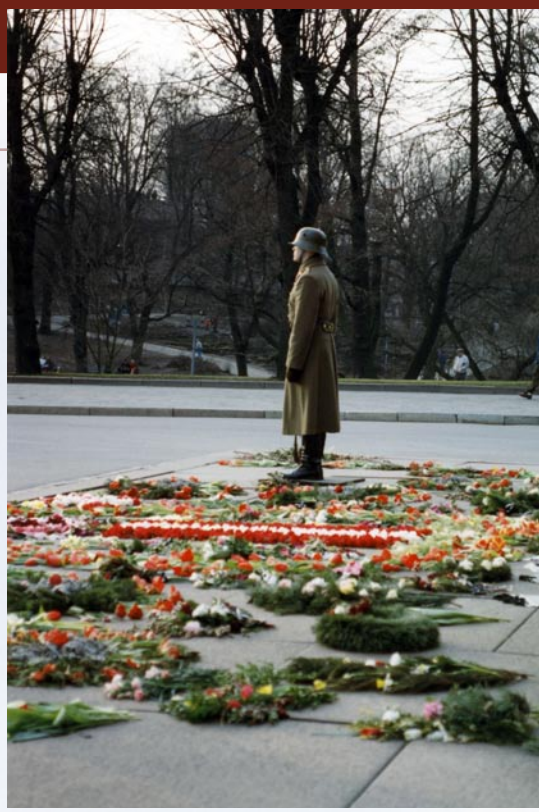
It is worth taking a look at the rapid changes that have occurred in just a few years. With the breakup of the Soviet Union and Warsaw Pact, there was a tremendous opportunity to enter some of these formerly denied countries and forge geospatial production and collaboration agreements on behalf of the U.S. government. As early as 1992, several nations from Eastern Europe were ready to be the first to enter into such arrangements.

Although many of these countries had mapping institutions in place—either military or civilian—common standards, technology and tools were lacking. What was often most humbling was the ingenuity of the people and their pure will to move forward with the resources available to them, regardless of how limited the resources were. The challenge to take disparate data and non-standard feature-attribution schemes and use them to enhance our geospatial holdings was daunting.

In many cases, tremendous payoffs were achieved though the infusion of training and technology upgrades for countries that showed promise in their ability to move to higher levels of data sharing and common geospatial standards. In these newly democratic nations a collaborative geospatial presence was born.

NGA personnel participate in a technical exchange meeting with counterparts from the Czech Republic (1993).

Anita Davis and then Lithuanian Technical Director begin agreement negotiations (1993).



A guard stand watch in a Latvian square.

Through the mid- to late-1990s, GEOINT capabilities on the European continent continued to mature. This growth was partially driven by the need of nations in the former Soviet Union and Warsaw Pact to be self-sufficient and autonomous in filling their own geospatial requirements and partially due to the outreach initiatives of several lead nations around the globe, namely Australia, Canada, France, Germany, Italy, the United Kingdom and the United States. NATO and the European Union also engaged the nations of Eastern Europe, and with the establishment of the Partnership for Peace, their GEOINT capabilities accelerated.

Now

Today NGA and the United States enjoy close relations with most nations in Eastern Europe. From the Baltics to the Balkans and the Caucasus, former potential adversaries are now some of our closest allies. Ten former Soviet Republics and Warsaw Pact nations are now full members of NATO, with the remainder joining with the traditionally neutral nations of Europe as members in the Partnership for Peace. These nations have clearly stepped forward—demonstrating commitment, providing support and showing leadership by standing shoulder-to-shoulder with coalition allies in full partnership in fighting the global war on terrorism.

It is through bilateral GEOINT exchange and cooperation agreements that NGA has formalized its partnership with 14 of these nations. The GEOINT agreements provide the legal framework within which NGA engages with partners in the full range of data and product exchange, co-production, and other joint projects, such as airfield surveys for the Global Positioning System, gravity and geodesy surveys, print support, geographic names cooperation, and flight-information and safety-of-navigation information exchanges.

