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A Wind of Change

USGIF DIRECTOR OF ACADEMIC PROGRAMS DR. CAMELIA KANTOR ON THE FOUNDATION'S RECENT ACADEMIC ACCOMPLISHMENTS AND UPCOMING GOALS

By Lindsay Tilton Mitchell

Dr. Camelia Kantor, USGIF's director of academic programs, joined the Foundation in July 2017 from Claflin University in Orangeburg, S.C. In less than 10 months, Kantor has forged many new partnerships and initiatives for the Foundation. In this interview, Kantor reflects on her first year so far and looks toward future goals.

What were some major highlights in your first year with USGIF?

My first year with USGIF can be described by the Hugh Prather quote: "Just when I think I have learned the way to live, life changes." It's been a journey! When I accepted this position, I was a tenured faculty, my house was paid for, and I was engaged in an active Romanian community in Columbia, S.C. Then I moved here and started all over with my husband and daughter.

I think the most important achievement from my first year at USGIF has been managing the daily exchanges and communication with individuals from across the GEOINT enterprise without much prior exposure to it. I am an academic, so there were times when I would sit in meetings and not understand many of the defense and intelligence acronyms, but strove to make sense of the communication based on the context. But I am a quick learner and, while I am still learning, I now feel confident in my capacity to contribute to the discussion.

Another highlight of my first year is the realization of the important role USGIF plays in the community, and that we have the support of a significant number of volunteers who help us advance the GEOINT tradecraft. And, I see a lot of potential for the Foundation's role to be even more significant. Volunteer support has allowed my colleagues and I to form a number of new industry partnerships. In the past year, we

> see *A Wind of Change* p. 16



In February, USGIF's Dr. Camelia Kantor gave a lightning talk titled the "Power and Potential of GEOINT" at the USC Spatial Science Institute's LA Geospatial Summit.

"As an educational nonprofit, USGIF relies on our dedicated members, partners, and volunteers to help us achieve such advancements and successes."

—DR. CAMELIA KANTOR, DIRECTOR OF ACADEMIC PROGRAMS, USGIF

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GEOINT 2018 WELCOME CELEBRATION Kick off the Symposium with great food and music

Join USGIF and 3,500 of your closest friends at Armature Works Sunday from 7 to 10 p.m. as we kick off the week with the GEOINT 2018 Welcome Celebration. From 6:30 to 10:30 p.m., complimentary shuttles will run every 15 minutes to and from the Tampa Convention Center and the Hilton Tampa Downtown.

FROM THE

PAE ISR's Resolute Eagle is a class 3 UAV with a 17,000-foot operational ceiling and 18-hour range in its catapult-launch and skid-landing version.



PHOTO COURTESY OF PAE ISR

UNMANNED SUCCESS

PAE ISR TO SHOWCASE NEW RESOLUTE EAGLE UAV

By Jim Hodges

Formed five years ago as a joint venture between PAE and American Operations Corporation, PAE ISR (Booths 1826 & 1827) brings to GEOINT 2018 the story of Resolute Eagle, its class 3 UAV, built in Sterling, Va., and first flown a year ago. The story includes a host of accomplishments for the unmanned vehicle since its first flight.

"Most of the aircraft that can do what ours can are larger and more expensive," said Polli Ogilvie, director of marketing with PAE ISR. "As all technology progresses, aircraft get smaller but stronger. That's kind of what we have. We are a [class] 3, but we have the capability of some 4s and 5s."

A Resolute Eagle UAV will be on display in the lunch seating area adjacent to the company's booth.

PAE ISR touts the reduced footprint of its vertical takeoff/landing version of Resolute Eagle, as well as its 15,000-foot ceiling, 12-hour range, and 60-pound payload. A small catapult launch/skid-landing version of the 18.2-foot wingspan plane adds 2,000 feet of ceiling and six hours of endurance.

In its first year, Resolute Eagle has demonstrated full beyond-line-of-sight SATCOM capability, necessary for a long-endurance UAV. The company added a transponder to the UAV for testing in Oregon commercial airspace and, shortly thereafter, won a \$1.7 billion ceiling value contract with the U.S. Navy.

The company aims to connect with GEOINT 2018 attendees seeking a platform to test and evaluate sensors and other ISR components.

ANALYTICAL HEAVY LIFTING

FEATUREX TO DEMONSTRATE GEOINT ANALYSIS APPS AND PLATFORMS

By Phillip Swarts



IMAGE COURTESY OF FEATUREX

In this FeatureX image, the near infrared channel is enhanced to facilitate tasks such as detection and measurement of ground cover, foliage, and crop health.

Taking a photo from a satellite is only the first step. The second is "knowing what's in an image and what changes over time," said Gil Syswerda, founder and CEO of **FeatureX (Booth 508)**.

"We focus on understanding what's in satellite images," Syswerda continued. "As a part of that process we have built a number of compelling technologies both for enhancing images and for deepening understanding."

Boston-based FeatureX sources images from across multiple GEOINT providers, and uses that information to build its own series of apps and platforms that allow users to best analyze and understand GEOINT data.

The company's next big release will be a website "that allows anybody to pick a location on the planet and source satellite images on it," Syswerda said. "We're trying to make satellite imagery as easy to use as Google Maps."

"Right now the barriers to entry are pretty high," he continued, noting that contracting with satellite operators to get images and then doing analysis on those images is "a lot of heavy lifting" that many >

FLOOR

EXHIBIT HALL HIGHLIGHTS

potential customers can't afford—especially if they're only interested in one or two specific locations.

FeatureX aims to do that heavy lifting then provide the images and analysis to its customers.

"Our tools, our platforms, our website will just make it much easier for pretty much anybody to jump in," Syswerda said.

FeatureX will also offer tools for third-party users to build their own web interfaces and apps using geospatial maps and data, and will demonstrate the aforementioned technology and platforms at its booth.

INTEL, INNOVATION, AND ANALYSIS

CACI PROVIDES ACTIONABLE INTELLIGENCE AND TRAINING TO SUPPORT THE IC

By Andrew Foerch

CACI (Booth 1029) applies deep learning research to supply defense and intelligence community customers with bleeding-edge artificial intelligence capabilities including object detection and high-speed predictive analytics.

"CACI's domain expertise and our long history utilizing machine learning to build relevant solutions set us apart. CACI has integrated powerful capabilities that push the envelope and bring the latest scientific advancements into production at a much more rapid pace," said a spokesperson from CACI's GEOINT team.

