THE GEOINT 2016 SYMPOSIUM

SUNDAY
MAY 15, 2016

SHOW DAILY

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Designing for the End User

PHIL GILBERT OF IBM TO SHARE DESIGN THINKING APPROACH DURING GEOINT FOREWORD KEYNOTE

by Kristin Quinn

Today, nearly 40,000 IBM employees practice design thinking—a human-centric process of creating products specifically to meet user needs by applying empathy and insight. Phil Gilbert, general manager for IBM Design, aims to make that number 100,000 by the end of 2016, and for everyone at IBM to be a "design thinker" by the end of 2017.

Gilbert will give a keynote address Sunday at 8:45 a.m. during GEOINT Foreword, the pre-conference science and technology day that precedes USGIF's GEOINT 2016 Symposium.

"In a very specific way, I will talk about using design thinking, empathy, and fairly lightweight and easy-to-use tools to deeply understand the human beings that we are developing applications for," he said.

"The need to understand human beings becomes even more critical when you have dependent networks of people receiving the same information but working in very different contexts," Gilbert continued. "We need new ways to understand these people because they each expect different tools even though the underlying information is the same." For example, a warfighter in the field, an admiral at the Pentagon, or a civilian at the White House may need the same information delivered in very different contexts in order to make the quickest and best-informed decisions, he explained.

"In order for them to understand that information, the development of the tool being used has really got to understand and empathize at a deep level with each of those individuals uniquely," Gilbert said. "Otherwise you're developing a generic tool which none of those people will be able to make sense of in the timeframes needed."

Design thinking is fueled by two strategic drivers, according to

see GEOINT Foreword p. 8

Phil Gilbert addresses IBM designers on the 2016 vision for the IBM Design program.

> "I will talk about using design thinking... to deeply understand the human beings that we are developing applications for."
>
> —PHIL GILBERT, GENERAL MANAGER, IBM DESIGN

