



NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY
An Introduction to Our Capabilities and Contributions
2019





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INTRODUCTION

The National Geospatial-Intelligence Agency (NGA) provides timely, relevant and accurate geospatial intelligence (GEOINT) in support of policymakers, warfighters, first responders and intelligence community (IC) partners. GEOINT is the use of imagery, imagery intelligence and geospatial information to describe and depict features, activities and locations on Earth, helping users visualize what is happening at a particular time and place. GEOINT allows military commanders to know the exact location of U.S. forces, coalition partners, adversaries and noncombatant persons. It predicts adversary movement based on natural and man-made obstacles. GEOINT goes beyond describing “what, where and when” to exposing “how and why.”

NGA is a Department of Defense (DOD) combat support agency and a principal member of the IC. NGA gives warfighters, the IC and first responders a worldwide, firsthand intelligence baseline for their own analytical and operational needs. This includes everything from contributing to the state of readiness of our military forces to ensuring safety of navigation in the air, on land and over/under the seas. NGA also helps protect the homeland by providing critical insight for humanitarian efforts, disaster relief and recovery operations.

The director of NGA serves as the functional manager for GEOINT, the DOD GEOINT manager, the head of the National System for Geospatial Intelligence, and the chair of the Five Eye Allied System for Geospatial Intelligence. As such, the director synchronizes operations to realize a professional, interoperable, agile and integrated GEOINT enterprise.



VICE ADMIRAL ROBERT D. SHARP DIRECTOR, NGA



Vice Admiral Robert Sharp is the seventh Director of the National Geospatial-Intelligence Agency (NGA). VADM Sharp leads and directs NGA under the authorities of the Secretary of Defense and Director of National Intelligence. He became NGA's director on February 7, 2019.

From April 2016 to February 2019, VADM Sharp served as Commander, Office of Naval Intelligence, and Director, National Maritime Intelligence-Integration Office. During his initial flag assignment, he served as the Director for Intelligence (J2), U.S. Special Operations Command.

His previous operational tours include deployments with USS Ranger (CV61), Carrier Air Wing 2 embarked on USS Constellation (CV 64), and Carrier Group 2 embarked on USS Harry S. Truman (CVN 75). Additionally, he conducted multiple deployments to Afghanistan as J2 of a Special Operations Task Force, leading joint, inter-agency intelligence professionals supporting Operation Enduring Freedom.

VADM Sharp's shore tours include Assistant Intelligence Officer for Commander, Naval Air Forces, Pacific; instructor duty at the Fleet Intelligence Center, Pacific; Targeting Officer on the Joint Staff; Intelligence Operations Officer with U.S. Fleet Forces Command; Director of Intelligence for Naval Special Warfare Development Group; Director of Intelligence and Deputy Director for the Maritime Operations Center for Commander, U.S. Naval Forces Central Command, U.S. 5th Fleet; and Senior Fellow on the Chief of Naval Operations Strategic Studies Group. He commanded the Joint Intelligence Center, U.S. Central Command, from August 2010 to August 2012.

A native of San Jose, California, VADM Sharp graduated from the University of the Pacific with a Bachelor of Arts in English and was commissioned through Officer Candidate School in 1988. He holds a Naval War College diploma and earned a Master of Science in National Resource Strategy from the Industrial College of the Armed Forces in 2008.

In addition to multiple personal, unit, and campaign awards, he has been the recipient of the Vice Admiral Rufus L. Taylor Award for Excellence in Instruction, the U.S. Army's Knowlton Award for Military Intelligence, the Rear Admiral Edwin T. Layton Leadership Award, and the Naval Intelligence Foundation Award for Excellence in operational intelligence support to the Fleet.

DIRECTOR



NGA RESOURCES

TEAM NGA

NGA has a total workforce of about 14,500 highly trained intelligence personnel working at more than 100 locations around the world, including Afghanistan, Iraq and the Horn of Africa. NGA's intelligence professionals are embedded within each combatant command headquarters, military service operational headquarters, and many other government agencies. NGA personnel are also forward deployed worldwide to provide Joint Task Force warfighter support. By providing GEOINT experts at customer sites to help discover, interpret and manipulate GEOINT products and services, NGA gives warfighters, the IC and first responders a worldwide firsthand intelligence baseline to meet their analytical and operational needs.

NGA will invest in its ability to recruit, engage, develop, train and retain a workforce that advances our tradecraft and innovates new solutions to meet emerging mission needs. To fuel and drive the entire global GEOINT enterprise, we will expand alliances with partners across the spectrum to keep pace with intelligence and foundation GEOINT needs in an increasingly complex world. NGA will open training, education and certification initiatives to all of our partners for unified GEOINT mission execution. This interoperability across the GEOINT enterprise will allow NGA to concentrate resources, tradecraft development and operations to extend NGA services.



NGA CAMPUS EAST, SPRINGFIELD, VA



2ND STREET CAMPUS, ST. LOUIS, MO



ARNOLD FACILITY, ARNOLD, MO

NGA's three principal facilities in Springfield, VA, and the St. Louis, MO, areas provide the infrastructure, tools and environment for the agency's GEOINT workforce to execute its mission.

NGA FACILITIES

NGA East

NGA Campus East (NCE) is the third-largest federal facility in the Washington, D.C., area at 2.77 million square feet. NCE has its origins in the 2005 base realignment and closure, which identified the Fort Belvoir North area in Springfield, Virginia, as the future home of NGA in the east. By constructing a purpose-built facility at that location, NGA modernized key elements of its infrastructure to provide a secure and modern working environment. The building and facilities enabled improved collaborative interaction and communication within and outside of the agency. The consolidation of the entire NGA workforce in the Washington, D.C., metropolitan area to NCE was completed in September 2011.

NGA West

For more than 70 years, NGA has maintained a presence in the St. Louis, Missouri, area, where nearly one-third of the NGA workforce operates. NGA's two west facilities are the 2nd Street riverfront campus just south of the Gateway Arch and a secondary campus located in nearby Arnold, Missouri. Much of NGA's aeronautical analysis and geodetic science work and a variety of other critical missions — including targeting, counterterrorism, counterproliferation, global navigation support and several geographically focused missions — are performed at its 2nd Street campus facility.

