



**Event Transcript: Summit for Sustainability  
Luncheon Keynote: Kevin O'Connell  
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**Rich:** ...event. It is my great pleasure to introduce Kevin O'Connell, the Director of the Office of Space Commerce at the Department of Commerce. I saw Kevin last week, and I said, "Kevin, I am introducing you. What should I say?"

He said, "Oh, Rich, as little as possible.

[laughter]

**Rich:** I am going to ignore that just for a second, and just say that I think Kevin stewardship of the Space of Commerce Office is an example of the right person being in the right place at the right time.

First of all, it's a broad, broad experience in the space industry both on the civil side, national security side. He's been an entrepreneur, a businessperson, an educator. He's been an advisor to national security, commercial industry, and key individuals. He brings a wealth of experience, and he brings this wealth of experience to a great place to do space policy, and that's the Department of Commerce.

The Department of Commerce is, of course, in the space business through NOAA. They are a commercial space regulator. They work deeply on issues of export control and trade, all the things which are fundamental to this new, emerging commercial space industry.

The one great thing about Kevin, if you've met him, and about his boss, Wilbur Ross, the Secretary of Commerce, is their tremendous energy, their tremendous passion for space. With that, I'm going to be quiet and let Kevin actually talk. Welcome, Kevin. Thank you for your remarks.

**Kevin O'Connell:** Thanks, Rich.

[applause]

**Kevin:** Thanks, Rich very much. You went on about twice as long as you should have, so I really take exception to that.

Thank you. Good afternoon, everyone. I'm Kevin O'Connell. Please enjoy your meal as it's coming to you. I'm unfortunately on a bit of a tight timeline this afternoon. As Rich has suggested, I'm Kevin O'Connell. I'm the director of the Office of Space Commerce. Many, many, many friends and colleagues in the room.

What we are trying to do and I've been trying to do for now the past year is to revitalize an office that was created 30 years ago in the Commerce Department with a view toward dealing with the kinds of space commerce issues that we're dealing with today, including modern issues like space congestion and space debris.

You've heard us say many times that we think that the future of space is overwhelmingly commercial. We spent a lot of time lately with people who are doing different projections of the commercial space future.

The secretary playfully said to me at one point, "Kevin, let's make sure we sharpen our pencils as we look at how people are assessing the future of space," partly to understand what their key assumptions are, the key drivers, the key impediments to reaching that trillion-dollar space economy that we're talking about.

One of the initiatives I'll mention is that within the department, we're working with the Bureau of Economic Analysis to try to develop a new way to capture the space economy. We tend to capture aerospace as a set of industrial processes.

We're actually going to try to set up, ironically, it's called a satellite account, to capture uniquely what is part of the space economy, a part of the economy that's moving at lightning speed from products to services.

We think that space could actually be one of the strongest areas of economic growth over the next two decades whether through the development of new services that improve our lives on earth or through new products and services that are driven by exploration and developments in the cislunar economy.

We applaud NASA's new efforts on LEO commercialization in this regard as well. We've also taken a quick look recently at the opportunities that can be made possible by, for example, additive manufacturing in space, where materials ranging from pharmaceuticals to advanced materials can be made with exceptionally high levels of purity.

Crystal and the Secure World team asked me to focus today on the role of the private sector in space sustainability. I know this is your topic for the entire day, so I'll probably just narrow down in on the private sector's role.

The space environment represents an unbelievable amount of economic potential, but that potential will only be realized if we take measures now to ensure the preservation of long-term viability and sustainability.

At Commerce, we see entrepreneurs all the time, from companies big and small -- and, yes, some of them look like they just came out of their garage after about a six-month stint -- that bring new ideas forward in the market.

Some of these ideas will potentially disrupt what we consider to be the traditional commercial space functions, areas like remote sensing, communications, navigation applications, and weather. While others are proposing to create wholly new capabilities in areas like satellite servicing, space tourism, manufacturing, and other areas.

This inevitably means that we have to tackle the problems and challenges associated with space debris, and space situational awareness, and space traffic management in order to safeguard the future of space. The way we have to do this is effectively, not recklessly.

