Remarks as prepared for
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Good Morning.

It's great to be here today to talk about how NGA is transforming to face the challenges – and opportunities – of Big Data.

NGA has a proud history as the premiere provider of GEOINT to the US government. Our foundational intelligence provides critical support to the military and national policy makers.

But as Director Cardillo said at the GEOINT Symposium last month, our future success is _not_ guaranteed. We face a national security environment with unparalleled complexity – and we no longer have a monopoly on GEOINT data.

We've seen a revolutionary growth of commercial capabilities that deliver new opportunities for us to seize, to push our boundaries farther, and to know more about the planet than ever before.

But our adversaries have the same opportunities.

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The sheer volume and persistence of data that's collected by all of the new sensors in the market, as well as the diversity and openness of the data, demands that we adapt. And rapidly.

We have to shift our traditional business model to respond to this tsunami of Big Data.

We can accept it and we can partner with it – but we have to do something with it when we get it. And if we're impressed by the amount of geospatial data from commercial space, the Internet of Things is going to dwarf that.

Gartner forecasts that 8.4 billion connected things will be in use worldwide by the end of this year – that's an increase of over 30% from last year. And by 2025, the Internet of Things will generate over 2 zettabytes, or 2 trillion gigabytes, of data.

These are all the Fitbits, the smart light bulbs, everything Alexa captures from Amazon devices – they open up a whole new trove of information for us to use.

GEOINT is no longer defined just by pixels, points and polygons. Now it includes mass media, social media, webs of open sensors and so on.

And our challenge is to sift through all this data chaos to find the valuable information *first* – to create new insights and advance our understanding of the world, which is what we pride ourselves of being able to do.

So when we think about exploiting ISR, we immediately have to face this data question. How much of the ISR data will we exploit? How will we exploit it? …and so on.

I mentioned the tsunami of Big Data – and you often hear that we're "drowning in data"… but what does that really mean? Are we saying there's too much data coming in?

That would lead us down a path to limit the data we look at, to use a series of triage approaches and to put blinders up to the rest.

We might prioritize what we analyze – based on location or requirement – and only perform long term historical looks in special cases. But to triage the data, is just a code to throw away part of it so that we can handle the rest.

Can you imagine if we told a President that we threw most of the Corona imagery away?

Instead of turning to triage solutions, we need to be asking: "How can we use it all?" and "How can we get back to a point where we're so good at ISR analysis that we wish we had more systems and more data coming in?" How can we exploit every piece of ISR data to provide the best decision advantage to our customers?

The answer is automation, AI and augmentation.

Director Cardillo announced at the GEOINT Symposium that NGA will apply AAA to every image that NGA ingests by the end of the year.

In the past year, NGA ingested more than 12 million images – and generated more than 50 million indexed observations. 75 percent of those were derived from automated algorithms. Unfortunately, most of this data remains hard to access – and, thus hard to use.

That's why we're pushing the envelope in every area of the intelligence cycle to be better, to be fast, and to be smarter.

We need to leverage technologies to automate our workflows – and we're doing this. We want to increase the speed and productivity to help anticipate our adversaries' next steps.

So we have initiatives underway, like Wayfarer; Watchmen; our work with Maven; and others are starting to develop tools that focus machine learning on the things that we have deemed routine tasks that our analysts do now manually. Change detection, automatic target recognition, and target monitoring.

We're building these capabilities and using Dev-Ops – pairing users, designers, engineers together for iterative sprints. And we've been doing this using agile methodologies for probably the last 4 to 5 years.

And now we're advancing our Broker Construct to help our customers maintain that competitive edge.

Especially in an age where everyone's sensor, and every point on the Earth is readily observed, and every consumer can access large volumes of data, unclassified geospatial content at the touch of a screen even through voice commands, what our customers need most is a trusted agent to help them filter through the data chaos that we're encountering.

So we're building this service with GEOINT Broker – to connect consumers to suppliers… to find the most valuable source to meet the customers' most critical needs.

