

Center for Strategic and International Studies

TRANSCRIPT

Event

Delivering Space Capabilities for Warfighting Advantage
**Drivers of Change: Understanding the Changing Needs of
Military Space Operations**

DATE

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FEATURING

Lieutenant General Douglas A. Schiess

Deputy Chief of Space Operations for Operations, U.S. Space Force

Rear Admiral (Ret.) Michael Studeman

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Timothy A.
Walton:

Well, good morning. I'm Timothy Walton. I'm a senior fellow in Hudson Institute's Center for Defense Concepts and Technology. And it's a pleasure to be co-hosting this event with CSIS. And I'd like to extend my special thanks to Kari Bingen and Christina Nordby, who've done the grand majority of the work both planning and executing this. And so, thank you very much, Kari and Christina, to you and your team, for making all this possible.

We're joined this morning by two exceptional panelists to talk about the current and emerging demands on the Space Force and for space operations and capabilities more broadly. Our first panelist is Lieutenant General Schiess. He's had a long and illustrious career that started in the missile force, then moved on to different space roles at home and abroad. And he's been recently confirmed as the, let me make sure, deputy chief of space operations for operations of the Space Force. This is his first public appearance, I believe. So, we're looking forward to hearing what you really –

Lieutenant
General Douglas
A. Schiess:

Day four in the job, so. (Laughter.)

Mr. Walton:

Keep it up. And secondly, we were joined by Rear Admiral Mike Studeman, U.S. Navy, retired, who was the head of the Office of Naval Intelligence and also the director of intelligence for INDOPACOM, J2. And since then, he continues to provide a font of knowledge on China, the Chinese Communist Party, and how can we gain advantage in this ongoing confrontation with the CCP. I'd like to start by giving the two of you an opportunity to share some of your thoughts on what you think are some of the challenges and ongoing demands on the force. We can have a conversation. And then I'd love to hear your thoughts and questions. You can scan the QR code to submit those moving forward.

General Schiess, over to you.

Lt. Gen. Schiess:

Yeah. Tim, thanks. Thanks for allowing us – thanks Kari and others for asking me to do this. So, yeah, day four. Just drove across the United States from Vandenberg. Just finished up being the Space Force component commander out there, and into this new role. And so, the first thing I'd say, we were listening to General Saltzman in the back. And obviously he talked about some of the challenges and things, but it's also a pretty bright future. We're coming up on our sixth birthday here. And so maybe we're getting out of the toddler ages and, you know, into being an elementary school person.

And so, but what I would say is we have to continue to build the Space Force, continue to build the warfighting organization that we need to be to do the job that we need to do for our nation. And those are the things that we're

continuing to work on. I look forward in this new job to helping all of our field commands and our component commands that are out there to be able to execute their mission. But it's an exciting time. And lots of work to do.

Mr. Walton: If I can just follow up, space never sleeps.

Lt. Gen. Schiess: Yeah, sure. That's right.

Mr. Walton: But these demands are continuing, in terms of your current demands. There's also new demands. Can you just expound a little bit on what are some of these new demands that you think are going to drive changes in the Space Force?

Lt. Gen. Schiess: Yeah. So first, let me just kind of talk about what the Space Force – you know, why we stood up a Space Force and what we need the Space Force to do. And so obviously, in the past under, you know, the Air Force and under Air Force Space Command, we did great job with space operations. But it wasn't the focus. It was more the focus on how do we deliver capabilities to our warfighters or to others? And as the space domain became contested, and more and more abilities there and warfighting domain, you know? And there was many years where we couldn't say that. We realized we needed a chief of space operations and a service to be able to do those missions.

And so, what are those missions? First off, we have to organize, train, and equip the force to be able to protect joint warfighters from space-enabled attack. And so, what does that mean? I think we're going to talk a little bit about threats later, but China is building the ability to use red kill chains to be able to target our forces at extremely far. Mike will be able to talk about that from his experience at INDOPACOM. So, we have to find ways to deny, degrade, and disrupt that kill chain as well, so that our joint warfighters can be able to get their mission done. We also have to protect our own capabilities and the capabilities of any U.S. government. And quite frankly, I see some of our allies here, our allies as well. We have to work with them to be able to defend those assets as well. Because the Chinese, and the Russians, and potentially others are developing systems to be able to take out our systems. That would then affect our blue kill chains.

And then, lastly, the same thing that we've been doing for a long time is delivering those capabilities, whether that's missile warning, Global Positioning System, or PNT, or satellite communications, and those kind of things. And so those are the three areas that we really have to focus on to be able to do our mission. The thing that's in the future is we have to continue to bring on those new capabilities to be able to do those three things that we have to say. And the adversary is trying to catch up to us and trying to – and they're moving fast. And so, we've got to continue to build the capabilities. Got to work with Congress and the Office of Secretary of War to – and the

Secretary of the Air Force to bring those capabilities on, so that we can continue to be the greatest space force in the world.

Mr. Walton: Thank you. Mike, can you share some of your perspectives on the, let's say, combatant commander demands for space capabilities, how some of those are evolving?

Rear Admiral Michael Studeman (Ret.): Yeah, good. First, I'll acknowledge something, that's a little bit odd to have a Navy guy at a space-related conference here. But in fact, there's so many parallels. I feel very at home here talking about sort of what happens in space, because there are correlations with sort of the Navy experience, right? And there are all these terms that are built on Navy things. We're a spacefaring nation, as we were a seafaring nation. There are new frontiers, unexplored elements. There's the hostile environment of simply operating there, even without an enemy, that makes life difficult. And in fact, they think the Space Force is going to have to confront what the Navy has confronted over time, which is that the American public can take for granted, you know, what you're doing, and maybe not even appreciate or see it or want to support it in the way that they should.