Some consideration is required on how we do this. We've been spending a heck of a lot of time on this, obviously.

Space debris is, in some sense, an economic problem. Aside from the possible impact of human lives aboard the ISS, it represents a real potential problem for governments and the private sector.

Especially as space commerce grows, we see more and more people thinking about this as an economic problem. Some of the folks from the office were in Montreal last week for the OECD Workshop on the Economics of Space Debris. We're seeing a number of economists start to turn their attention to this value issue. I'll talk about that more in a little bit.

This is also one of the reasons why the Department of Commerce under Space Policy Directive Three...Commerce has been designated the lead to develop a civil agency by 2024 for conjunction assessment on behalf of commercial operators.

Of course, this is being done within the administration's whole of government approach to space, but also, in particular, in excellent partnership with the Department of Defense. I'll foot stomp that again.

I often get asked, "Why Commerce?" on the issue of space debris.

As many have heard me say, there are a number of excellent reasons, from the technical excellence in organizations like NIST, the National Institutes for Standards in Technology, and NOAA, our most self-interested organization within the department, to our routine interactions with industry on what I call the supply and demand sides of the SSA and STM equation.

We regularly engage with companies who are bringing SSA, STM capabilities to the market with the development of new sensors, new analytic tools, visualization aids, and even extending beyond the services that the US government provides today to new kinds of decision aids and other new capabilities.

We are also talking on the demand side to propose new space operators about their plans to avoid the creation of new space debris. As people bring innovative new capabilities to market that are different from the ones we see today, what are their plans, while still on Earth, to actually avoid creating new kinds of space debris.

That problem is bound to get more complex. Again, a considerable urgency around finding mitigation to that set of problems.

As a brief Commerce update, we've been working in a number of areas. Some of you are aware that Dr. Diane Howard has just joined us as the chief counsel to the office. She is warmly welcomed in that role. Tremendous expertise not only in this area, but also in other areas of import to the Office of Space Commerce.

We also have a Presidential Innovation Fellow, Dr. Diane Luta, who's able to give us some amount of her time. She worked at Dartmouth with Pam Milroy, who's in the room. She is able to help us with some of the work she has done in pertinent areas.

I'm also here to tell you that we're right on the cusp of hiring another well-known person in this space. I won't announce the name today, but someone who we expect to come in shortly who has extraordinary experience in the Department on SSA and STM issues, even as we tap into NOAA's technical expertise in this area.

Many of you are aware that we issued a request for information on a variety of topics late in the spring. I wanted to give you a little bit of an update on that. We have received, so far, over 42 very diverse inputs to our RFI on SSA STM capabilities, including from well-known companies that are in this space. Many of them are represented in the room.

Also, from satellite operators, analytics providers, and cloud computing companies, in addition to academia and professional organizations. We're very thankful for those of you...Many in this room have put in their own comments into that RFI.

We actually do have some additional folks that would like to comment in an appropriate legal way who didn't see the RFI the first go around or who were busy with other things.

I would say in a very, very short summary, a majority of these inputs agree that enhanced standardized data sharing is key to tracking more objects, to preventing conjunctions, and to assist in the orbital debris mitigation whether existing or in the creation of future space debris.

We're also putting the ink on the final documents between ourselves and the Air Force Research Lab to gain access to the unified data library that I have mentioned before.

Major General Kim Crider and I spoke just yesterday about some of the very final details to get ink on the paper. We should be able to get access to that tool very, very soon as the very first step in what we call the open architecture data repository, and I'll say more on that in a bit.

In other words, companies who already operate in space or who are looking to do so have a vested interest in the long-term sustainability of the space environment. Simply put, whether debris or unpredictable or unsafe behavior creates risk to commercial space operations including by undermining the investment and insurance ecosystem that increasingly enables it.

Let's talk about standards and best practices for just a moment. Secure World Foundation, of course, gets credit for its role in DARPA's CONFERS program where standards and best practices are being developed as the market emerges.

I often joke that I wish I had more CONFERS-like efforts in four or five other technical areas as it turns out. Very important to keep note of that, that the regulatory and other technical inputs are emerging from industry as the market is emerging.