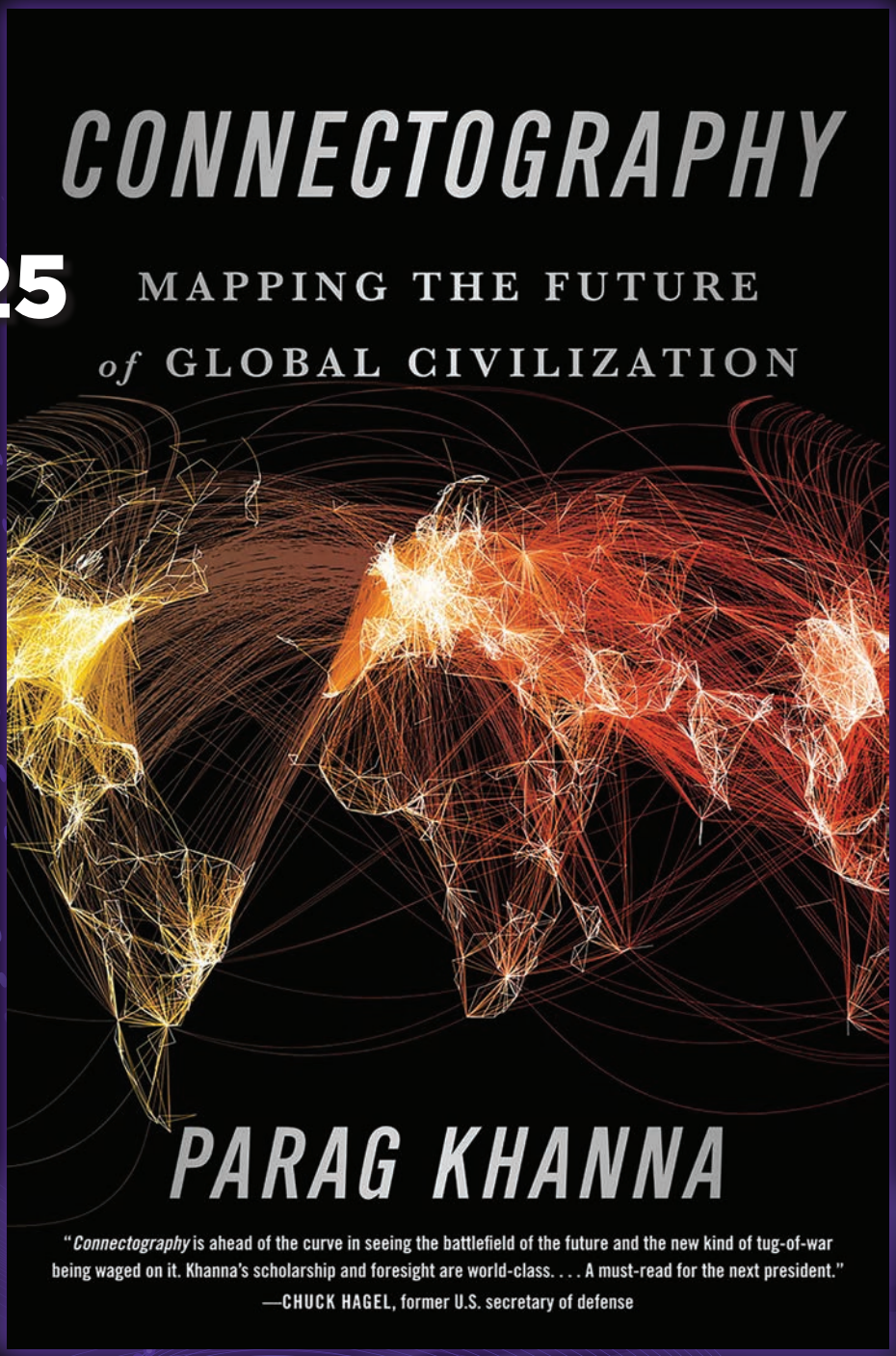
Book Signing Monday, May 16

12:30-1:30pm - Outside Osceola Ballroom

Meet in person

Parag Khanna

$25



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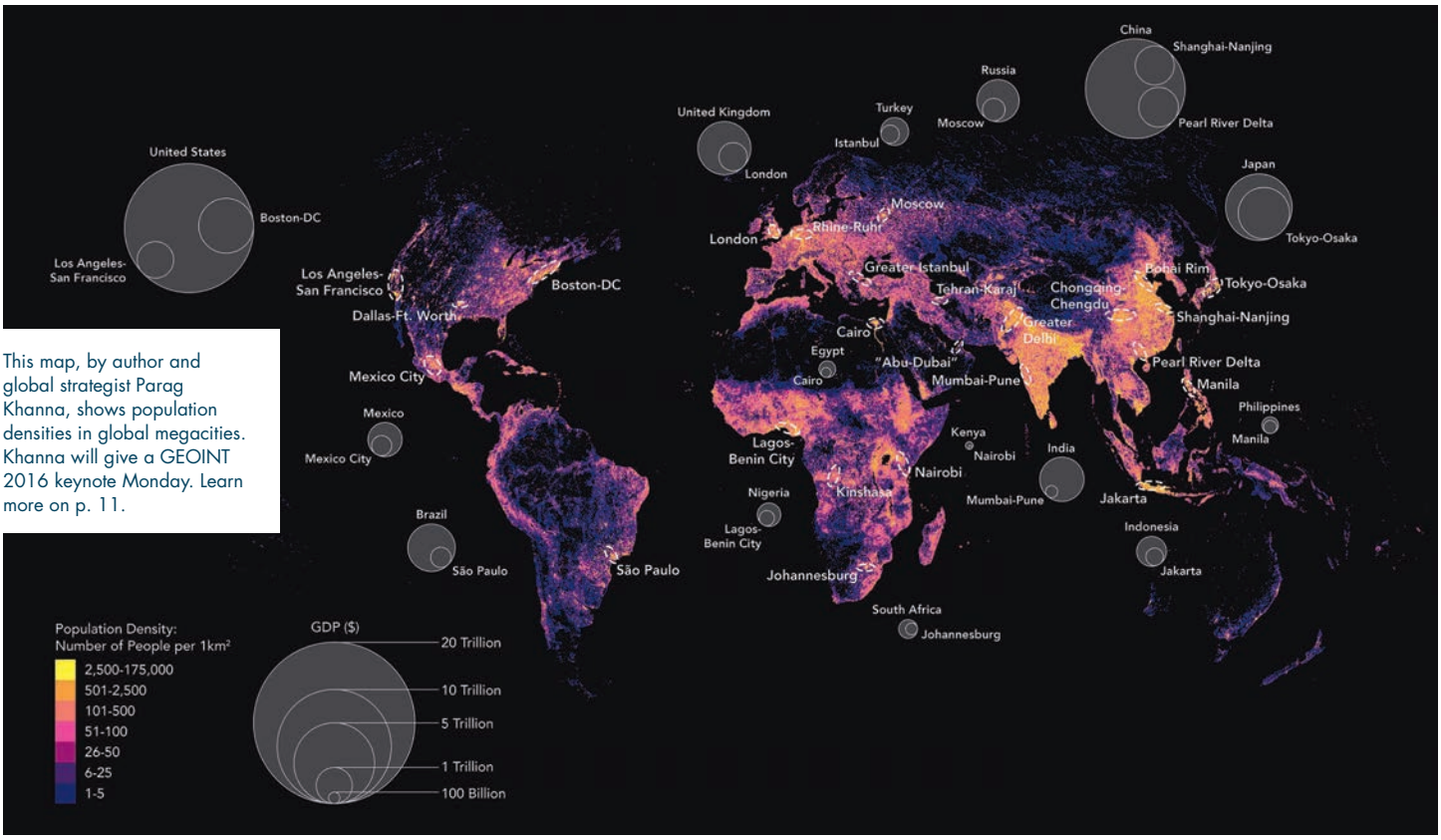
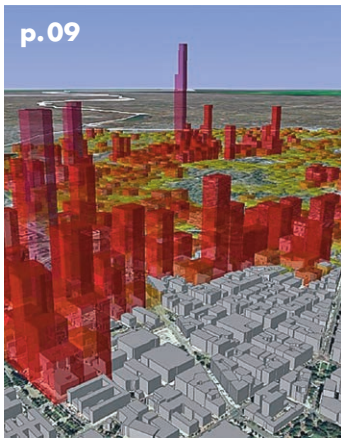


This map, by author and global strategist Parag Khanna, shows population densities in global megacities. Khanna will give a GEOINT 2016 keynote Monday. Learn more on p. 11.

DEPARTMENTS

FEATURES



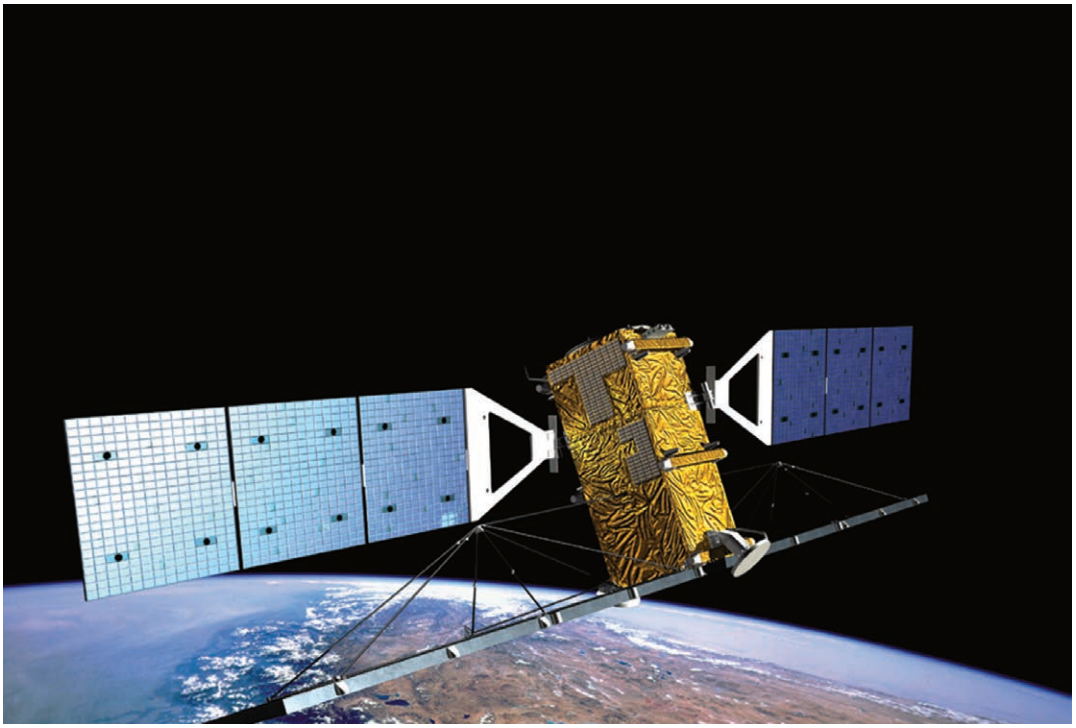
GEOINT 2016 WELCOME CELEBRATION

Kick off the Symposium with great food and music

Join USGIF in the Emerald Plaza Sunday night to celebrate the Symposium with a GEOINT 2016 Welcome Celebration from 7 to 9 p.m. The Welcome Celebration is always an exceptional setting to network with colleagues and celebrate the GEOINT Community. Attendees will enjoy food and beverages paired with entertainment. Hear a new spin on classic rock and contemporary songs from Orlando-based band Acoustic Joe, and participate in fun activities with your colleagues.

FROM THE

IMAGE COURTESY OF MDA



MDA's BlueHawk web-based information delivery system uses RadarSat-2 imagery to provide maritime domain analysis.

SUPPORTING MARITIME DOMAIN AWARENESS

MDA PROVIDES SHIP DETECTION AND OTHER GROUND SYSTEM CAPABILITIES FOR CUSTOMERS AROUND THE GLOBE

MDA (Booth 1329) will demonstrate its BlueHawk web-based information delivery and analytics system for maritime domain awareness at GEOINT 2016.

Providing maritime surveillance for GEOINT agencies around the world is one of the main objectives for MDA's ground systems line of business, according to Paul Kennedy, MDA's vice president of ground systems.

MDA aims to shorten the time between broad area imaging of the ocean and information delivery to end users, as well as to produce analytics combined with other information streams to provide more context.

"For Canada, we provide ship detection information into the common operating picture within 15 minutes of the image having been taken by satellite," Kennedy said.

At the Symposium, MDA will demonstrate BlueHawk with RadarSat-2 derived information. Also on display will be MDA's CTAR Mobile Ground Terminal (MGT), a multi-mission ground station that can be deployed in theater with a very small footprint to support warfighters. CTAR MGT derives ship detection reports using RadarSat-2 imagery and currently performs ship detection services in support of the U.S. government CTAR program.

MDA will also highlight other ground systems product offerings, including multi-sensor, multi-state, high-speed ground systems and capabilities for Earth observation satellite ground segments.

KNOWLEDGE CENTRIC ANALYSIS

IMAGE MATTERS' SOFTWARE ALLOWS ANALYSTS TO IMPORT INTRINSIC KNOWLEDGE AND TRADECRAFT

Image Matters (Booth 1516) will showcase its cloud-based FactWeave software/platform-as-a-service, which aims to set the pace for next generation analytics-on-demand.

