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Statement for the Record

House Armed Services Committee

Subcommittee on Strategic Forces

Hearing on the

Fiscal Year 2016 Budget Request for National Security Space Programs

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INTRODUCTION

Chairman Rogers, Ranking Member Cooper and distinguished members of the Committee, thank you for the opportunity to appear alongside my colleagues to discuss defense space programs. Space capabilities have long provided strategic national security advantages for the United States. Their importance to geospatial intelligence, or GEOINT, cannot be undervalued.

The National Geospatial-Intelligence Agency (NGA) is the nation's primary provider of GEOINT for the Department of Defense (DoD) and the Intelligence Community (IC).

Every local, regional and global conflict, crisis or challenge — now and into the future — has geolocation at its heart. In a world where everything has a geolocation record, GEOINT delivers spatial awareness, temporal context, insight and ultimately understanding and security by exposing threats and revealing the unknown activities in a world of accelerating change and complexity.

In addition, whenever DoD sails a ship, flies an aircraft, makes a policy decision, responds to disasters, or even navigates with a smartphone, they rely on NGA and its continued access to space-based systems.

To do our work, NGA obtains data from a wide array of platforms to produce geospatial intelligence. These sensors we use are not exclusively space borne; however, our assured access to space and space services is critical to accomplishing NGA's diverse, worldwide missions. Our missions include foreign intelligence, mapping, targeting and safety of navigation, and provisioning geospatial information to first responders during natural disasters and relief operations.

We acquire our space-borne data through partnerships with U.S. government agencies, international agreements and commercial partnerships.

And we use space-based communications systems to manage a GEOINT enterprise that operates around the globe and where our data and finished products are consumed by customers around the world.

The President's Budget for Fiscal Year 2016 (FY16) supports our mission requirements for space and space-based systems and services.

I would like to highlight a few areas.

NGA AND GPS

One program that is critical to the DoD and NGA is the NAVSTAR Global Positioning System (GPS) operated by the U.S. Air Force. It is the most exploited space-based asset that the U.S. government has ever developed. As GPS provides space-based radio navigation for anyone with a GPS receiver, both civilian and military uses have increased exponentially.

U.S. national security, transportation and navigation safety, economic interests, and many scientific disciplines all rely on GPS. This increasing dependence demands that the coordinate information and reference system be both accurate and accessible. NGA plays an essential role in maintaining and improving the accuracy and reliability of GPS by providing the DoD with precise GPS orbits, satellite and station clock corrections, and Earth-orientation information. NGA is thus both a daily consumer of GPS as well as a robust contributor to the system.

NGA and its predecessor organizations have partnered with the DOD to develop and maintain the World Geodetic System 1984 (WGS 84) as the standard geodetic frame of reference. The WGS 84 global reference frame provides a mathematical representation of the Earth's shape, a 3-D coordinate system and a gravity model that is essential for computing satellite orbits and precise locations on, above or below the Earth's surface. This global reference information is what allows users to determine their locations on Earth based on the precise positions of GPS satellites in space. Without WGS 84, bombs would not be smart, maps would not be accurate and imagery would not be precise. In essence, WGS 84 provides the ability for the nation to assess intelligence and conduct modern military operations.

NATIONAL SYSTEMS

Turning to space-based reconnaissance, NGA relies heavily on platforms and services designed, built and launched by the National Reconnaissance Office (NRO). Their CORONA, GAMBIT and HEXGON programs were extraordinary achievements developed in an era when we enjoyed a monopoly on imagery from space and data was a strategic national asset during the Cold War. Their subsequent innovations have furnished a modern suite of space-borne sensors to meet the most demanding challenges of the 21st century.

In recent months, I can attest that NRO space-borne assets have met national security requirements that only such national technical means programs could accomplish.

As the functional manager for GEOINT, I oversee the formulation of current and future GEOINT requirements and evaluate the performance of sensor systems to meet those needs. As I look to the future, our task is less about finding the proverbial needle in a haystack, but finding — and then holding at risk — one particular needle in a stack of needles. The requirement for high-resolution images remains -- but of increasing importance is the requirement to dwell on, or revisit, a target often to maintain persistent awareness. The difference between dwell and revisit is driven by the rate of change of the observed activity as well as how critical continuous detection is to characterizing that activity. We must sustain the spatial and temporal access to ensure our customers understand and can respond to adversaries that continue to evolve and adapt.