The partners have fully integrated their GEOINT capabilities with NGA by adopting NATO standards and by aggressively investing in new technologies. NGA has assisted in this process by managing numerous Foreign Military Sales cases, through which the partners allocate Warsaw Initiative grant funds to obtain state-of-the-art hardware, software, training and support to modernize and enhance digital GEOINT- production and exploitation capabilities.

NGA is committed to increasing GEOINT collaboration and sharing knowledge gained from production processes with allies. In fact, NGA's Director, Vice Admiral Robert B. Murrett, recently announced that "Building new and enhancing enduring international partnerships" is one of NGA's Focus Areas. Frankly, in today's global environment, NGA and its international partners must work together. The nations of Eastern Europe are a great example of what can be achieved through GEOINT collaboration and partnership. P

Anita Davis (Left) **and William Trzyzewski** (Right)

Anita Davis is an NGA Staff Officer in the Office of International Affairs and Policy, Strategy Cell.

William Trzyzewski is an NGA Staff Officer in the Office of International Affairs and Policy, Europe Team.

Industry

IEC Awarded as Top 5 DoD Program

By the IEC Program Office

NGA's Integrated Exploitation Capability (IEC), the backbone of the National System for Geospatial-Intelligence, was selected as one of the Top Five Department of Defense (DoD) Programs for 2005. The award was presented Oct. 25 in San Diego at the annual conference of the National Defense Industrial Association. The association sponsors the awards program jointly with the Office of the Undersecretary of Defense for Acquisition, Technology and Logistics.

The IEC program was recognized in the area of systems engineering and integration, in particular for its excellent application of industry best practices.

The IEC provides imagery-exploitation capability to NGA and its customers worldwide. The system currently is deployed on more than 2,600 workstations at 84 sites within the Department of Defense and Intelligence Community.

"This is definitely a team award," James Sapcoe, IEC Program Manager, said. "It reflects the combined efforts of the NGA Acquisition Directorate, its customers and the contractor, the Lockheed Martin Corporation."

"IEC provides access to both NGA and commercial imagery repositories, all-source intelligence, and tools for multi-intelligence data fusion," said the IEC Deployment Lead. "We use it to enable GEOINT Analysis from national and command locations for executive policy support."

IEC is used at theater locations to support the warfighter and at tactical locations during crises. "We also use it for national security events such as Hurricane Katrina, the Olympics and Presidential inaugurations," said the IEC Contracting Officer's Representative.

The IEC program was initially awarded June 3, 1998. Its primary focus was to replace an aging imagery exploitation system, IDEX II. New requirements were that the system be based on standards and have commercial-off-the-shelf products with a minimum of custom-developed software.

Initially fielded on UNIX® platforms, IEC has kept pace with current technology and with a concentrated technology-insertion program. It is now available with industry-standard desktop computers or as a platform-independent software-only product.

"This award validates the engineering and management successes the IEC program has achieved over the years," said Sue Patterson, IEC Development Lead. The program was the Agency's first major competitive procurement for the acquisition of a major system after its establishment in 1996. Consequently the IEC's processes became the baseline model for NGA's processes today.

"I am flattered and excited that the good work of so many is finally being recognized by DoD and the Intelligence Community," Sapcoe said. "It's an honor to be associated with such dedicated, professional folks all around. I knew that I was fortunate to be a member of a high-performance team, and the notice is a good confirmation of just how outstanding they all are." P

Members of the Integrated Exploitation Capability Program receive national recognition. From left, Lockheed Martin's Arthur Ibers and Doreen Cohen and NGA's James Sapcoe accept the congratulations of retired Air Force Maj. Gen. James McInerney, Vice President of the National Defense Industrial Association (NDIA). The program was cited as one of the top five programs in the Department of Defense.

