"The Military's Third Offset Strategy and the Revolution in GEOINT"

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Introduction – GEOINT is Critical to the Military's Third Offset Strategy

It's great to be here in Orlando this morning. Thank you Joan Dempsey for the warm introduction. Jeff Harris, my hat is off to you and the rest of the USGIF board for your support to industry, government, and education across the GEOINT community. Thanks to Keith Masback and the USGIF leadership and staff for once again putting on this great symposium and thank you for inviting me to attend. Keep up the great work.

NGA leadership – Robert, Sue, Wyman and your senior team -- thank you for your stewardship of this GEOINT community. You lead GEOINT in standards development, cutting edge research, innovative commercial partnerships, and new tradecraft. Within NGA, you have over 1,000 personnel co-located in partner facilities around the world, including combatant commands, military services, embassies, intelligence agencies, and foreign partners. You give me great confidence in the future health of GEOINT.

It is a privilege to return again and speak at this year's GEOINT Symposium. Just like you, I'm looking forward to hearing from so many voices of leaders of the GEOINT enterprise over the next few days – Robert Cardillo, Jim Clapper, Betty Sapp, Michael Lumpkin, Steve Welby, Winston Beauchamp, Doug Loverro, and of course in a few minutes Parag Khanna – each pointing to the key trends shaping the important work ahead.

Last year I closed the conference as a final keynote speaker. This year I'm honored to kick-off the formal portion of this year's conference – framing the conference with some of the thinking from the Pentagon's leadership on how the revolution in GEOINT can contribute to the military's Third Offset Strategy.

As you know, as Under Secretary of Defense for Intelligence, I am responsible for shaping the application of intelligence to military needs. I serve as the Secretary of Defense's principal intelligence advisor, oversee $17 billion in military intelligence program funding as well as other related capabilities in the battlespace awareness areas, and shape a 110,000 person civilian and military workforce across the 8 defense intelligence components of the Intelligence Community.

My priorities are to focus on integrating this enterprise, on ensuring it effectively contributes to current military operations, and on building innovative new capabilities for the future.

Over the last four months, I have had the occasion to visit some of our US military and defense intelligence team across 16 countries on five continents to baseline our contributions. Afghanistan. Iraq and the Middle East. North Africa. Across Europe's eastern flanks. The Asia-Pacific. One trip was an under-the-radar visit into northeastern Syria with our special operations forces to assess our counter-ISIL efforts there. Another trip allowed me to fly with our United States Air Force conducting routine reconnaissance over the South China Seas, just as we have done for years, in support of freedom of navigation and commerce, international norms, and the peace and stability of the Asia-Pacific.

Without question, one of the biggest takeaways of all of these visits was how central GEOINT is to our day-to-day military operations. Now more than any other time in our history, GEOINT plays a critical role in informing our defense leaders to make sound decisions, and in our military commanders' ability to deter our adversaries and, should deterrence fail, enable us to defeat the enemy. Today, global imaging, communications, and precision navigation and timing are deeply enmeshed in our joint operations -- central to our deterrence, assurance, and warfighting. Without robust intelligence capabilities to enable decision advantage to our operational forces, our ability to fight and win would be severely compromised.

Geostrategic competitors seek to challenge the United States' ability to fight and win a high-end, contested fight by attempting to roll back our ISR advantages and eliminating our historical asymmetric advantages. They benefit from the ubiquity of technology that has enabled them to rapidly improve their air, space and terrestrial-based ISR. In fact, our near-peer competitors may seek to turn the table on us by choosing their own asymmetric ways to put us off balance.

Key among potential adversaries' anti-access/area-denial, or A2AD, strategies is to deny, degrade, and disrupt our ISR capabilities across all domains. Potential adversaries attempt to confuse and complicate our intelligence gathering and exploitation efforts by using capabilities like camouflage, concealment, decoys, land-mobile air defense systems, and ballistic and cruise missiles.

Over the last 18 months Secretary of Defense Ash Carter and Deputy Secretary of Defense Bob Work have set in motion a Third Offset Strategy to counter our adversaries advanced technology proliferation, recognizing the powerful strategic effects that came from our earlier offsetting advantages -- first, in nuclear deterrence, and second, in global command and control, precision strike, and stealth. In a Third Offset, we seek broad-based strategic advantage through new technologies as well as new operating concepts – investing in new tools and capabilities as well as how to creatively use them.