AI technology and automation will be a primary focus for CACI at GEOINT 2018. On Monday afternoon in the exhibit hall, Jasen Halmes, CACI's director of artificial intelligence, will present a lightning talk in the **Innovation Corner (Booth 1751)** titled "A Novel Deep Learning Approach for Rapid Labeling of Sparse Objects in Full Motion Video."

CACI's product suite includes a tool for indexing objects detected via full-motion video (FMV), a user-driven object-of-interest search capability, and an automated feedback loop—all of which improve mission efficiency and speed up decision-making for analysts. The FMV object detection capability will be the subject of a live demo at CACI's booth.

In addition to its AI offerings, CACI will promote GEOINT Academy, a workforce development program that provides specialized training in areas such as FMV and geospatial analysis. Industry professionals lead entry-level and advanced courses online and in person to help prepare students across the education spectrum for new career paths.

"We're not just a software and technique type of training program. We dive into the critical thinking aspect," said GEOINT Academy Director Brooke Gillam.

The program also serves as a test bed for CACI's research and development projects.

THE DNA OF GEOINT

JOHNS HOPKINS TO INTRODUCE NEW MASTER'S DEGREE PROGRAM IN GEOSPATIAL INTELLIGENCE

By Andrew Foerch

Johns Hopkins University's (JHU, booth 702) new master of science in geospatial intelligence is accepting applications for its first semester, which begins in May. The program will combine math and science with history of the geospatial profession and the art of analysis, equipping students to become practitioners of foundational and case-specific GEOINT.

"[The degree] models the DNA of GEOINT. Any future solutions and iterations of GEOINT will have to exhibit the four characteristics of art, science, math, and history. That's how we've shaped our curriculum," said program director Jack O'Connor.

An introductory course for new students will establish this framework, presenting an overview of how the four columns blend within the geospatial intelligence discipline.

The remainder of the program allows students to explore their interests and hone particular applications they may want to pursue in their careers. Courses are offered in big data analytics, satellite tasking, remote sensing, ethics, cartography, and more.

GEOINT communications courses will help students learn to convey data and intelligence with brevity and clarity. The program concludes with a semester-long capstone class in which students develop an analytic plan to address a geospatial problem and present their results.

"The idea is to have students demonstrate they understand the four threads," O'Connor said.

The program will continue JHU's long history of geospatial research, which includes crowdsourced studies on the effects of oil fracking on public health in Pennsylvania and Ohio; 38 North, a website that analyzes North Korean weapons of mass destruction facilities using commercial satellite imagery; and numerous satellite projects from NASA's Jet Propulsion Laboratory.

Additionally, O'Connor will present a training and education session Tuesday afternoon about the history of collection management based on a lecture from the program's introductory course.

"There were two heroes in the history of GEOINT—one goes back to the U2 program, the other came when satellite imagery caused the first big data problem," he said. "I'm going to talk about the current big data problem and put out a challenge: who will be the third hero?"



Jack O'Connor

GEOINT 2018 Welcome Celebration

Join USGIF and 3,500 of your closest friends Sunday from 7 to 10 p.m. as we kick off the week with the GEOINT 2018 Welcome Celebration. The Welcome Celebration is always a great setting to network with colleagues while enjoying great food, beverages, and entertainment.

Sponsored by Amazon WorkSpaces, the celebration will be at Armature Works. The building, recently renovated into a state-of-the-art event and dining space, dates back to 1910 and was once the storage and maintenance facility for the historic Tampa Electric (TECO) streetcars.

At the event, enjoy outdoor games such as beanbag toss and giant Jenga as well as a cigar roller station complemented by a scotch tasting bar. Inside, hear great music and see artists at work. And before you leave, don't forget to visit the photo booth for photos with live animals.

From 6:30 to 10:30 p.m., complimentary shuttles will run every 15 minutes from the Tampa Convention Center and the Hilton Tampa Downtown to the celebration at Armature Works.

An Experiential Learning Opportunity

STUDENT ASSISTANTS PARTICIPATE IN WORK-STUDY PROGRAM AT GEOINT 2018

By Lindsay Tilton Mitchell

Eighteen students from around the world will experience GEOINT 2018 for free thanks to USGIF's Student Assistant Program.

"Through this program, students are not only able to experience the GEOINT Symposium but also able to learn from and engage with professionals from across the discipline to better understand the GEOINT Community and its many different career paths," said Justin Franz, USGIF's community and educational manager.

The student assistants—along with other college students and a few select Tampa area high school students—will display their research in poster presentations during Sunday's GEOINT Foreword. Attendees can vote for their favorite college student poster using the GEOINT 2018 mobile app. The student with the most votes will win complimentary, full Symposium registration to GEOINT 2019 in San Antonio, Texas, a one-year USGIF individual membership, and the opportunity to present

Training Snapshot

The GEOINT 2018 Symposium offers 58 hours of training and professional development opportunities. Visit the GEOINT 2018 registration desk to purchase training. Each training session is \$25 for USGIF Members and \$30 for non-members.

MONDAY MORNING SESSIONS 7-9 A.M.

[USGIF's GEOINT Essential Body of Knowledge Update and Professional Certification Overview](#)

Talbot Brooks, Director of the Center for Interdisciplinary Geospatial Information Technologies

Room 18

The GEOINT Essential Body of Knowledge (EBK) was designed in cooperation with a wide range of industry, government, and academia and describes the breadth and depth of knowledge, skills, and abilities across the global GEOINT profession. The current revision of the EBK improves the document's usability as a study guide for certification, a roadmap for academic

course development, and a reference for defining positions in the workplace. This session will cover the EBK revisions and include examples from USGIF's boot camp exam prep course so attendees have a better understanding of how the EBK aligns with training and certification programs.

[To Download or Not to Download? BAE Systems](#)

Room 20

Gain hands-on experience with GXP's server and desktop applications. Discover the functionality available in streaming services and how sensor models and terrain facilitate highly accurate pixel delivery in the NSG Enhanced Streaming Services architecture as it incorporates the latest OGC streaming services.

[Fast Prototyping of Big Data Analysis Algorithms for Geospatial Discovery and Insights Using Open Source Software and Cloud Computing](#)

Descartes Labs

Room 21

This course will directly address

some of the knowledge areas captured under the USGIF GEOINT Essential Body of Knowledge Competency II (Remote Sensing and Imagery Analysis), specifically teaching attendees new ways and processes to synthesize technical, geographic, and intelligence information from multi-modal/multi-temporal/multi-sensor data.

