Episode 169 – Commercial Data, Open Source Intelligence and Moving at the Speed of Technology

Speaker: David Gauthier, Chief Strategy Officer, GXO, Inc. – 26 minutes

John Gilroy:	Welcome to Constellations, the podcast from Kratos. My name is John Gilroy, and I'll be your moderator. Today we'll be talking about the challenges of the DoD leveraging data from the commercial space industry. Our guest is Dave Gauthier, former director of commercial operations for the National Geospatial Intelligence Agency, and now Chief Strategy Officer at space consultancy, GXO Incorporated. Dave, we're going to jump right in here, and I'm going to jump right in with kind of a curve ball question, turn the tables on you here. As commercial space grows, the DoD has experienced significant opportunities to leverage commercial data. You have been engaging with the commercial industry for a long time. First as a buyer and now as a consultant. Going to turn the tables here. How has your view of buying commercial data changed?
David Gauthier:	Well, first thank you John, and thank you Kratos. It's a pleasure to be here talking to you today. My thoughts on commercial data have changed significantly in the past four or five years. I think in the past, starting to look at buying commercial data, the role of government was largely one of augmenting what they were getting naturally from their own sources, and using commercial data to augment that. However, I've come a long way since then, and in the present, see this as commercial data providing a critical advantage for strategic competition. More than just data, we've seen a shift towards information services. And in that regard, it's helpful to think of how an everyday user, they don't want a lot of traffic data. They don't want to see accelerations or velocities from vehicles on the highway in a table. They want to see the nice green line or red line on the map that is a service that tells them whether or not they should drive down the highway today. So turning ISR data into information services is where I see us going now.
John Gilroy:	Russia invaded Ukraine about a year ago, and commercial industry really stepped up with images and data that told a story about the invasion. But up until that time, the government seemed to question the value of commercial imagery. So why the hesitancy? Was it because they didn't see a need, or because they didn't trust commercial companies? Can you give us some insight?
David Gauthier:	Sure, but I'm going to push back on you a little bit, John, and say that it may have appeared that the government questioned the value of commercial imagery, but in reality, I think the value was always well known, and the real limitation is where the government was willing to employ commercial imagery

in its mission use. And like I mentioned before, a lot of the employment of commercial imagery was as augmentation to current mission and not really providing the role for a commercial imagery to break out of its shell. And so it was always in a supporting role. But this is the first conflict, the Russia-Ukraine conflict, where commercial ISR and imagery has a leading role, and I think they're winning the Oscar this year. Russia-Ukraine provided the perfect use case. If you think about it, there's a lack of U.S. drones for ISR imagery over the battle space. There's not a U.S.-led coalition with command and control infrastructure and everything else.

So we were relying on a scrappy military to make best use of what they could from commercial capabilities, and we allowed our industry to jump into the fray and showcase those capabilities. And I was personally driven to help commercial radar imaging get a foothold and take part in this effort.

John Gilroy: The demand signal for commercial data is growing, but now there seems to be a concern that the U.S. and intelligence agencies are not adopting commercial services as quickly as industry would have hoped. There doesn't seem to be a significant budget to sustain an industrial base. Can you talk about what can influence this budget?

David Gauthier: Yeah, there's an unfortunate system in place with government purchasing and programming and budgeting, and I think of it in two ways. One, as a new technology capability becomes available, it tends to become available a year or two before user demand and adoption can really understand it and bring it to bear. So the demand lags new capability by a couple of years. And then to make matters worse, the intel community's budgeting process lags demand by two to three years, right? So you're budgeting two years in advance for things you know about. So you're talking about a four to five year lag in adoption and budgeting just sort of built into the system that we operate with. So one of the things our consulting firm is proud to do is help the government adopt and scale space technologies faster. And it's not just us alone. There's a lot of people working on this.

I'm sure you've heard of the PPBE Reform Commission. There's acquisition reforms going on. There are definitely glimmers of hope in the Department of Defense. It was Ash Carter's vision to bring on the Defense Innovation Unit, DIU. We now have an office of Strategic Capital, and the Space Force Commercial Services Office is really looking at bringing capabilities in as fast as they're ready, and having a marketplace for the end user to bring on commercial capabilities.