Let me spend a minute on long-term sustainability. I see Simonetta di Pippo here. I see Peter Martinez here. I'm certain it's already been discussed but let me congratulate the US and ally delegations for the successful passage of the long-term sustainability guidelines within the UN COPUOUS. A special shout-out to Peter and to Simonetta and others for their hard work in carrying out these efforts over a number of years.

I'm sure you'll talk about this in many other ways today including how the guidelines will be implemented in the capture of best practices. I will also be remiss here not to recognize the role of the private sector in those discussions. Indeed, I made my own presentation on the role of private sector in space at the STSC meetings earlier this year.

A centerpiece of the US delegation's effort included continuing discussions about the role of the private sector in space and how they would contribute to safe and sustainable operations. This discussion focused the private sector on continuing to help create a sustainable environment for space commerce.

Implementation of the LTS guidelines can ultimately promote the international adoption of best practices for information sharing and operational coordination. Thereby enhancing the safety of innovative government and commercial space activities. This will be increasingly important as new space business concepts emerge.

At Commerce, we believe that proactively developed standards and best practices ensure that industry views are broadly represented and that those are incorporated into any future licensing and regulatory discussions. Within our own SDP3 efforts, we've engaged the National Institutes of Standard and Technology again to conduct a landscape study on standards and to help us apply their standards and best practices toolkit to issues like this.

NIST is an organization that routinely works at the national level and the international level. In fact, we recently had discussions with the FAA about a process that they had used in another area and how they might apply to this particular set of issues on orbital debris.

NIST has recognized partners and processes that are inclusive for other internationally recognized standards and organizations like ISO. Again, to include things where there has been very high-quality hard work done to develop standards, they have a process by which they can quickly incorporate those into their own thinking and other processes.

Let me spend just a minute on space traffic management because in international audiences, I often get the question, "Hey, Kevin, does the United States want to be the traffic cop in space?" The answer is it absolutely does not.

What we are trying to do at Commerce within our own efforts on SSA and also STM is really to increase the quality and accuracy and the proper speed that is sent to owner-operators so that they have a self-interest in protecting themselves, getting out of the way, pick whatever words you want, or collaborating with others to have to do the same thing.

That's the central idea here, to create the right kinds of data for people to do this. I'll go off my script at this point for just a moment. In my own personal read of the RFI responses, we're seeing some very, very interesting responses, mostly not from the space community that speak to this issue as yet another high-end data analytics problem. It's got its own uniqueness.

It's got its own aspects that we have to pay very careful attention to, not least of which is the mandate to use the DOD authoritative catalog as the base of whatever else we do and to not mess with the SSA agreements. It really is a high-end data analytics problem. Again, on a personal level, if part of my brain over the years has been focused on space issues, the other part has been focused on intelligence analytic issues.

I think there's this much interesting effort here that can be put against the analytic part of the problem and the alerting and warning part of the problem as there can be on the sensor side. Watch this space to see if I'm right on that.

To quickly conclude on my remarks for this topic, the private sector has several incentives to support space sustainability. The first is economics. This one is easy. If the space environment is seriously degraded, it creates risks to both revenue and capabilities. It undermines the confidence of enabling industries like finance and insurance.

Second, commercial operators want to be predictable, at least to a large extent. It is in their best interest not to be mistaken as a bad actor. In this regard, navigating the standards and best practices for RPO and debris removal are absolutely critical here.

The dual-use nature of RPO and debris removal has to be reconciled from a commercial perspective in as much as this function potentially changes the entire economics of space for both government and commercial actors. We have to work hard. This is a hard one. We're going to have to work pretty hard on it.

Third, as we see with other regulatory functions at Commerce, industry often provides helpful input on issues where the government has concerns. Again, I've mentioned my own RFI that the office put out back in late April. We are in the process of summarizing those.

We're probably going to have an industry day. I'm not 100 percent sure of that. We'll probably have an industry day to continue that conversation. We're in the process of finalizing all of the summaries and things like that.