21st Century

New System Takes 'Taskers' in Stride

By Stanislaw Grzeda and Timothy Elsbury

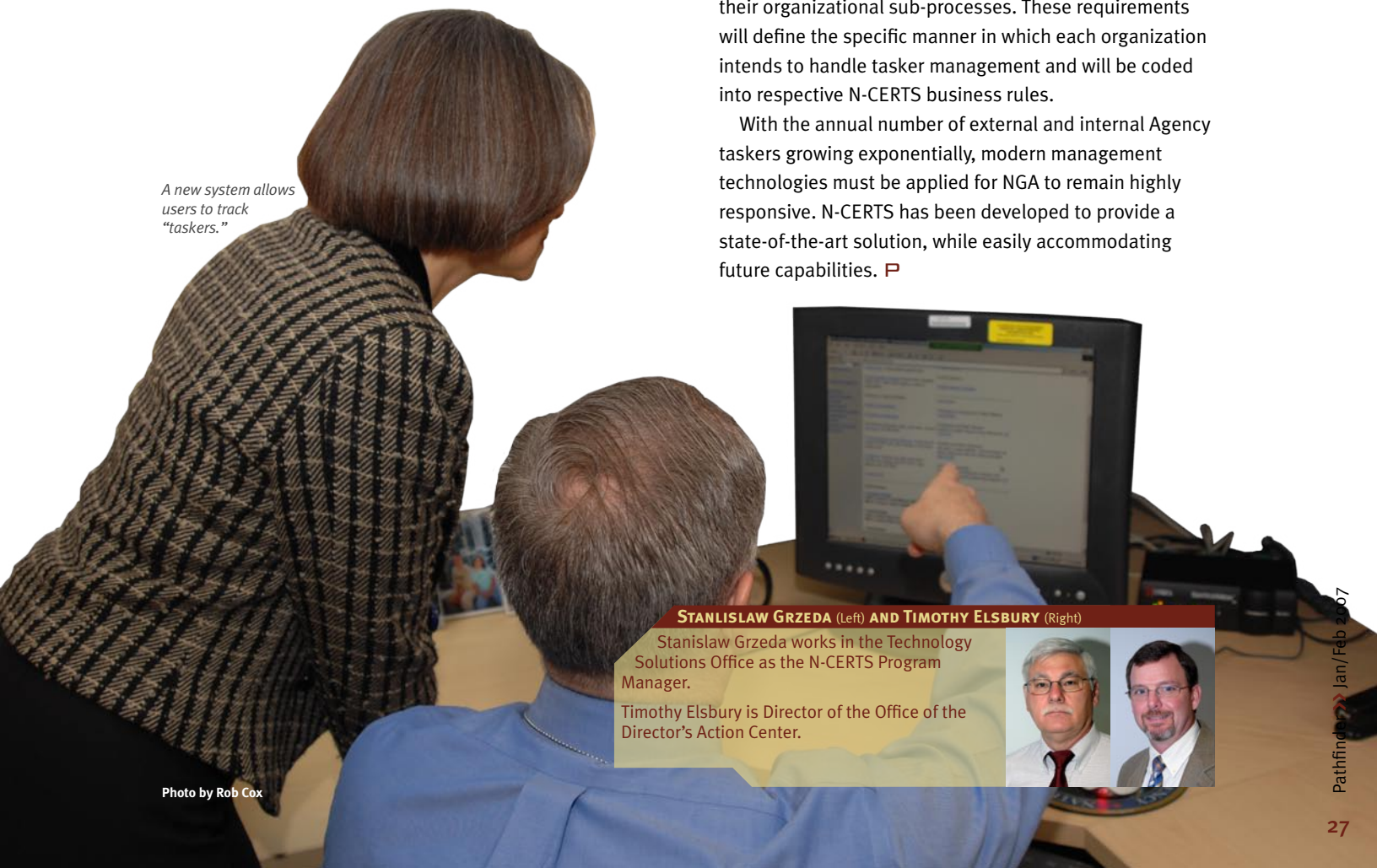
The Office of the Director's Action Center manages written communications for NGA's Executive Committee including the assignment and tracking of actions to be completed by NGA offices and directorates. A system developed in 1999 automated some processes but shortfalls remained, especially the inability to track tasked actions ("taskers").