So, we talk about having sea blindness. And I fear too that if the Space Force is not able to communicate – I think they're doing it very well now – but if they drop the information domain as a place where they need to communicate what's happening, the centrality of investments there, that you can end up where the Navy has gotten, where we have not been able to support our industrial base and we're struggling in many ways, even as we maintain some superiorities, right? So, I think the experiences are similar. And I feel at home. I was tempted to go ahead and do something like this to make it feel even more comfortable here. (Laughter.) But let me flip that back down.

I'm part of the INDOPACOM mafia. Once you actually are stationed down in INDOPACOM, at that combat and command, and you see the world through those lens, you can't sort of unsee it. And, in fact, you are up front and close to some of the most challenging things that we can face as a nation and as a military. And it alters you when you really are in the know. And I think one of the continuing requirements is for people like me to continue to try to translate exactly what some of those difficulties are, and how important it is for us to sort of get it right in that part of the world.

If that's going to be the engine of growth of the 21st century, we need to do everything in our power to ensure there's stability and that there's progress there, and that doesn't deteriorate into something that's going to affect the entire world. And part of that ultimately involves deterrence across the board, in an integrated fashion, but ultimately too, you know, each of the warfare domains, including the space one. And if the Chinese believe that

they might have an edge, that they can actually undermine American power and get away with a major operation because they feel they've advantaged themselves there or disadvantaged us, then we have a problem, Houston, right? Because you don't want the Chinese to face those kind of temptations. You want them always to be thinking twice about moving out.

And so, this is a very, very contested space across all warfare areas. But in particular with the space domain, you take a look at the advances the Chinese have made. You've been warned by multiple space experts now about how far the Chinese have come. And while you can say that we still have space, you know, dominance in key areas, whether you call them a peer competitor or near-peer, I think that's a debatable point whether or not you take a look at the Chinese and simply, like you do in other areas, you just say it out loud. They're a peer competitor. And they deserve to be treated as a peer. And what that means is that in some areas you may be superior, but in other areas they may be superior. And you've got to manage those brutal realities, right?

And so, if you're looking at it from Admiral Paparo's point of view, you take a look and go, yes, I will need to have space domain awareness. But I want the space capabilities to give me other domain awareness as well. I can't just do that alone. And I need to have support for all of those fires – which is, like, mass, you know, support to fires in a concentrated period of time that can be sustained not just over days or two weeks, but you may be looking at something like most conflicts go, far outside the initial expected parameters into something that's more, you know, persistent. And therefore, what do we look like more on week three, week five, week seven, and so on and so forth? What does the resilience look like in your domain? And have we created enough of those redundancies to be able to handle a really challenging, hostile environment, where the other guy just has more anti-satellite capabilities of all types, right?

And so, people are – obviously, you know about direct, you know, ascent anti-satellite systems. But the number of, you know, co-orbitals, the challenges that have come up there, not just with one effector, with multiple types of effectors, that the Chinese are working, the directed energy, the electronic warfare components that can be placed either on the ground or up in space. And, you know, the things that they've done to copy us, including, you know, copying the X-37, and having a couple of variants of their own space planes, et cetera. So, the Chinese are clearly expanding their capabilities. And we need to think through the protection of the blue side as well as what it – what we need to have in terms of going after red, which is the sensing all the way to the firing and to the completion of the targeting cycle.

So, Admiral Paparo clearly will talk a lot about assured C5IRTs, and a counter C5ISRT. And frankly, those things just need to be unpacked because if you say

it too quick, you'll lose an appreciation for what those things are, right? Command and control, computers, communications, cyber, intelligence, surveillance, reconnaissance, and targeting, all heavily depend on what the general and his compatriots will provide. But we also need to have, you know, the offensive capability to go after the other guys as well. So, a lot of requirements for INDOPACOM. They deserve our support. And in fact, when you think about the contingencies that they have to work through, you're not talking about one OPLAN. You're talking about multiple combatant commands that are going to be serviced by all this, right? STRATCOM, NORTHCOM, CYBERCOM, TRANSCOM, INDOPACOM, the list goes on how many plans are actually activated by one major thing that may happen in the Western Pacific.

Lt. Gen. Schiess: If I could add to that. One of the things that we have done over the six years here is we have stood up service components to every combatant commander. We're not quite there yet. There'll be more to come on that. But there hasn't been a service – there hasn't been a combatant commander that has said, I don't want one, or I don't need one. As a matter of fact, they're knocking on the door every day, like, when are you going to stand up the one to help me? And then the interesting part from my previous job as the component commander to U.S. Space Command is the interaction that you just said. I probably interacted with the INDOPACOM staff more than I did others, maybe EUCOM next and CENTCOM, just because of the global nature of some of the things at U.S. Space Command.

But we needed space expertise in those combatant commands, as a service component to them and also on their joint staffs, because what we don't want is them to just think someone else is going to take care of this, and we have to have those connections. And so, like I said, every combatant commander is, hey, when am I going to get my service component so that I can have that? Quite frankly, we're a pretty small force, and even ranked structure. We have three of those now that have one-star generals that are competing with sometimes three- and four-star admirals and generals in there.

So, but to your point, the combatant commands are some of our biggest advocates that the Space Force needs capability, because they know that they can't do their mission. Admiral Paparo, Admiral Aquilino before that, they are asking for space capabilities in their UPLs and in their IPLs, because they know that they need it to do the counter-C5ISR, or to execute those blue kill chains as well.

Mr. Walton: Appreciated you're sharing the role of the Space Force detachments and those human connections, which are invaluable. Are you similarly being able to advance machine-to-machine connections, and integration into Maven Smart System or other operational and tactical level tools at the pace you

need?