[Accelerating API Availability with Microservices](#)

CA Technologies

Room 22

The goal of this training session is to provide participants with a solid understanding of what microservices are, what the basic elements of microservice architecture (MSA) are, and in which cases it may be appropriate to consider MSA as an architectural approach.

[Overview of Non-commercial Civilian Imaging Satellites and their GEOINT Applications](#)

Radiant Solutions

Room 23

NASA, the European Space Agency, and several other civilian



government agencies deploy and operate Earth imaging satellites. Many of these agencies make their imagery available at low cost, or even for free. This training session is intended to provide information about some of these non-commercial, less traditional GEOINT sources.

[Leveraging Satellite & UAV Imagery Safe Software](#)

Room 24

With satellite and UAV imagery becoming increasingly available and frequently updated, government agencies can gain great insights by leveraging this information. This workshop will address the challenges of processing this data for use. Attendees will be equipped with the technical knowledge of how data from satellites and UAVs can be processed and manipulated in preparation for analysis.

his or her research on stage during GEOINT Foreword 2019. Second and third place winners will receive a one-year USGIF individual membership.

“Attending classes at George Mason provides me with only half of my professional knowledge,” said Andy Avila, a senior at George Mason University and incoming student assistant. “Being part of the Symposium will provide me with the real-world, industry-specific information I need to apply my theoretical studies in the workforce. As such, I hope to expand and deepen my network of professionals in the field to learn from them and better prepare myself for post-baccalaureate employment.”

In addition to providing onsite support, students will attend an exclusive workshop with Hexagon Geospatial. The student assistants and other college students will learn how to use Hexagon’s Smart M.App platform to create an Incident Analyzer View—an interactive map displaying specific incident data. Students will display data using charts, graphs, gauges, and other tools while applying critical thinking and analysis skills.

For the best mapmaker, Hexagon Geospatial will award complimentary registration to its 2018 HxGN LIVE event in Las Vegas this June, including the opportunity for the winning student to speak about his or her project on stage.

Student assistants will wear red “got questions” T-shirts throughout the Symposium. This year’s students represent Fayetteville State University, George Mason University, Gettysburg College, James Madison University, North Carolina Central University, Northeastern University, Pennsylvania State University, the U.S. Military Academy at West Point, the Universidade Nova de Lisboa, University of Missouri at Columbia, University of Redlands, University of South Carolina, University of Southern California, and University of Utah.

Exploring Tampa Bay

WHAT TO EXPERIENCE IN “THE BIG GUAVA”

By Andrew Foerch



If the more than 100 speakers, 58 hours of professional development, 250 exhibitors, Government Pavilion Stage, lightning talks, and dedicated networking opportunities aren’t enough—or if you’re just looking for some after-hours entertainment—the local Tampa area offers many exciting attractions.

WATERFRONT

Walk, jog, bike, or segway along the scenic **Tampa Riverwalk** for a taste of all downtown has to offer. The 2.4-mile path officially begins at South Plaza in the Channelside district. Here, companies offer kayak and water bike rentals as well as boat tours. Close by is **The Florida Aquarium** with its famous stingray petting tank. The Riverwalk follows the Hillsborough River north, eventually hitting **Curtis Hixon Waterfront Park**—a hotspot for exercisers, dog-walkers, bird-watchers, and the occasional fire-juggler.

YBOR CITY

Tampa’s historic **Latin Quarter** is a must-visit. Under the direction of Vicente Martinez-Ybor more than 150 years ago, the neighborhood blossomed into a major manufacturing center for quality cigars, and is now the only

National Historic Landmark District on Florida’s west coast. Enjoy Cuban, Spanish, Italian, Greek, and French cuisine, as well as eclectic retail stores, ghost tours, nightlife, and live music up and down vibrant 7th Avenue.

DINING

For an upscale culinary experience, make a reservation at **Bern’s Steakhouse** on S. Howard Avenue. In addition to perfectly aged steaks, the restaurant boasts one of the largest wine collections in the world and an internationally famous dessert room. **Jackson’s Bistro** offers elegant dining on the water a short walk from the Convention Center. For casual fare, check out one of the many Ciccio Group-owned restaurants on S. Howard Ave. **Fresh Kitchen**, **Ciccio Water**, and **Green Lemon** are popular and affordable with a splash of local flavor.

SHOPPING

The **Hyde Park** neighborhood is a charming village overflowing with name-brand retailers and local boutiques connected by smooth brick walkways. Inventive restaurants abound as well, such as **Cinebistro** (which merges the classic dinner-and-a-movie concept) and **On Swann**. Minutes south of downtown, **Channelside Bay Plaza**

offers a collection of waterfront shopping and entertainment, with shops that sell coffee, art, wine, cigars, and more.

ART & MUSEUMS

About a mile from the Tampa Convention Center is the **Tampa Museum of Art**, the region’s largest museum dedicated to contemporary fine art and new media. Channelside is home to the **American Victory Ship Mariners Museum**. And docked behind the aquarium, the **S.S. American Victory**, deployed during WWII, is one of four operational merchant vessels in the U.S. To learn about the city’s exploration by European adventurers, visit the **Tampa Bay History Center** to tour its featured exhibit, “Treasure Seekers: Conquistadors, Pirates & Shipwrecks.”

Spouse/Guest Tours

USGIF is offering discounts on activities for your spouse and/or guests to enjoy while you attend GEOINT 2018. Sign up and pay at the on-site registration desk or online at geoint2018.com/about/discounts. Transportation is included.

Monday, April 23 Kayaking Excursion— \$119

9:30 a.m. to 1 p.m.
Experience a 2.5-hour guided tour in Shelly Key Preserve. Includes all equipment and bottled water.

Tuesday, April 24 Ybor City Historic Walking Tour—\$139

10:30 a.m. to 3 p.m.
This two-hour guided tour includes lunch at the famous Columbia Restaurant.

Are you a Fuzzy or a Techie?