In order to achieve success in the Third Offset Strategy, the defense intelligence enterprise will play a central role, leveraging the GEOINT community's ability to innovate and drive change.

A few examples of areas important to the Third Offset Strategy where GEOINT will play a leading role include: advanced data analytics, human and machine teaming, deep learning

capabilities, all-source model-driven collection management, and machine-to-machine tipping-and-cueing.

Today I'll touch on four current focus areas we at the Pentagon are emphasizing as particularly key to GEOINT's contributions to the military's Third Offset Strategy:

- GEOINT Transformation
- Survivable and Resilient Space
- Commercial Partnerships, and
- Coalition Integration

First: GEOINT Transformation

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The GEOINT community forms the heart of our ISR architecture, influencing and pushing sensor development, collection, processing, and analytic tradecraft.

You have been on the front end of initial employments of LIDAR, Hyperspectral Imagery, Ground Moving Target Indicator (GMTI) and wide area motion imagery (WAMI), just to name a few of the exciting advancements in phenomenology over the last several years.

Just over the last ten days, I visited a range of key nodes in our enterprise where GEOINT innovation is happening – in visits to NGA's New Campus East, to NRO's headquarters in Chantilly, and, yes, at DIA at Bolling and at NSA at Ft. Meade.

A few days ago, one of our key Five Eyes partners, New Zealand Chief of Defence Intelligence Brigadier John Howard, and I visited the 480th ISR Wing at Langley Air Force Base, another node in our enterprise where some incredible innovation is underway in allowing real-time access to ISR mission data and content, as well as the ability to overlay other geospatially-enabled products with live FMV sensor feeds. A very powerful capability and a great harbinger of things to come.

By the way, Brigadier Howard is here at this conference today – as I am sure are all of our Five Eye and other close partners – an indicator of how focused we all are on harnessing the power of GEOINT in the years ahead.

As we look ahead, it is clear that this GEOINT community is leading further transformation that will bring real solutions to the needs of the military and the warfighter.

One transformation underway is the movement from pixels to services – that is, from a model of providing military operators with pictures…to providing them with GEOINT insights.

This means developing artificial intelligence systems that use historical and real-time data from multiple sources and domains, identify key information needs based on an operational

commander's requirements, and automatically initiate collection to fill knowledge gaps. In the GEOINT realm, much of this is captured in the concepts of Activity-Based Intelligence, or ABI – and the Object-Based-Production (OBP) and Structured-Observation-Management (SOM) that feeds ABI.

The tasking and collection components of ABI must operate autonomously at machine-to-machine speeds, using all available data and collection resources to predict where an activity of interest will occur and drive the collection and processing of relevant information at greater speeds. Object-Based-Production will give our analysts precious time back to allow them to focus on analysis.

Transforming GEOINT also means bringing in more sources of information than ever before – including openly-available geospatial information. In this regard, the Pathfinder work NGA began last year and continues today with Pathfinder II offers real opportunities to explore the boundaries of what's available to the community in freely available open source environments.

Transforming GEOINT implies an integrated collection approach consisting of diverse sensors and phenomenologies, orchestrated across all domains and leverages government, commercial, and open sources. To accomplish this we have to be able to link airborne and space collection capabilities as well as commercial open source into a "system of systems" that – in the military context -- can counter highly mobile threats such as theater IADS and ballistic missile systems, and maritime threats in a contested environment

Effective execution of ABI requires a federated architecture, with new mission management and data processing attributes, which will change the way we build and operate entire sensor systems. The Intelligence Community's IT modernization efforts – you all have heard the term ICITE -- and DoD's parallel IT modernization toward the Joint Information Environment -- or JIE -- are two critical efforts postured to provide a more effective and affordable information technology environment for data sharing. IC ITE and JIE offer new, exciting, innovative opportunities for national-to-tactical and tactical-to-national integration.

We see a future made up of multiple clouds within the IC and DoD, ranging from small tactical clouds for operational forces to large, data intensive structures in the United States and across the globe, and including both unclassified and multi-level secure clouds. Looking ahead we foresee a more globally dispersed and deployed -- yet better connected and even more effective -- community of defense intelligence analysts than ever before.

Second: Survivable and Resilient Space

Let me now talk about a second area of focus for the Pentagon and our Third Offset Strategy – survivable and resilient space assets.