Progress continues to replace the aging 2nd Street location and build the Next NGA West facility that will be located just north of downtown St. Louis. When complete, this state-of-the-art facility will significantly improve NGA's current and future mission productivity, flexibility, operational efficiency and security. It is an opportunity to provide a safe, secure, adaptable and efficient environment for the workforce in the St. Louis metro area that will sustain the evolving GEOINT mission.

Next steps for the program include award of a design-build contract for the campus in March 2019 and the start of construction activities in the summer of 2019. The campus is expected to be complete in 2025.



COMMUNITY

STRENGTH THROUGH COMMUNITY

The democratization of GEOINT — coupled with a dynamic, complex, interconnected and increasingly competitive environment — is driving the community toward a more professional, agile and integrated GEOINT enterprise. GEOINT is unquestionably bigger than a singular government agency. NGA is adapting beyond its walls as the realities of the world dictate, succeeding with and in the global GEOINT enterprise to embrace a more transparent and connected world. The community is looking to NGA to be the leader and provide cohesion in this vast landscape.

The director of NGA is the functional manager for GEOINT, a role defined by Title 50 Authorities, Executive Order 12333, DOD Directive 5105.60, and Intelligence Community Directive 113 and distinct from the responsibilities as agency head. To synchronize operations and realize an integrated GEOINT enterprise, the GEOINT functional manager guides and oversees GEOINT for the U.S. government and Commonwealth partners through the National System for Geospatial Intelligence (NSG) and Allied System for Geospatial Intelligence (ASG). NSG members include the IC, Joint Chiefs of Staff, military services and combatant commands. NSG partners include the Civil Applications Committee, which represents other U.S. government organizations such as the U.S. Geological Survey, Department of Interior and the Federal Emergency Management Agency. The ASG comprises Australia, Canada, New Zealand, the United Kingdom and the United States.

In his role as the GEOINT functional manager, the director of NGA sets the strategic direction for the GEOINT enterprise by synchronizing GEOINT missions, disciplines and activities to leverage enterprise capabilities distinct from organizational affiliations. He establishes well-defined doctrine, standards, policies, directives and procedures by validating and advocating for the needs of the NSG. The functional manager, with the support of the National Geospatial Intelligence Committee — the NSG committee of record — and his NSG GEOINT mission managers, provides advice and planning guidance that aligns, integrates and drives global GEOINT operations across missions and organizations to achieve U.S. national security and defense objectives.

PROFESSIONALIZATION
INSPIRE AND PREPARE NEXT GENERATION TALENT



INTEROPERABILITY
ADVANCE AND PROMOTE SEAMLESS INTEGRATION



UNITY OF EFFORT
LEVERAGE AND EMBRACE UNIQUE CONTRIBUTIONS





NGA MISSIONS

NGA has a broad mission set and a reputation for delivering high-quality products from uniquely qualified intelligence professionals. The services and functions of NGA support national security and foreign policy objectives of customers and military partners worldwide every day.

NGA's day-to-day operational missions – whether ensuring safety of navigation by air, land or sea, enabling combat support at the tactic level, or providing imagery intelligence to national decision-makers – do not stop. Our work ensures that trillions of dollars of military equipment and personnel safely navigate the globe by air, land and sea; that the proper targets are prosecuted to maximum effect, with minimum collateral damage; and that decision-makers fully understand the capabilities of our enemies.

We work with the resources, manpower and IT infrastructure that we have in order to meet current mission requirements – while we also transform. We are transforming tradecraft, skill sets, our workforce, workflows and our IT architecture simultaneously with current mission requirements.

INTELLIGENCE ANALYSIS AND WARNING

NGA provides a wide range of GEOINT analyses, data and services for customers spanning from analysts to policymakers to warfighters. NGA advances national security objectives through GEOINT support to military operations, planning, decision-making, diplomacy, intelligence analysis, strategic and tactical warning, search and discovery, and targeting.



© 2014, 2016, DigitalGlobe

South China Sea
Construction of man-made reefs with pumped sand is documented by DigitalGlobe's satellites over a period of 25 months.

Monitor and Assess Enduring Threats and Challenges

NGA analysts use GEOINT to continuously monitor and assess threats and challenges to the national security environment, including nuclear weapons-related developments, counterproliferation, counterterrorism, treaty verification, foreign military capability assessments, and economic and environmental issues. By continuously monitoring threats, NGA enables policymakers and operators to pursue responses that serve U.S. interests.

Warning and Situational Awareness

NGA runs integrated operations centers 24 hours per day, 365 days per year, to provide near-real-time exploitation and analysis of GEOINT sources for our military, defense policymakers and first responder community. NGA analysts use GEOINT to monitor troop movements, missile-related activities, emerging world events and other critical, time-sensitive issues.

Discover Unknowns and Attack Hard Problems

NGA conducts rigorous broad-area searches of terrain and research into foreign state and non-state programs to improve and increase DOD and IC understanding of topics such as underground facility development and cyber-related infrastructure. NGA creates visual products, such as 3D animations, time sliders, custom graphics and fly-throughs, which uniquely convey intelligence findings.

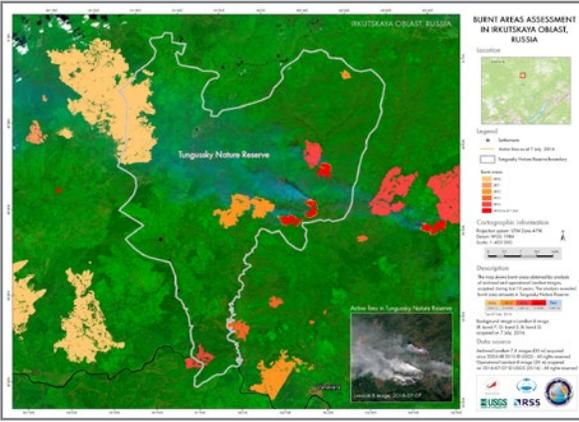
Domestic Security, Humanitarian, and Disaster Response

In support of lead federal agencies and mission partners, NGA provides GEOINT products and services to inform and improve disaster response, humanitarian support and domestic security. In the homeland security realm, NGA provides GEOINT in support of counterterrorism, counternarcotics, border and transportation security, and special event support, such as the presidential inauguration and the Olympics. Recent humanitarian/disaster response efforts have included California wildfires and historic flooding in South Carolina, Texas and along the Mississippi River. In 2014, NGA began providing unprecedented online access to its GEOINT information through a public-facing website devoted to such crises.