"It's radical and revolutionary," said Image Matters CEO Harry Niedzwiadek.

FactWeave performs what Image Matters calls "knowledge-assisted analytics," by embedding analyst knowledge into the service framework.

"Literally, an analyst takes what he knows and goes through the tools we provide to encode it at the machine level, so instead of needing an analyst to answer a simple question the machine answers it," Niedzwiadek said.

FactWeave provides analysts the tools to encode tradecraft and what they know about specific people, places, and events.

"So another machine can come along, talk to the smart machine, and it's kind of like they're talking to a person," Niedzwiadek added.

This knowledge-centric rather than data-centric process will allow new data entering the platform to be looked at through a knowledge-assisted lens. Niedzwiadek added this technology has considerable potential as the National >

FLOOR EXHIBIT HALL HIGHLIGHTS

WARFIGHTER COLLABORATION

TRIDENT SYSTEMS ENABLES SECURE VIDEO AND VOICE COMMUNICATIONS IN THEATER

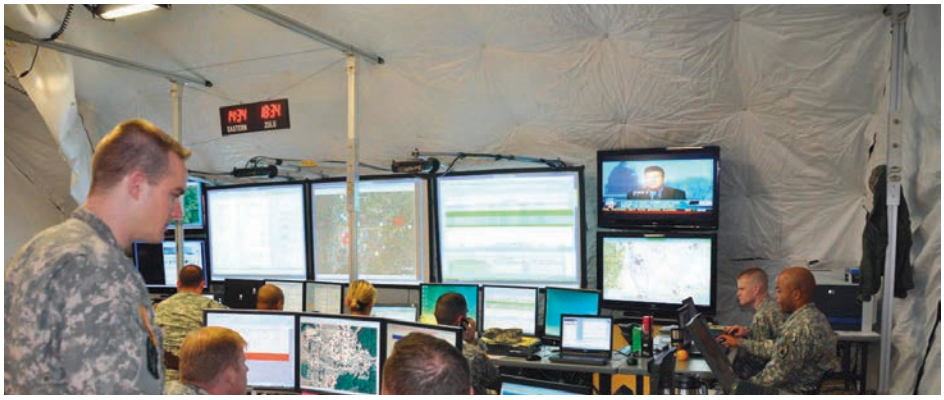


PHOTO BY TRIDENT SYSTEMS

Trident Systems provides voice and video collaboration capabilities for command centers.

For more than 30 years, **Trident Systems (Booth 1221)** has been dedicated to providing technology and solutions for the military, Intelligence Community, and a broad spectrum of government and industry partners. As a veteran-owned small business, the company's areas of focus include integrated C4I systems, radar and radio frequency systems, assured collaboration systems (ACS), collaboration services, and complex system engineering services—all in direct response to customers' mission needs.

"We're very excited to be exhibiting for the first time at GEOINT 2016," said Dave Briton, Trident Systems vice president and business director for shared solutions collaboration. "We want to show our presence to members of the Intelligence Community and get the word out about our solutions."

Trident's collaboration systems offer critical communications capabilities created specifically for the joint warfighter. ACS products include voice and video cross-domain solutions, Collaboration Gateway, Tactical Chat (TacChat), and TransVerse. These tools, paired with features such as voice ID, video chat, and more, help soldiers in theater communicate safely and securely between different networks.

Trident will also conduct TacChat and TransVerse demos in collaboration with its partner the **Air Force Research Laboratory (Booth 2007)**.

Geospatial-Intelligence Agency pivots toward object-based production—building a vast network of people and places of interest—and the Intelligence Community (IC) embraces the IC Information Technology Enterprise.

Image Matters will also highlight its work as the lead technical support contractor for the National Geospatial Platform Initiative's **geoplatform.gov**. The platform brings together stakeholders from the U.S. and throughout the world to experience shared and trusted geospatial resources including data, services, and applications.

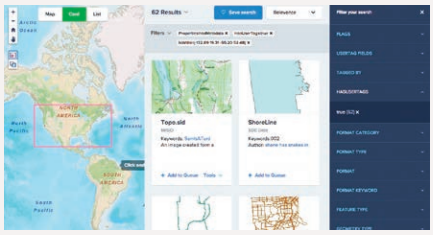


IMAGE COURTESY OF VOYAGER SEARCH

SIMPLIFYING SEARCH

VOYAGER SEARCH TO SHOWCASE ENTERPRISE SEARCH TECHNOLOGY

Voyager Search (Booth 1422) brings power and speed to geospatial intelligence searches with its Voyager geospatial data search solution. As an all-in-one enterprise search capability, the easy-to-use Voyager search engine has the ability to index more than 1,700 different file formats, whether structured or unstructured or geospatial vs. non-geospatial data.

The company also offers Navigo, an out-of-the-box search interface that sits on top of the Voyager index. Navigo is used for search, data management, document delivery, and map visualization.

"What makes our platform stand out compared to others is we're solely dedicated to search technology," said Brian Goldin, CEO of Voyager Search. "Our software is deployed in every aspect of the intelligence and defense community across all networks."

In April 2015, *CIO Review* recognized Voyager Search as the most innovative GIS company of the year, calling it "the Google of the GIS World."

In addition to federal and state government agencies, Voyager Search also has customers in the oil, gas, and natural resource industries. The company offers customers the toolbox they need to build custom search engines, whether it's a government agency providing the public with access to geospatial data or a police department managing and sharing video content.

Exploring the Gaylord Palms

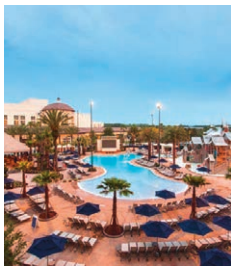
MANY DIVERSE ATTRACTIONS UNDER ONE ROOF

The Gaylord Palms has something for everyone. After the GEOINT 2016 Symposium events have wrapped up for the day, take time to kick back and check out the many opportunities the Gaylord offers for dining, relaxation, and exploration.

DINE

Enjoy specialty sushi and eclectic hand-crafted drinks at **Sora**, or sample the seasonal menu inspired by Mediterranean cuisine at **Villa de Flora**. Black Angus steaks, artisanal cheeses, and an award-winning wine list can be found at **Old Hickory Steakhouse**. At **MOOR**, enjoy fresh food procured from the land and sea in collaboration with local farmers and fishmongers. For the sports enthusiast, **Wreckers Sports Bar** features more than 50 HDTVs and a two-story video wall.

RELAX



PHOTOS COURTESY OF MARRIOTT

Traveling with the family? The Gaylord's Everglades-inspired **Cypress Springs Family Fun Water Park** is a multi-level aqua playground with four water slides, an active lagoon, a plunge pool, and basketball area. For a more tranquil setting, visit the **South Beach adults-only pool**, lined with tropical palms and with cozy poolside cabanas available for reservations. For a little extra relaxation, stop by the **Relâche Spa**, which was awarded four stars by *Forbes Travel Guide*.

EXPERIENCE FLORIDA

Don't miss the opportunity to discover the best of Florida throughout the hotel's many atriums. The 161-gallon **Key West Lagoon** is home to a variety of marine species, including mangrove snappers, redfish, snook, stingrays, and tarpon. At **Gator Springs**, you can observe 15 juvenile alligators and 30 native species turtles. In **Sawgrass Place**, stop by to witness two popular exhibits featuring non-venomous snakes and a family of baby alligators.

DISCOUNTS

Visit **geoint2016.com/about/discounts** to enjoy discounts on Orlando area attractions such as the Kennedy Space Center, Pirates Cove Adventure Golf, WonderWorks, Gatorland, and more. Also take advantage of discounts to restaurants, shopping, and other fun activities.