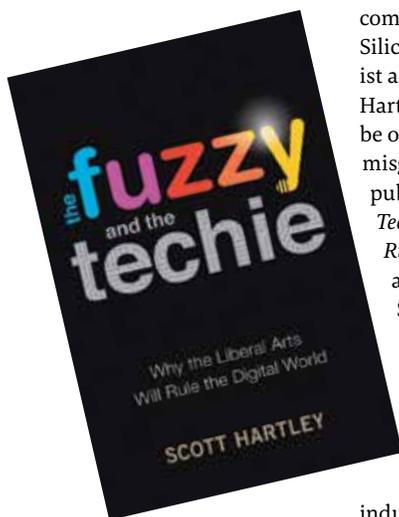
AUTHOR AND VENTURE CAPITALIST SCOTT HARTLEY TO GIVE GEOINT 2018 KEYNOTE

By Andrew Conner



Scott Hartley speaks on the future of work at the World Bank/IMF Annual Meeting in 2017.

PHOTO COURTESY OF IMF/Ryan Rayburn



At a time when some prominent voices in the business world are questioning the value of a liberal arts education compared to a STEM degree, Silicon Valley venture capitalist and best-selling author Scott Hartley believes this notion might be overstated and perhaps a bit misguided. Hartley, who recently published *The Fuzzy and the Techie: Why the Liberal Arts Will Rule the Digital World*, will be among the GEOINT 2018 Symposium keynote speakers.

Named for terms Hartley was first introduced to as an undergraduate at Stanford University, his book explains that successful companies, whether in technological industries or otherwise, need both leaders with “fuzzy” soft skills in the humanities as well as “techie”

hard skills in STEM. Moreover, Hartley myth-busts the notion that success can be achieved as fully one or the other.

“I studied political science and saw myself as someone who was really inspired by a classical, well-rounded education,” Hartley said. “When I worked at companies like Google and Facebook, people outside the industry didn’t understand what I did. People don’t realize that 50–60 percent of these companies are non-engineering and employ people providing all different kinds of value, yet the narrative about Silicon Valley is that it’s code that drives innovation. In reality, most of the innovation is in solving human problems, and centers around psychology.”

The importance of “fuzzy” skills as complementary to “techie” skills

was reinforced in Hartley’s experience as a venture capitalist as well as in his work as a Presidential Innovation Fellow at the White House, and in his term membership at the Council on Foreign Relations (CFR).

“In venture capital, your job is to meet with hundreds of entrepreneurs, and you begin to unpack the full gamut of skill sets. I realized the code was actually the commodity. What made companies successful were passion, curiosity, a deep understanding of a human problem, charisma, and the ability to hire people. More often than not, it wasn’t the standout coder from MIT who received investment,” Hartley recalled. “Sometimes the tech-focused teams struggled more than the team that was a hungry theater arts major partnered with

a technologist. The reason I wrote the book is that narrative was at odds with what I was seeing in Silicon Valley.”

Since publishing *The Fuzzy and the Techie*, Hartley has traveled the world spreading this message—one he is excited to share with the GEOINT 2018 audience in his Monday morning keynote. Although he cut his teeth in Silicon Valley, Hartley has seen how important liberal arts training can be in the defense and intelligence communities.

“At both the White House and CFR, I had exposure to experts with military and intelligence backgrounds. I’ve also worked on geospatial intelligence through Spire, a startup that uses remote sensing cubesats for maritime domain awareness and weather data,” Hartley said. “These types of relationships helped me realize

this message is not unique to Silicon Valley, that across industries we’re struggling to balance context and code.”

One example of cross-disciplinary synergy Hartley plans to share in his address is the Intelligence Advanced Research Projects Activity’s Good Judgment project, a government-sponsored research study that called for teams representing many different disciplines to forecast future events.

“The assumption was that the solution would be technological—purely big data. But there was one team that blended humans and machines using some data science and algorithms to sort data but then also using human experts to make determinations on that data,” Hartley said. “They blew away the competition. It shows humans are more important than hardware.”

Hartley said this would be one of the main takeaways from his remarks: While the artificial intelligence and machine learning revolution is coming, it won’t be as all-consuming as some predict. Routine aspects of work may be automated, but humans will always be necessary to provide the kind of thinking algorithms cannot. And because of this, investments in education beyond coding and computer science are still essential.

“One concept we all have to take to heart is that our education has to be in ‘beta,’” Hartley concluded. “None of us have studied something that’s so relevant it’s going to be useful forever, so we have to continually invest in our education, and we have to build diverse teams around us that mitigate our own biases, and blend both the fuzzy and the techie.” 🌐

CONNECTING INTEL AND OPERATIONS IN REAL TIME



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—Dave Zader, Wildland Fire Administrator, Boulder, CO



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Marshaling Data for the Greater Good

A PREVIEW OF LINKING THE WORLD CEO MINA CHANG'S GEOINT 2018 KEYNOTE

By Myrna Traylor

While it comes as no surprise that the worlds of geospatial intelligence and humanitarian outreach are very different, Mina Chang, CEO of Linking the World, is fully invested in bringing those worlds together in meaningful, and possibly paradigm-shifting, ways.

"Our industries use such different language," Chang said. "And when we do have the same terminology, we are using it in such different ways. We need a cultural shift."

Chang, who is also an International Security Fellow at New America, will moderate a panel on spatial analytics and disaster relief Sunday during GEOINT Foreword, as well as give a keynote address during Monday morning's general session.

She described how NGOs apply data to their goals of identifying and delivering aid to populations in crisis around the world. Typically, aid organizations' use of geospatial data is two-fold: First, crisis mapping or post-program output data demonstrates to donors and potential donors how their money has been or will be used. Second, there are mountains of statistics—such as who is located where and what they are doing—that Chang said are not really actionable for aid organizations.

"The military uses this kind of data for contingency planning, and even enemy groups use it," she explained. "There are tools that allow us to identify problems on the ground, but NGOs are not incentivized to use data in this way."

Rather, she said, NGOs are forced to use data to meet the needs of donors rather than aid recipients.

"NGOs had to put ourselves in boxes: water, health care, education, etc., in order to target donor dollars," Chang said.

She said there have been some unintended consequences from incomplete or inappropriate project implementations. Her goal is to recast how the GEOINT Community can use open-source, unclassified tools to support humanitarian organizations in using data to shape truly targeted programming.

"I didn't want to continue programs that were reactive, so we shifted to becoming proactive," Chang said. "We know which are the failed states; let's use the big data tools to see what the next trouble spot would be. We need to build resiliency in target populations against bad actors who want to prey on the peoples' vulnerability. We can see who is gaining territory to legitimize their ascendancy."

Chang said it's essential to identify this tipping point—the moment when aid intervention would be most useful to support local leaders who don't have tools

"We know which are the failed states; let's use the big data tools to see what the next trouble spot would be."

