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Governing GEOINT Growth

PANEL DESCRIBES THE NATIONAL SYSTEM FOR GEOSPATIAL INTELLIGENCE'S
ROLE IN TAMING THE GEOINT TRADECRAFT

By Matt Alderton

As a discipline, geospatial intelligence started as a sapling—small, shallow, and slender with just a few short branches. Properly nurtured, however, all immature arbors eventually grow. GEOINT is no exception. Today, 21 years after the founding of the National Imagery and Mapping Agency and 14 years after the creation of the National Geospatial-Intelligence Agency (NGA), GEOINT is a big, burly tree with deep roots and sprawling branches extending in all directions.

As any arborist will tell you, that kind of tree needs someone to prune it on a regular basis so it continues to grow and become healthy, productive, and strong.

The National System for Geospatial Intelligence (NSG) is GEOINT's gardener, and Symposium-goers received a behind-the-scenes look at the tools it uses to tend to the GEOINT tradecraft during a GEOINT 2017 panel discussion Tuesday.

The panel featured five NSG leaders: Robert Cardillo, director, NGA; Col. Steven Fleming, Ph.D., professor of the practice of spatial sciences, Spatial Sciences Institute, University of Southern California; Dr. Joseph F. Fontanella, director of the U.S. Army Geospatial Center and Army Geospatial Information Officer; Dr. Suzette Kimball, director of the Civil Applications Committee (CAC); and Maj. Gen. William Reddel III, adjutant general of the New Hampshire National Guard.

Moderated by USGIF CEO Keith Masback, the hour-long conversation encompassed everything from standards and governance to technology and training. It began, however, with a discussion of trust, which NSG representatives said is the foundation for their collaborative work.

"We heard from [Allied System for Geospatial Intelligence] members yesterday that ... their ability to come together as a group—their ability to communicate—has developed trust, which is completely vital to everybody accomplishing their mission," Masback said. "How has the NSG served to develop that trust over time?"

► see *Governing* p. 16



"To be able to understand what [DoD and IC] needs are and put that together with the kinds of research and development capabilities within the civil community is of enormous benefit to the American taxpayer."

—DR. SUZETTE KIMBALL, DIRECTOR, CIVIL APPLICATIONS COMMITTEE

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GEOINT 2017 CLOSING RECEPTION

Join USGIF in the exhibit hall Wednesday afternoon from 2 to 3 p.m. for the GEOINT 2017 closing reception. Sponsored by the City of Tampa Bay, enjoy Cuban-inspired hors d'oeuvres, desserts, and cocktails. This is a great opportunity to network with colleagues one last time while looking ahead to GEOINT 2018, to be held April 22-25 in Tampa, Fla.

FROM THE

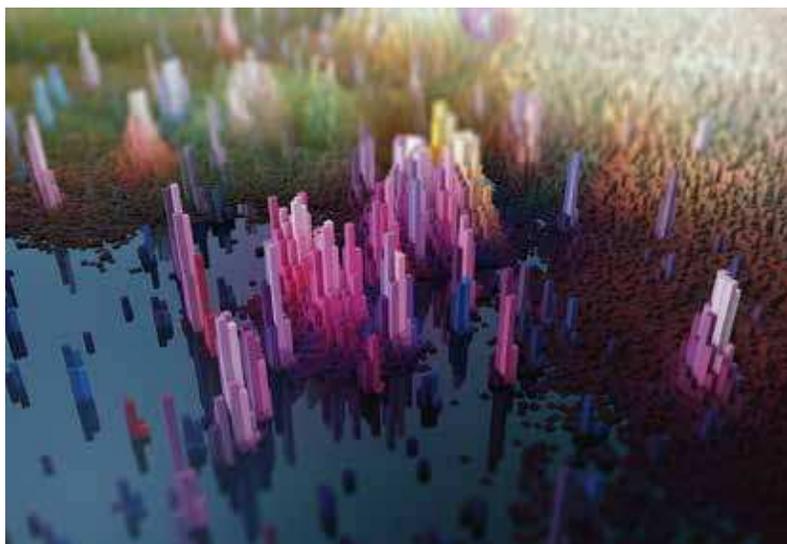


IMAGE COURTESY OF RAYTHEON

Raytheon (Booth 1760) offers solutions for problem-driven collection, complex event processing, and more.

DATA-CENTRIC ANALYSIS

RAYTHEON SHOWCASES COGNITIVE ANALYSIS AND MORE

By Jim Hodges

Raytheon (Booth 1760) brings data-centric analytics to GEOINT 2017. “It used to be that it was harder to get the right data to solve the problem because of a lack of data,” said Luis Martinez, director of National Geospatial-Intelligence Agency (NGA) programs for Raytheon. “Now it’s the complete opposite. You’ve got to find the right data [from the deluge] to solve the problem. All of this leads toward automated (data) collection and automated analytics,” Martinez said.

With that understanding, Raytheon is working with NGA on the Cognitive Analytic Virtual Assistant (CAVA) project, intended to help analysts gather the data they need. CAVA technology conducts research into machine learning algorithms that learn from analysts how best to automate some of their activities in support of data gathering and analysis. Raytheon is also researching data brokering capabilities, which are important in analyzing, storing, and parceling out data.

In its exhibit, Raytheon offers an interactive video wall that includes information about machine-to-machine intelligence mission management for satellite constellations, problem-driven collection, complex event processing, and automated production.

“[The Symposium] is a great opportunity not just to see what other companies are bringing forward, but to meet with customers and learn their needs,” Martinez said.

Jane Chappell, vice president of Raytheon Global Intelligence Solutions, agreed.

“Our goal is to take what we learn from the Symposium and innovate solutions to directly address those challenges,” she said.

Raytheon BBN Technologies, a subsidiary of Raytheon, is also in the booth demonstrating its language translation analytic service.