John Gilroy: David, let's dig a little bit deeper into this topic. I think the Pentagon has set up partnerships with industry to support the military under certain situations. Right now, the Space Force is in the early stages of designing a commercial augmentation space reserve, which would fall under this type of public-private partnership of some sort. So David, can you explain how this commercial space

KRATOS

reserve would work versus, I guess the old fashioned, the old school Civil Reserve Air Force, Civil Reserve Air Fleet, I think it's called.

David Gauthier: Yeah. I think this is a very exciting opportunity, and Space Force is willing to take on the mantle of responsibility for this. The Civil Reserve Air Fleet was considered greatly successful, even though almost never used to its full extent, but it provided incentives for the airlines to sign up to help the nation in time of conflict or war. And so the CASR, which is what they're calling this commercial augmentation space reserve, we'll call it CASR, they're looking to build upon that model. It's not just about airlift of people in equipment, it's about all things that commercial space can offer. So the scope is greatly expanded. We're looking at commercial launch capabilities, commercial mobility in orbit, commercial satellite communications, commercial ISR capabilities. So there's a lot that can be brought to bear. And all summer this year, there's been sort of this expert working group taking comments from industry and the government to figure out how to best posture this capability going forward.

It will offer contracts to commercial companies. And then if a company takes the contract, they sign up to a multi-tiered approach to providing support. One is the baseline during peace where they will offer capabilities to the military and get some kind of preferential buying from the military in order to offset some of their resource needs going forward. There will be an ability to rapidly surge the purchase of those capabilities at a moment's notice. And then if the Secretary of Defense decides it's a conflict that requires it, they will then surge again to full execution of CASR, which is basically where the military can take over the capacity of these commercial capabilities and use them at their discretion. So it's a tiered approach, and the crux of this will be companies volunteering to be a part of this system based on the incentives, and maybe the war risk insurance that the government would offer to help offset the cost.

John Gilroy: Well, David, we're going to make a transition from acronyms now. So we went from the commercial augmentation space reserve, the CASR, to the defense industrial based, DIB. So we know about the DIB. Some people estimate 300,000 businesses in the DIB. It's pretty well known in the DC area here. So my question to you is, how do you incentivize a company to participate in this agreement? We talked about the CASR. There's a whole lot of risk just putting in a satellite in in orbit without even considering military attacks. So how do you motivate someone?

David Gauthier: Right. Well, I mentioned incentives are the crux of this. We have to have a financial incentive during peace time, during surge time where the companies are getting additional contract purchases so that they can offset future costs of this capability. The other thing is in the craft model with aircraft, it was easier for the government to hold civilian aircraft outside of combat operation zones, not force them to go into direct environments where they're threatened by the military adversary, where they could be attacked. In space, it's completely

different. The entire domain can be under threat at any time. Anyone operating there can be considered a target. And we've heard Russians and the Chinese talk about commercial companies helping the military as being targetable. So the threat is real, and that's why I mentioned things like war risk insurance. The government has to provide some type of commercial protection to the companies that are supporting military operations in the space domain. And that would be the best way for companies to decide that they can be a part of this.

John Gilroy: Well, David, this is a part of the interview where we talk about 1950s television before you were born. In 1957, a guy named Johnny Carson launched a show called Who Do You Trust? So my question to you is, how does the government decide who to trust? How do you decide who to trust? Do you envision the military taking over control of the satellites? Would it be just a matter of commercial satellites providing more capacity during the time of war? This is some serious information we're dealing with here.

David Gauthier: Right. And for CASR, they are walking a very fine line on the who do you trust effort? So when I was at NGA, I took an approach of trust our friends, and then verify them, right? Unfortunately, some other parts of the community are all about verifying first, and then trusting second, or only working with U.S. companies. And so I think in a global industrial age, that's not an option for us anymore. We have to look at wherever the best technology is. As long as they're from friendly countries, we can figure out how to bring those U.S. subsidiaries of those businesses onshore, and then mitigate any foreign controller ownership issues that might be a concern. So I'm pleased to see that CASR is going down this path where they're saying, "Yes, we'll work with U.S. companies, yes, we'll work with U.S. subsidiaries of foreign owned companies, but we have to go through the process of mitigating their ownership control and influence so that we can trust them to support U.S. interests and U.S. military activities going forward."

John Gilroy: There's a famous leader who, I think in the last four or five years, he famously said that culture will eat strategy for lunch. So let's talk about culture here.

David Gauthier: Okay.

John Gilroy: So how do you change a culture so that the government considers buying from commercial first? This is a cultural change. This is not easy.