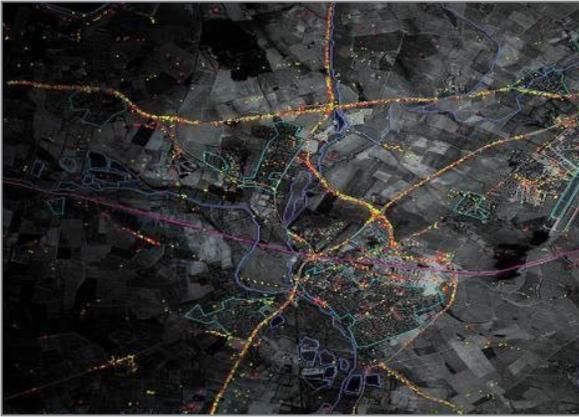
Support to Military Operations

NGA is committed to providing GEOINT support down to the last tactical mile. In addition to dedicated subject matter experts within many of our customers' organizations, NGA also conducts a voluntary deployment program, embedding GEOINT professionals to support DOD operations worldwide. NGA provides direct military support to the DOD by developing, maintaining, and providing the World Geodetic System 1984 and geodetic data to U.S. weapons systems.

USGS



JSTARS image (DOD)



NGA



NGA

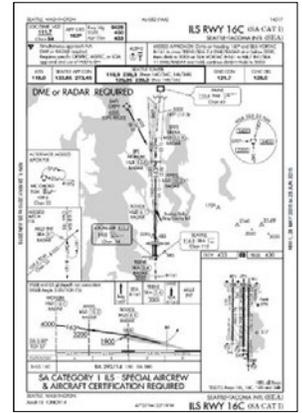




MISSIONS

SAFETY OF NAVIGATION

NGA prepares, compiles, publishes, distributes, and maintains worldwide maritime and aeronautical safety of navigation databases, products, and services in support of DOD and partner warfighters, U.S. government agencies, foreign and commercial partners, international treaties, and other agreements. NGA's safety of navigation products and data include digital nautical charts, sailing publications, notices to mariners, airfield foundation data, vertical obstructions, flight information publications, and the Digital Aeronautical Flight Information File. The agency enhances maritime safety through the Maritime Safety Office watch desk and internationally coordinated worldwide Navigational Warning Service. NGA leads the transformation of maritime and air navigation systems, standards, products and services, converting legacy products into digital content for dissemination through government-owned web-based and mobile applications. These apps put the power of safe navigation into the hands of the user. Additionally, the agency has developed an industry-leading electronic library of 48,000 instrument flight procedures and associated digital flight management system data. The library satisfies U.S. and international mandates to transition to GPS-based air navigation, ensuring continued access to worldwide airspace and airports in support of national objectives.



NGA



FOUNDATION DATA

NGA provides the basis for intelligence integration by building the foundation of a global geospatial operational framework. Foundation data helps us describe the world in which we live. Whether through a geographic information system-enabled application or hard copy map product, foundation data enables military and civil operations, is a critical component of major weapons systems, and frames our understanding of our natural and man-made environment. NGA continues to lead the DOD and IC for the production, procurement, assessment and cataloging of this data from U.S., foreign and open sources.



NGA

NGA Streets Basemap

The NGA Streets Basemap is an online cartographic visualization used for situational awareness and as a backdrop to display other geospatially referenced data. It is built from curated foundation data and allows the user to zoom in at different scales, from a worldwide view to neighborhood level, for the entire globe. It is made available to the IC and DOD communities as a web-mapping service on classified and unclassified networks. The NGA Streets Basemap averages more than 10,000 visits per day.

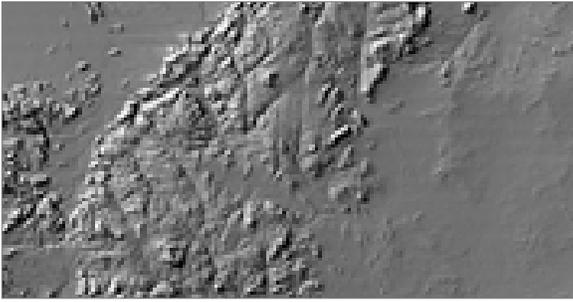


NGA

Topographic Data

Topographic data is information captured, generated, enhanced and depicted in a graphical manner. It delineates natural and man-made features of any place on the Earth showing their relative positions and elevations. This data is stored and service enabled for the discovery, retrieval and generation of mapping and geodetic information and products.

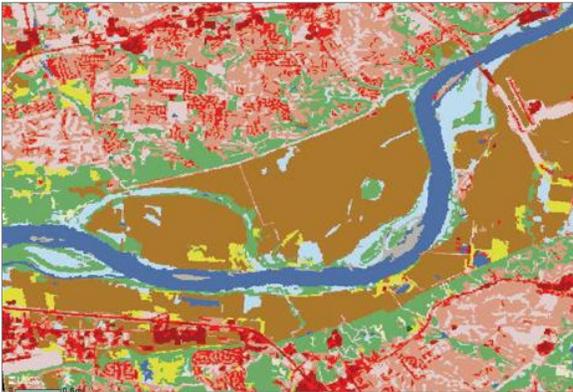
NGA



Elevation and Terrain

High resolution digital elevation terrain models provide an unclassified seamless terrain data set that represents a “bare earth” lay of the land. Elevation data provides the essential quantitative data for military systems that require terrain elevation, slope and gross surface roughness information. Elevation data also supports the image-orthorectification process and is used in mission planning, terrain modeling and visualization.