Lt. Gen. Schiess: Yeah. We are doing that. Probably not at the pace that we need to. Major General Cropsey, from the Department of the Air Force, is working some of those systems to bring them on. As a matter of fact, we just sent out one of our really smart colonels to all of the service components to say, hey, what is the standardization that you need to be able to provide to your combatant commander what the space picture looks like? On the space command side that's more evolved there, just because of that.

But to get to that we still need the sensors from space domain awareness to be able to – you know, it's crazy to think we – you know, no other domain would be like, oh, I can't sense all of my domain, or those things. And then, as our adversaries look to go farther out, we're going to have to then eventually look at those two. Because we can't allow something to happen in the domain that we don't know about. So, we are working it. We are not there yet, but it is – it is a priority for us to continue to do that.

RADM Studeman: If I could add, I think that orchestration, integration across lots of boundary lines is really important. And my sense is that things are tracking pretty well. I mean, people are trying to, from birth, create something that's going to have interoperability with, for example, the intelligence community capabilities, so we don't end up having sort of standalone sort of combat systems that don't find a way to take that data, connect it, and allow people to have sort of the discovery, and then act on it very quickly, right?

And so, you know, the Unified Data Library Concept that's already reality, to be able to kind of have that data lake, right? So regardless of sensor, where it is. That it can be exploited, and it can be acted on very quickly, those are all, you know, innovative concepts that finally we get to create from scratch without having so many dependencies on the legacy stuff.

Mr. Walton: Yeah. We talked about demands. One demand in particular I wanted to dig in a little bit more into is counter-space capabilities. Then outgoing Secretary of the Air Force Frank Kendall talked about a need for more counter-space. And then we've seen the other services, Army, Navy, continuing to field their own counter-C5ISR and/or counter-space capabilities, just because they do have a need for more of it. And it sounds like Space Force needs to do more in this area. How do you view that mission area evolving, in light of the threats and in light of the demand that the other services are placing?

Lt. Gen. Schiess: Right. Yeah. So, some of that is difficult to talk about because of the classification level. But we also need to continue to work to bring that classification level down so that I can talk to my partners in the joint force about those things. You know, we're not going to fight the war at the special access level. So, we have to be able to do that. But what I would say to you,

we are continuing to bring on those capabilities. You know, interestingly, you talk about the Army and the Navy and even the Marine Corps bringing on some of those capabilities. What we have – what we have tried to push, and I believe in my last job and will carry on into this job, is what does the Space Force bring to the fight so that the other services don't have to bring to the fight?

And so, when we talk about orbital warfare, that is clearly a Space Force mission. And so, we have to be able to have the capability to, again, talk about – you know, deny, degrade, disrupt red kill chains. And that we may have to do that through orbital warfare-type capabilities that we bring on. So, we have to continue to work with Congress to bring those systems on. We are. And just can't talk about all those. But in the electromagnetic area, so electronic attack, electronic sensing, on that, that probably is something that some of the other services, you know, can continue to bring, because they may be doing that to defend their, you know, the carrier strike group or other things. We can help with that, but there's no problem with them bringing that capability on.

In my last job, the commander of Space Command gave me space operations control authority. Well, that's very familiar of air control authority and domain – you know, maritime control authority. So, in that I would work with my other service components to be, like, OK, what are you doing in that area in a peacetime perspective? And then, how are you working through that when we go to crisis or to conflict?

And so that we, one, are not duplicating efforts, but that we are also working together to meet both combatant commanders, whether it's the geographic that is terrestrial or the geographic that is in space. And so, I think that's perfectly good. The CSO has the requirement to be the person that looks across all the services of, hey, are we being duplicative, are we working together to be able to meet those things? So, when he's in the tank, he's having those discussions with his other service chiefs.

RADM Studeman: I would add that, you know, I've heard a space expert talk about, you know, buy what you can from commercial, and then develop what you must. And so, I do think, you know, that partnership is really key. And it sounds like it's off to a great start there. You know, we need to think through – you know, Russia talks about, you know, things up in space. Proliferated architectures that commercial companies have placed up there. And they call them quasi-civilian. So already, you know, you've created a conundrum for them, right? Do they target, you know, commercial space? And what does that look like, in terms of rules of engagement and all the rest?

But I do think that it appears that we have a good strategy for getting what we need from the commercial side, and integrating it, and thinking through

the security elements of it. I would just add that I think as we go fast, right – and this is not just in the space domain, but all throughout the department – we’re going to acquire more. We have other companies that are going to come into space. We are increasing the attack surface on the cyber side. So while we may think we’re going to build something fast and we’re going to strengthen this domain over here, if we’re not careful, we don’t think through the supply chain, we don’t think through the upstream accesses that our adversaries have – including insider threats and our IP, and once they get that they can do counters from the get-go – then we’re not thinking well enough about kind of the entire life cycle of the capabilities that we’re, you know, producing.

So, let’s go fast. Let’s integrate everybody. Let’s also have a very wise sense of what the adversary can do. And the reality check that they’re actually here in our tech ecosystem in the United States, and in our partners’ ecosystems. And we have to be wise to red already being inside some of our blue systems.

Mr. Walton: Well, we talked earlier about some of the key challenges that the Space Force is facing. How are you going to try to build on what Mike was mentioning, communicate some of these key operational problems? There are public fora, certainly. Many of the other services have adopted a growing number of middle tier of acquisition, other transaction authority consortium mechanisms, by which you can get this virtuous intel-dev-ops cycle and share that information. How do you view new pathways for sharing operational Insights and intel insights with performance moving forward?