Training Snapshot

This year, the GEOINT Symposium offers 60 hours of dedicated professional development. Attendees are eligible to receive .02 Continuing Education Units per session for select trainings, courtesy of Riverside Research, an IACET-authorized provider and USGIF mission partner in STEM education.

MONDAY MORNING SESSIONS 7-9 A.M.

Leveraging Open-Source Intelligence for Fusion and Activity-Based Intelligence
Aptima
Osceola Breakout 1
This course will provide an in-depth exploration of the challenges associated with exploiting open-source intelligence and fusing it with traditional sources.

Using the Analytic Decision Game to Teach Critical Thinking
Pennsylvania State University
Osceola Breakout 2
This presentation explores the use of the analytic decision game as pedagogy to train the human analyst of the future—the digital native.

Organizational Orientation to Agile
OGSystems
Osceola Breakout 3
In this course, attendees will learn basic foundational agile methods, as well as how agile is an expression of lean thinking.

Unsupervised Learning of Human Geography Data Using Open-Source Tools
Spatial Networks
Osceola Breakout 4
This workshop demonstrates the use of unsupervised learning techniques to better understand human geography variables in new environments.

Building Better Models Using Robust Data Mining Methods
SAS Federal
Osceola Breakout 5
Through case studies, attendees will learn to build better models that don't over-fit data.

Using Geospatial Data and GEOINT Products for Remote Sensing Research, Outreach, and Education
U.S. Geological Survey
Osceola Breakout 6
This course will provide information about geospatial data and products produced by U.S. government remote sensing programs that can be obtained for use in research, outreach, and education.

The Next Generation of GEOINTers

GEOINT 2016 FEATURES ROBUST YOUNG PROFESSIONALS PROGRAM

The USGIF Young Professionals Golden Ticket Program offers the opportunity for exceptional young professionals from the GEOINT Community to receive complimentary full Symposium registration and access to exclusive GEOINT 2016 events.

This year marks the sixth group of young professionals to participate in the Golden Ticket Program. The GEOINT 2016 Golden Ticket agenda will include special mentoring sessions, attendance at the invitation-only USGIF Chairman's reception, and luncheons with NGA Deputy Director Sue Gordon and IBM Fellow and Chief Scientist of Context Computing Jeff Jonas. Golden Ticket winners will also participate in the GEOINT 2016 outreach project by hosting 50 Junior ROTC cadets from Oak Ridge High School in Orlando at the Symposium Wednesday.

THE GEOINT 2016 YOUNG PROFESSIONAL SELECTEES ARE:

- Christina Ahier, Software Engineer, Harris Corp.
- Christopher Behr, Systems Engineer, Vencore
- Aimee Benedict, Software Engineering Manager, Accenture Federal Services
- Chris Clasen, LiDAR Image Scientist, NGA
- David Cox, GIS Analyst, ASRC Federal Inuteq
- Kyle Dees, Layered Sensing Exploitation Analyst/Physical Scientist, U.S. Air Force
- Chris DeMay, Chief Operating Officer, HawkEye 360
- Travis Dennis, National Government Sales, Esri
- Charlie Devine, 3D Geospatial Analyst, VRICON
- Shon Diaz, Full Motion Video Subject Matter Expert, ISPA Technology
- Kara Goda, Business Operations Manager, Accenture Federal Services
- Lauren Hickman, Systems Engineer, Vencore
- Will Hubbard, NGA Analyst/Storyteller/Editor, TASC
- Carlos Jimenez, Geospatial Analyst Supervisor/Imagery Mission Supervisor/Geospatial Reports Editor, U.S. Air Force
- Jonathan McColgan, Senior Consultant, OGSystems
- KJ Meyer, Senior Associate, Pricewaterhouse Coopers
- Delia Midamba, Experienced Associate, PricewaterhouseCoopers
- Brooklyn Middleton, Political and Security Risk Analyst, Riskline
- Danielle Murkerson, Software Engineer II, RadiantBlue
- Tory Pugliese, Geospatial Information Unit Leader, FEMA
- Laura Sadlowski, Business Development Analyst, Lockheed Martin Space Systems Company
- Charlotte Shabarekh, Director, Analytics, Modeling and Simulation Division, Aptima
- Kristen Smith, Business Development Solutions Analyst, USG, DigitalGlobe
- Melissa Soucie, Surveying Technician, Land Resource Consultants
- Jessica Thomas, Senior Consultant, OGSystems
- Amanda Ziemann, Postdoctoral Research Associate, Los Alamos National Laboratory

USGIF's Young Professionals Group (YPG) will host a panel discussion with speakers from DigitalGlobe, OGSystems, and Google from 2:30 to 3:30 p.m. Monday in Gainesville 1-2. The group will also host a networking reception from 5 to 6:30 p.m. Tuesday in Sarasota 2-3. Both events are open to all Symposium attendees.

To learn more about the USGF YPG, visit usgif.org/community/YPG.

A Learning Experience

STUDENT ASSISTANTS FROM 11 UNIVERSITIES TO VOLUNTEER AT AND ATTEND GEOINT 2016

Twelve student assistants representing 11 universities across the country have the unique opportunity to participate in GEOINT 2016 as part of USGIF's Student Assistant Program. Each student will work 20 hours throughout the Symposium by helping out during training sessions, in general session, or at the USGIF booth in the exhibit hall.

"The student assistant program is a fantastic opportunity for these hand-selected students to experience GEOINT 2016," said Justin Franz, USGIF's volunteer engagement manager. "The program offers the opportunity to network and engage with professional analysts, engineers, developers, and data scientists."

In addition to providing onsite support, students will have the chance to tour the exhibit hall, attend receptions, and network with government and industry attendees.

"I applied to attend GEOINT 2016 to get a first-hand experience of the GEOINT profession and the evolving technologies that help influence it," said Kyle Phillips, a sophomore GIS major at Lakeland Community College in Ohio, who will be a student assistant this year.

Liling Lee, a student in the University of Southern California geographic information science and technology graduate program, said she had a valuable experience last year as a GEOINT 2015 student assistant.

"I absorbed so much information and have reflected upon discussions which are helping me grow as a geospatial intelligence thinker," Lee said. "The peers and professionals I met and befriended at GEOINT 2015 will be invaluable sources of support and knowledge as I progress as a geospatial analyst. I am thrilled to be part of the GEOINT Community."

Student assistants will wear bright green T-shirts emblazoned with the phrase "got questions?" throughout the week. If you see a student, please say hello and share your experiences and advice about pursuing a career in the GEOINT Community.

Additionally, the student assistants—alongside 2015 USGIF Scholarship recipients and students from USGIF-affiliated universities—will display their student research posters Sunday from 7:30 to 8:30 a.m. and during lunch in Osceola Ballroom AB. Attendees can vote for their favorite student poster at **GEOINT2016posters.org**. The student with the most votes will win complimentary, full Symposium registration to GEOINT 2017 in San Antonio, Texas, and a one-year individual membership to USGIF. Second and third place winners will also receive a one-year membership.

Designing for the End User *continued from cover*

Gilbert: the rising expectations of the user and the multitude of devices and places from which users are accessing information; and the volume and pace at which information is being delivered, both in the commercial and national security realms.

"People have rising expectations and demand to receive more and more information in a context and format that makes sense to them," he said. "Instead of them having to learn the tool, the tool should learn them."

Phil Gilbert answers questions in April after giving a SAP Design Talk in Walldorf, Germany, to more than 800 SAP employees.

Gilbert founded three startups over the course of 30 years before IBM acquired his third startup, Lombardi Software, in 2010. At IBM, Gilbert quickly set out to introduce the human-centered design approach that made Lombardi a success. He started by running a pilot with a small IBM research and development team of about 1,000 people, hoping to change the way the team thought about the people that used its products. The team ended up drastically simplifying its offerings—taking 44 products down to four while doubling its market share.