In November the Enterprise Operations Directorate's Information Technology Solutions Office (EP) unveiled the NGA Central Electronic Routing and Tasking System (N-CERTS), a correspondence management system it developed with the participation of an integrated processing team comprised of representatives from across NGA. EP is responsible for providing the integrated, worldwide exchange of data among NGA's internal and external stakeholders.

Accessible from NGA desktops, N-CERTS integrates seamlessly with existing NGA technical infrastructure and enterprise-architecture strategy. The system has many new features, including the capability to track taskers in real time. Users are able to track the date and time a tasker arrived at its current location, the date/time when each recipient received the tasker, and the date/time each recipient routed the tasker to the next step. Users are able to attach documents to taskers, a feature that was lacking in the system N-CERTS replaces. To support continuity of operations, N-CERTS will have two identically configured sets of servers in separate locations.

Deployment of N-CERTS is taking place in two phases, with Phase II scheduled for completion in 2007. The system contractor, Stanley Associates Inc., is assisting directorates and offices in determining system requirements for their organizational sub-processes. These requirements will define the specific manner in which each organization intends to handle tasker management and will be coded into respective N-CERTS business rules.

With the annual number of external and internal Agency taskers growing exponentially, modern management technologies must be applied for NGA to remain highly responsive. N-CERTS has been developed to provide a state-of-the-art solution, while easily accommodating future capabilities. P



A new system allows users to track "taskers."

Photo by Rob Cox

Stanislaw Grzeda (Left) **and Timothy Elsbury** (Right)

Stanislaw Grzeda works in the Technology Solutions Office as the N-CERTS Program Manager.

Timothy Elsbury is Director of the Office of the Director's Action Center.

New Campus East

Process Innovations Will Abound

By Gail Cherochak

The NGA workforce is a team of problem-solvers who constantly invent ways to improve geospatial intelligence (GEOINT) creation and delivery processes. Yet sometimes their efforts are hampered by their working environment. New Campus East (NCE) gives NGA the opportunity to modernize and integrate processes that have been scattered among different facilities.

While it's exciting to build a new eastern home for NGA, the real return on investment in NCE will be the revitalization of the Agency's GEOINT mission. As NGA plans for a unified, modern physical and technological environment, improved processes for mission accomplishment will become part of NGA's everyday life even before the move deadline of Sept. 15, 2011.

The opportunity to improve processes presents NGA with a world of possibilities—new procedures, faster deliveries, efficient workflows, predictable timelines, consistent results, effective services, integrated operations, one-stop shopping, common tools, shorter learning curves—in other words, better ways of doing NGA's business that make a difference for NGA's workforce and mission partners.

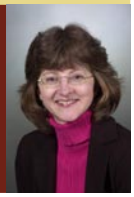
At NCE the NGA workforce will experience mission-related process improvements, starting with face-to-face access to each other. Collocating the analytical workforce based on communities of interest or communities of practice could provide for increased knowledge sharing, cross-training, analytical depth, and mentoring. Similarly, the procurement of new systems will be enhanced by the close proximity of representatives from acquisition, technology, research, training and GEOINT analysis. Other mission improvements could come from shifting functions among organizations, inventing creative rotational assignments, or delivering more training because the college will be right down the hall from employees' offices.