Lt. Gen. Schiess: Yeah. Good question. We are doing that already. You know, Space Systems Command, under Lieutenant General Phil Garrant, is working through some abilities to provide threat-based information to commercial companies. You know, the big primes, and even some of the smaller, they have folks that are briefed into the level so we can provide that to them. But some of the startup companies may not. And so, there’s a lot – you know, then-Major General Gagnon, now, Lieutenant General Gagnon, he did a great job of providing unclassified information on threats that both the Chinese, Russia, and others were doing. So, we’re working to do that.

In companies that have contracts with the United States and others, we have instituted a commercial integration cell that then takes that information and, at the Top Secret/SCI level, is able to get that out to those folks as fast as possible, because they have cleared folks to do that. But yes. We have to be able to get the threat information to them so then they can make wise decisions as they’re using their money to build on things, that we maybe look at to say, hey, this is something that we want to buy.

Mr. Walton: I’d like to ask maybe a two-part question. One, for you, General Schiess, on, what are some of the key threats? Again, sensitive. But some of the key

threats and how they're evolving in new ways. And then for you, Mike, you talked earlier about how we face a peer adversary in China. Other adversaries as well, but there's a peer competitor, peer adversary there. It applies to military operations, but I think also there's a broader strategic competition, strategic rivalry at play that informs some of these deliberations. So, if you can share some thoughts on that.

Lt. Gen. Schiess: Yeah. So, Mike brought a lot up at the beginning there that obviously we have seen that both Russia and China have direct-ascent anti-satellite missiles to be able to do that. They continue to nondestructively test those and get those better. They are – in the directed energy, they are working to be able to bring on systems that can then at least degrade, maybe even destroy, satellites, at least the low Earth orbit. Russia has – you know, we've talked about whether they are going to put a nuclear weapon into our middle orbits. And so, they continue to do that. They continue to have jammers. They have an extreme number of jammers on all different frequencies that would then affect our communication systems.

And then, in the on-orbit area too, you know, we've talked about, you know, publicly, that they've – China has demonstrated the ability to grapple a satellite and move it to a different orbit. And so, they continue to – we've seen nesting doll satellites from Russia, where they have a satellite that maybe then pushes off a different item, and then could also send out a projectile. And so, they continue to test that on a regular basis. China is at extremely fast pace. I mean, we've ran out of ways to say that – breathtaking, jaw dropping, I don't know what the next one is. (Laughter.) But they continue to go fast with that. And then we felt that Russia may slow down based on sanctions and whatever, but they haven't. They continue to bring on some of those capabilities. Maybe a little slower than their – than we thought they would if there wasn't those things, but they continue to do those things as well.

So that's, you know, all different ways – on orbit, direct ascent, directed energy, RF energy. They are looking at different ways. And that doesn't do anything to talk about their cyber, that they are as well, to get into our networks to be able to do those kinds of things. And so, you know, I got my daily tablet this morning with the intel that I read through before meetings. And there's space all throughout that on different capabilities that they are continuing to bring on. And so, we just have to continue to develop systems that can counter those systems, that we can develop systems that can defend themselves, or develop systems that can work through contested environments. And that's what we're continuing to do.

RADM Studeman: It warms my heart as an intel officer to have an operator, like, give the intel brief. (Laughter.) So, you get some really good intel people who are setting you up. Obviously, you're paying close attention to all that.

Look, there's physical attacks too. I mean, this is – like, you're not safe from any vector. Like, they're not ten feet tall, but they're not six feet tall. They're seven and a half feet tall, right? And particularly when you – when you come to certain parts of, you know, our infrastructure. And so we just have to be wise to how they think through systems, you know, destructive warfare, and their evaluation of all of our co-dependencies, looking at it holistically, and then figuring out, obviously with more use of artificial intelligence, machine learning and good intelligence on their side, exactly how to blind and deafen and dumb the United States, right?

And so, they're looking at it across the board. And nothing – there's no weapon that's sort of, you know, not considered. If it exists, it's going to be factored into how the Chinese might approach this, including the stuff that makes us very uncomfortable. That in the United States, there could be sleeper cells that are here that could, in fact, do a number of things. Not just take a backhoe and tear up fiber leading into a military base, but other kinds of things that, you know, could actually destroy capabilities, directly or indirectly. That's the way that the Chinese talk about it, they write about it, they plan, they resource, and then they maneuver in peacetime to be able to do that. And, frankly, we have underestimated, I think, the reach that China has been able to develop in this regard. So, I do think there are system factors and then there are some human factors that come into play.

Let me add that I do think that when you talk about the combatant commands and what they're going to need, the ability to harness artificial intelligence and do the modeling and simulation required to think through, the way the Chinese are thinking through, all this is really important. I think we have models. I think we have a lot of things that are already developing. But we need to put that on steroids, right? Because this kind of decision aid, it can't be just one for acquisition. You need modeling and simulation to be running next to you all the time as a decision aid to figure out what's my maneuver going to be in this domain or that domain, how do I mitigate a particular offensive action that the red side has taken that harms me over here, and how do I fight hurt most effectively, right?

And unfortunately, there's so much stuff in every part of the battle space that a human is going to be struggling to keep up with this. And they don't have the expertise in any one brain. So, we're going to depend more and more on those kinds of augmented support functions to be able to tell us exactly how hurt we are, and how we need to mitigate that damage, and how we become resilient? When do we launch? When do we reconstitute in space, right? Those are big decisions that have to be made. But also, you know, how well are we going after that red side?

And then when you look at them together, where am I in terms of advantage

and disadvantage? And unfortunately, we just can't do it the old primitive ways of before. The JFC, the joint force commander, is going to need those things. Admiral Paparo, when he talks about AI-enabled command and control, sort of gets to that point. But we're going to need modeling and simulation to be on steroids to help us with everything that we need to invest in every area, but also for operational decision making.