After about 18 months, it became apparent the design thinking method was worth scaling across IBM. The company now has a global network of 29 design studios and counting, which house about 1,300 designers with thousands more non-designers working alongside them to build new solutions in very human-centered ways, according to Gilbert.

Gilbert acknowledges that scaling the design thinking approach across a large organization such as IBM can be challenging. Yet IBM has so far experienced success by allowing teams to self organize around compelling user research and climb what the company calls "hills."

"Highly empowered, multi-disciplinary teams are given a hill to climb, but they're not prescribed how to take it," Gilbert said. "They figure it out."

The company now has complex design teams that are geographically dispersed and reimagined for a continuous delivery environment that is always changing and delivering a new version, according to Gilbert.

"Everything is a prototype, even the things you release," he said.

Regarding GEOINT Foreword, Gilbert said he looks forward to engaging with the defense, intelligence, and homeland security communities, which include many IBM customers, as well as to sharing his knowledge with the national security sector.

"I think [design thinking] is something that can help us beat the bad guys a little more often," he said.

GEOINT Research & Development

FOUR NATIONAL LABS TO PRESENT AT GEOINT FOREWORD

by Kristin Quinn

New this year at the GEOINT Foreword pre-Symposium science and technology day will be presentations from four National Laboratories. The National Labs presenters discussed with *The GEOINT Symposium Show Daily* a preview of what they plan to share with the GEOINT Foreword audience:

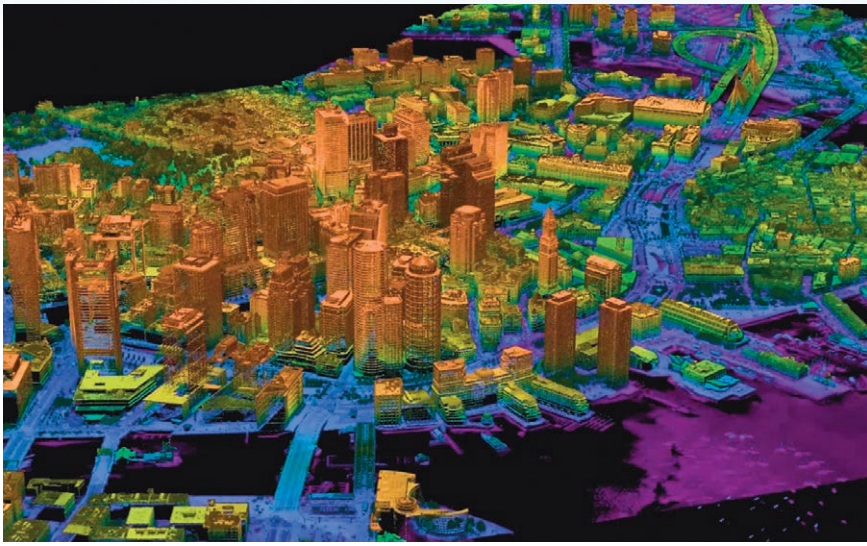


IMAGE COURTESY OF MIT

Los Alamos National Laboratory, Los Alamos, N.M.

Los Alamos National Lab (LANL) is known for pursuing experimental science and is seeing increasing GEOINT applications in the missions it supports. Dr. Jon Schoonover, program director in LANL's Emerging Threats Program Office, and Nicholas Generous, digital epidemiologist, plan to dig deep into biosurveillance technology and capabilities during their GEOINT Foreword presentation.

The presentation will include a look at how open-source intelligence can be used to mine social media data and help understand disease spread in cases such as the recent Ebola and Zika virus outbreaks.

Generous specializes in digital disease detection through the internet, smartphones, fitness trackers, and more. Wearable technology and the Internet of Things, according to Generous, are becoming more relevant for uses such as disease-layer epidemiology or studying natural disasters—"Imagine looking at the shock wave from Fitbits as people wake up during an earthquake," he explained.

"Fusing that kind of data to make insights is becoming increasingly important," Generous said. "I hope to show people the types of data that are out there and stimulate thoughts of how they might be able to use it themselves."

LANL will exhibit in **Booth 1921**, sharing more of the science it's pursuing around GEOINT missions.

MIT Lincoln Laboratory, Lexington, Mass.

Paul Metzger, group leader for intelligence and decision technologies with MIT Lab's ISR and Tactical Systems Division, will present on the processing, exploitation, and dissemination of data. His presentation will include a discussion of some of the GEOINT sensors developed by his division, as well as multi-INT fusion using open-source data and applying deep learning to military problem areas.

This will be Metzger's first time attending GEOINT Foreword.

"One of the biggest challenges I've seen is that often it's really hard for people to find out who in the community is working in what areas," he said. "In general, people are much more willing these days to collaborate. It's really good for events like [GEOINT Foreword] to help spread awareness."

Oak Ridge National Laboratory, Oak Ridge, Tenn.

Oak Ridge National Lab (ORNL) will focus its presentation on three main subject areas: population distribution and dynamics—which the lab is most known for, geographic data sciences, and scalable geospatial computing and visualization.

Presenters will be Dr. Budhendra Bhaduri, corporate research fellow and group leader; Eddie Bright, lead for the Population Distribution and Dynamics Team; and Dr. Robert Stewart, lead for the Geographic Data Science Team.

Their overview of geographic data sciences will touch on machine learning, pattern recognition, geospatial statistics, algorithm development, volunteered geographic information, and more. Scalable geospatial computing and visualization means taking GEOINT research beyond the desktop, according to Bhaduri. For example, he said, ORNL is home to the largest machine ever to be used for GEOINT research.

Bhaduri emphasized the lab's focus on mission-driven research and development as a reason he looks forward to presenting at GEOINT Foreword.

"Having that mission represented in the audience gets us instant feedback in terms of whether we are on the right course," he said.

ORNL will also exhibit throughout the week in **Booth 1915**.

Sandia National Laboratories, Albuquerque, N.M.

Bert Tise, distinguished member of the technical staff at Sandia National Labs (SNL) plans to brief on the labs' GEOINT and ISR development.

Tise will share an overview of SNL's advanced synthetic aperture radar (SAR) test bed and research and development capabilities, as well as present ideas on how to rethink SAR for an advanced exploitation and automation environment.

"I am looking forward to showing how SAR imagery is a key component of complete ISR mission solutions," Tise said. "It's not just about delivering exquisite imagery but how the SAR system supports critical ISR decisions."