We found ourselves in a similar situation to NSA when they went through the explosion of digital growth – and we decided we could either compete with the proliferation of GEOINT, or embrace it, bring it in, and broker it.

And Broker will allow us to develop a stronger relationship with our customers because, in order for it to work, we have to have a deeper understanding of their needs. No longer do we just want requirements.

We want to truly understand their issues so that we can match them with phenomenologies, and the right supplier to deliver it.

We'll use a value-drive process to dynamically match the best content from the supplier at any given time to the customer that needs it, through a transparent marketplace.

This Broker process will enable us to optimize our supplier network, while maximizing our customer value and mission outcomes. And we'll use value-chain analysis to monitor the flow of issues and needs.

Now the rise in data, combined with dramatic improvements in computing power, represent a phenomenal opportunity to do, to know, and to understand, and achieve more.

But none of it matters – all the brokers in the world and all the tools in the world don't matter if we don't have data-savvy people leading and supporting our mission.

We know that, particularly in the areas of AI and automation, the value of innovation comes from a combination of both the data itself and the talent.

And so that's why one of our most important focuses needs to be on getting get us to the future by getting us a "data-centric" workforce.

This means new ways to hire, new approaches to recruitment, new training, and it means adopting a new way of thinking: Computational Thinking.

It means recruiting different people from different places than we normally do, who don't necessarily live with 50 miles of DC, or a military base.

We need more people with computer science and data science degrees – and we need to be more open to hiring people in different ways. We need to bring in people without clearances and enable them to develop unclassified solutions that we can apply to classified problems.

We also need to the experience and expertise that our current workforce brings to the table, so training must also be part of the process.

Everyone at NGA will be trained in basic coding principles and computational thinking. That's why we taught our Director to code.

But we're not stopping at one basic class – we're pursuing an aggressive human capital management strategy to bring in more skillsets, particularly the hard sciences of software engineering, data modeling and visualization.

And we also need to talk about our process – we need a different mentality within the government when it comes to building tech.

First of all, we need to be part of building it. Agile development, DevOps – these things aren't new, they're just how software gets made now, by everyone who doesn't work for the government.

We can't just put together some requirements, throw them over the wall to a contractor, and wait until we get something back. There needs to be a constant process of ongoing development, where we build, test, field, build, and so on.

In a world in which an algorithm gets stale after a few months – if not weeks – we need to be constantly developing this stuff.

And that means that the government needs to be in a position to constantly develop – which means that we need to rethink what and how we contract.

Our acquisition approach must be more responsive to mission needs. So we've also transformed our business model by restructuring our acquisitions model.

We've always tied our development efforts to mission requirements, but in the past our workflows would drive our acquisition strategy.

We ended up with large, long, stove-piped contracts that we treated like programs – and we're frustrated when well executed deliverables didn't give us the mission outcomes we wanted.

So we've changed our approach. To shorten delivery time to meet capability needs. To expand our use of alternative acquisition pathways to examine new technologies. And ultimately, to achieve the most valuable outcomes at the most reasonable costs.

This is going to look like smaller contracts focused on mission-specific capabilities – so smaller procurements, but more diverse opportunities for industry.

All of the transformation efforts I talked about require new and strengthened partnerships to develop the innovative solutions to our hardest challenges. Ultimately, innovation itself is a new form of competition and we need to be able to out-innovate our adversaries.

Our data processing architecture, and the quality of our data scientists, are just as important to maintain our competitive edge as aircraft carriers and special operations forces.

In this new world of Big Data, those who can most quickly separate the threat from the noise – especially at machine speeds – will be the ones with the decision advantage in a time of conflict.

Our adversaries know this as well as we do.

So with the stakes so high, we can't afford to "drown in data. We can't turn to triage. We need to tackle these issues head on. We need to rapidly sift through the data not only to convey "the when and the where" of the most important national security issues of our time.

We need to deliver "the who and the what" – "the why and the how" – and then, most importantly – "what's next?" And we know that our success is inextricable linked to a whole of Global GEOINT Enterprise mindset – and many of you in this room are part of that.

So I look forward to working together. And I look forward to your questions.

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