Unlike our airborne systems, which for the most part have always had to be prepared to operate in a contested environment, space often has been considered a sanctuary. Deputy Secretary Work touched on this recently during the 2016 Space Symposium when he said, "our constellations were optimized for an anomalous world, a brief blip of time when our obvious

advantages in space-based capabilities could be fielded and operated with impunity." Today that is no longer the case.

The DoD and IC are now emphasizing resiliency for our space programs. Secretary Carter has briefed Congress that we will sustain over the FYDP the more than $5 billion in new investments DOD made last year to make us better postured for contested military operations in space – including over $2 billion in space control efforts to address potential threats to U.S. space systems.

The Air Force and the National Reconnaissance Office have taken the lead and are cooperatively working to ensure an integrated approach to resiliency across the space enterprise. Their collaborative efforts will ensure future systems will be built with resiliency considered from the beginning, both within individual systems and from a "system of systems" perspective. New space programs will have resiliency KPPs – Key Performance Parameters.

We have seen the results of this work already shaping our next-generation space systems.

For example, the recently completed Space Based Infrared System (SBIRS) Follow-On Analysis of Alternatives (AoA) acknowledged the importance of Overhead Persistent Infrared (OPIR) and evaluated architecture options to meet stringent strategic and tactical warfighting needs. Just as important, the AoA emphasized resiliency against a high-end peer threat in evaluating the architecture options. As the Department makes its final decisions on the SBIRS Follow-On during this fall's budget review process, resiliency will be a key factor.

Similarly, the NRO is increasing resiliency in the national overhead architecture. As the Department and Intelligence Community define requirements for our collection systems, we want to ensure those systems will be available when we need them most. These considerations have already dramatically influenced our requirements for GEOINT and SIGINT systems.

This presents its own set of challenges. We might have to trade off some collection performance for increased resiliency. Any trades will be decided through a deliberate process and take into account warfighter requirements.

To help offset some of the trades for these resilience capabilities, we will likely look to available commercial or coalition systems to help address some capability shortfalls. As a result, our warfighters may be depending on systems that are not fully resilient. We need industry's help to come up with innovative ways to make the commercial services we use more resilient and affordable.

A key element of resiliency also is effective command and control of our assets.

We remain concerned that in the event of conflict involving the U.S. and a near peer adversary, some of the adversary's early "shots" would likely target space systems. Space situational awareness, a comprehensive operational picture, and the ability to react quickly are critical to operating through those attacks. The Joint Interagency Coalition Space Operations Center, or

JICSpOC, is the experimental platform that will determine the command and control functions and capabilities that we'll need.

As an early operational and organizational construct of the Third Offset strategy, the JICSpOC will heavily leverage our current and future GEOINT capabilities. Advanced technologies will provide different types of space situational awareness. Deep learning machines will allow us to determine what is happening within the constellation. And human-machine collaboration will provide visualization and battle network tools for the commander to make timely decisions.

To integrate these initiatives requires a governance structure to monitor and oversee the performance of the entire DoD space portfolio. Last fall, Deputy Secretary Work created the Principal Defense Space Advisor (PDSA) position to monitor the portfolio, and formalized a new Space Major Force Program. These efforts are moving the Department to a more cohesive and unified space governance model.

As the Under Secretary of Defense for Intelligence, my office works closely with the Principal Defense Space Advisor, serving as the critical bridge between the Secretary of Defense and the Director of National Intelligence for all joint intelligence efforts.

These efforts are very exciting and require our best thinking. We on the government side will look to all of you in industry and in the research community to continue to innovate and help us in this journey.

Third: Commercial Space and Partnership

Now to a third area of focus for supporting the Pentagon's Third Offset Strategy – commercial space partnerships.

The U.S. Government has benefitted from a strong partnership with traditional commercial imagery partners over the years. Such partners and legacy systems have contributed greatly to foundational GEOINT and to all aspects of the U.S. military's operations -- in peace, in war and a range of other key missions including natural disasters and humanitarian relief.

We are seeing great potential in new and upcoming innovative technology and commercial endeavors that will enhance GEOINT and commercial imagery across the board. Beyond today's existing commercial capabilities, a number of U.S. companies – many of which are represented in this room – are building new commercial constellations, developing a broad spectrum of innovative commercial capabilities, and implementing new ways to access, analyze, and process data into commercially useful information. These advances will prove to be critical enablers for industry users and will likely prove beneficial to the Department as well. Leveraging the right commercial capabilities will provide new sources of timely data and position the Department to better utilize and fuse data from many sources.