Strong and continuing cooperation and dialogue between industry and government are very, very important when it comes to issues like this. Industry-based norms and best practices help influence regulation and helps ensure that Commerce is not drastically hindered by new regulations.

I'll just mention in closing -- I know I have a few minutes for questions -- the conversation we're having here today will continue, of course, tomorrow and Thursday at the Space Enterprise Summit. The Enterprise Summit was initially envisioned by Secretary Ross when he gave his speech in 2018 at the National Space Symposium where he talked about an international regulatory conference that would be held in Washington in January of 2019.

We weren't in the office in January of 2019 for those that can remember it, actually, and so this is, in part, that kind of event. The summit is really about two things. It's cosponsored, obviously, between Secretary Ross and Secretary Pompeo. There are really two primary topics of the Space Enterprise Summit.

The first is opportunities in space, whether they be of a discovery and exploratory nature and how those are done or of a space commerce nature. That's the first. What are the opportunities that we're looking forward to?

The second is about the changing nature of partnerships. Partnerships here can be -- you'll see panels organized along these lines -- government to government partnerships, government to industry partnerships, and purely commercial partnerships.

Over the course of a day and a half, we'll have extensive conversations. We've got a powerhouse lineup -- again, many people in the room are already participating in the Space Enterprise Summit -- to really talk about how space partnerships are changing and how they will help enable the opportunities we see in space in the future.

Just before I walked in here, I checked. Right now, I believe we're at over 500 participants for the Space Enterprise Summit. That has surprised both us and the folks in the Department of State, I believe. We hope to see everybody there. On that note, I think I will stop and see if anyone has any questions. How am I doing on time?

[applause]

**Kevin:** OK, perfect.

**Host:** All right, Kevin has graciously agreed to take some audience questions. We will have two people running with mikes in the room. Please raise your hand. He will select who he would like to call on. Please wait for the mike. Just a reminder, these are questions, not comments so please be brief.

[laughter]

**Kevin:** The gentleman over there.

**Pat:** Hi. I'm Pat Hose from James. Do you want the second Space Force site?

**Kevin:** I don't even know that I understand the question.

[laughter]

**Pat:** I was told that the Department of Commerce expressed interest in acquiring the second Space Force site from the Air Force because the mission had changed from a military to a civilian one. Is that not correct?

**Kevin:** I genuinely don't even understand the question. What are you referring to as the second Space Force site?

**Pat:** All right, so the Air Force is contemplating building...You know what Space Force, I'm sorry, Space Fence is, right?

**Kevin:** Ah!

[laughter]

**Pat:** Space Force, all right, my bad.

[laughter]

**Pat:** I got it.

**Kevin:** Ask your question again please.

**Pat:** Do you want the second Space Fence site?

**Kevin:** I was going to have the big guys in the lobby come in and grab him and pull him outside, actually.

[laughter]

**Kevin:** No, I have not asked for a second Space Fence site or anything like that. As you can obviously hear, we think there's a very robust commercial industry that has a lot to bring to bear on this. We're delighted to work with that industry, again, both on what I've called the supply and demand side of this. We've had no conversations of that sort with anyone. Thank you.

The gentleman back there. See the gentleman back there?

**Audience Member:** Thank you. [inaudible 22:32] from the University of Toulouse. SPD3 is making a big distinction between SSA services that have been provided by the [inaudible 22:43] freely in basic services that will remain free and in [inaudible 22:48] services that obviously might not be. Could you develop a little bit between what will be the basic services and [inaudible 22:58] services?

**Kevin:** It's a great question. Thank you. It's a question for which the answer seems easy, and it's actually harder than you think it is and here's why. If you believe that the commercial world can actually do so many things differently, diversely in a way that I've at least hinted at in my remarks and I've said elsewhere, it means that the whole system will have to change over time.

SPD3 is clear with us for now. DOD will own the authoritative catalog, and again, that will be one layer that comes into our architecture. Secondly, as I said earlier, we will not touch the agreement, the now 100 SSA agreements that are in place. That's told to us. We're not even going to worry about that.