INTELLIGENT SEARCH

DIFFEO USES MACHINE LEARNING TO STREAMLINE RESEARCH AND DISCOVERY

By Andrew Foerch

Software startup **Diffeo (Booth 1623)** wants to revolutionize the way we search for files and information by answering for its

users the question: “How do I know what I missed?”

Diffeo’s cloud search and discovery capabilities help analysts discover “unknown unknowns.”

“How do you discover something you didn’t know you were looking for? I’m looking for information on [a topic]—I don’t know what specifically, but I want to know as much as I can. Diffeo shows those non-obvious relationships,” said Geoffery Milstein, VP of Federal Programs at Diffeo.

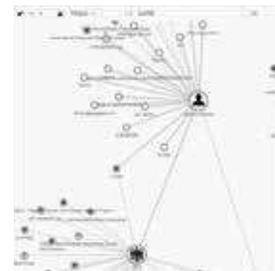
Diffeo grew out of the Text Retrieval Conference Knowledge Base Acceleration project, which it organized for the National Institute of Standards and Technology and DARPA Memex. The company also won the grand prize last year in the National Geospatial-Intelligence Agency’s Disparate Data Challenge.

At GEOINT 2017, the company is demonstrating how it uses “collaborative machine intelligence,”—or AI—in algorithms to help accelerate the discovery of pertinent information during research.

What differentiates Diffeo is that its software operates seamlessly within a user’s normal work process, namely in applications like Microsoft Word or OneNote. As progress is made and data is added, the machine performs textual analysis to continuously learn about the user’s interests and what sorts of disparate information might be useful. The software then sends automatic queries to external and internal sources like databases, SharePoint repositories, and the internet, pulling together relevant information for the user.

“You don’t have to have ground-truth data. Every time the user interacts with the machine, it is reformulating its model,” Milstein said. “It’s not just another tool you have to learn.”

Additionally, Diffeo is showcasing its “knowledge boards” or graph displays, which perform gap analysis between working documents and, for example, a website the user has been frequenting in order to create visual representations of the data.



Learn how **Diffeo (Booth 1623)** uses “collaborative machine intelligence” in algorithms to accelerate the discovery of pertinent information during research.

FLOOR

EXHIBIT HALL HIGHLIGHTS



Tom Sawyer Software (Booth 1526) is demonstrating how to visualize, navigate, and analyze GEOINT data in desktop and web-enabled applications.

ANALYZING CYBER THREAT

TOM SAWYER SOFTWARE DEMONSTRATES NEW PRODUCTS ALONGSIDE ORACLE

By Lindsay Tilton Mitchell

Tom Sawyer Software (Booth 1526) provides organizations with sophisticated graph and data visualization for geospatial intelligence analysis. The company works with defense systems integrators and U.S. federal customers on mission-critical projects.

“Our company name, Tom Sawyer Software, says a lot about our philosophy and what it means to try to build a great company—it’s a long journey down a winding river,” said CEO Brendan Madden. “Great things don’t come easily, we believe in building something that lasts.”

The company’s flagship product is Tom Sawyer Perspectives, which helps clients analyze cyber threats and criminal activity on a global scale. U.S. federal customers have used the technology for several years to filter, visualize, and analyze more than one trillion entities—people, events, places, and activities—from foreign and domestic sources.

At its GEOINT 2017 booth, Tom Sawyer Software highlights how to visualize, navigate, and analyze GEOINT data in desktop and web-enabled applications. Additionally, Oracle (Booth 1939) and Tom Sawyer Software are both showcasing a cyber threat analysis solution jointly developed by the two companies.

Tom Sawyer Software is also highlighting its new Tom Sawyer Maps functionality that combines the power of the company’s existing rule-based drawing views and the OpenLayers map library.



Noblis (Booth 1337) is featuring capability overviews and subject matter experts sharing insights with attendees.

COMPUTATIONAL POWERHOUSE

NOBLIS SHOWS OFF DATA ANALYTICS AND MACHINE LEARNING AT ITS FIRST GEOINT SYMPOSIUM

By Andrew Foerch

Exhibiting for the first time at GEOINT 2017 is Noblis (Booth 1337), a nonprofit research and analytics organization.

“We’re fresh. We’re kind of looking at [GEOINT 2017] as our coming-out party,” said Ellen McCarthy, president of Noblis NSP, the company’s intelligence segment.

At its booth, Noblis is featuring capability overviews and subject matter experts sharing insights with attendees. Additionally, visitors to the Noblis booth may view a series of informative videos highlighting the organization’s services.

Among those key offerings is Noblis’ data analytics capability, which leans on the company’s Center for Applied High Performance Computing to develop and commercialize applications requiring graph analysis.

“We have a Cray [XMT2] computer, and a bunch of SGI and IBM power,” said Roger Mason, executive VP of Noblis National Security and Intelligence. “That allows us to not just do powerful engineering analytics, but to test [real-world use] cases.”

For example, open-source data can be used to compare satellite positions and monitor movement of objects, improving a client’s spatial situational awareness.

According to Mason, Noblis has experienced great success in machine learning.

“We have a group that has done applied machine learning for facial recognition for IARPA and others,” he said. “We’ve taken that same group and instead of applying that machine learning to face recognition, turned it to a different type of imagery, i.e. GEOINT, to see what we can do in terms of feature extraction and change detection.”

Their booth includes information on this offering as well as on the Internet of Things.

Government Pavilion Stage Highlights

THE GEOINT 2017 SYMPOSIUM ONCE AGAIN FEATURED A GOVERNMENT PAVILION STAGE IN THE EXHIBIT HALL AT WHICH SENIOR LEADERS FROM VARIOUS FEDERAL AGENCIES SHARED CANDID INSIGHTS WITH SYMPOSIUM ATTENDEES AND EXHIBITORS



A panel of NGA and General Services Administration (GSA) experts discussed NGA's role as a broker, allowing the agency to take advantage of the explosion in geospatial data and information.