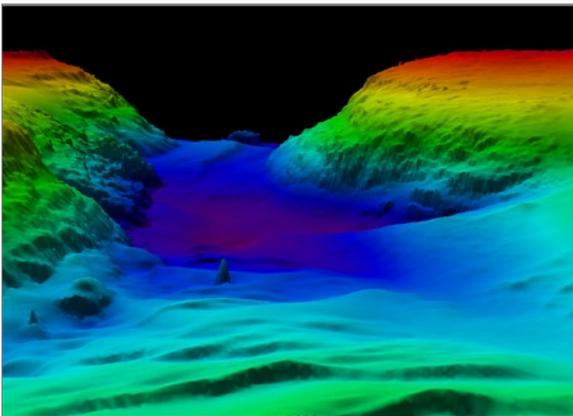
NGA



Land Cover

Land cover representations, as either raster or aerial vector data, depict natural conditions, such as landforms, water and vegetation, and broad patterns of human land use, including population centers, agricultural areas, resource harvesting or extraction, etc. Land cover is a thematic human geography content category that reflects the physical environment and the spatial distribution of human activities within it.

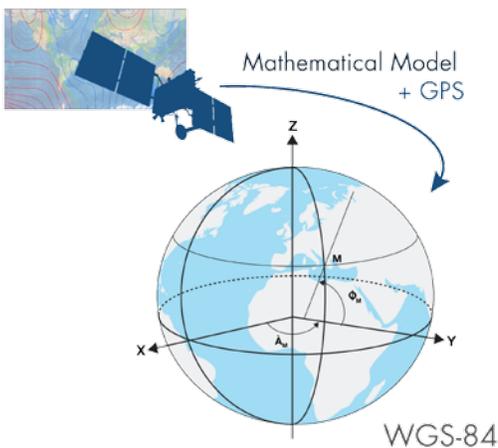
NGA



Bathymetry

The ocean floor changes in elevation as much as the elevation of the ground does, so NGA collects worldwide bathymetric measurements to map the ocean floor. Using classified and open sources such as direct measurement, sound navigation and ranging — or sonar — and specialized radar sensors. This data can be used to assess the depth of water and potential hazards to navigation, such as reefs and islands. This is particularly helpful to submarine navigation.

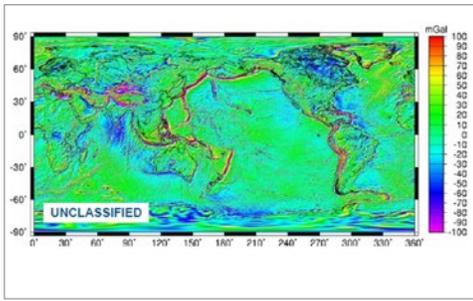
NGA



Geodesy, Geophysics and the World Geodetic System 1984

Built from satellite, gravity, elevation and other geodetic and geophysical foundation data, the World Geodetic System (WGS 84) provides the single reference frame to geolocate all GEOINT data to support safety of navigation, targeting accuracy and intelligence activities. Through constant monitoring of our dynamic earth, WGS 84 precisely defines latitude and longitude and provides a magnetic model to aid navigation and an Earth gravitational model that helps define global mean sea level.

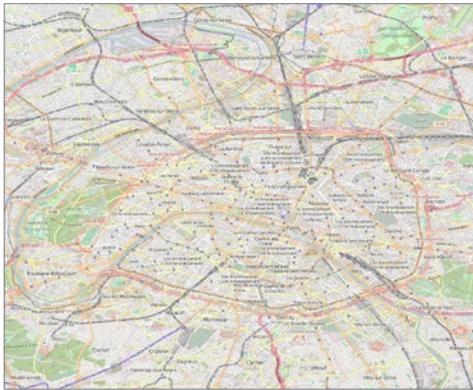
NGA



Gravimetry

Around the world, the strength and direction of gravity varies slightly due to various geophysical phenomenon. Although humans cannot sense these small variations, the effects on military guidance systems can be tremendous. Gravimetry is the measurement of the strength of the Earth's gravity field in three dimensions. NGA's worldwide gravity model supports military customers by supplying gravimetric products essential to inertial navigation systems, ballistic missiles, and targeting accuracy and for minimizing downrange and cross-range errors for weapons systems.

NGA



Transportation and Infrastructure

Transportation and infrastructure reflect the physical environment and the spatial distribution of human activities within it. Spatial representations of infrastructure, typically captured and maintained as vector feature data, constitute the constructed human environment in aggregate and include elements related to energy, water, waste, habitation, communication, economic activity and governance. Vector data related to transportation, a subset of the infrastructure content holdings, represents the linear network segments and nodes that allow for the physical movement of people, materials and products through a given environment.

NGA



Boundaries and Names

NGA maintains the authoritative U.S. government databases for foreign geographic names and political boundaries. NGA provides the support for the U.S. Board on Geographic Names' foreign geographic names standardization program. The official foreign geographic names data is made available via NGA's GEOnet Names Server. The U.S. Department of State bears authority for the U.S. government depiction of international boundaries as well as maritime boundaries and claims. In partnership with the State Department, NGA produces data for international land boundaries, maritime boundaries and claims, and neighborhood delineations for incorporation into U.S. government products and reporting.



Mono Mission Planning and Stereo Point Positioning Products

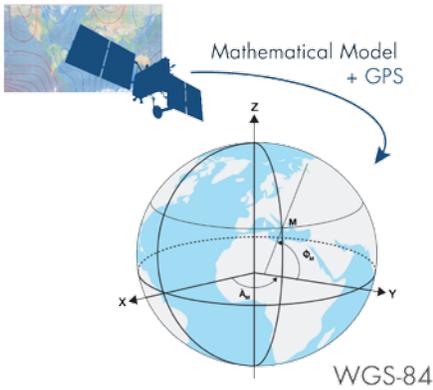
Photogrammetric techniques, resulting in validated triangulation solutions with unprecedented accuracy, are the foundation for NGA's mono image mission planning controlled image base and stereo targeting digital point positioning database. The controlled image base is a seamless database of digital ortho-mosaic commercial and National Technical Means imagery used for mission planning and military aircraft and vehicle navigation.