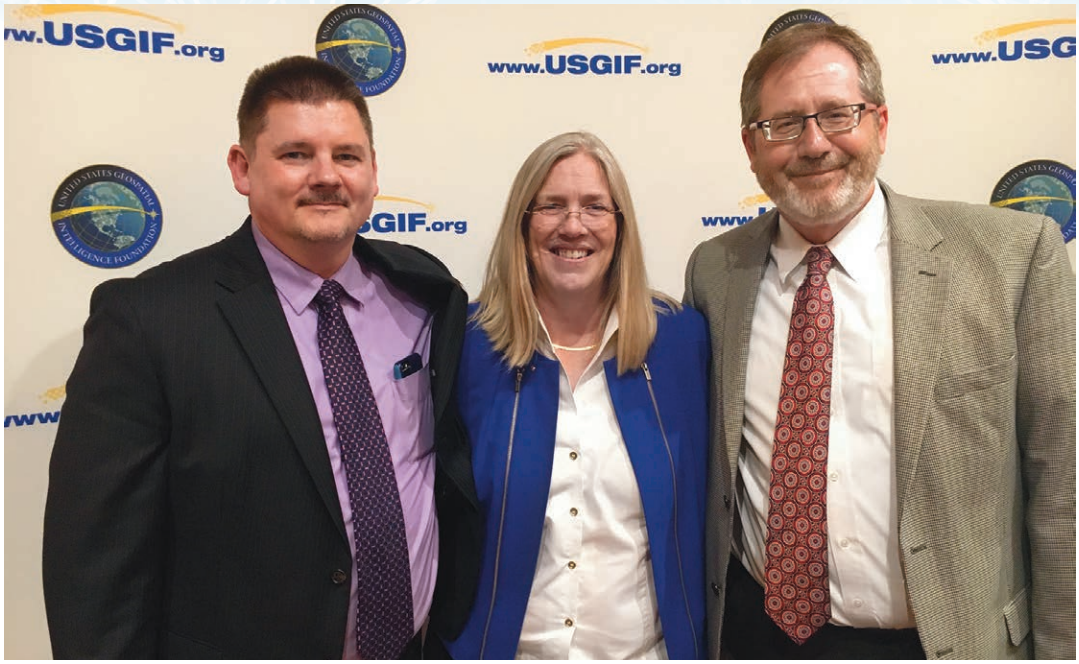
His presentation will also include insights on human-system integration and the future of radar technology.

GEOINT 2016 Sneak Peek

IC LEADERS PREVIEW SYMPOSIUM GOALS

by Kristin Quinn

In April, three Intelligence Community leaders shared their plans for the GEOINT 2016 Symposium at USGIF's GEOINT 2016 Sneak Peek event in McLean, Va. The National Geospatial-Intelligence Agency's (NGA) Sue Gordon, deputy director, and Mike Geggus, industry innovation advocate, discussed the agency's plans to send 200 intelligence officers to the Symposium. Terry Busch, chief of the Defense Intelligence Agency's (DIA) integrated analysis and methodologies division, discussed DIA's modernization efforts.



Mike Geggus and Sue Gordon of NGA (left), and Terry Busch of DIA previewed their respective agency's GEOINT 2016 plans in April at a USGIF event.

Busch, who is in charge of DIA's big data strategy, said foundational intelligence modernization is one of the agency's top priorities.

"We figured out a long time ago, if you get everything to geo, data starts fusing really, really well," Busch said, adding that about 85 percent of the world's data has some geographic attribute or quality.

Busch said DIA hopes to leverage the knowledge of USGIF, as the GEOINT Community's professional society, to seek solutions for foundational intelligence modernization at GEOINT 2016.

> "The benefit is for [the officers] to come back and help change perspective and help us reshape how we move our enterprise forward." —MIKE GEGGUS, NGA'S INDUSTRY INNOVATION ADVOCATE

"We know what foundational is—that's well defined," Busch said. "What we don't know is how we get [to modernization]. … We're trying to dial in this answer, it's great to have this forum and [the Symposium] to go and do this. We want to have that dialogue."

Gordon said 200 intelligence officers from across all NGA directorates would attend GEOINT 2016. Each officer attending was required "to prove that they had something they wanted to accomplish with you," Gordon told the audience. "Something they wanted to learn, to know, to advance."

Geggus said the GEOINT 2016 theme of "The GEOINT Revolution" is fitting as industry grows, extends, and scales so fast it can be difficult for government to keep up. He said NGA's engagement strategy for the 200 officers would be collective learning—to get the government personnel to shift their concept of industry partnerships from an exchange of goods and services to an exchange of ideas and perspectives.

"The benefit is for [the officers] to come back and help change perspective and help us reshape how we move our enterprise forward," Geggus said. "We have this auspicious goal to take these 200 officers and bring them together as a collective. Part of that is through technology. The idea is to assign each officer two industry partners to engage with under the assignment, to learn, and then share and report back to the group. The idea is to get full coverage of the event."

Gordon said NGA Director Robert Cardillo intends, in his GEOINT 2016 keynote address, to grade NGA on how the agency has performed against the strategy he presented at GEOINT 2015. Cardillo is scheduled to speak Monday at 11:30 a.m. in the Osceola ballroom.

"He's going to tell the good, the bad, and the ugly," Gordon said. "We think there's more good than the other two, but he'll be pretty candid about where we've done well and where there's still work to do."

Gordon said she intends to engage with industry and other partners at the Symposium to seek new ideas and solutions in the following areas: acquisition, GEOINT services, cloud migration, analytic modernization, and more.

Busch will speak at the Government Pavilion Stage in the exhibit hall at 2:30 p.m. Monday. Gordon and Geggus will present from the Government Pavilion Stage alongside NGA's Nicole Pierce and Karyn Hayes-Ryan at 12:30 p.m. Wednesday.

From Political to Functional Geography

BEST-SELLING AUTHOR AND GLOBAL STRATEGIST PARAG KHANNA TO GIVE MONDAY KEYNOTE

by Kristin Quinn

Parag Khanna's passion for geography was fostered by his global upbringing, having lived in New York, India, the United Arab Emirates, and Germany as a child. He vividly remembers traveling to Berlin with his parents in 1989 and sitting on what was left of the Berlin Wall.

"Going to Berlin right after the wall came down was a major eighth-grade geopolitical awakening," Khanna said.

He was subsequently glued to CNN during the first Gulf War and carefully analyzed the collapse of the Soviet Union.

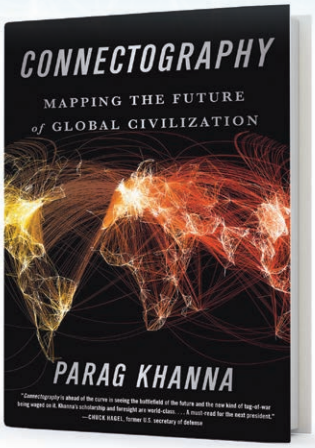
"That particular point in time was, for me, when geography and travel became geopolitics and career," Khanna said.

Khanna, who will give a keynote address Monday at 10:45 a.m. during the GEOINT 2016 general session, has since become a leading global strategist and best-selling author. He is a CNN Global Contributor and a senior research fellow with the Centre on Asia and Globalisation at the National University of Singapore. He is also managing partner of Hybrid Reality.

Khanna's most recent book, *Connectography: Mapping the Future of Global Civilization*, is the last in a trilogy 10 years in the making. "Connectography," as defined by Khanna, is the fusing of connectivity and geography. The book examines how the emergence of megacities (in the U.S., consider the Northeastern corridor stretching from Boston to D.C.) and modern infrastructure are reshaping the meaning of geography all over the world. When compared, infrastructure lines overwhelm political lines on a map, Khanna explained.

In his keynote, Khanna aims to be provocative and to encourage the national security community to think more in terms of functional or infrastructural geography as opposed to political geography.

"There is a systemic shift underway from political to functional geography, both of which are equally strategic," Khanna said, adding he hopes this perspective will provoke thought from the audience about the consequences of how and what they map.



> "There is a systemic shift underway from political to functional geography, both of which are equally strategic." —PARAG KHANNA

"Topographical re-engineering of geopolitical relationships underway in the world today has such enormous consequences," Khanna continued. "It's not focused on enough. I want to put that front and center. A lot of what we think of as alliances and maneuvers are actually very ephemeral."

Khanna will also discuss his Connectivity Atlas project, a living, regularly updated visualized data set of infrastructure and connectivity in the areas of transportation, communications, and more.

Copies of *Connectography* will be available for sale Monday at 12:30 p.m. in the foyer outside the Osceola ballroom, and Khanna will be present to sign copies. The book brings together visual and literary elements with robust, custom maps representing the ideas put forth in the text. Maps in the book reveal 21st century trade flows, what the world will look like if it warms four degrees, separatist movements in Africa, urban archipelagos, and how North America is evolving beyond NAFTA.