NGA AND GSA DISCUSS CIBORG

Agency experts talk about NGA's new role as a broker for capabilities and services
BY MELANIE D.G. KAPLAN

The National Geospatial-Intelligence Agency (NGA) has a new role on the GEOINT stage. So explained NGA Director of Source Justin Poole yesterday to a full house at the GEOINT 2017 Government Pavilion Stage. Poole moderated a panel discussion among NGA and General Services Administration (GSA) experts who discussed NGA's role as a broker, which allows the agency to take advantage of the explosion in geospatial data and information.

Poole explained CIBORG, the Commercial Initiative to Buy Operationally Responsive GEOINT, NGA's new partnership with GSA that will allow the agency to broker commercial imagery products for other government agencies.

"It's an excellent opportunity for companies not used to doing business with us," Poole said, noting CIBORG will allow industry providers to make their capabilities available to other government customers, military services, and first responders.

Sherry Prewitt, director of NGA's Source Operations Group, explained the broker concept as an ever-changing set of value-added services for customers.

"At its core, we needed to look at, do we really understand what our customers are trying to achieve," she said. "Once you understand what they need, you can provide more services."

This supply chain structure offers a tremendous opportunity to NGA, said Scot Currie, director of the agency's Source Mission Integration Office. He explained it as a central depository—"a single place to look at... what the commercial world can offer us."

The key to making the broker role work is speed. NGA senior analyst Carter Christopher acknowledged, "If you've ever delivered technology at NGA, you know it can take a long time."

"When we're trying to connect customers with solutions," Carter said, "they don't want to wait six months. They don't want to wait—in many cases—six minutes."

DIA LOOKS TO OPEN-SOURCE INTELLIGENCE

The agency is embracing data science and automation to leverage information from social media and location-based apps
BY MELANIE D.G. KAPLAN

Through social media and location-based apps, the world is telling us about itself every day, Donna Bridges of the Defense Intelligence Agency's Integrated Analysis and Methodologies Division said Monday from the Government Pavilion Stage at

GEOINT 2017. Bridges discussed how GEOINT would support the agency's future mission.

"The knowledge of the crowd is something we want to leverage," Bridges said.

She added one of DIA's current challenges is incorporating and aggregating open-source intelligence into the database loop—in other words, getting the best spatially-enabled data to the analyst through automation.

"The old way of doing things will no longer work because it doesn't scale," Bridges said. "It used to be one analyst would look at one image at a time."

With automation, thousands of images are scanned every day, so experts know—with confidence—where there are airports, where there are solar panels. "And we want to be able to do that for the world," she added.

Today, DIA combines traditional sources with big data to feed the intelligence cycle and create a living, digital inventory of the Earth.

"Our mission generally is to avoid strategic surprise," Bridges said. "We're trying to take this data, bring it in, and augment what we already have to answer analytic questions. Those questions change every day."

Bridges' colleague, Joe Ingram, said in an attempt to counter the traditionally non-agile government pace, their division hires not only analysts, but also coders and data scientists.

"We've got the opportunity to identify a lot of different organizations, data sets, capabilities and available tradecraft."

—DAVID LILLEY JR., ACTING GIO AND ACTING DIRECTOR OF THE DHS GEOSPATIAL MANAGEMENT OFFICE



DIA's Donna Bridges and Joe Ingram spoke about leveraging the knowledge of the crowd.

“The world is literally mapping itself faster than we can database it,” Ingram said. “Luckily for us, we have smart data-scrappers and data scientists that are able to go out and collect, aggregate, and correlate a lot of this data into our existing intelligence databases.”

Ingram said DIA has gotten really good at doing so.

“Now the challenge,” he said, is “getting the data and analytics to the warfighter in every domain.”

DISCOVERING GEOINT ACROSS THE DHS ENTERPRISE

A framework for knowledge sharing helps DHS make more, better use of GEOINT

BY MATT ALDERTON

Next to warfighting and intelligence gathering abroad, it’s hard to imagine a more apt use for geospatial intelligence than crime fighting here at home. The U.S. Department of Homeland Security (DHS) is therefore a voracious

user of GEOINT, according to David Lilley Jr., acting GIO and acting director of the DHS Geospatial Management Office.

There’s just one problem: Not all employees across the DHS enterprise realize what GEOINT services exist, how to access them, or in what ways to leverage and share them.

During a presentation Monday on the Government Pavilion Stage at GEOINT 2017, Lilley explained how his office is solving that problem by evangelizing, activating, and otherwise enabling GEOINT throughout DHS, which comprises more than one million people across a range of mission sets, including asset management, special events security, border patrol screening and vetting, law enforcement, and cybersecurity.

“We’ve got the opportunity to identify a lot of different organizations, data sets, capabilities and available tradecraft,” Lilley said, “And what we’ve tried to do is use an adaptive approach to making

sure the community can reuse those capabilities.”

To that end, DHS has compiled a geospatial body of knowledge known as the Homeland Security Geospatial Concept of Operations (GeoCONOPS), a tour of which Lilley offered during his presentation.

“This concept of operations is helping us leverage existing capabilities and deliver those capabilities to mission owners,” explained Lilley, adding GeoCONOPS documents who at the federal, state, and local level is using GEOINT, as well as what data and training resources are available to help users deploy GEOINT more effectively.

“We’ve bundled all that into [GeoCONOPS] to help the community identify, reuse, and repurpose what’s available, and focus limited resources on true gaps that we have instead of repeating [efforts].”

The end goal for all stakeholders: increased security and savings.