COMMERCIAL IMAGERY

This budget request supports U.S. government acquisition of commercial imagery. This imagery enhances U.S. geospatial readiness and responsiveness, and complements national technical means collection for current high-interest areas and rarely imaged areas. This investment in commercial imagery funds a large percentage of our foundation GEOINT data and supports air and sea navigation and humanitarian assistance.

In addition, because commercial imagery is unclassified, it meets the growing demands for shareable GEOINT data and products across the government, with allies and nongovernmental partners.

NEW CHALLENGES AND OPPORTUNITIES

And this leads me to the challenge of this decade.

Today, there is an explosion of innovation across the geospatial community. It is one that NGA must embrace. I refer to this explosion as the “democratization” of geospatial information.

Two factors are driving this democratization: the rapidly spreading geography of the Internet and the “darkening of the skies” by small satellites.

First, the revolution that is the geography of the Internet and the emerging Internet of Things — creates a record of georeferenced activity that makes what NGA and our IC partners do — spatio-temporal analysis — the bridge to the future of commerce, cooperation, transparency and security.

Second, the skies will “darken” with the hundreds of small satellites to be launched by U.S. companies and as procedures are developed to allow safe operation of Unmanned Aerial Vehicles in civil airspace. We need to invest in the growing number of commercial satellite providers to enhance our persistence capabilities.

The questions that arise from the persistence of geospatial data streaming from hundreds of overhead platforms covering the earth multiple times a day are staggering.

The challenges of taking advantage of that data are daunting.

We cannot afford to store it all and we cannot afford the manpower to exploit it all. We have to go to a service model where we acquire only what we need, when we need it. Increasingly the commercial model focuses on the valuable information derived from the image and not the raw imagery data. This change puts a premium on tools that derive information from the image and the analytics that put it in the context of the business application or national security problem. And these are only the beginning of the questions we must answer — or even know to ask — about the impact of the revolution of sources. What questions can we answer with daily coverage of the planet? What choices will our adversaries make with daily coverage of the planet? What questions can we answer when we revisit locations as often and for as long as we need to stare? How will we maintain decision advantage in such a playing field? This is the primary challenge in space that NGA will face in the near future.

Over the next 10 years, our agency will become just as adept at using emerging information sources as we are with using existing government sources. The solution to key intelligence questions lies in maximizing the integration of all available GEOINT sources. The exponential growth in the quantity of data necessitates the automation of change detection to free up our analytic workforce from being data gatherers to data interpreters finding the meaning behind that data. The cumulative effect of this new data environment will be a persistence capability that is not just derived from the characteristics of a particular sensor but from a more robust synergistic knowledge base.

In 10 years, NGA will not be known for analyzing traditional reconnaissance imagery, a capability that will generally be available as a commodity. It will be known for application of geospatial analytics to big and extraordinarily diverse data. Analysts will not spend their days searching images, looking for and recording significant changes. They will instead model our national security problems and apply analytics to the massive collections of geo-referenced observations that we get from a multitude of sources – both traditional intelligence sources and open and commercial sources. They will make fewer intelligence assessments from direct observations and more from

discovering relationships hidden in the sum total of that collection; moving from anecdote-based observations to evidence-based understanding.

The combined possibilities of innovation in our national technical space architecture and the emergent commercial space market are inspiring us to seek new opportunities. We excelled in the past in a secure, closed system. Successful partnerships in the future will depend on transparency and openness to any sources that add insight. We must excel in the open by reducing barriers between our system and the explosion in the commercial market.

In closing, the demand for GEOINT knowledge is growing exponentially. The President's FY16 budget request provides us with the resources necessary to maintain access to a variety of space systems and space-borne products critical to our ability to support warning, targeting, mission planning, navigation and flight safety today, and to embark on this new playing field. My colleagues here today are invaluable teammates in all of our endeavors.

On behalf of the men and women of NGA, thank you for this opportunity to appear before the subcommittee and I look forward to addressing your questions.