David Gauthier: Right. And I would've expected this cultural change to have happened faster. But I don't know why I would expect that. Maybe I'm an optimist. When it comes to imagery or ISR capabilities, this is a generational change. It's a tough one. The established capabilities inside the government have been there for decades, and it's given the time for the IT systems and the data architectures to

KRATOS

be rigorously secured and understood. And so to go in and modify that for a commercial first operating concept is very difficult. So we do have to overcome that over time. I do look at some examples that I think are illuminating. One is U.S. Transportation Command. In the beginning, U.S. Transportation Command was asked to be ready at any time to deliver the defense department's assets to a combat theater overseas. And so they built the equipment and the transportation capacity to do that.

They did it so well, they were asked to then move DoD equipment at any time, not during a conflict, any time in peace all the time. And they said, well, we will start using commercial capabilities to do that. They created a hybrid system. It worked so well that they were then asked to move anything, anytime, anywhere for anyone for the U.S. government. And what eventually happened is they became experts in logistics and using commercial capabilities around the world. And today, they're 97% commercial and 3% government owned transportation assets. So it really is a good model for saying if ISR and commercial imaging can take this same path, we'll be using commercial first at some point, and then backstopping the most critical things the nation does with the government owned systems.

John Gilroy: Earlier, you mentioned your previous employer, NGA. Well, I think the National Geospatial Intelligence Agency is starting a new procurement program called Luno. In fact, they released an RFPI, I think maybe back in October. So can you tell us how the Luno program works? I've read that the data provided by Luno contracts must integrate directly into analytic workflows for operational use. Sounds pretty complicated.

David Gauthier: It could be. I'm really excited for Luno. We made a shift, when I was the director of commercial operations at NGA, to focus on commercial analytics services, the idea that the NRO would buy the imagery and NGA would buy what we called commercial analytics services. And our first contract for that was called economic indications and monitoring, this idea that we could buy a lot of data that would help us monitor economic activities around the world. I joke with some of the end users, that we could make the case that anything moving at any point in time, anywhere on the planet was economic activity. So we started to use commercial companies to track aircraft movements, ship movements, movements of personnel, movements of natural resources, trains, et cetera. Luno, the demand for these services grew so fast, we quickly outpaced the original contracts. And Luno is the larger, more operationally ready contract for this.

The whole idea behind commercial analytics services is to push commercial GEOINT higher up the value chain. It's, instead of providing raw data to our users, it's to provide them with those information services that can more readily be integrated into their workflows, as you said. So I think the benefits of doing this are, one, it's easier to integrate into workflows. Two, it's a little bit more

KRATOS

resilient for the entire intelligence community or DoD ecosystem because we've distributed analytic capabilities across companies now, not just in-house. And three, it allows for a faster technology refresh. The companies can move at the speed of technology, refresh their capabilities, and provide improved services every few weeks as opposed to whenever a new program comes into the government.

John Gilroy: Let's focus on what you mentioned earlier, the NRO, the National Reconnaissance Office. I think recently, they said that the commercial electro-optical market continues to expand as new entrants develop innovative solutions. Innovation, good. So first, can you give us a brief overview of what electro-optical is, and then maybe expand about some of the innovative solutions that would support general admissions?

David Gauthier: Absolutely. Electro-optical, it sounds a little bit odd, I think, to the average person, but it really just means a digital camera that takes images in the visible spectrum, just like what the human eyes can see. And so putting digital cameras on earth inside spy satellites was how that was born. And now, we have the great imaging capabilities in the commercial market as well. Innovative solutions in electro optical would be going a little bit beyond the first order, which is what the human eye can see, and maybe adding some additional spectrum. So we're talking about looking in the infrared to see variations in thermal environment. It could be going at a high frame rate. So we're looking at video or enhanced video capabilities as opposed to one image at a time. It also means going to higher imaging resolutions. So the current best capabilities is probably Maxar's Worldview-3 at a 30 centimeter resolution. But there are companies coming now, like Earth Observant and Albedo, that will fly their satellites lower and achieve higher resolutions, the 10 to 15 centimeter resolution.

John Gilroy: Centimeters seems almost unbelievable, doesn't it? Really?

David Gauthier: It's amazing. Yes.

John Gilroy: Let's just sit back, and imagine you're in high school and you're learning about the math with observational. That's pretty specific. That's pretty detailed, isn't it?