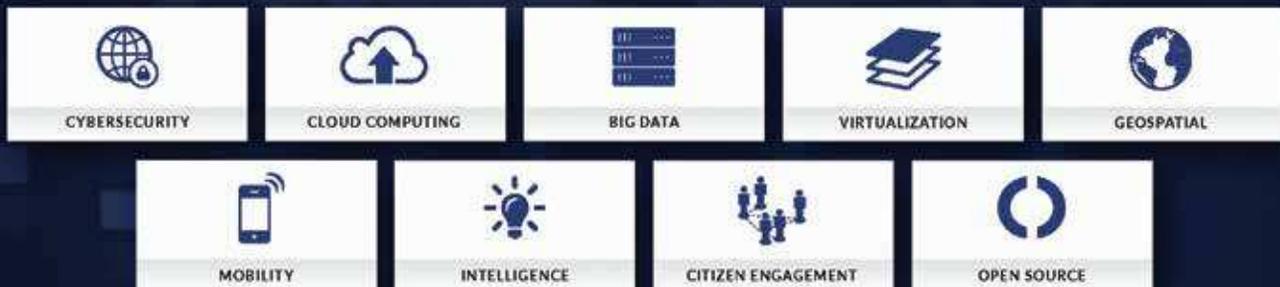
David Lilley Jr., acting GIO and acting director of the DHS Geospatial Management Office, discussed how GEOINT is used by DHS.

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NRO Deputy Director of GEOINT Jimmy Comfort discussed how NRO plans to use commercial imagery as a means to leverage national assets more effectively.

NRO DECLARES INTENT TO PURCHASE COMMERCIAL GEOINT

Agency says commercial imagery will complement traditional IMINT
BY MATT ALDERTON

The National Reconnaissance Office (NRO) has something it wants you to know: It does not have a hit out on commercial imagery.

“I want to address that pesky little persistent rumor that keeps popping up about the NRO wanting to kill commercial GEOINT,” NRO Deputy Director of GEOINT Jimmy Comfort said Monday during a presentation on the GEOINT 2017 Government Pavilion Stage. “Nobody in the NRO of any significance is talking about killing commercial GEOINT. Period.”

In fact, NRO isn’t just an observer of the commercial GEOINT marketplace; henceforth, it will also be a customer, Comfort announced.

Indeed, NRO and the National Geospatial-Intelligence Agency (NGA) last year introduced a joint collaboration known as the Commercial GEOINT Activity (CGA). Using CGA and an associated web platform called the CGA Leaderboard, the two agencies assess current resources and develop

shared strategies for accessing, acquiring, and integrating new commercial GEOINT capabilities.

“We’ll be using [CGA] to inform the NRO’s commercial acquisition decisions as we start to procure and integrate this imagery into our future overhead architecture,” Comfort said. “Yes, you did hear that correctly: NRO will be procuring commercial imagery.”

There’s a good reason the NRO has never acquired commercial GEOINT before. And there’s a good reason it’s starting to do so now.

“Ten to 15 years ago, NRO did some studies about per-pixel costs and which systems were cheaper,” Comfort said. “Back then, the IC

wasn’t using commercial imagery like it is today. So [NRO decided] it would be more efficient for us to just use our [National Technical Means],” Comfort said. “Fast forward to today ... [and] commercial imagery is now a mainstay imagery collector for the United States.”

Certainly, NRO won’t cease to deploy classified national assets for its IMINT mission. Rather, NRO will use commercial imagery as a means to leverage national assets more effectively.

“There are times when it’s better not to take the image because other sensors have already told us there was nothing significant to report there,” Comfort said. “And what that really means is we can now use our high-performance—some might say exquisite—assets to go after something more important.”

NGA OFFERS DATA FOR PARTNERSHIPS

In new role, Dr. Anthony Vinci will help the agency create more public-private partnerships
BY JIM HODGES

In November, Dr. Anthony Vinci met with National Geospatial-Intelligence Agency (NGA) Director Robert Cardillo and Deputy Director Sue Gordon in New York City to discuss the idea of using NGA data as currency.

This idea included Vinci leaving Findry, a crowdsourced data collection firm he founded, and joining

“Ten to 15 years ago, NRO did some studies about per-pixel costs and which systems were cheaper.”

—JIMMY COMFORT, DEPUTY DIRECTOR OF GEOINT, NRO

NGA to help establish public-private partnerships to develop technology that improves the quality, value, and use of NGA data.

“The IC is good at solving what are, in essence, impossible problems,” said Vinci, now NGA’s director of plans and programs, to an overflow crowd at the GEOINT 2017 Government Pavilion Stage Monday. “The tech industry’s strength is in risk taking. It brings flexibility and creativity to problem solving.”

So why not marry the two?

“[NGA has] data,” Vinci said. “Having come out of the tech startup world, it’s a wonderland. ... If data was oil, NGA would be Saudi Arabia.”

To tech companies, data is oil.

The question, Vinci said, is “how can we combine data and talent to come up with new solutions?”

To achieve public-private partnerships, the agency will perform due diligence on prospective partners to assure data security. “I want to raise boats,” Vinci said, referencing the rising tide aphorism, “But not all boats.”

The idea is a cultural departure from conventional government problem solving. The Intelligence Community usually solves problems alone, or pays industry for solutions, Vinci said.

As with any investment, a reward is expected. In this case, NGA’s data investment is designed to yield positive results for the future of the GEOINT discipline. ☺

Dr. Anthony Vinci, director of plans and programs, NGA, spoke about his new role establishing public-private partnerships to develop technology that improves the quality, value, and use of NGA data.



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A Glimpse into the New World

TECH AUTHORS AND FUTURISTS ROBERT SCOBLE AND SHEL ISRAEL PREDICT AUGMENTED REALITY WILL CHANGE LIFE AS WE KNOW IT

By Andrew Foerch



Robert Scoble and Shel Israel gave a joint keynote discussing virtual and augmented reality.

Tech author duo Robert Scoble and Shel Israel gave a joint GEOINT Symposium keynote Tuesday previewing what they referred to as the arrival of “the new world.”