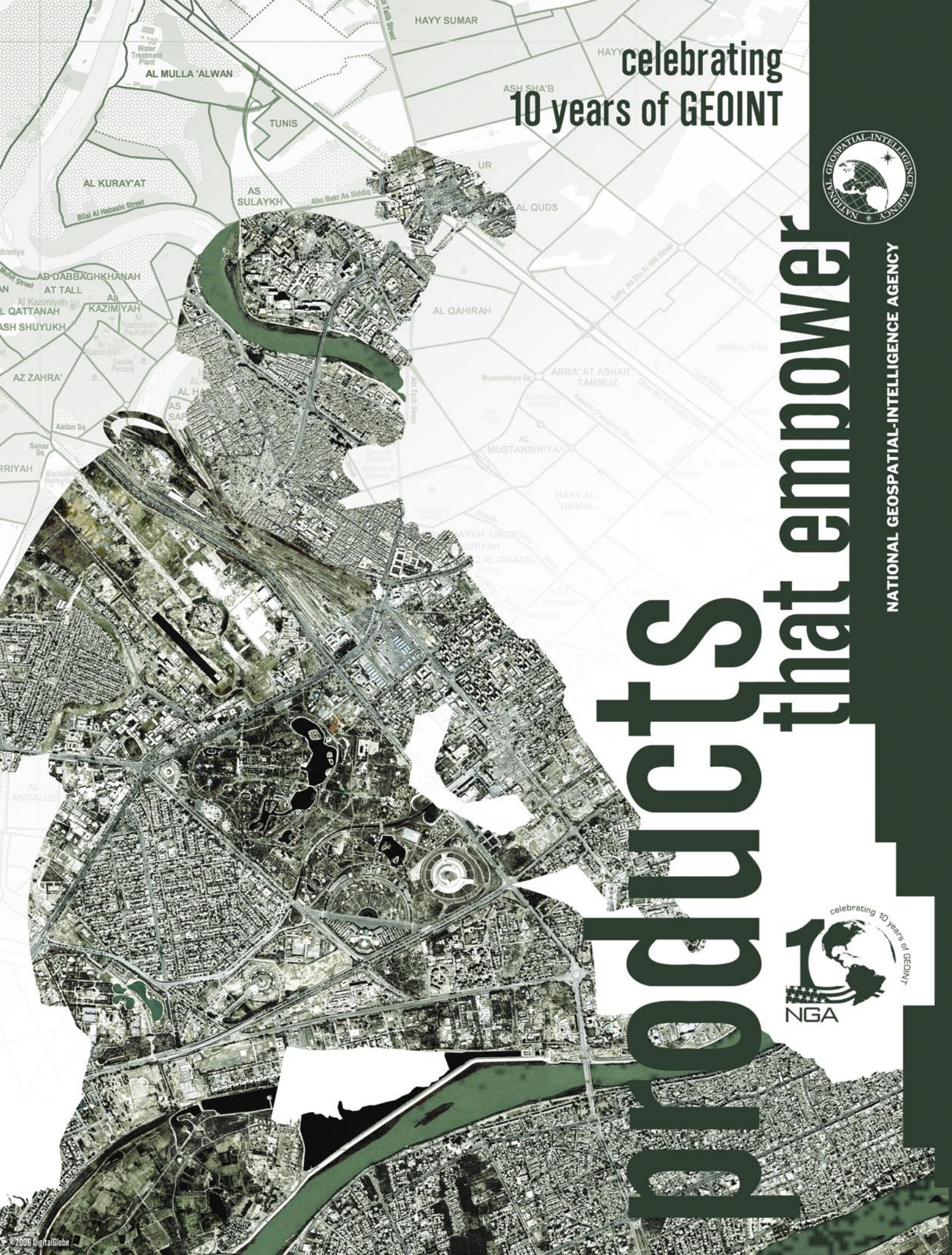
In addition, changing corporate administrative processes could help workers do business more efficiently. Pooling supplies, using a central records storage area, sharing high-speed printing services, and using one standard software tool to schedule conference rooms are examples of improved processes that could result from consolidation at NCE.

For NGA's mission partners, process improvements at NCE will be visible immediately as advancements already planned continue to strengthen NGA's performance in delivering GEOINT and supporting deployed teams. NGA's partners will benefit from our increased information sharing compatibility and interoperability. Visiting partners will be able to meet at one location with their NGA counterpart experts in modern meeting facilities equipped with the latest technology. Students from our NGA partner organizations who attend the National Geospatial-Intelligence College will have the added advantage of touring NGA's headquarters and meeting our GEOINT functional experts.

NCE will be more than a new building. Transformed business processes, along with a state-of-the-art facility and robust technology, will enrich and invigorate NGA's mission as the premier GEOINT provider. P

Gail Cherochak was a communications specialist contractor in NGA's New Campus East Program Management Office.





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