Human Geography

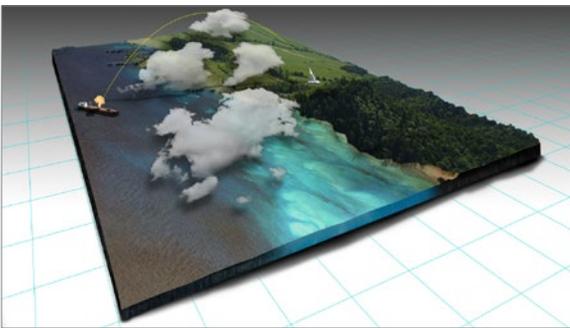
Human geography looks at the geographic features of a place, the people who live and operate there, and why. Understanding the attributes, actions, reactions, and interactions of groups and individuals in the context of their environment allows analysts to describe and predict patterns of human behavior.

PRECISION ENGAGEMENT AND TARGETING



Precision Engagement

NGA leads the way for the DOD by helping to ensure the precision and accuracy of GPS and maintaining the WGS-84 reference frame, which is the backbone for all geolocation. This effort also improves GPS geolocation accuracy for government civil agencies, commercial industry, and individual consumers.



Targeting

NGA enables the U.S. and Allied partners to meet military and intelligence targeting objectives by providing data, software validation, program accreditation, training certification, targeting expertise and operational support. This support includes target identification, vetting and precise coordinate GEOINT target development.



GEOINT SOURCES

NGA is the nation's leader in developing and managing comprehensive and innovative GEOINT collection strategies and content applications. This mission includes the discovery, procurement, production, accessibility, delivery and management of GEOINT sources. These sources include U.S.-operated classified satellite systems; airborne intelligence, surveillance and reconnaissance imagery; commercially operated satellite imagery; geospatial analytic services; commodity and open-source data; and spatially enabled data from other intelligence sources. A major component of this mission is maintaining maximum utility and effectiveness of our GEOINT data sources to ensure we collect the intelligence we need at any time, any way and anywhere. A growing aspect of this mission is working with GEOINT analysts to make better use of automation, create more complex content strategies that increase efficiency and effectiveness of collection, and allow analysts to better leverage all the GEOINT data sources available.

National assets provide exquisite and peerless capabilities to meet our hardest challenges. However, to provide the best value for customers, NGA must leverage all types of geospatially enabled content. To that end, NGA continues to expand its application of traditional and new GEOINT sources. Over the past decade, NGA partnered with the commercial imagery industry to dramatically improve delivery of commercial GEOINT and is now expanding into commercial GEOINT analytics. Succeeding in and with the open means looking at new sources and new forms of data. NGA is also combining publically available open-source data and geospatially enabled commodity data with geospatial information to provide a fully integrated intelligence picture.

Using all of these diverse sources, NGA employs advanced analytics that discover and provide tip-off and alerts to systems, collectors and analysts. These efforts involve the development of advanced analytic tools and techniques that enable analysts to interact effectively with data and models, discover new objects, and ask intelligence questions differently based upon the power of data analytics.

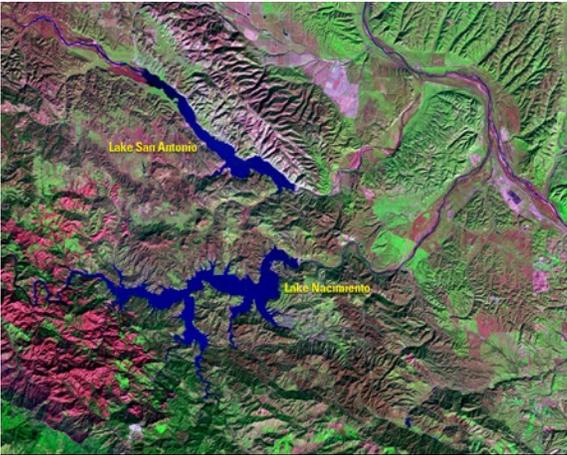
These diverse sources include geophysical and geomagnetic information used to improve and ensure navigation and positioning in denied environments and improve navigation and positioning for current and future U.S. systems.

SOURCES



Panchromatic

Panchromatic produces an image similar to black-and-white photography. The images can provide a very detailed and accurate likeness of an area or object and can show shadows and other effects that help identify characteristics of an object or environment.



Multispectral

Where panchromatic imagery looks only at the total amount of light coming in, without any consideration of its color or frequency, multispectral sensors capture the light in frequency bands spanning across the electromagnetic spectrum. At its simplest, multispectral collection can create a color image of a target. It also provides more detail to images, showing characteristics that are not otherwise visible.



Hyperspectral Imagery

Hyperspectral imaging is an advanced form of multispectral imagery that collects data in hundreds of bands within the electromagnetic spectrum, offering better spectral resolution than multispectral capabilities. Certain materials reflect light at very specific frequencies. If electromagnetic signals are collected in those frequencies, it can form images useful in precise terrain or target analysis.



Infrared

Infrared imagery is produced as a result of sensing electromagnetic radiations emitted or reflected from a given target surface in the infrared portion of the electromagnetic spectrum. The information is displayed in a gray-scale image.

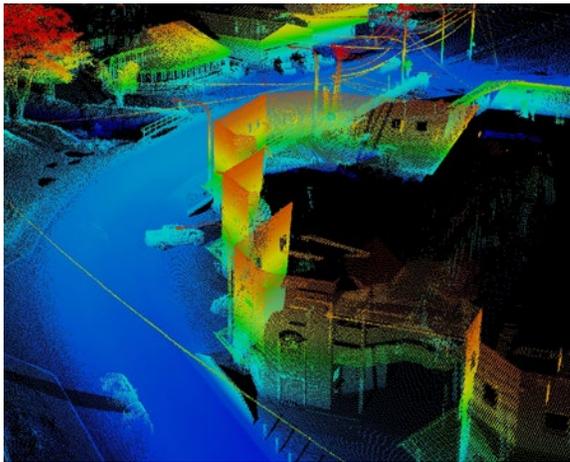
DLR, CC-BY 3.0



Radar

Radar imagery is collected by bouncing radio waves off a target, collecting the reflected signal, and reconstructing the data in the form of an image. These sensors use reflected radar energy to illuminate objects in day or night and in almost any weather conditions.

© Samborn Map Co.