Scoble and Israel’s latest book, *The Fourth Transformation: How Augmented Reality and Artificial*

Intelligence Change Everything, examines the unavoidable evolution of business, entertainment, sports, medicine, shopping, and more as a result of reality-altering technologies.

The pair has predicted major transformations before—like the necessity of social media in business—but this paradigm shift, Israel said, “will change the world more fundamentally than has ever happened before in digital history.”

“What is very clear,” said Scoble, “is that our entire world is going to be copied.”

That virtual copy will become the center of a new user interface that takes location-based technology a step further, recognizing the exact parameters of the environment around a user and altering it for any variety of purposes.

3D sensor platforms such as Google Tango, as well as the impending rise of 5G communications, add an element of real-time environmental analysis for seamless integration of visual data with the real world. For example, an app for the Microsoft HoloLens headset, called Actiongram, lays 3D holograms including dinosaurs, zombies, or even internet celebrity “grumpy cat” over a user’s view. Scoble himself kicked off the keynote wearing a HoloLens.

The concept of the fourth transformation primarily encompasses technology, but it examines society as well.

“Technology is changing the behavior of younger generations. We renamed generation Z into the Minecraft generation,” Israel said. “They’re thinking in 3D.”

The next generation’s expectations for learning and shopping have changed, and businesses must adjust how they cater to customers.

Walmart, for example, has begun using virtual reality to train hundreds of thousands of employees. Lowe’s offers a “Holoroom” home improvement simulator that lets users virtually remodel and choose appliances before purchase. Facebook has taken a big step as well, recently re-branding from a social network to an “AI social platform.” That openness, Scoble said, implies a good deal about how the world will soon change.

According to Scoble, the way humans interact with technology is evolving too, as evidenced by eye tracking interface startup Eyefluence. Instead of tapping an icon on their smartphone screen, Eyefluence enables users to navigate with their eyes to send an email or watch a video. In addition, he predicted, biometrics and cornea recognition will transform personal security.

10 years ago, the world Scoble and Israel spoke of was confined to science fiction literature. Today, surgeons can walk around inside a 24-foot, 3D model of a human heart with a congenital issue to find the defect before ever invading a living body. Friends on opposite sides of the world can play a game of Frisbee with ease using augmented reality.

Intelligence Community, take note: interactive data is being offered and consumed in a vastly new way, and the spatial boundaries of the world are dissolving. 🌐



Robert Scoble took the stage wearing a HoloLens holographic computer.

Projecting Global Power

TRANSCOM LEADER OUTLINES LOGISTICAL CHALLENGES

By Jim Hodges

The situational awareness required by U.S. Transportation Command (TRANSCOM) leader Gen. Darren W. McDew is a tall order.

“I need global situational awareness,” McDew said Tuesday during a GEOINT 2017 keynote address.

“Believe it or not,” McDew joked, “we don’t have every single asset we’ll need for every spot in the world today.”

For example, many people don’t realize the logistics required for a force of B-52 bombers to leave Missouri, fly across the world to Libya to drop 100 precision bombs, then return home, he said.

To do so requires 15 TRANSCOM airplanes positioned to refuel the B-52s en route. That’s 15 of TRANSCOM’s 500-plane inventory, but McDew said his 140,000-person command could actually use 1,000 tanker planes.

The general acknowledged that not many people truly understand TRANSCOM’s mission and how it is achieved. The command’s mission involves air, sea, and land military components, plus growing commercial industry support. And the demand for its resources is great.

“The might of this country’s military can only be projected through logistics,” McDew said. “And we cannot continue [to do what we do] without commercial industry ... If you only think of [logistics] as moving stuff, then you aren’t devoting the intellectual capital [to consider] how things can be done differently. That is our big challenge.”

Projecting military strength becomes more difficult the farther the services have to travel. As forces are drawn back to the U.S., but missions remain far-flung, there is a greater need to transport



Gen. Darren W. McDew, U.S. Transportation Command, welcomes autonomous technology as long as it is cyber-protected.

military assets to and from areas of operation. With declining numbers of commercial ships sailing internationally under the U.S. flag, and with aging transport aircraft, challenges continue to mount.

“We need your help or we’ll be the best land-locked, CONUS-based military in the world,” McDew said, adding that culture change is another hurdle to overcome.

“I’ve been challenging my people and the people we work with that we must resolve to be different,” he continued. “We must resolve to be better ... I believe in my heart that many [people] have risk avoidance. That they give in to elements of fear. If we get locked into doing things

as they have always been done, our adversaries will have a much easier time.”

As an example of doing things differently, TRANSCOM would welcome self-driving vehicles, perhaps even self-sailing ships or self-flying planes.

“It’s not if, it’s when,” McDew said of autonomous technology. “If we could do it tomorrow, I’m ready ... But, that’s got to be a cyber-protected force.”

McDew said there is still only one great superpower in the world—the U.S.

“But,” he warned, “if we don’t change some things, if we don’t think differently, we may not remain in our superpower status, and it definitely will be grabbed by somebody else.” ☺

“We cannot continue [to do what we do] without commercial industry ... If you only think of [logistics] as moving stuff, then you aren’t devoting the intellectual capital [to consider] how things can be done differently. That is our big challenge.”

—GEN. DARREN W. McDEW,
U.S. TRANSPORTATION COMMAND

Enabling New Space

SMALL SAT EXPERTS DISCUSS OPPORTUNITIES, BARRIERS TO INNOVATION

By Andrew Foerch



The USGIF Small Sat Working Group panel discussed the difficulty for startups and commercial space actors to garner timely licensing and funding from government, among other topics.

Leading experts in the small satellite market gathered at GEOINT 2017 for USGIF’s Small Satellite Working Group meeting to discuss the modern space landscape and changes required to break barriers and foster innovation in the small sat community.

Moderator Rob Zitz, co-chair of the working group and a senior vice president for MDA, posed the question: “How do we go faster? How do we help government agencies and others who want new space get there sooner?”