Mr. Walton: Yeah.

Lt. Gen. Schiess: On that, real quick, and he brought up ground. And I should have talked about that too. One of the – one of the good things of having Guardians in service components and Guardians in there is when the two and the three are building the JIPTL together, sometimes there's a huge ground target that we could maybe execute against that isn't rising to the level that might be on, you know, the ATO, or something else, because, quite frankly, they just don't understand enough that taking that out could then affect other things in space.

So we have seen – we've seen that increase in knowledge of, hey, you know when General Whiting is talking to general – or, to Admiral Aquilino about, hey, what the JIPTL looks like, I may need your help to execute some of the things that will then help me do better in the space domain. And so that's a great point of it's not just the satellites or even just the antennas. It could be transfer stations. It could be power stations. It could be things like that. And so, getting that on the JIPTL is important too.

Mr. Walton: Yeah. And it seems like the threat is radically different, right? Like, in the past there was maybe sanctuary in CONUS, or in the contiguous United States. That's no longer the case because of sleeper cells. But even if we look at projections of threats, conventional strike capacity will be able to attack us in mass within the continental and contiguous United States. So vulnerable fixed infrastructure, rigid command and control architectures that can't dynamically shift, could neuter a lot of our space capability if we don't get ahead of that.

RADM Studeman: Yeah, agreed. You had an earlier question to say, OK, you know, what are the larger aspects of kind of the China rivalry and the challenges. If you'll allow me to maybe talk about it a bit, because I do think we may be – we haven't had this in the national conversation. And I think it needs to be a dialogue that we do have about, you know, where China is going. Because it's not all about a single war plan. It's not all about defending Taiwan. There are multiple ways you could get into a fracas, you know, with the Chinese. And managing that is really important. We want to deter it. We want to lock it down and keep it from breaking out.

At the same time, China is moving very strong in becoming, you know, the

most powerful space force on the planet. They intend, and they're spending trillions, on actually dominating this frontier. And they intend to set the standards and the protocols, create dependencies. And there's an extension of the, you know, Belt and Road Initiative that's playing out in space. They call it the Space Silk Road. You know, you can – you can search all these things. It's not, you know, hidden. But the Chinese ambitions are more than just putting, you know, a person – you know, two taikonauts on the moon, and then moving on, you know, to Mars. Their concept is much bigger than what we appear to be talking about as a nation.

This is part of their grand strategy. When they talk about becoming a technoeconomic superpower, self-reliant technoeconomic superpower, there's a space portion of that's involved in sort of this grand strategy that they've, you know, resourced well. And so, they want to own, you know, the ability to be first at the space economy, right? They want to be able to develop a series of geopolitical relationships, right, that are similar to the BRI here on terrestrial Earth, that then extend over into, you know, the space side of it. And they're working very hard at partnering to be able to develop the sort of coalition that sometimes I think we may underestimate. And so, the different aspects of the Chinese ambition, I think, need to be pulled apart a little bit more.

You know, frankly, people may be too focused on just the Artemis Accords and what happens there. But you can imagine, you know, the Chinese flag being planted in a lot of different places here. And symbolically, I think the world will look at this. And I think you're going to feel a shock in your system, right? If they have – if they have two taikonauts, right, that plant the Chinese flag in 2029, the 80th anniversary, you know, of the CCP taking over, they're going to make a big deal about it in the information domain.

And the perception will be that the Americans are slipping behind. And maybe, in fact, your descent is all but inevitable. That's how this is going to sort of play out. And there's a national pride thing that we shouldn't wait too long to sort of activate when it comes to things that relate to the space frontier. So as important as we need to be able to fight in space, be able to maintain capability, there is a larger rivalry playing out there. And the Chinese aim to win it. And they are far along in progressing along their marks.

Mr. Walton:

Yeah. General, I appreciate that you were focused in your remarks, maybe, on what are the most consequential missions to achieve campaign success. You're doing a job, right, in terms of focusing, enabling the Space Force to fight effectively. How are some of these missions evolving slightly? And moving to the future, maybe linking on Mike's remarks, what does maybe five, ten years from now the future need to look like?

Lt. Gen. Schiess: Yeah. I think we do have to continue to work on AI and ML to bring those in. I mean, the space domain awareness job is ripe for that. You know, in my last job, you know, depending upon what launch was happening, I might get a call in the middle of the night this launch happened, or whatever, and what was the intel that we're doing. The Chinese are getting pretty good with their op-sec that they hadn't been in the past, with what's on – what satellite is on their launch capabilities. But we're still kind of just, all right, we know where things are, we're searching. We need to get to where when something happens, we know about it as soon as possible.

One of the things that Mike talked about was using commercial. And so, we are doing that with the space domain awareness model, which allows us to even provide not classified information to get that. But we have to get better at that. We have to get faster. It doesn't have to have a person in the loop. There's got to be a person on the loop that gets the information, knows what to do with it, and provide it to someone. But we've got to get the systems that can do that much faster to be able to do that. The same with on-orbit capabilities. You know, as we go to a proliferated, you know, architecture for communications, for missile warning, for NTI-type things, you know, the Doug Schiess, the Captain Schiess that was sitting on an ops floor, you know, controlling satellites, we still need that captain to do some things.

But I don't know – there's no way that we can have that person doing the whole proliferated architecture. And so, do we do different models where some of that's contractor, some of it's done on its own? But then what's the payload part of that? And where do we put the Guardians at the right place? And so, we've got to continue to evolve in that structure to be able to do the things that we need to do – that we need people to do and then focus on the things that systems or other things can do for us.

Mr. Walton: Thank you.