Light Detection and Ranging (Lidar)

Lidar is an electro-optical phenomenon that uses laser pulses in the visible and infrared portions of the electromagnetic spectrum. The sensor emits a pulse of laser light toward an object, which reflects back some of the energy to the sensor. The time it takes for the energy to return provides elevation values – shorter roundtrips indicate higher elevations, and longer roundtrips indicate lower elevations. This process helps measure distances to, heights, and other characteristics of an object. The process can be used to develop 3D models of an object, such as a building.

NGA



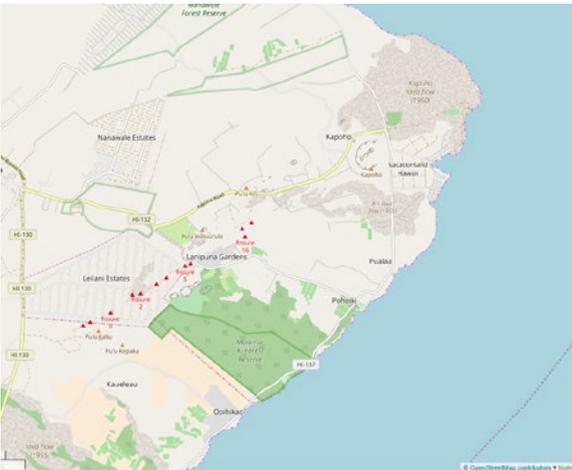
Persistent Wide-Area Surveillance

Persistent wide-area surveillance provides observation over a broad region to increase the chance of detecting a specific activity. When coupled with software-based analytical tools that sort through large amounts of data, analysts can track that activity forward in real time or backwards forensically.



AIRBORNE

Manned and unmanned airborne sensors and platforms provide the best means of full-spectrum persistent surveillance. They combine the ability to conduct multiple visits and to dwell on targets for extended periods to help with change detection, characterizations of activities, observation of behavior and discovery of unknowns. NGA is integrating airborne capabilities with a variety of sensor packages, including full-motion video, panchromatic and radar, into traditional GEOINT architectures. With persistent surveillance capability and unique collection capacity, airborne has the ability to maximize full-spectrum collection capacity through contributions to overall imaging plans and strategies. Airborne data also helps maximize the benefits of GEOINT against a variety of issues, including direct support to operations. NGA uses and makes available data from a wide variety of airborne platforms, including U-2, RQ-4 and MQ-9 unmanned aerial vehicles.



OPEN SOURCE

Geospatially referenced open-source intelligence (OSINT) includes traditional avenues, such as commercial, industrial and academic databases; traditional media sources; and increasing access to social media sites and content. Social media, which now includes greater amounts of georeferenced information, is providing a unique, on-the-ground perspective of conflict regions, humanitarian disasters and other areas of interest around the world. By combining geospatially referenced OSINT with other GEOINT sources, analysts may identify or confirm activities and events with greater confidence.



COMMERCIAL GEOINT

NGA procures a full range of commercial products from U.S. and foreign commercial satellite operators and GEOINT service providers on behalf of the DOD and IC, including imagery data and commercial production and analytic services. Commercial capabilities are robust and include space-based panchromatic, multispectral, and radar imagery and a variety of airborne-based sensors. Commercial imagery is key to NGA's foundation data mission, and since it is unclassified, it is readily shareable to support humanitarian and natural disaster missions and military operations with foreign partners. In fact, commercial imagery supports more than 90 percent of foundation mapping efforts. In response to the wave of emerging commercial imagery providers, NGA is working with the National Reconnaissance Office to engage with the most mature of these new providers to assess mission utility and possible access to operational data and services.

PROVIDING THE GEOINT ADVANTAGE

RESEARCH

NGA research delivers future GEOINT capabilities to users for operational impact. Our portfolio-based approach balances risk and project duration to serve our GEOINT mission space with uniquely different capabilities. We conduct annual reviews of our programs and invite external reviewers from our IC and DOD mission partners and oversight authorities to participate.

Research directly supports strategic decision advantage by making GEOINT faster and more accurate, adaptive and resilient. We are building towards NGA's 2025 strategy with capabilities that:

- Automate workflow processes with advanced quantitative modeling to increase productivity and flexibility, freeing human experts to focus on the most critical problems;
- Harness new data technologies with scalable computational methods and artificial intelligence, automation, and augmentation techniques to anticipate threats, increase speed of decision-making and operate in innovative, unexpected ways;
- Leverage multidisciplinary and nontraditional geospatial data sources to enrich GEOINT analysis with new insights, connections and techniques;
- Identify complex patterns in cluttered environments and large disparate data sets to predict adversary behaviors;
- Derive meaningful intelligence from the association of geospatial information with data in cyberspace;
- Authenticate our data to protect against malicious alteration and machine-generated errors;
- Optimize and enable collaboration of existing capabilities, processes, and sources to create new value, counter denial and deception techniques, and automate/manage foundation information; and
- Improve knowledge of the spatiotemporal physical and geometric characteristics of the Earth's surface, subsurface and nearby space.

NGA conducts basic and applied research to provide powerful new concepts, technologies and capabilities from the best technical sources; whether NGA, mission partners, academia, industry or small business. We manage our programs using the Heilmeyer criteria to ensure our work solves real problems, provides valuable information to decision-makers and remains affordable. The Heilmeyer criteria help us evaluate results at key points in our agile acquisition strategy. We invest resources and people to successfully transition mission-centered, proven prototypes to enterprise capabilities.

ADVANTAGE

COMMERCIAL GEOINT

NGA has years of experience working with industry partners on foundation GEOINT production efforts, but it has only recently begun engaging with industry on application of commercial GEOINT analytic capabilities to intelligence problems. Industry advances in geospatial science, machine learning and data integration hold great promise to enrich NSG analytic data layers for key intelligence issues, such as counterterrorism, counterproliferation and threat finance. We anticipate commercial alerting and change detection services will enable more efficient use of high-demand GEOINT collection platforms, and procurement of data aligned to automated tools will allow analysts to shift from mundane tasks to more complex analysis against hard intelligence problems.

NGA's Strategy 2025 addresses investments in emerging GEOINT providers that will maximize contributions and collaboration within the global GEOINT enterprise via commercial partnerships. NGA will gain process efficiencies, eliminate redundant purchases and centralize acquisition authority to complement existing imagery sources with nontraditional commercial data sets and geospatial analytic services.