A principal topic of discussion was the interplay between commercial and government space initiatives. In the current market, said John Hanna, VP of government programs for Spaceflight Industries, it’s extremely hard for startups and commercial space actors to garner timely licensing and funding from government. He continued, saying until stronger space leadership is established in the Pentagon, some companies will choose to turn away from government altogether.

Marcy Steinke, DigitalGlobe’s senior VP of government relations and public policy, said a major regulatory shift on Capitol Hill is necessary to take commercial satellite capabilities to the next level. The existing legislation overseeing the industry—the Land Remote Sensing Act—was established in 1992, she said, voicing her support for a new bill currently making rounds in Congress.

According to Keith Johnson, CTO and chief engineer with Leidos, part of that government-commercial interplay needs to

include the establishment of space traffic management and situational awareness. This isn’t an exclusively government-oriented problem—commercial actors need to collaborate as well. “Rules of the road” are imperative to govern the congested space of the future and to limit buildup of debris. The sustainability of large-scale small-sat launches was brought into question, and Steinke referenced the possibility of increased tracking efforts to enhance space object awareness.

National security consultant Jeff “Skunk” Baxter mentioned the importance of fresh, innovative thought leadership from outside the Intelligence Community.

“Start a conversation with people that don’t know anything about small sats,” Baxter said. “It will stimulate ideas, it will stimulate concepts, and it will hopefully get us further down the line,” he said.

Zitz synthesized the discussion as such: “The threat we face requires us to change space architecture to make it more resilient. One way to do that is to move to smaller satellites in larger numbers. Policy or funding or cultural barriers in the way of moving to smaller satellites are things we as a community have to address and overcome.”

Yet the future of space looks promising. In the next few years, NASA plans to have repair robots in orbit, directly servicing deployed satellites. Automation will allow analysts to keep up with the increasing collection of vast amounts of data. Steve Jacques, managing partner of Jacques and Associates, said engineers are actively developing onboard data processors that would revolutionize the way information is disseminated. Concluded Hanna, “It’s a great space to be in.” 🌐



“Start a conversation with people that don’t know anything about small sats.”

—JEFF “SKUNK” BAXTER, CONSULTANT



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A Distinguished Career

MAJ. GEN. (RET.) ROBERT ROSENBERG NAMED 2017 LUNDAHL-FINNIE LIFETIME ACHIEVEMENT AWARD RECIPIENT



Maj. Gen. (Ret.) Robert "Rosie" A. Rosenberg was named the 2017 USGIF Lifetime Achievement Award recipient.

"Maj. Gen. Rosie Rosenberg is a proven leader never satisfied with the status quo."

—THE HONORABLE JEFFREY K. HARRIS

USGIF named Maj. Gen. (Ret.) Robert "Rosie" A. Rosenberg, former director of the Defense Mapping Agency (DMA), as the 2017 recipient of the Foundation's Arthur C. Lundahl-Thomas C. Finnie Lifetime Achievement Award Tuesday at GEOINT 2017. Rosenberg is the 13th individual to receive this prestigious award.

"Maj. Gen. Rosie Rosenberg is a proven leader never satisfied with the status quo," said The Honorable Jeffrey K. Harris, chairman of USGIF's Board of Directors. "Rosenberg's remarkable career reflects his passion for developing and mentoring high caliber professionals and providing them with the technology to be effective

agents of change. The board was unanimous in its selection of Rosenberg for the 2017 Lifetime Achievement Award in recognition of his decades of substantial contribution to the art and science of geospatial intelligence."

Rosenberg served 30 years in the U.S. Air Force and was instrumental in the U.S. satellite program. He participated in the initial development, testing, and launches of the Atlas-Agena reconnaissance satellite systems with the Air Force Ballistic Missile Division, and was the mission planner & targeteer for the GAMBIT reconnaissance satellite program. In other National Reconnaissance Office (NRO) assignments, he was responsible

for developing and acquiring the mission planning and command and control software for the HEXAGON program, and also served as acting director of the NRO staff.

Rosenberg was director of DMA, a predecessor to the National Geospatial-Intelligence Agency, from 1985 to 1987. During his tenure as director, Rosenberg made DMA essential to the success of the nation's warfare capabilities and guided Phase II of the DMA modernization program to ensure alignment with changing DoD requirements.

"What an unexpected and most humbling honor to be named as the Lundahl-Finnie Lifetime Award Winner at this year's GEOINT Symposium," Rosenberg said. "Just to be honored in the name of these two great American patriots—who so significantly contributed to the foundation of GEOINT—is an awesome recognition in my lifetime. It is also an honor to be sharing this moment with my wife, Marge, of 60 years, who made my contributions to our national security possible."

The Lundahl-Finnie award recipient is nominated and voted upon annually by the USGIF Board of Directors. This distinguished award is named for Arthur C. Lundahl and Thomas C. Finnie, celebrating their accomplishments—in imagery analysis and mapping, respectively—and their legacies within the GEOINT Community. Lundahl is known as the father of modern imagery intelligence and analysis, and was the founding director of the National Photographic Interpretation Center. Finnie served as DMA's director of management and technology, and was one of the primary architects of the agency's evolution into the digital era. 🌐