What I worry about is the future in which this world really changes dramatically based on developments both on the ground of an SSA C-SPOC like nature, things that go on in our architecture, but also the extent to which they're going to change in space. I think we have to be very creative now in trying to think through. Basic services for now will stay the same as they are today.

What will they look like in 2, 5, 10 years? I mentioned that on paper, we have until 2024 to set up this new agency. I worry that the market is going to drive us a lot faster to be effective in doing this than that timeline allows. It's a very important question, and it's actually a harder question than you think it is. Thank you.

Yes ma'am? Hi. Hello.

**Audience Member:** What do you perceive as the top risks to developing a robust commercial space industry?

**Kevin:** For the overall risks that are out there?

**Audience Member:** Yeah.

**Kevin:** There's a couple of things that we're hearing, and I'll channel what we're hearing from industry. Again, the wonderful thing that I get to do is sit in a place where industry knocks on our door all the time, big and small. Number one is making sure that there's fair competition in the world, that there's actually a basis for fair competition as people develop new capabilities.

Second, and you know the administration's view on this is quite firm, trying to make sure we're removing the regulatory burdens that exist. Those that were at COPUOUS earlier this year will remember a panel that Peter, I think, ran on both established and emerging space powers and how they thought about regulation.

This was an area where being a "mature space power" was not necessarily a compliment because countries that had been in space for a long time were finding that a lot of their regulations were out of date, needed to be modernized, and also frankly, needed to be modernized at a rate that was different from in the past.

I had a conversation somebody out in the hall on this. Many of you have observed how quickly we have turned around lots of new proposed rulemaking documents, RFIs, etc., etc., etc. How do we structurally come up with regulations in areas that are moving so quickly that even that kind of process winds up putting us at a disadvantage?

I think that's a second one, making sure the regulatory environment is absolutely right. The third is we have not given thought, and obviously, this is one of the things we're pushing for at Commerce...We

know how to regulate and authorize certain space functions. If you bring me a remote sensing capability, I know how to regulate it.

Again, we could argue about whether it's done the right way, etc., but there's a process for that. People knock on our door very, very quickly with space capabilities that none of us has any idea how to regulate. How do we put in place a business-friendly process that also incorporates security and safety dimensions that actually gives people a shot at going to space and taking a shot at something?

Sometimes, we see folks coming to us with a capability and the government says, "Gee, that's pretty scary, we probably ought to slow that down." Our argument would be, "No, no, no. Don't slow it down on the innovation side because there's a lot of people who would want to use it. Slow it down if you...Not even slow it down but put your emphasis on the governance of the activity if the innovation does not work or does not work in the business model that the operator comes to us with."

Those are among the things that I think would be worrisome for me.

Theresa?

**Theresa Hitchens:** Are you making any...

**Kevin:** Get her.

**Theresa:** Hi. I'm Theresa Hitchens with "Breaking Defense". Are you making any progress in figuring out how to better ingest industry provided SSA data as well as foreign provided data?

**Kevin:** Absolutely. Again, I think one of the keys...We've had a lot of discussions with industry on this. What are the ways that we can ingest their data? How can we...I'll use the word fuse, I don't know if that's precisely the right word, but how can we merge it and incorporate it with other datasets that are provided by the government?

The requests to the RFI have a lot of ideas about how to do this. Again, I don't want to oversimplify it, but when you think about the way this was done in the cloud computing world, people in the cloud computing world have come to us and said, "You simply have another version of a lot of problems that we see ourselves with where you have government plus commercial data, you have different kinds of accesses for different kinds of people, you wrap the data in different layers, and you drive your analytics completely through those."

I think a distinction we're hearing is that on the government side, we tend to spend a lot of time spending money to architect things. We're going to spend a year and a half and a lot of money to architect something. A difference we're hearing out of the cloud computing and other industries is that they'll architect something quickly in a very short matter of time, and then they can work dynamically.

If it's not exactly what you wanted, they'll change it, they'll change it again, and they'll change it again. It's done very, very quickly. Again, I'm not certain any of those things work here, but those are some of the ideas that we're hearing at Commerce. I think we're starting down the path that you're suggesting.