To succeed in the open, NGA must improve our acquisition and adoption of commercial data, information and analysis. Emerging commercial GEOINT data, products and services are evaluated and prioritized against NSG mission needs by NGA through a formal and continuous process of discovery, assessment, acquisition and integration. NGA considers a variety of acquisition approaches to support NGA and NSG missions.

LEVERAGING BIG DATA AND ADVANCED ANALYTICS

NGA is emphasizing new and innovative approaches to analysis, collaboration and dissemination, thereby redefining our relationships with partners and customers. Analytic modernization allows the NSG to gain efficiency, quality, optimization and integration.

Structured Observation Management (SOM)

SOM is NGA's approach to creating and organizing GEOINT information that is structured, accessible and applicable to mission needs. SOM frees data through the adherence of common standards and practices, thus enabling discovery and innovation. It also provides the community a common understanding of NGA's content, improves the quality and veracity of the data, and results in an advantageous environment for making rapid decisions. Fundamentally, SOM ensures immediate access to large volumes of data and provides analysts the time and space required to innovatively solve the intelligence challenges of the 21st century.

Analysis as a Service

As the capabilities of the geospatial commercial sector increase, NGA is pursuing innovative acquisition efforts to procure 'analysis as a service' rather than the traditional acquisition of images and contract analysts. This approach enables NGA to leverage the vibrancy of the commercial sector to obtain basic analysis and geospatial observations, freeing NGA's highly skilled analysts to pursue the high-level, differentiated analysis that provides our customers with a decision advantage.

Activity-Based Intelligence (ABI)

NGA is harnessing the power of big data by employing advanced ABI tradecraft to manage the tidal wave of national, commercial and open-source data. ABI allows NGA analysts to separate information of interest from the noise and bring coherence to vast and disparate geospatial data sets to exploit patterns of life, discover new information, and identify and close intelligence gaps.

Analytic Modeling

NGA, in collaboration with the IC, is aggressively pursuing the development of analytic models to capture our understanding of our adversaries' behaviors. The IC will share these machine-readable models internally to promote cross-discipline analytic peer review and refinement.

INFORMATION TECHNOLOGY MODERNIZATION

The proliferation of data and imagery enabled by technological innovation in the commercial market is driving the need for faster and more agile IT systems and services to deliver GEOINT to NGA customers wherever and whenever they need it. This is especially true in conflict zones, when time is of the essence and connectivity is unreliable or nonexistent. NGA, as part of the larger IC, is committed to accelerating the speed, availability, value, usability and security of intelligence through increased integration and information sharing and modernization of infrastructure, tools and services.

The mission capabilities described within this primer are possible only with a modern architecture to deliver and support them. NGA is engaging in digital transformation that will provide the connectivity, interoperability, bandwidth, storage capacity and cybersecurity protections necessary to incorporate data from traditional and new sources. Transitioning from an “as-is” to an envisioned “to-be” architecture will evolve NGA’s IT systems from human-initiated processes to modeling and automation and will enable NGA to broker future transactions.

The desire for interoperability, information sharing and on-demand access to applications sparked NGA to partner with the Defense Intelligence Agency (DIA) to develop and deploy a common desktop environment, or DTE, as a workspace for users hosted at the sensitive compartmented information (SCI) level. NGA and DIA personnel use the DTE as their primary SCI computing platform, as does a component of the U.S. Coast Guard and the White House Military Office. DTE efficiencies include standardized hardware, infrastructure, and software and the use of enterprise license agreements. DTE complies with the Collaborative Reference Architecture, issued by the IC Chief Information Office in 2018, which each IC organization must integrate into its existing infrastructure to ensure interoperability throughout the IC.

NGA is also enabling greater information integration by transitioning to a cloud environment on all security domains. The agency created a hybrid cloud strategy and migration plan at the end of 2015. NGA is implementing a strategic combination of commercially provided private clouds and NGA data centers to deploy mission applications and data. Benefits of cloud migration include, among others, cost effectiveness, flexibility, increased automation, high-performance scalability, agility and heightened security.

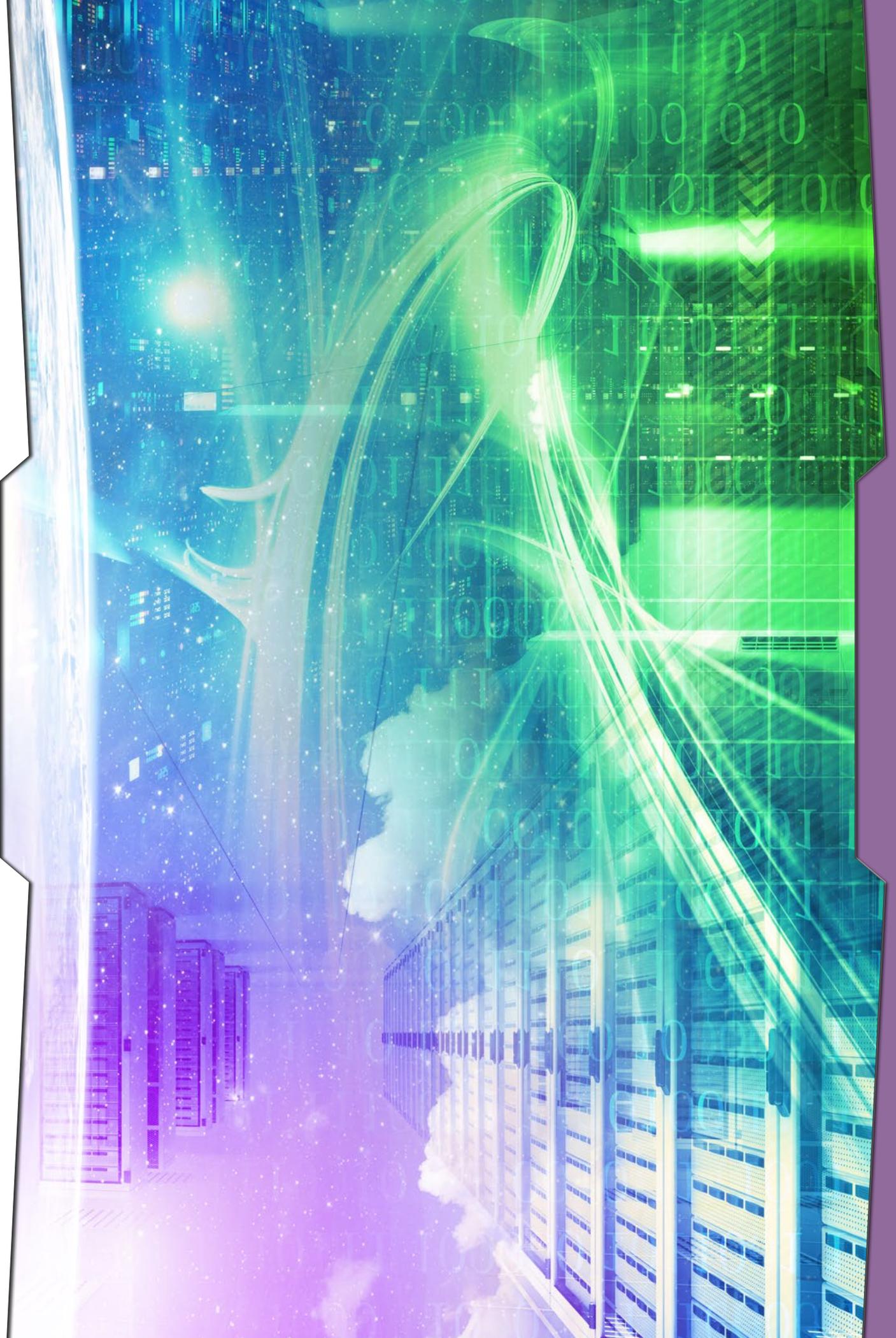
Cloud-based capabilities have enabled the introduction of several key services directly to support warfighters, humanitarian service providers, and other IC and DOD personnel working in theater.