Accelerating Innovation in the Community

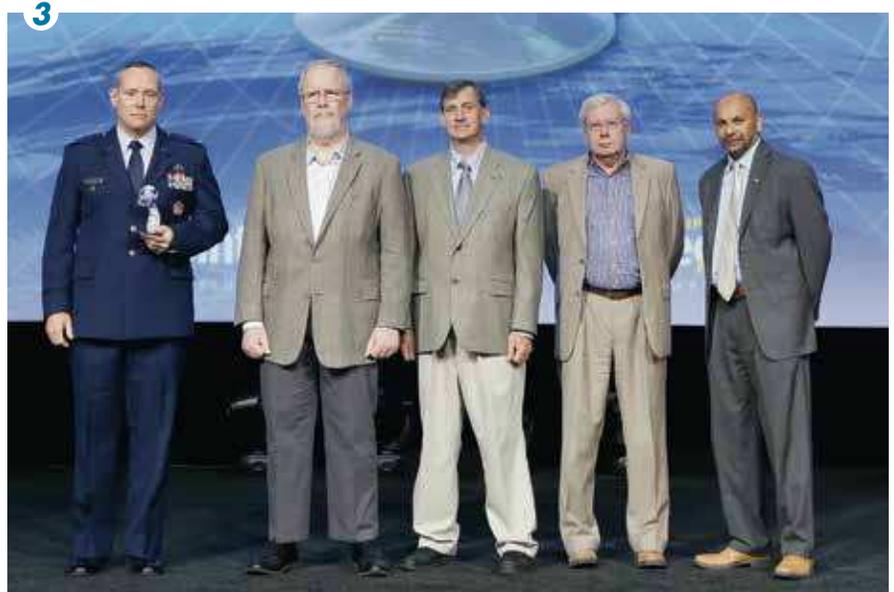
2017 USGIF AWARD WINNERS ANNOUNCED

The USGIF Awards Program annually recognizes the exceptional work of the geospatial intelligence tradecraft's brightest minds and organizations that are pushing the community forward. Award winners are nominated by their colleagues and selected by the USGIF Awards Subcommittee.

"Unwavering commitment to service, inspired innovation, academic rigor, and discipline are just some of the words that define the exceptional accomplishments of this year's awardees," said Kevin Jackson, USGIF Awards Subcommittee Chair. "Their accomplishments will have lasting effects on our nation and the world."

THE 2017 USGIF AWARD WINNERS ARE:

- 1. Academic Achievement Award:**
DIRSIG Development Team, Rochester Institute of Technology
- 2. Community Support Achievement Award:**
Dyah Goodman and Michael B. Mosteller, National Geospatial-Intelligence Agency (NGA)
- 3. Government Achievement Award:**
NGB-J2 DAART Development Team, National Guard Bureau
- 4. Industry Achievement Award:**
SpyMeSat Team, Orbit Logic
- 5. Military Achievement Award:**
Canadian Armed Forces





From left to right: USGIF CEO Keith Masback; Maj. Gen. William Reddell III, Adjutant General, New Hampshire National Guard; Dr. Suzette Kimball, director, Civil Applications Committee; Dr. Joseph Fontanella, director, U.S. Army Geospatial Center; Col. Steven Fleming, Ph.D., U.S. Army (Ret.), professor of the practice of geospatial sciences, Spatial Sciences Institute, USC; and Robert Cardillo, director, NGA.

“There are a number of inherent dependencies that have been created over time just by the advancement of technology. We’re at a point right now where with limited resources we have to rely on each other’s best practices [and] adapt them so we can continue to reinvent them.”

—DR. JOSEPH FONTANELLA, DIRECTOR, U.S. ARMY GEOSPATIAL CENTER

NSG partners trust each other because they have to, said Fontanella, who highlighted the ways in which NSG partners have become inextricably linked to one another as a result of increasing technology and decreasing resources.

“There are a number of inherent dependencies that have been created over time just by the advancement of technology,” Fontanella said. “We’re at a point right now where with limited resources we have to rely on each other’s best practices [and] adapt them so we can continue to reinvent them.”

It’s not just trust that makes the NSG tick—understanding is essential as well.

“We have to have a clear understanding of the relationships we have and how they depend on each other,” Fontanella continued. “And I think the NSG is a vehicle by which those things are brought to light. It’s a governance process that helps us understand where our problems are, where our strengths are, where our weakness are, and how we can ... take better advantage of each other’s capabilities.”

Cardillo echoed the importance of technology.

“[Technology] is a uniting integrator at the data level,” the NGA director said. “We all need [data], we all must share it, and we all must find meaning from it, so [let’s] let that unite us.”

But integration is easier said than done, the panel acknowledged, highlighting another important charge the NSG has within the GEOINT Community: enabling interoperability by way of standards and certifications.

“To put it into context, there’s about 180 systems in the Army [alone] that consume or create geospatial information ... One of our big challenges is: How do we connect all the way from national down to tactical?” Fontanella said. “A lot of the heavy lifting for that has to happen inside the NSG member formations. All the plumbing that has to be put together to ensure interoperability ... is the work of the members.”

Without that plumbing, warfighters and decision-makers receive incongruous views of the same battle space in which they operate, creating risks, vulnerabilities, and efficiencies that impact their ability to succeed against the adversary.

“You’ve got to have standards ... that ensure things show up the way they’re supposed to,” Fontanella continued. “[The NSG is needed] to provide overarching guidance and to referee issues.”

The roles of academia and civil agencies were also represented on the panel. Fleming, for instance, discussed how universities must work with the NSG to implement new approaches to training and education that allow the GEOINT tradecraft to actively adapt alongside new technologies rather than passively reacting to them.

“The [siloes] learning paradigms that many in the room grew up with ... don’t work in a dynamic [environment],” Fleming said. “... When it comes to a body

of knowledge, there's a baseline which you have to have and then there are emerging technologies that we have to keep up with; we have to figure out how to [teach those emerging technologies] to the workforce."

Kimball, meanwhile, discussed contributions civil agencies make to the NSG.

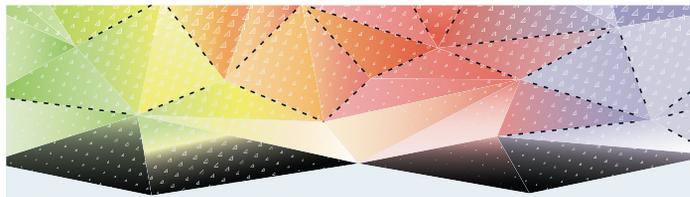
"Civil agencies have a lot of capabilities that can enhance the information that is collected, developed, and disseminated to help the warfighter," explained Kimball, who said the civil community's expertise in things such as natural hazards—e.g., landslides, flooding, earthquakes—can greatly benefit its DoD and IC partners.