RADM Studeman: I think there's a – there's a piece here, going back to sort of how we set up, you know, our capability space to be top notch and superior. You have to back it all the way up to how we invest in STEM. He should be making choices with regard to so much talent that wants to, you know, pound down the door and come into this particular area, you know, for work. And this is one of those things where it's all interrelated. It is connected. And so, you know, how we incentivize more STEM education in our country for a variety of different fields, including this one, you know? And once again, if I were to compare the Chinese, that have double the number of STEM Ph.D.s today, 50,000 or 25,000, and eight times as many B.S. engineers. I mean, we have a – we have a problem with sort of sculpting the future.

And so how do we get ahead of this so we're not, you know, so dependent on another country's expertise that they've built up in so many different

warfare areas, including, you know, this one? I fear that we don't seem to sort of have the complete picture about, you know, what we need to be doing, you know, as a country, and how we need to be led to deal with these challenges. There's a microcosm in space, but I do think it reflects something larger that's important for us to really get our hands around as a country.

Mr. Walton: Thank you.

I wanted to turn to some of the questions we've received via the QR code. The first one is from Courtney Albon of Air and Space Forces Magazine: And it's observed that the annual Report on U.S.-China Competition released this week includes a recommendation that the Space Force inject more realism into its training and wargaming. How would you grade the service's current modeling and simulation and training capabilities, and what does it need to do to improve?

Lt. Gen. Schiess: Yeah. No, that's a big area that we are working on, but need to continue working on that. And so, we talked about it as the OTTI, the operations, test, and training, infrastructure initiatives, and things that we're doing there. So, we now have a PEO that is working that, and as things continue on that. But she's right. We have to continue to bring that to fruition. You know, I'll go back to my very first assignment as an ICBM operator. We had a simulation system. As a matter of fact, it's in the one that I operated on in Grand Forks Air Force Base North Dakota is in the SAC museum. I say today that you could put me in the SAC museum today with some TOs, and I probably could do – because we had the fidelity of that.

And then going into space, we really didn't, because we did most of that training on the real world. So, we have to get that simulation to that. We are working on that, to be able to do that. We have to have ranges. We have to have the ability from the electromagnetic spectrum to do things so that we can test those with different receivers. And we have to have capability. You know, before the Space Force, as soon as we had a satellite, we presented that to STRATCOM, or Space Command in the past. And then we said, hey, we need some – we need to do some operations. We need to do some testing, training, and procedures, TTPs. How do we do that? Well, we gave all of the satellites to the combatant commander.

We have to have that capability so that we can do those kind of testing. As we look to the new officer training that's going on, what actual hands-on are they doing? So, do I need to buy some satellites that I can actually let, you know, them play around with – play around is probably not the right word – they can operate with? But – or do I have some kind of good simulation to be able to do that? And I think we need to work that. In the exercise area, I think we've come really, really far. In my last job I did two tier-one exercises, both were at space command in INDOPACOM. And we were able to do the

simulation of what was actually happening. Wasn't great yet on how to present that to Admiral Aquilino and General Whiting so that they could, you know, look at it. But we're working – that'll be much better in the next tier-one that they do, to be able to go, hey, this is actually what's happening in this domain, how it affects you on the ground. And so, we have to continue to work those things. But it is a priority. And we continue to work on that.

RADM Studeman: This stuff is hard because you have perfect knowledge on blue, but you don't have perfect knowledge on red. And you have environmental factors that also come into play and modeling, simulation issues. And so, what the National Space Intelligence Center is now doing is really critical to say, a chunk of the intelligence community needs to set the priorities for collection. And you need to go after things. And maybe more – or bolder, more creative ways. But they've got to wedge into a very tough competitive environment for use of limited intelligence assets. But you absolutely need to get into the Chinese R&D base and figure out exactly kind of what they're working on, what the state of the technology is, so you remove operational surprise from the equation.

But this is – this is tough going, right? And so I do think that the Space Force focus on, you know, tactic squadrons, that are able to take a look at not just sort of the characteristics of a target system but the pattern of life, and the behaviors, and the likely techniques and procedures that the adversary – all of that needs to be rolled in and worked well, just like we do it in every warfare domain. So, I'm happy to see that they've gone in this direction. But this is an uphill battle. And you never sort of get to the top of the hill. It's just a thing in many ways, because the adversaries are constantly creating new capabilities. They'll be developing their own tactics. They'll be reacting to ours, et cetera. So, this is where the tension lies, that you're never done with the M&S. And at the end of the day, it has to be a dynamic, fluid sort of activity that continues to inform all decisions out there.

Mr. Walton: And I would think we need to also have a very close linkage with industry, where they can inform your TTPs and come up with new, creative ways, and you can have this iterative dialogue back and forth. Do you think that's going to be funded increasingly with RDT funding, or more operations and support funding? What are the – it's not your direct focus, but generally speaking, like, what are the modalities to ensure that we can have this better operations development?

Lt. Gen. Schiess: Well, so maybe I'll take the answer a little differently. We definitely have to have, and I think we do – I see many in here that I that I work with on a on a regular basis. We have to have a great relationship with the industry to be able to do that. One of the things is, what are the requirements that we give industry to say, here's what we need, or here's what we go? And are we being overly prescriptive? You know, is 80 percent OK, if it has these things and

that? We have to get to that. So, I do think we should be using that. You know, I don't think I'm the expert to answer whether that's RDT&E or O&M funding on that.

But, you know, I used to say in my last job, I just want more – more stuff, more things. And so I'll just say, as the operator on the space staff, I want more also. And so whether it's RDT&E or O&M money, I don't care. Let's get after the things that we need to be able to build the Guardians that can do the missions that we need them to do.

Mr. Walton: Bob Vince said – oh, go ahead, Mike.