In February, Khanna gave a TED Talk titled, "How megacities are changing the map of the world." Preparing for the TED Talk helped shape the book as he honed and distilled his many thoughts on connectography, he said. To view Khanna's TED Talk, visit **ted.com** and search "Parag Khanna."

The author said he looks forward to hearing the other GEOINT 2016 keynotes and engaging in conversation with fellow speakers and attendees.

"[The GEOINT Symposium] is the largest gathering of its kind, bringing together such a diverse group of people," he said. "That kind of intersection is going to be really exciting."

FACTS FROM KHANNA'S FEBRUARY 2016 TED TALK

- The world currently houses **64 million kilometers** of roads, 4 million kilometers of railways, 2 million kilometers of pipelines, and 1 million kilometers of internet cables—but has less than 500,000 kilometers of political borders.
- The world will build more infrastructure in the next **40 years** than it has in the last 40,000.
- By 2030, two-thirds of the world's population will live in cities, and the world will have as many as **50 megacity clusters**.

Parag Khanna

PHOTOS COURTESY OF PARAG KHANNA

Moving at a Rapid Pace

A CONVERSATION WITH USGIF CEO KEITH MASBACK

USGIF CEO Keith Masback addresses the audience during GEOINT 2015 in Washington, D.C.

In the past year, USGIF has introduced the concept of the GEOINT Revolution through speaking engagements, in the pages of *trajectory* magazine, and at Foundation events. Now it is the GEOINT 2016 theme. How does the Symposium help further the GEOINT Revolution?

Most people are immersed in their day jobs. The bulk of GEOINT professionals—whether working in national security, homeland security, critical infrastructure, or emergency management—are head down in the day-to-day, the demands of their respective roles, and the relentless pinging of their inbox. The Symposium is an annual opportunity to take a step away from the daily churn and focus on the future of the tradecraft and Community.

The GEOINT 2016 program is a dynamic microcosm of the GEOINT Revolution. At a macro level, GEOINT Symposium content continues to evolve as our field rapidly advances. As a thought leader, USGIF cannot lag behind the changes but instead must be out in front of them, leading the discussion.

Among the exciting speakers this year are Phil Gilbert of IBM, who is breaking ground in the emergent concept of design thinking, and Parag Khanna, who just completed his third book, *Connectography*—a uniquely powerful look at the world through a set of very different lenses. And, of course, we continue our longstanding practice of hosting senior leaders from across the GEOINT Community.

One of my favorite things to do this time of year is peruse the Symposium registration list as it grows day by day. It always tells a compelling tale. Registrants include leadership from industry, academia, and government at all levels, citizens of nearly 30 countries, and more than 200 GEOINT professionals from the National Geospatial-Intelligence Agency (NGA) alone. USGIF's partnership with NGA has never been stronger and our reach has never been broader.

Building on past successes and learning from participant feedback, we've tightened up our professional development offerings to 60 hours of accredited training and education. We continue our very popular and incredibly important Young Professionals Golden Ticket Program. We will once again host a local high school, and this year we've added a program for elementary school students using National Geographic's Giant Traveling Map.

How has the GEOINT Revolution affected USGIF and its mission?

The current posture of the GEOINT Community makes the founders of USGIF appear rather prescient because they specifically decided 12 years ago to create the Foundation as a 501(c)(3) educational, nonprofit professional organization. If USGIF hadn't been created 12 years ago, there would certainly be a screaming demand for it right now. There's much credit to be given to those who originally conceived of USGIF. There are plenty of trade and lobbying organizations, and many of them do great work, but as I like to say with respect to USGIF's unique mandate: "A rising tide lifts all boats." A philanthropic higher calling underpins USGIF. So here we sit, perfectly positioned to be a convening authority for the community, to provide thought leadership, to support academic programs, and to create professional development programs such as Universal GEOINT Certification. As the field of GEOINT quickly broadens, as this revolution takes hold, we're remaining focused, making sure students are graduating with the skill sets that will be required, that emerging technologies are being explored, and that professionals will be able to demonstrate proficiency through certifications. GEOINT professionals will need to continually learn and grow to be properly positioned during the course of the GEOINT Revolution.

The educational component is the value proposition of USGIF.

It's astounding to come to work every day and look at the things we're doing and realize since 2008 alone—throughout The Great Recession, sequestration, and decreased government spending—USGIF has more than doubled in size in terms of its Organizational Membership. We are now nearly 270 organizations strong. Since we recently re-launched our Individual Membership offering, we've gained more than 1,240 individual members. Our membership represents not only our core constituents from defense, intelligence, and homeland security, but is expanding across almost every sector of the economy.

What are some examples of how USGIF is meeting its educational mandate?

There are nearly 650 people out there who have earned USGIF GEOINT Certificates from one of our 14 accredited college and university programs. In 2016, USGIF will have awarded more than $1 million in scholarships to students studying the geospatial sciences, remote sensing, or related fields. We're really starting to see the return on these investments. Our certificate holders and scholarship winners are working in industry, in government at all levels—local, state, federal—and in the military. Each time we come across another person whose life the Foundation has touched, it makes us recognize the responsibility we have to redouble our efforts and continue pushing to expand our programs and reach more people.

Take, for example, Dr. Matt Rice, who earned his Ph.D. with the help of USGIF scholarship funds and now teaches in the geography and geoinformation science department at George Mason University—a USGIF-accredited school. Just think of all the students he's going to influence over the course of his career as an academician.

Joel Max, who earned a USGIF scholarship in 2015 and participated in our Young Professionals Golden Ticket Program at GEOINT 2015, is now an emergency management coordinator for Larimer County, Colo. Megan Miller, who earned a 2014 USGIF scholarship, later interned in NGA's Basic and Applied Research Office. Her internship informed her Ph.D. dissertation research, in which she is studying algorithms and methodologies that would enable digital surface model generation from low-altitude UAV imagery.

In March, I spoke in Baltimore at TUgis, Maryland's GIS conference hosted by Towson University. After my presentation, a young lady named Andrea walked up to me and pulled a USGIF coin out of her pocket. She'd saved the coin I presented to her for participating in the student poster exhibits at USGIF's GEOINT Community Week five years ago as a high school student. She's soon to graduate from Towson with a geosciences degree. If that doesn't get you excited about what we do then I don't know what does.

In addition to education, how is USGIF's burgeoning Universal GEOINT Certification Program furthering the organization's mission?

GEOINT 2016 marks an important milestone for the Foundation as we formally launch our Universal GEOINT Certification Program. Achieving any of our three certifications—GIS and Analysis Tools, Remote Sensing and Imagery Analysis, or Geospatial Data Management—is a remarkable achievement in its own right. Obtaining all three of them, and then meeting the additional requirements for a Universal GEOINT Professional designation, will be a truly distinguishing credential for any professional in the GEOINT Community.

The community needs certification opportunities as part of the continued professionalization of the field. This tradecraft has sufficiently matured to the point where the value of a professional certification at this level is now a critically important differentiator. Further, USGIF's unprecedented joint efforts with NGA to recognize functional equivalence between the three USGIF professional certifications and four of NGA's certifications have allowed us to create an ecosystem that is transparent and transportable for the benefit of the GEOINT Community in its broadest context.

What other programs does USGIF offer throughout the year?

Beyond the GEOINT Symposium, USGIF hosts multiple programs large and small. There's GEOINT Community Week in the fall, annually providing an opportunity to look at myriad topics in depth, and also including our black tie GEOGala. Our workshop series produces a new event approximately every quarter, including recent workshops on data analytics and small satellites. These workshops create venues for the community to come together in the pursuit of solving new challenges. On the second Tuesday of every other month, we host GEOINTeraction Tuesday in Northern Virginia, which features a senior leader from a U.S. government agency, offering a regular education and networking opportunity. Weekly, USGIF's many working groups and committees host meetings at our headquarters in Herndon, Va. Many of them are also here at the Symposium hosting meetings and panel discussions.