David Gauthier: Very detailed. And you're seeing individual cars on the parking lots. You're seeing all those things. I really wanted to mention another advanced electro-optical capability, which is non Earth imaging. So for the first time, we're seeing commercial companies turn these cameras away from the Earth and image things in space, so we can use them to image other space objects. We can keep track of foreign space capabilities and get some behaviors and pattern of life on how some of these things are operating while they're in space.

John Gilroy:	A lot of things going on in space, and I think if you take and look at combining things, you get a lot more power. So the aggregation of optical imagery with other forms of satellite data is pretty powerful. So what kind of deeper insights would be gained by this collection of data?
David Gauthier:	Definitely more powerful if you can bring different phenomenologies of remote sensing collection together and use them in a concerted orchestrated way to understand the world better. So one of the first things we saw in the commercial market that could do this was an ability for two or three companies to combine their data and offer alerts to illegal activities. First one was illegal fishing. We've also did some illegal mining, illegal logging. And so the idea there is you're using satellite imagery, sometimes electro-opticals, sometimes radar, to follow vessels around. And then when they make different maneuvers in and out of economic exclusion zones, you're also combining that with the radio frequency energy you collect from space, which might tell you something about their radars, their communications, so you can identify that chip and track it over time. And so now, you're finding fishing vessels fishing where they're not allowed to be. You're finding other activities on the ground. You can use some of those signals to also look at where there might be interference with GPS, interference with other things. And so all of a sudden, you're mapping illicit activities around the world, and you're able to do that in a rapid fashion.
John Gilroy:	If you look at the big picture of the last maybe 15 years, we have gone from being data starved to being data inundated. It's everywhere. It's petabytes everywhere. There still seems to be a challenge regarding the right data going to the right outfit at the right time. So can you give us maybe some insight in the best way forward in getting commercial data into the hands of a war fighter in a timely manner?
David Gauthier:	Definitely. And you've hit upon probably the largest challenge right now. If we have enough capacity, enough data, we're observing the world at a sufficient revisit rate, and enough phenomenologies, how do you then get that to the war fighter, to the decision maker in a rapid timeline? So great news is we have the capacity to collect all this information. The question is how do you turn it into actionable data, and then deliver it quickly? And so I think one of the things we are relying on in the future will be what you might call the internet in space. And so you see the Space Development Agency putting up mesh networks of communication satellites that will have optical inter-satellite links. And they will create a mesh around the globe where you have information traveling at the speed of light from one satellite to another, and then down to the ground.
	And so that will be a way to sort of change the game in timeliness for commercial companies. There are also commercial satellite communications companies doing this on their own. So once we have these networks in space, companies can collect data on one side of the world, use on-orbit computing power on those satellites to distill the necessary information for that war

KRATOS

fighter, and then drop that data within seconds into the hands of the war fighter. And we've already seen even Apple iPhones planning to have direct links to satellites. So this is something that is not science fiction anymore. This is a company collecting something from space and dropping that information into your iPhone on the other side of the world within seconds.

John Gilroy: I just wrote down on-orbit computing power. It's really science fiction-y. It's like really? They can do that now. That's kind of amazing. So David, when you were with the NGA, you said the agency plans to coordinate with industry and using non-traditional data sources for geospatial intelligence efforts. So what kind of useful data that wouldn't normally be attainable from imagery alone would be helpful?

David Gauthier: Great question. I think it's always important to think what more can I get from a data or information perspective that is outside the image, it's beyond the image. So what I was really talking about there was Open Source Intelligence or OSINT, and there are a lot of companies collecting data and providing extremely valuable contextual information about local environments. So a couple of examples could be Janes Defense. They have deep historical knowledge of those local areas. Some companies are out there with survey teams that can get information out of the local environment. You've got a company called Altana that is mapping the world's supply chains. And so understanding the movement of good services and trade throughout the world is important. And I think I mentioned other things like the ability to detect interference and signals and map that around the world. And Slingshot has a project called DEEP that's doing that. So there are a number of companies that are figuring out how to create contextual information about the world that is not seen in the image, but adds value to the images that are taken and exploited.

John Gilroy: David, it's always difficult to articulate federal use of commercial assets, and I think you really hit the ball out of the park with this interview. I'd like to thank our guest, David Gauthier, Chief Strategy Officer at GXO.

David Gauthier: Thank you, John. It was a pleasure to be here.