RADM Studeman: I was just going to say, General Gagnon talks about having champagne tastes on a beer budget here. (Laughter.) So, I think it's just our lot in life.

Mr. Walton: Yeah.

Bob Vince here, of Lawrence Livermore National Lab, also has a question on more: And does the SPACECOM have representatives on site within appropriate commands of allies and partners? Do other nations have reps at SPACECOM? And I would say, you know, maybe beyond just the reps, are we creating pathways to have, again, machine to machine, links between our architectures?

Lt. Gen. Schiess: No, so that's a great, great question. And there's a good answer on this. And so, yes. The answer is yes. The problem for both sides is there's not enough people to put them all the places that we want to put them. But this last spring/summer, we – the deputy for the job I just left, Lieutenant General Bythewood is how out there, is a Canadian general officer. And he has worked in space jobs in the United States before. And he is – he's the allied deputy there that's working that. To work out those dynamics, we had to then – we sent an O-6 Guardian to Canada, that is their Canadian Space Division's deputy in Canada. And so – but we do all those. Space Command has different allies. They have allies that are – they have liaison officers and then they have exchange officers. The deputy J-5 at U.S. Space Command is a Brit. And so, we do do those things. We have a – we have a U.S. Guardian with the U.K. Space Command.

Every time I talk to my counterparts, they're like, I need more Guardians. And then every time I talk to them, I said, oh, I need more of them with us. But in our space operations centers we have a bunch of them that are with us every day. And on the U.S. Space Command side, you know, under Operation Olympic Defender, they went from, you know, just British, Canadian, and Australian, to adding New Zealand, and then Germany, and France. And so, they are continuing to look at our allies and how we bring them together. I can't remember if that was the second part of the question.

Mr. Walton: The second part: Beyond the representatives, the humans, are you getting the machine connections you need to actually get better understanding their architectures, and maybe even ideally integrate your operations, in some cases?

Lt. Gen. Schiess: That's great. One of the things that the CSO did is he worked to have Air Marshal Godfrey be a part of the space staff here in D.C. And he's helping us with that. We're getting after that. It's not as – it's not as good as it needs to be. And a lot of it is picking up a phone and talking to them instead of the ways. But we have done some operations with a couple of our different nations. And we work through how we could pass information to each other. We had just at the last job – sorry, I keep talking about the last job – we just finished a CONOPS for how we do space domain awareness across those seven different nations to be able to – but then, to the UDL, we have to be able to provide that data. How do we get that data into that and share it? So, more work to do, but it is something that we are working on.

RADM Studeman: I mean, the reality is that many of our partners have information security challenges. And so, we want to trust. We want to sort of jump in. Human-to-human is easier in terms of exchanges and sort of controlled environments. But machine-to-machine really does onboard some incredible risk, potentially. And so, if you – if everybody isn't informationally secure, and there are doubts in certain areas, the discipline is low, if they don't have kind of the high-end technicians that are operating, you know, their side, then what you may be doing is simply giving away your best insights to the adversary. And so that has to be – it's always a consideration – but it tends to be a governor on how quickly and how closely you may be operating at all levels. Just a reality check.

Mr. Walton: Yeah. David McFarland of Varda Space Industries has another question on more things that need to get done.

Lt. Gen. Schiess: More things.

Mr. Walton: More things. And, speaking of parallels to navies and warfighting, what are your thoughts on the principles of war and its influence on force design and operations? And specifically, he's talking about being able to conduct space to ground to air to surface and subsurface fires. When will space operations include space to Earth fires or bombardment?

Lt. Gen. Schiess: That is a policy question. And I think those are things that should be asked to our policymakers. But what I say when I get this kind of question is that the Space Force needs to be able to build the capabilities to be able to give the

secretary of war and the president of the United States any option to do whatever they need to do, and then whether they then decide that we're going to go after those capabilities.

RADM Studeman: I mean, this is – I agree, this is a policy issue. Presidential at a certain point. I mean, we had previous administrations that didn't want to sort of weaponize space. Space is weaponized now, by the way. And when your adversaries do it, everybody has to sort of do it for protection, principle of warfare, right? The protection side of it. And so how far we go, I think the Pandora's box has been opened in this regard. And so, we have to be very careful. Look, there are concepts that we had going back decades, and Rods from God and things like that. You didn't – you just drop, you know, lots of metal. And the effects were, you know, potentially devastating.

And where we go as a country, we'll see. You know, but there is this sort of – there are international norms in space treaties and things like that, that we're going to have to be, you know, debated. And we have to see where we want to go. But I don't think that's actually limiting what the adversaries are actually now considering or doing in space. And so, you can fall behind very rapidly if you're not, you know, careful. And so as much as we don't want to see sort of armaments up there, and the potential for Kessler effect and danger, if anyone decides to use any part of it. It's just the reality of our times. And we're going to have to debate it.

Mr. Walton: And we may also be in a position where we have perhaps an ephemeral advantage, at least in launch, right? So, we could maybe generate new classes of effects, new classes of capabilities. Sure, there are policy considerations tied to that, but that could shape the normative environment as to the acceptability of them and how the domain evolves. We'll see.

Another question we have here from Troy Morris of KMI: With SJ-21 in popular discussion, should the U.S. be changing to more public shows of force or capabilities for similar, like, generalized docking?

Lt. Gen. Schiess: I think we are getting information out on some of our capabilities as fast as possible. We are trying to declassify or lower the classification level of different systems. And I think that will continue to go after that. I do think, you know, you could have – you know, I'm not in any way a deterrence expert. But you could talk to deterrence experts. And the best way to deter is to at least show that you have the ability to do something. And so, I think those conversations are happening. And likely, you know, in the future there will be more things that we talk about.