—MINA CHANG, CEO, LINKING THE WORLD



or jobs to give their populace.

"The 11-year-old boy who works at a checkpoint for a radical group doesn't care about ideology," Chang said. "He does it because they give him money for himself and his family."

Though this paradigm shift will require considerable effort, Chang sees models in the business world for how it could be applied.

"I admire Silicon Valley: They celebrate failures, they learn from those lessons. I so wish our non-profit sector would do that. There are best practices that are not shared, nor lessons learned," she said, adding that much of the data used to identify a crisis goes afterward into what she called 'the data basement.' "We need to apply this data for machine learning. How can we put values on all these indicators? The AI doesn't exist yet."

Moreover, Chang said, there is a general lack of coordination of

data analysis efforts among NGOs on the ground.

"We have to get them to want to share. As the NGO sector grows and gets better at collecting data from human sources [it can be put to better use]."

Chang is looking forward to engaging with experts from defense, intelligence, and industry who recognize both the consequences and the opportunities of our increasingly interconnected world.

"Geospatial intelligence is vital to understanding the world, but we all understand that data science alone is not enough," Chang said. "This is a community of people who are not afraid of complex challenges and welcome cross-sector, cross-discipline collaboration. So it is a privilege to keynote at [the GEOINT Symposium] because I know that through coordinated efforts, we all help advance national security and global stability." 🌐

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Join Us at the Welcome Celebration

Sunday, April 22 • 7-10pm • Aramture Works

powered by  **amazon WorkSpaces**

Shuttles will run every 15 minutes,
6:30-10:30 p.m., from the Tampa
Convention Center and the Hilton
Tampa Downtown.



EdGEOcation at GEOINT 2018

USGIF TO HOST TAMPA AREA K-12 STUDENTS FOR INTERACTIVE LEARNING PROGRAMS



During the GEOINT 2017 K-12 program, Girl Scouts from the San Antonio area had the chance to learn about GEOINT and participate in various activities, including National Geographic's Giant Traveling Map of North America. GEOINT 2018 will once again welcome local K-12 students.

Nearly 140 K-12 students from the Tampa Bay area will have the unique opportunity to engage in science, technology, engineering, and mathematics (STEM) activities at GEOINT 2018. Eighth grade students from Stewart Middle School in Tampa, fifth graders from Shorecrest Preparatory School in

St. Petersburg, and Junior ROTC cadets from various high schools in Hillsborough County will visit the Symposium throughout the week.

"We have a wonderful program planned for Tampa students this year," said Lindsay Mitchell, USGIF's lead educational manager. "By attending technology

demonstrations and participating in interactive map activities, the children will be encouraged to think about how GEOINT is used in their everyday lives. They will also learn about the many career opportunities that require GEOINT knowledge and skills."

High school students from Hillsborough County will participate in poster sessions Sunday during GEOINT Foreword. USGIF selected these students from the Hillsborough Regional STEM Fair in February for the best use of GEOINT to solve a real-world problem. The high school students will join college students also displaying their research.

Approximately 15 eighth grade students from Stewart Middle School will attend Monday, and nearly 70 fifth graders from Shorecrest Preparatory School will visit the Symposium Tuesday. The K-12 program—sponsored by AGI, BAE Systems, and Maxar—is a full day of activities that includes a 10-foot inflatable globe, exhibit hall tours, and a panel discussion featuring leaders from academia, government, and industry.

K-12 program speakers will include:

- **Col. Steven D. Fleming, Ph.D.**, U.S. Army (Ret.), Professor of Practice of Spatial Sciences, University of Southern California
- **Karyn Hayes-Ryan**, CEO, KHR Impacts

"Fulfilling the promise of what we know is possible tomorrow will depend on helping these kids imagine their potential contribution at the center of a space renaissance."

—NANCY COLEMAN, VICE PRESIDENT OF COMMUNICATIONS, MAXAR

- **Elizabeth Lyon**, Senior GEOINT Authority, Geography and Cartography, NGA
- **Carmen Medina**, Founder, MedinAnalytics
- **Patty Mims**, Deputy Director, Federal Government, Esri
- **Ashley Richter**, Program Data Management Lead, AECOM
- **Dr. Chris Tucker**, Principal, Yale House Ventures
- **Christopher Viselli**, Senior Operations Executive, USGIF
- **Isaac Zaworski**, Vice President, Vricon

USGIF will also debut an interactive map of North America at the Symposium called USGIF's Portable Planet. The 35-by-26 foot map is an educational tool that not only teaches K-8 students about maps and geography but also allows them to practice critical thinking, spatial analysis, and teamwork. See the map in action

at the "EdGEOcation Station" adjacent to registration.

"Seeing and hosting K-12 students on the floor at [the Symposium] is always a highlight. It's thrilling to know that exposing young minds to our industry in such a hands-on way might create a spark in someone," said Nancy Coleman, vice president of communications at Maxar. "Right now, there's keen interest in businesses like ours that sit at the nexus of the new space economy. At Maxar, we take our responsibility to inspire the next generation seriously, because we love what we do today—but fulfilling the promise of what we know is possible tomorrow will depend on helping these kids imagine their potential contribution at the center of a space renaissance."

The students from Stewart Middle School will attend an

exclusive workshop by Hexagon Geospatial. The workshop will involve learning how to use Hexagon's Smart M.App platform to play a game in which they map Florida amusement parks. This activity will teach students how to display information about the amusement parks while applying geospatial analysis to make informed decisions.

On Wednesday, up to 50 Tampa area high school Junior ROTC cadets will participate in a data collection activity with members of USGIF's Young Professionals Group. In collaboration with the World-Wide Human Geography Data Working Group, students will use a free, open-source mobile app to collect data in Tampa neighborhoods that are susceptible to natural disasters. The information collected will be shared with local first responders. 🌐

GEOINT 2018 Carahsoft Partner Pavilion

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	#1704		#437
	#413		#1509
	#511		#1001
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	#800		#1708
	#1724		#1622

Join us at our Carahsoft 2018 GEOINT Networking Reception!

April 24, 2018 | 5-8:30pm
Tampa Marriott Waterside
Hotel and Marina

Cross-Disciplinary GEOINT

GEOINT FOREWORD TO SHOWCASE THE BROAD ROLE OF GEOSPATIAL INTELLIGENCE ACROSS SECTORS

By Phillip Swarts



Dr. Chris Tucker of USGIF's Board of Directors greets attendees during GEOINT Foreword 2017 in San Antonio, Texas. The 2018 GEOINT Foreword agenda will focus on nontraditional GEOINT analytic use cases.