Some GEOINT 2016 attendees might still think the Symposium is all USGIF does, but in fact we move at a very rapid pace, churning out programs and events all year round. The bottom line is that everything we do is about living up to the vision of USGIF's founders: Build the Community, Advance the Tradecraft, Accelerate Innovation.

> "If USGIF hadn't been created 12 years ago, there would certainly be a screaming demand for it right now."
>
> —KEITH MASBACK, CEO, USGIF

Visit USGIF.org to learn more about the Foundation's educational initiatives, professional certification, and other events.

8:00a—2:00p ALLDER GOLF CLASSIC (CELEBRATION CLUB, CELEBRATION, FL)

8:30a—5:30p GEOINT FOREWORD (GAYLORD PALMS, OSCEOLA BALLROOM C–D)

8:30—8:35a
Welcome: Dr. Darryl Murdock, Vice President of Professional Development, USGIF

8:35—8:45a
Master of Ceremonies: Dr. Chris Tucker, USGIF Board of Directors

8:45—9:15a
Keynote Speaker: Phil Gilbert, General Manager, IBM Design

9:15—9:22a
Lightning Talk: "Augmenting Physical and Virtual Realities" by Michael Thomas, SAS

9:22—10:12a
Presentation: Los Alamos National Laboratory—Jon Schoonover, Program Director, Emerging Threats Program Office; and Nicholas Generous, Digital Epidemiologist

10:12—10:19a
Lightning Talk: "An Activity Based Intelligence Approach to Space Situational Awareness (ABI for SSA)" by Charlotte Shabarekh, Aptima

10:19—11:09a
Presentation: Sandia National Laboratories—Bert Tise, Distinguished Member of Technical Staff, Sandia National Laboratories

11:09a—12:35p LUNCH BREAK AND LIGHTNING TALKS

11:45—11:52a
"Enabling Cloud-based Augmented Reality Networks" by Dr. George Demmy, CTO, TerraGo Technologies

11:52—11:59a
"Metadata Matters: Preserving Metadata May Be As Valuable As Preserving the Data Itself" by Ivan Pittaluga, Quantum

11:59a—12:06p
"Incorporating Open-Source, Social Media or the Internet of Things to Better Understand Spatial and Temporal Patterns" by John Mills, Applied Research Laboratory, Penn State University

12:06—12:13p
"Enriched Open-Source for GEOINT Analysis" by Don Widener, BAE Systems

12:13—12:20p
"Real-Time Geospatial Intelligence at Scale" by Mike Kilrain, MemSQL

12:20—12:27p
"Creating an Analytically Rich Fly-through on the Fly" by Craig Brower, VRICON

12:27—12:35p
"Narrative Analytics for GEOINT: Uncovering Spatio-Temporal Context for Consequence" by Dr. Rita Parhad, Optensity & Monitor360

12:35—1:00p
NETWORKING BREAK

1:00—1:50p
Presentation: Oak Ridge National Laboratory—Budhendra Bhaduri, Corporate Research Fellow and Group Leader; Eddie Bright, Lead, Population Distribution and Dynamics Team; Robert Stewart, Lead, Geographic Data Science Team

1:50—1:57p
Lightning Talk: "Object Based Production Powered by Cloud and Data Analytics Efficiently Fuses Multi-INT for Enterprise Insight" by Jason Nichols, Scitor (SAIC)

1:57—2:47p
Presentation: MIT Lincoln Laboratory—Paul Metzger, Group Leader, Intelligence & Decision Technologies, ISR and Tactical Systems Division

2:47—3:15p
NETWORKING BREAK

3:15—3:45p
Presentation: Dr. Stacey Dixon, Deputy Director, IARPA

3:45—3:52p
Lightning Talk: "Analytic Framework to Effectively Merge Technology with Tradecraft" by Keith Johnson, Lockheed Martin

3:52—4:22p
Presentation: Dr. Bradford Tousley, Director, Tactical Technology Office, DARPA

4:22—4:29p
Lightning Talk: "Utilizing Geotagged Social Media to Evaluate Risk and Respond to Threats" by Matthew McCarthy, Deloitte Advisory

4:29—5:00p
Closing Keynote: Dr. Peter Highnam, Director, Research, NGA

5:00—5:05p
Final Thoughts: Dr. Darryl Murdock, Vice President of Professional Development, USGIF

7:00—9:00p
GEOINT 2016 WELCOME CELEBRATION
EMERALD PLAZA, GAYLORD PALMS

» MONDAY, MAY 16 AT-A-GLANCE

EXHIBIT HALL OPEN 10:00A-5:00P

7:00—9:00a	**TRAINING AND EDUCATION SESSIONS** (Osceola Rooms 1–6)
9:00—9:15a	**GEOINT 2016 OPENING CEREMONIES: PRESENTATION OF COLORS AND NATIONAL ANTHEM** (Osceola Ballroom C–D)
9:15—9:30a	**WELCOME REMARKS FROM THE HONORABLE JEFFREY K. HARRIS, CHAIRMAN OF THE BOARD, USGIF** **USGIF'S ARTHUR C. LUNDAHL–THOMAS C. FINNIE LIFETIME ACHIEVEMENT AWARD PRESENTATION**
9:30—9:45a	**MASTER OF CEREMONIES: THE HONORABLE JOAN DEMPSEY, USGIF BOARD OF DIRECTORS, AND EXECUTIVE VICE PRESIDENT, BOOZ ALLEN HAMILTON**
9:45—10:15a	**KEYNOTE: THE HONORABLE MARCEL LETTRE, UNDER SECRETARY OF DEFENSE FOR INTELLIGENCE**
10:15—10:45a	**NETWORKING BREAK** (Osceola Foyer)
10:45—11:30a	**KEYNOTE: PARAG KHANNA, AUTHOR, *CONNECTOGRAPHY: MAPPING THE FUTURE OF GLOBAL CIVILIZATION***
11:30a—12:30p	**KEYNOTE: ROBERT CARDILLO, DIRECTOR, NATIONAL GEOSPATIAL–INTELLIGENCE AGENCY**
12:30—2:00p	**LUNCH AND EXHIBIT HALL** (Florida Exhibit Hall A–F)
12:30—2:00p	**USGIF NGA ADVISORY WORKING GROUP/NRO ASP INDUSTRY ADVISORY WORKING GROUP DISCUSSION** (Gainesville 1–2)
1:30—4:00p	**GOVERNMENT PAVILION STAGE** (Florida Exhibit Hall)
2:00—4:00p	**TRAINING AND EDUCATION SESSIONS** (Osceola Rooms 1–6)
2:30—3:30p	**USGIF YPG PANEL: EXPERIENCING M&A** (Gainesville 1–2)
4:00—5:00p	**EXHIBIT HALL NETWORKING RECEPTION** (Florida Exhibit Hall A–F)

USGIF Accredited Programs

Thinking about going back to school?

- UT Dallas — The University of Texas at Dallas
- Fayetteville State University
- George Mason University
- James Madison University
- Missouri
- Northeastern University College of Professional Studies
- NOVA IMS Information Management School
- PennState World Campus
- University of Redlands
- University of South Carolina
- USC University of Southern California
- United States Air Force Academy
- West Point United States Military Academy
- The University of Utah

There's no better time than the present. Earning a geospatial intelligence certificate from a USGIF-accredited institution provides the skills required to address challenges, offers competitive advantage, and ensures organizations get high-caliber employees who understand GEOINT.

Learn more at usgif.org