As we assess the costs, risks, and benefits of commercial capabilities – individually and collectively – we will seek to fill Defense requirements by balancing the right commercial capabilities with national security equities. As we move forward with the Third Offset Strategy

and towards more machine to machine tipping and cueing, we, government and industry, need to address how to deal with data integrity and pedigree, and information security challenges so the Department can leverage these evolving new commercial capabilities as one of many customers – also without becoming an "anchor tenant".

The White House Office of Science and Technology Policy recently endorsed a proposal for the U.S. Federal Aviation Administration to oversee "non-traditional" commercial space activities. As the "mission authorization" proposal moves forward, it may highlight an important need for a designated U.S. organization responsible for oversight, authorization, management, safe operations, and compliance of such capabilities and missions. As these new capabilities proceed, frank and open discussions together with proactive industry best practices will ensure safe space operations into the future.

Fourth: Coalition Integration

My fourth and final area of focus today in describing our support to the Pentagon's Third Offset Strategy is in coalition integration.

As we know, our military operations involve working with allies and coalition partners. The defense intelligence enterprise must continue to effectively integrate the capabilities of long-standing allies, while maturing its agility to rapidly interoperate with current and future coalition partners. This is especially important for the GEOINT community. In order to transform the huge volumes of collected data into a decision advantage, we must enable federated processing, exploitation and dissemination (PED) with our allies and partners.

The military will increasingly rely on IT information-sharing architectures such as the US BICES and BICES-X capability to enable this coalition intelligence information-sharing imperative. BICES provides critical coalition data and information sharing to our warfighting commands and coalition partners while meeting a high priority demand for GEOINT data sharing. In fact, it has been so successful at meeting combatant command needs that demand is exploding. We need to continue to expand our ability to share data with our coalition partners and we need DoD and industry to partner to fully optimize the effect this capability brings to the overall intelligence enterprise.

Integration with partners and allies can provide immediate coverage in areas where the U.S. lacks sensing capability, particularly airborne and manpower; and enhance specific target area knowledge, leading to superior battlespace awareness.

The GEOINT community is a critical link in this and your involvement in the annual USD(I) sponsored Enterprise Challenge exercise allows us to showcase emerging multi-intelligence ISR capabilities that improve joint and combined ISR interoperability. With your help, we can achieve effective data integration with our Allies and Partners.

Conclusion

So these are four areas where we at DOD believe we all need to shape the revolution in GEOINT in order to make it most beneficial to the military.

In closing, let me again review the strategic context that shapes my thinking and focus as a Pentagon leader.

Our nation's defense leaders believe that as we examine both current and future operating environments, we see our margin of technological and combat superiority at risk of eroding. Addressing this is one of our most important strategic tasks in order to preserve our ability to deter conflict and preserve international peace and stability, disincentivize competitors from preemptive actions, and preserve our edge in any future US military operation.

That's why we're exploring new "offset strategies" – new combinations of technologies, operational concepts, and organizational constructs to maintain our ability to project overwhelming combat power into any theater and at times of our own choosing.

Key to this Third Offset is our defense intelligence capability, particularly the great strengths we derive from GEOINT. And it is therefore imperative to continue to: transform our GEOINT enterprise to maintain the nation's strategic advantage, to make our space architecture more resilient and survivable, to harness the full creativity of the commercial and academic sectors, and to seamlessly integrate with coalition partners in unprecedented ways.

I'm encouraged by the GEOINT community's forward leaning focus and excited about the future of our GEOINT enterprise, enhanced by innovation that will provide timely, relevant, and decisive intelligence to counter our adversaries advancing A2AD technologies and capabilities.

Deterrence depends on preparedness. The blunt reality is we must prepare to deal with adversaries who are willing to fight in every domain, including space.

Today our nation is face with many challenges – but with every challenge comes opportunity. We are in an exciting era for defense intelligence – an era where the defense intelligence enterprise has the potential to become the most capable intelligence system the world has ever seen.

It really is an honor to spend some time with you today. Our future success can best be achieved with the close partnering of government, industry, allied and coalition partners, and academia. Thanks for all you do to make this community's contributions so vital to the defense of the nation.

Thank you.