Geospatial intelligence is rapidly expanding far beyond its defense and intelligence community origins. Speakers at Sunday's GEOINT Foreword—the GEOINT Symposium's pre-conference science and technology day sponsored by IBM—will detail the many ways GEOINT is influencing disaster planning and relief, healthcare, sports, analytics, and other industries.

The goal of this year's GEOINT Foreword is to connect people from different fields who are united in their use of geospatial intelligence, said Renard Paulin, who helped plan the event as volunteer co-chair of USGIF's Tradecraft and Professional Development Committee.

Paulin said he hopes GEOINT Foreword participants “take ideas and concepts they’ve learned at GEOINT Foreword and ... combine them with what they’re hearing at the larger GEOINT Symposium to come up with something different, unique, or interesting.”

Budhendra Bhaduri, director of the Urban Dynamics Institute at Oak Ridge National Laboratory, will participate in a GEOINT Foreword panel discussion on emerging geospatial technologies in health services.

“GEOINT Foreword is almost a preview of some of the work that is going on in the broader context of the GEOINT Community,” Bhaduri said. “It’s just highlighting a very particular section of the sort of cross-disciplinary collaborative impact.”

Bhaduri said he plans to discuss how GEOINT can be applied to better understand the planet’s population, population mobility, and the state of certain settlements or environments.

“All of this is extremely critical information for ... agencies that are trying to work in the epidemiology mission or healthcare accessibility mission,” he said.

Bhaduri and Oak Ridge have partnered with the Bill and Melinda Gates Foundation in an

effort to eradicate polio, starting with the goal to vaccinate all children in Nigeria under the age of five. Vincent Seaman, interim deputy director for strategy, data, and analytics at the Gates Foundation, will also speak on the health services panel.

“We rely heavily on basic geospatial reference data—so names of settlements, locations, and some key points of interest like health facilities or schools or markets,” Seaman said. “In most of these countries, the census data is usually not very good. It’s hard to even get access to it, and sometimes there hasn’t been a census in a really long time. Having a way to estimate population based on what we can see from above and then based on some information from the ground is really useful.”

Seaman and Bhaduri both said they aim to work more closely with other government agencies and private companies to learn new ways of improving the collection and cataloging of GEOINT data—and in turn share any innovations that arise from their health sector mission.

“This cross-fertilization of ideas, challenges, and solutions by being able to interact with a very large community of practitioners and decision-makers provides a unique and unprecedented opportunity to gain from this kind of cross-disciplinary thinking,” Bhaduri said.

In addition to the health services panel, GEOINT Foreword 2018 will feature panels on GEOINT to optimize human performance in sports, spatial analytics to improve disaster planning, and professional development in geospatial data analytics. Dawn Meyerriecks, deputy director of the CIA’s Science & Technology Directorate, will give the GEOINT Foreword keynote address at 9 a.m. 🌐



Don't Miss the Student Poster Sessions!

USGIF will feature the research of 27 college students and four Tampa area high school students during poster sessions at GEOINT Foreword. Visit the poster area during lunch and networking breaks to speak with students about their research. USGIF is holding a competition in which attendees can vote for their favorite college student project via the official GEOINT 2018 mobile app. The student with the most votes will receive a complimentary, full Symposium registration to GEOINT 2019 in San Antonio, a one-year USGIF individual membership, and the opportunity to present his or her research during GEOINT Foreword 2019.



Congratulations to the 2018 Golden Ticket Winners!



**Michael
Airosus**



**Dan
Hausler**



**Cadienne
Naquin**



**Katie
Salvaggio**



**Michael
Aper**



**Jeffrey
Heuwinke**



**Paul
Park**



**Josh
Sisskind**



**Robert
Chambers**



**Grant
Huang**



**Melanie
Pittaluga**



**Joseph
Svrcek**



**Armando
Drain**



**Megan
Hughes**



**Ricky
Rios**



**Allison
Tompkins**



**Stephanie
Greer**



**Kevin
Hyers**



**Matthew
Rodgers**



**James
Urban**



**Brandi
Gross**



**Kate
McKenzie**



**Megan
Rohrer**



**Richard
Windisch**



**Lauren
Yoroshko**

A Wind of Change *continued from cover*

have added two new scholarships; improved our selection process for USGIF's State and Future of GEOINT Report and scholarship program; and rethought the formatting of our GEOINT Essential Body of Knowledge (EBK) and accreditation process. In addition, we increased the visibility of GEOINT Symposium lightning talks, and this year will introduce a dedicated stage for them at the **Innovation Corner (Booth 1751)** in the exhibit hall.

What's in store for the future of USGIF's Collegiate Accreditation Program?

The Foundation's accreditation program is my primary focus, and I strive to make the accreditation process both rigorous and flexible enough to allow for market changes. We just published our 2018 Accreditation Guidelines that replace those created in 2013. The revisions to the standards represent substantive improvements and mirror best practices from accrediting organizations, while reflecting best practices and the needs of the GEOINT Community.

We are now using USGIF's GEOINT EBK as a core integrator and organizer of GEOINT education from academia to the professional world. USGIF accreditation provides a pathway for growth as well as a mechanism to address programs that no longer comply with the standards. As GEOINT has matured and evolved, so has USGIF's Collegiate Accreditation Program. I am hopeful that the GEOINT Community, especially those interested in hiring GEOINTers, will appreciate and recognize the value of students graduating from our rigorously evaluated programs.

We are also reorganizing our volunteer structure by strengthening and clarifying the role of USGIF's Academic Advisory Board and Academic Committee—now named the Accredited Programs Committee—and its subcommittees. This will help set clear objectives to better support academia and advance the GEOINT tradecraft. Most important, however, is we are seeing ongoing commitment to USGIF accreditation among our schools: the U.S. Air Force Academy and the U.S. Military Academy recently gained renewed academic accreditation, and James Madison University and the Universidade Nova de Lisboa's NOVA Information Management School received full accreditation following provisional accreditation in 2016.

What new USGIF partnerships will benefit the Foundation's accredited programs?