NGA will continue to modernize its systems, tools and services through its integrated program offices, comprising a new business model for developing and acquiring IT capabilities. IPOs integrate people, budgets and mission throughout program lifecycles. Each IPO comprises a team of mission users – analysts, content providers and data scientists – and IT product and service providers, including software developers, systems and data engineers; and acquisition and cybersecurity personnel.

Protecting NGA’s IT infrastructure and data through cutting-edge cybersecurity and data assurance programs will continue to be at the forefront of all modernization and acquisition efforts. The agency continues to build an agile cybersecurity infrastructure that promotes a robust and resilient enterprise, maintaining full mission capability and ensuring trusted and accurate GEOINT under any circumstance.

GEOINT ASSURANCE

The global proliferation of geospatial data, capabilities and tradecraft has had a powerful and positive economic effect. Artificial intelligence-enhanced systems offer the potential to amplify the benefits of geospatial data even further. However, these same technologies could be used by adversaries to undermine our shared understanding of the environment. The U.S. and its allies must strengthen our protection of geospatial information to assure trust and confidence necessary for common awareness and decision advantage.



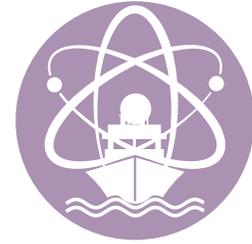
FUTURE/GOALS/STRATEGY



GOAL 1 **People**

Inspire and Grow Our World-Class Workforce

NGA will invest in our ability to recruit, engage, develop, train and retain a workforce that advances our tradecraft and innovates solutions to meet emerging mission needs. Our world-class workforce must master technology to combine the science of intelligence with relentless curiosity; leverage diversity to continuously raise our GEOINT expertise; and learn to use machines as digital assistants to provoke expert analysis. NGA will evolve its workforce culture to emphasize transparency, respect, excellence and teamwork — creating a workplace built by our people which is inherently inclusive and attractive to our aspiring teammates. NGA will insert accountability into performance metrics for the agency and individuals. We will accept and expeditiously act upon feedback from our workforce, customers and overseers. We will adapt and grow to exceed the expectations of our customers.



GOAL 2 **Partnerships**

Fuel and Drive the Entire Global GEOINT Community

NGA will collaborate and expand alliances with domestic and international partners to fulfill our common vision for a mission-integrated, professional and resilient GEOINT community. We will implement governance, standards and enterprise services with our partners that enable interoperability and build resilience and operational strength in the GEOINT community. NGA will transform its acquisition tradecraft and contracting services to enable efficient and mutually beneficial partner and supplier engagement. NGA will share capability and resource planning, training, education and certification with our partners for unified GEOINT mission execution and transparent resource decisions.

FUTURE



GOAL 3

Mission Today

Secure and Deliver the Nation's Most Trusted GEOINT

NGA will support U.S. national security by delivering persistent, accurate, secure and timely GEOINT data, products and services our customers rely upon to perform critical missions. Our objective remains the same — deliver trusted GEOINT for decision advantage to those we serve — and we must stay ahead of the rapidly improving decision cycles of our adversaries. As we accelerate timelines and expand our enterprise, we must not inadvertently dilute the power of the GEOINT we provide. We will decrease decision timelines by expediting reporting to enable timely military, political and humanitarian action; broker geospatial solutions that leverage global suppliers to deliver the best possible GEOINT to any mission at any time for any location; and maintain the confidence and trust of our customers by consistently ensuring the availability, security and quality of all GEOINT.



GOAL 4

Mission Tomorrow

Anticipate Opportunity and Foresee Threats

NGA will translate actionable intelligence into opportunities to ensure our national security. We will reduce strategic surprise by elevating our understanding of the world and anticipating future events. We will increase decision advantage with agile operations that adapt faster and integrate opportunities for innovation before our adversaries. NGA will transform GEOINT by investing in breakthrough capabilities that strengthen strategic warning, mission forecasting and foundational military intelligence for our customers. NGA will automate routine GEOINT tasks and corporate business processes and take advantage of technology from academic, corporate and government-military partners to create strategic capabilities with mission advantage. We will evolve strategic research and development to harness new phenomenologies, data-centric technologies, advanced analytics, deep learning, computer vision, high-performance computing, automation and artificial intelligence.