Remember that, and I think you've written about this, the UDL will be our first stop courtesy of US Air Force to bring in sensor data and see exactly how those datasets will be merged.

**Scott Jones:** Yes, thank you. Scott Jones from Ottawa, Canada. I have a question that I think follows on from some of the discussion here. I want to ask a question about secrets in space. There's been a lot of discussion about the potential for commercial or even foreign contributions to SSA data.

There is a history of SSA being a very highly classified government domain. Do you believe that basic observational data of any object in space is unclassified?

**Kevin:** I don't want to answer it from a classification label. I will tell you that 20 years ago, I co-wrote a book called, "Commercial Observation Satellites at the Leading Edge of Global Transparency." I'd like to buy up the 12 remaining copies at \$1.57 a piece, have Amazon ship them to me, and change the first part of the discussion to space situational awareness at the leading edge of global transparency.

Obviously, as more and more actors get into the SSA world, that's going to be a more difficult promise.

Yes, sir?

**AJ:** My name is AJ [inaudible 31:06] . NASA is thinking about or doing privatization or commercialization of the ISS. Is the Department of Commerce going to be involved in that? I would think that group would probably be...

[crosstalk]

**Kevin:** Absolutely. Administrator Bridensten and Secretary Ross had a conversation at the National Space Symposium in Colorado Springs along this very line. In fact, we had one of our colleagues from the office up at the announcement in New York of the new LEO commercialization strategy.

By the way, I did want to go back to the question that Theresa asked for one second because you're asking about government and commercial data fusion. One of the things we've explicitly considered from the outset, and I will run a panel at the Space Enterprise Summit on Thursday morning on this, is how we're going to bring allied data and allied commercial data specifically into the open architecture data repository.

That's not an afterthought. It's something that we're thinking about explicitly right at the front end. We'll look forward to that conversation with my colleagues.

One more, and it's always Doug Loverro who always terrifies me.

[laughter]

**Kevin:** Kevin, you asked me in '68 what I thought about...

[laughter]

**Doug Loverro:** Kevin, I don't know if we've ever met. My name is Doug Loverro.

[laughter]

**Doug:** Kevin, you know I'm a big believer in commercial SSA data, but there's got to be a commercial market for the commercial data. How do you envision that commercial market developing? How do you envision a business making a profit off of this kind of data in order to maintain that commercial market?

**Kevin:** We're starting to hear...Again, I think one of the advantages we have is we're routinely in contact with the companies that are in this space. We're starting to hear about developments where they are engaged by other companies, potential new satellite owner-operators for SSA kinds of data.

We have not gotten to the point of discussing what the profit and loss and frankly, I won't get to that point with them. We hope and we're certain that they'll do their own good work to determine what's

profitable and what is not. Obviously, depending on the kind of the market and the kinds of data that we need in the market...

You know, we think about a world...If you accept any part of our trillion-dollar space economy, we're thinking about a world where we will have to do this business fundamentally differently than the way we do it now. You logging on to a website, me sending you an email, me calling you and saying, "I'm deadly serious, Doug, get out of the way," that cannot hold in the world that we envision in space.

I will leave it to those owner-operators to decide what their profitability levels are, etc., etc., etc. The Secretary likes to talk about the space market becoming a "normal commercial market" and what happens in a normal commercial market is you have successes, you have failures, you have merger and acquisition, you have all sorts of behaviors that you see in any other market.

Because this is the space market and governments are so heavily invested in it, what we really have to avoid is governments overreacting to developments in that market. I've told you and I've told others in this room the story before where every once in a while, I'll get an email at Commerce when a company fails that says, "Hey, Kevin, did you see company X failed? I told you that space commerce stuff was all nonsense."

Well, that can't be the case. It is really becoming a normal market given the population of players that's coming into the market and the demand we expect to see if we're even halfway right in what the market will become in space for SSA and related data.

On that note, I am going to run. Sorry to go out so quickly. Thank you so much for your time and attention today.

[applause]

**Host:** All right. Thank you, Kevin. I sort of wish I could claim that I wrote those remarks, but I really couldn't thank you enough for your insight into what's happening here in the US and what you hope to happen internationally, so thank you.

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