We have been very successful in establishing and, in some cases, strengthening our relationship with several industry partners. For example, USGIF signed memorandums of understanding with the DigitalGlobe Foundation, Hexagon Geospatial, and Boundless in an effort to provide our 14 accredited schools with free and simple access to software, data, imagery, and technical support. In the fall, we partnered with NVIDIA to offer an essay challenge in which three winners from our accredited schools were awarded an NVIDIA GPU. We also partnered with Caliper, which offered its Maptitude software to our schools for free, as well as with Reinventing Geospatial, which introduced a new, needs-based scholarship. All this in under one year—it's amazing!

I am on the lookout for additional partnerships; in particular, those that would help our faculty—especially individuals in their early career—gain funding for research and curriculum development, support for students in the form of travel grants to present their research, and volunteer career mentors whom we could pair with students. There is still a lot of work ahead of us, and as an educational nonprofit we rely on



USGIF's Dr. Camelia Kantor presents the U.S. Air Force Academy's certificate of re-accreditation to Dean of Faculty Brig. Gen. Andrew P. Armacost.

our dedicated members, partners, and volunteers—which aren't mutually exclusive—to help us achieve such advancements and successes.

What can GEOINT 2018 attendees expect to see from academia this week?

Obviously the GEOINT Symposium is not a primarily academic conference, but we are making efforts to offer our academic collaborators opportunities to showcase their expertise. Attendees will have the chance to hear from academic presenters via lightning talks, several panels at GEOINT Foreword, and in the Academic Pavilion of the exhibit hall. We will also share information on our accredited programs at USGIF (Booth 1147), as well as gather professionals from throughout the community onsite via meetings with USGIF's joint Certification Governance Board, Academic Advisory Board, and Accredited Programs Committee.

Are there any opportunities for experienced professionals to share their knowledge with students at GEOINT 2018?

Students will showcase their research via posters throughout GEOINT Foreword. Additionally, USGIF is once again hosting a Student Assistant program in which students have the opportunity to attend the Symposium for free via a work-study agreement. These specially selected students will wear red shirts throughout the event. This year, with support from Hexagon Geospatial, student assistants, along with other college students attending the Symposium, will have the opportunity to take part in an interactive workshop using Hexagon's Smart M.App platform.

Some 2017 USGIF Scholarship Program recipients will also be in attendance, taking advantage of the complimentary Symposium registration we offer to all scholarship winners.

Year by year, we hope to increase our academic offerings. I encourage all attendees to visit the student posters, the Academic Pavilion, and, ideally, to follow up with students and faculty by providing support for internships, faculty exchanges, mentorship, etc. A basic principle of urban planning and development is that high levels of education and the presence of universities draw highly technical and innovative companies to a region. This reiterates the value of academia and what it can offer the GEOINT Community. ☺

MONDAY, APRIL 23

NGA Advisory Working Group/NRO ASP Industry Advisory Working Group Discussion

Aligning Acquisition Strategies and Business Models for Decisions and Action

1:00-2:30p in Room 19

Speed-to-mission and data-driven decisions are critical enablers to national security. While NGA and other government organizations are striving to accelerate acquisition timelines, industry is adopting Agile and DevOps practices to improve agility, productivity, and solution quality. Join the NGA and NRO Advisory Working Groups as they discuss recent industry

contributions with regard to improving acquisition practices and adopting business models that leverage agile and DevOps best practices. The session will include a "Voice of Industry" opportunity for industry partners to provide input and ideas for achieving the vision: driving data to decisions and action.

Small Sat Working Group Discussion

Small Sat Interoperability: The Art of the Possible

3:30-4:30p in Room 19

A discussion with industry visionaries on integration and interoperability of small satellites into new and existing architectures.

TUESDAY, APRIL 24

St. Louis Area Working Group

Strengthening the St. Louis Workforce

9:30-10:30a in Room 19

It is at the core of USGIF's mission to advance GEOINT tradecraft through education and outreach, thus ensuring the GEOINT Community will always have well-trained candidates ready to enter its workforce. Take part in the discussion about how to support and build new geospatial-centric pipelines that integrate and amplify existing NGA efforts designed to educate and train individuals from St. Louis, Mo., and the surrounding region.

Machine Learning & Artificial Intelligence Working Group

Introduction to Machine Learning & Artificial Intelligence

1:00-3:00p in Room 19

During this session, participants will be introduced to concepts, definitions, and practical applications of machine learning and artificial intelligence relevant to the GEOINT Community. The introductory discussion will provide a common lexicon and explanation of what the terms "machine learning" and "artificial intelligence" mean, highlight representative/popular methods, and entertain questions from participants in what is intended to be an interactive and engaging conversation. The introductory session will be followed by three brief demonstrations of existing ML & AI capabilities relevant for the GEOINT Community, showing what can be done today with this technology.

Small Business Advisory Working Group

Data for Small Business Decisions and Action

11:00-12:00p in Room 19

This panel will explore 2017 NGA small business participation data, successes, failures, and lessons learned. We will discuss projected small business opportunities for 2018 and 2019 and the future of small business set-asides. We will also discuss advice for small business start-ups or businesses entering the NGA market to prepare for the next one to three years. We will also discuss avenues to get small business ideas and capabilities in front of potential buyers.

St. Louis Area Working Group

Monthly Meeting

3:30-4:30p in Room 19

SLAWG will host their monthly meeting at the Symposium. This meeting is open to all attendees.

WEDNESDAY, APRIL 25

Modeling and Simulation Working Group

Geospatial Summit III

8:00-10:00a in Room 19

This will be the third in a series of 3D geospatial modeling & simulation (M&S)-related meetings co-sponsored by USGIF, the Open Geospatial Consortium (OGC), and the Simulation Interoperability Standards Organization (SISO). The purpose of this series is to establish a continuous learning culture across the geospatial and M&S domains that will lead to greater interoperability and progress toward our vision of a global model of the Earth. The focus of this summit is: to review recent advancements made with regard to interoperability; to discuss the challenges that lay ahead; and to provide details on a roadmap of current and planned initiatives designed to stimulate robust experimentation across the community regarding new levels of interoperability.