"The expertise civil agencies provide ... [is] enhanced by having access to [National Technical Means] and ... can provide

safety for military operations on the ground," she continued. "To be able to understand what [DoD and IC] needs are and put that together with the kinds of research and development capabilities within the civil community is of enormous benefit to the American taxpayer."

The discussion also touched upon topics such as the cyber-location nexus and agile acquisition. Underlying all of it, however, was the sense that GEOINT isn't growing slowly like a tree, but rather rapidly like a weed. Its role as gardener, therefore, makes the NSG more relevant now than ever, not only for its ability to prune wayward branches, but also for its ability to cultivate new crops.

"When I look at what the NSG is for," Reddel synopsised, "it's all about connecting resources." 🌐



NATIONAL ACADEMIES TO STUDY SOCIAL & BEHAVIORAL SCIENCES FOR NATIONAL SECURITY, ISSUE CALL FOR WHITE PAPERS

The National Academies of Sciences, Engineering, and Medicine's Board on Behavioral, Cognitive, and Sensory Sciences is conducting a decadal survey on social and behavioral sciences for national security. The survey will identify opportunities that are poised to contribute significantly to the Intelligence Community's analytic responsibilities.

The board issued a call for white papers as part of the process to develop a research agenda that will guide investment decisions and application efforts in national security in the next 10 years. Responses are due June 12. Please direct questions to Julie Schuck at JSchuck@nas.edu or (202) 334-3379.



DON'T MISS THESE EVENTS

JULY 11

GEOINteraction Tuesday

Esri User Conference,
San Diego, CA

JULY 11

GEOINteraction Tuesday

Noblis Office,
Reston, VA

AUGUST 7-9

2017 National Geospatial Preparedness Summit (co-host)

University of Alabama,
Tuscaloosa, AL

SEPTEMBER 12

GEOINteraction Tuesday

Northern Virginia

OCTOBER 17-18

Tech Showcase West

St. Louis, MO

NOVEMBER 11

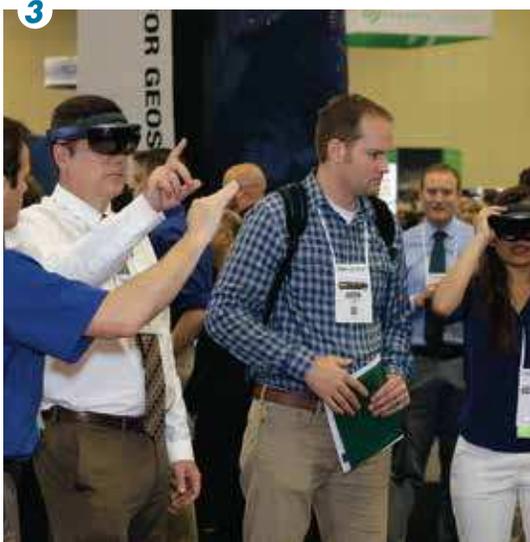
GEOGala

McLean, VA

NOVEMBER 11-17

GEOINT Community Week

Northern Virginia



1. Attendees tour the GEOINT 2017 exhibit hall Monday afternoon. 2. From left to right, Dawn Eilenberger, Karyn Hayes-Ryan, Carmen Medina, and Letitia Long speak to Girl Scouts on the National Geographic Giant Traveling Map. 3. Attendees try out Microsoft's HoloLens in the exhibit hall. 4. Colin Johnson of Northeastern University won the student poster contest for his presentation "Building Change Detection from LiDAR Point Clouds." 5. Young Professional Golden Ticket winners had the opportunity to attend the USGIF Chairman's Reception. 6. Dr. Dave Warner speaks to young professionals at the USGIF booth. 7. The Girl Scouts of Southwest Texas pose with female IC leaders on the National Geographic Giant Traveling Map. 8. Sinclair Community College's National UAS Training Center conducted a live, virtual, constructive UAS demo Sunday using its Mobile Ground Control Station.



7:00-9:00a

Professional Development Training
& Education Sessions (River Level 006C-007D)

8:00-9:00a IMPACT MENTORING

USGIF Young Professionals and Tradecraft & Professional Development Committee Program Kick-off

9:00-9:15a

Master of Ceremonies: Letitia A. Long, USGIF Board of Directors

9:15-10:00a

Keynote: Lt. Gen. John N.T. "Jack" Shanahan, Director for Defense Intelligence, Warfighter Support, Office of the Under Secretary of Defense for Intelligence

10:00-10:45a

Keynote: Adm. Kurt W. Tidd, Commander, United States Southern Command

10:45-11:30a

Keynote: Lt. Gen. Vincent R. Stewart, Director, Defense Intelligence Agency

10:00a-3:00p

Exhibit Hall Open (Halls 2-3)

11:30a-1:00p

Lunch in the Exhibit Hall

12:30-1:30p

Government Pavilion Stage (Hall 2, Booth 138)

- NGA Acquisition Report Card – Moderator:
Dr. Anthony Vinci, Director of Plans and Programs, NGA;
Karyn Hayes-Ryan, Component Acquisition Executive (CAE), NGA;
Nicole Pierce, Senior Procurement Executive, NGA;
and Daniel Takane, Acquisition Strategist, Industry Innovation Advocate, NGA

1:00-2:00P

USGIF ANALYTIC MODERNIZATION WORKING GROUP

"The Future of Analysis: a Visioning Session"

2:00-3:00P

EXHIBIT HALL CLOSING RECEPTION

Taste of Tampa/See you at GEOINT 2018

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