Mr. Walton: Yeah.

Mike, you brought up the idea of thinking beyond immediate Earth orbits.

And that ties to this question we have here from Michael Beavin of Advanced Space. He asks: Beyond the Earth orbits what's the Space Force doing, or should it do, in terms of how it views cislunar space? Maybe you can start, Mike, and then General Schiess.

RADM Studeman: Well, the Chinese intend to dominate cislunar. And so, they're already talking about, you know, in-space servicing, assembly, manufacturing, dominating the protocols that are used for the kinds of, you know, transit, you know, passages that exist to things sort of beyond the Earth and the Moon. And having the Moon bases be built up, you know, creating – you know, with additive manufacturing, you know, using lunar soil to create the bricks and all the rest. And they intend to get the moon base. And you'll see all sorts of interesting, you know, other country astronauts that will be part of the Chinese program as they legitimize it, internationalize it, give it commercial cover, and continue to sort of explore out.

And they intend to sort of be superior in all these areas. It's one area where it is sort of untrammled ground, right? It is not yet dominated by any one power. And they intend to sort of be the first there, which comes with rights to be able to perhaps set the norms and the standards going forward. So that's the Chinese intent. And I think we need to be pretty careful about where that goes. And the problem is that there's going to be a whole lot of commercial and legitimate activity taking place. And there's going to be a subset that will have dual use capability here, not just in development of technology here but in terms of, you know, where a system may have a nefarious capability, though it looks like it's mainly doing kind of commercial things, sitting in cislunar, around the moon, and in other places as you expand out.

Lt. Gen. Schiess: Yeah. I mean, cislunar is an area that we need to be looking to what kind of capabilities do we have. And there are some of the things that Mike said that the other potential adversaries are doing. And so, I would just argue that that just means there's got to be a larger Space Force, there's got to be more capabilities as we go forward. There's a lot that we have to do. And so that's on the horizon. And obviously, we need to keep our eye on it. But, you know, I can name all the things that we've got to do in addition to that.

Mr. Walton: Yeah. Related to what functions are done by whom, there's been a growth in commercial providers providing not only products to the government, but increasingly they're trying to provide services – communication, certainly, but a range of other services. We're also going to need to depend on, I think, a vibrant space economy, terrestrially and actually in orbit to generate some of our new capabilities. How do you view that vision evolving well into the future, and the relative roles that maybe the government should focus on with defense contractors, as opposed to commercially provided capabilities?

Lt. Gen. Schiess: Yeah. I think you look at all the other domains and see how, you know, the military might have been the first to be in that domain, and then that added others. You could look at the sea domain, and, you know, we've got all kinds of sea things that commercial companies do. The air – you know, the air travel and how we do air logistics and things like that, from how the military. I think space is obviously the same. I think one of the things that we have to make sure that we look at is what are inherently military operations, and who has to then – what do we have to do to build a Guardian to be able to do that inherent military operations? And what can we just have somebody else as a service do for us, and work through that?

And I think we're starting to have those conversations. And we're looking at, you know, as we go to proliferated architectures and different things, to do – if it's providing effects and capabilities that maybe we don't have to be military person in the loop or whatever, we should look at that. And so, I think that's going to continue as more commerce, as we talked about, as commerce goes to cislunar, as commerce goes to the Moon. We've got to – we've got to be able to do that because, frankly, the government's – our government's probably going to ask us, like, what are our – what are our – what do we have to do to be able to defend that and be able to be there? So, I think there's lots of things that we can ask the commercial companies to do for us as a service.

Mr. Walton: Thank you.

Any final remarks before we come to a close? Let's start with you, Mike.

RADM Studeman: I think we have to be wary, as much as we want, and need to keep space superiority. You can't create so much dependency there that you lose it if you lose, you know, that domain or that area. And so, I do think that across the board investments need to be, you know, thought through, balancing what we need for space. And clearly, we need more. But we also need to not create a center of gravity where somebody can sort of kick that three-legged stool. And if space is gone, we can't, you know, execute X, Y, and Z. And we need to think through sort of the – I don't like to catastrophize, but, you know, there are scenarios that are not, you know, as unlikely as they were a few years ago. Where somebody, let's say Russia, may want to be a spoiler in space, and sort of does actions that could create a whole bunch of things that would end up destroying much of what we have in the space architecture.

And so, we have to think through those rainy days, right? But that requires us to think through stratospheric investments. Like, where are we in investing in the stratosphere as well, right? Where are we in some of the other domains? Because they're all, like, cross dependent in certain ways, but they can't be so cross dependent that if you lose one domain you lose everything, right? And so, I do think we need to maintain our balance in this, even as we

sort of strengthen an arm that's just sort of in its nascent, you know, phases, maybe, mature. We may need to, you know, further evolve. But let's keep our heads about ourselves too about how this is, you know, all related. And we can't put our eggs all in one basket.

Mr. Walton: Thank you.

Lt. Gen. Schiess: Yeah. So just thanks to Mike and to you for this panel. I thought it was great conversation. And thanks to Kari and the team for allowing us to do this.

You know, what I would say is a lot of times you get, you know, myself, or General Saltzman, or one of the other senior leaders up here and we talk about it. But I think we need to think about right now, around the world, there are Guardians, you know, captains, lieutenants, tech sergeants, staff sergeants, that are on the floors doing the mission right now. And they, by far, are the smartest people that I've seen in a long time, going back to your STEM. And they get up every day, and do their job, and make sure that our potential adversaries say today is not the day to attack the United States in space, or, for that matter, in any domain. So, thanks for allowing me to be here.

Mr. Walton: Thank you very much, the two of you. And please join me in thanking them.
(Applause.)

(END.)