INNOVATION CORNER BRIEFINGS

Exhibit Hall, Booth 1751

MONDAY	
12:30-12:50p	St. Louis Area Working Group Overview
12:50-1:10p	Tradecraft and Professional Development Committee Overview
4:20-4:40p	Machine Learning & Artificial Intelligence Working Group Overview
TUESDAY	
12:30-12:50p	NRO ASP Industry Advisory Working Group Overview
12:50-1:10p	Young Professionals Working Group Overview



8:00a–4:00p GEOINT Foreword Pre-Symposium Science & Technology Forum (Ballroom A–C) Sponsored by IBM

8:00–8:45a

GEOINT Foreword Registration, Breakfast, and Poster Sessions

8:45–8:50a

USGIF Welcome: Dr. Chris Tucker, USGIF Board of Directors

8:50–9:00a

GEOINT Foreword Welcome: Sam Gordy, General Manager, IBM Federal

9:00–9:45a

Keynote: Dawn Meyerriecks, Deputy Director, Directorate of Science and Technology, Central Intelligence Agency

9:45–9:50a

Master of Ceremonies: Dr. Michael Hauck, Co-Chair, USGIF Tradecraft and Professional Development Committee; and Independent Consultant

9:50–10:45a

Presentations: GEOINT in Sports – Optimizing Human Performance and Enhancing Fan Experience

- 9:50–10:05a – Aaron Baughman, Principal Data Scientist, Sports & Entertainment, IBM
- 10:05–10:20a – Rocco Pecora, BI Solutions Architect, SME Solutions Group Inc.

- 10:20–10:35a – Dr. Dave Warner, Director, Medical Intelligence, MindTel
- 10:35–10:45a – Audience Q&A

10:45–11:15a

Networking Break and Poster Sessions

11:15–11:30a

Dr. Cordula Robinson, Associate Teaching Professor, Northeastern University, presenting the GEOINT 2017 Poster Session selection “Building Change Detection with LiDAR Point Clouds”

11:30a–12:15p

Panel: Professional Development for Geospatial Data Analytics and Influencing Decisions or Outcomes

- Moderator: Dr. Chris Tucker, Principal, Yale House Ventures
- Dr. Todd S. Bacastow, Professor, John A. Dutton e-Education Institute, Penn State University
- Col. Steven D. Fleming, U.S. Army (Ret.), Professor of the Practice of Spatial Sciences, University of Southern California
- Sue Kalweit, Director, Analysis Directorate, NGA

12:15–1:15p

Lunch and Poster Sessions

1:15–1:20p

Master of Ceremonies: Renard Paulin, Chair, USGIF Tradecraft and Professional Development Committee; and Director, Intelligence Programs, Octo Consulting

1:20–2:15p

Panel: Spatial Analytics to Optimize Disaster Planning, Position and Expend Resources, or Predict Stress Points in Overlapping Civil Sectors

- Moderator: Mina Chang, CEO, Linking the World; and International Security Fellow at New America
- Chuck Delaune, Senior Director, Disaster Technology Humanitarian IT, American Red Cross
- Ted Okada, Chief Technology Officer, FEMA
- Michael Ouimet, Critical Information Systems, Texas Department of Public Safety, Division of Emergency Management, Texas
- Dr. Vasit Sagan, Associate Professor, Department of Earth and Atmospheric Sciences, St. Louis University

2:15–2:45p

Networking Break and Poster Sessions

2:45–3:45p

Presentations: Using Emerging Technologies in a Geospatial Context to Monitor, Assess, and Act in Medical and Health Services

- 2:45–3:00p – Budhendra Bhaduri, Urban Dynamics Institute, Oak Ridge National Laboratory
- 3:00–3:15p – Dr. Vincent Seaman, Deputy Director (Interim), Strategy, Data & Analytics, Global Development, Bill & Melinda Gates Foundation
- 3:15–3:30p – Dr. Mario Schootman, Associate Dean for Research, College for Public Health and Social Justice, St. Louis University
- 3:30–3:45p – Audience Q&A

3:45–3:50p

Thank You: Sam Gordy, General Manager, IBM Federal

3:50–4:00p

Closing Thoughts: Barry Tilton, USGIF Volunteer; and Vice President of Engineering and CTO for U.S. Government Programs, Vricon Systems

7:00–10:00p GEOINT 2018 Welcome Reception Celebration (Armature Works, 1910 N Ola Ave) Powered by Amazon WorkSpaces

» MONDAY, APRIL 23, AT-A-GLANCE

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

7:00–9:00a	TRAINING AND EDUCATION SESSIONS (Rooms 18–24)
9:00–9:15a	PRESENTATION OF COLORS AND NATIONAL ANTHEM FROM H.B. PLANT HIGH SCHOOL JROTC AND JEFFREY “SKUNK” BAXTER; GEOINT 2018 WELCOME FROM THE HONORABLE JEFFREY K. HARRIS, USGIF CHAIRMAN OF THE BOARD (Ballroom A–C)
9:15–9:30a	MASTER OF CEREMONIES: LETITIA A. LONG, USGIF BOARD OF DIRECTORS
9:30–10:00a	KEYNOTE: THE HONORABLE JOSEPH D. KERNAN, UNDERSECRETARY OF DEFENSE FOR INTELLIGENCE
10:00–10:30a	KEYNOTE: MINA CHANG, INTERNATIONAL SECURITY FELLOW AT NEW AMERICA; AND CEO, LINKING THE WORLD
10:30–11:00a	MORNING COFFEE AND NETWORKING BREAK Sponsored by CACI
11:00–11:45a	KEYNOTE: SCOTT HARTLEY, VENTURE CAPITALIST AND AUTHOR, <i>THE FUZZY AND THE TECHIE: WHY THE LIBERAL ARTS WILL RULE THE DIGITAL WORLD</i>
11:45a–12:30p	KEYNOTE: ROBERT CARDILLO, DIRECTOR, NGA
12:30–2:00p	LUNCH IN THE EXHIBIT HALL
1:00–2:30p	USGIF’S NGA ADVISORY WORKING GROUP/NRO ASP INDUSTRY ADVISORY WORKING GROUP (Room 19)
1:15–4:30p	GOVERNMENT PAVILION STAGE (West Hall, Booth 117) Sponsored by Oracle
1:30–4:10p	LIGHTNING TALKS (Innovation Corner, Booth 1751)
2:00–4:00p	TRAINING AND EDUCATION SESSIONS (Rooms 18–24)
3:30–4:30p	USGIF’S SMALL SAT WORKING GROUP DISCUSSION (Room 19)
4:00–5:00p	YOUNG PROFESSIONALS MENTORING DISCUSSION (YPG Lounge, Booth 1348) Sponsored by Northrop Grumman
4:00–5:00p	EXHIBIT HALL NETWORKING RECEPTION Sponsored by Lockheed Martin



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