Moderator: Daniel Porras, Secure World Foundation

Speakers:
- David Bertolotti, Eutelsat
- Doug Hendrix, ExoAnalytic Solutions
- Pamela Moraga, Permanent Mission of Chile to the United Nations and other International Organizations based in Geneva
- Victoria Samson, Secure World Foundation

Daniel Porras: My name is Daniel Porras. I'm the director of Strategic Partnerships and Communications here at Secure World. I'm delighted to welcome you to this discussion, "Security and Stability of Space -- What You Need to Know."

This is going to be a very important seminar because there's a big initiative going on right now at the United Nations around space security. Every member state is going to have an opportunity to submit their own views and perspectives on some of these very difficult issues.

We're delighted to have a couple of experts here today to talk with us about why this is important and why all member states need to be paying attention to this particular initiative. Tim, if you could go to the next slide, please.

[pause]

Daniel: It's coming along. Let's see. We're having a couple of issues here. I'll tell you what, why don't we just go ahead and go to a couple of brief introductory remarks on this issue? Why is this important? Why are we here today, and why are we talking?

Space is becoming increasingly important for everyone. We start all of our discussions and papers with recognition of that, but this is particularly true of great power competition and military activities in general. Satellites are a cornerstone of a lot of activities that are taking place today, everything from communications to reconnaissance to potentially even targeting for missile strike systems.

Increasingly, what we're seeing is that the technology for space is accessible to everyone. Now, not only can we set up rockets and send up satellites, we're also finding ways that we can interfere with or potentially even destroy satellites. This is a big issue that we don't fully understand the consequences of yet.

We talk often about space debris and what could happen if we had widespread space debris everywhere, but we've never really sat down and seen what would happen if there was widespread kinetic conflict in outer space. The international community has seen this. They've recognized it.

For many, many years, we've been trying to do something about it. They've been trying to do something about it. Of course, organizations like Secure World Foundation are there to try and support, but there's been a lot of gridlock.

It's been very heartening to see that there is a new initiative that was put forward by the UK last year at the United Nations and was adopted by the General Assembly. That resolution entitled, "Reducing Space Threats through Responsible Norms of Behavior," has a couple of really interesting points to it.

What it asks is for the Secretary General to get input and data from all UN member states on what are the threats in space. What do you see as being responsible norms of behavior, and what do you see as being possible ways forward? Then to submit this input to the General Assembly, which is going to put together a report, which will then be the basis for a new discussion on possible norms of behavior.

Now, this is exciting because they're not necessarily prescribing any particular solution, but at least there's a recognition that we've got a problem, and we need to start talking about it. We're going to talk about that today. I've been going on long enough. I think we're back up and running. Tim, can you please go to the next slide?

Our speakers today and I'm really delighted to have some of these because they are some old friends of mine. First and foremost, of course, is Ms. Victoria Samson. She's a director of our Washington office for Secure World Foundation. She's been doing this topic for quite a long time. She really knows her stuff here.

We've also got Mr. David Bertolotti, who is a directeur des affaires internationales chez Eutelsat. Also a company that has been keeping an eye on space security issues for quite a while, and they're one of the few.

We've also got Doug Hendrix, who is the CEO of ExoAnalytic. ExoAnalytic is a space situational awareness company, so a private company that is monitoring outer space. He's going to talk to us a little bit about what we can see in space.

My old friend, Ms. Pamela Moraga. She is the first secretary at the Permanent Mission of Chile to the international organizations in Geneva including the Conference on Disarmament. She leads up their disarmament, global security, and humanitarian affairs unit, so somebody who's been looking at this from the emerging space actor side of the conversation.

With that, Jack, over to the next slide. Just a couple of housekeeping rules. First thing, we've got closed captioning. We're trying to make our events more accessible. If you'd like to turn on the closed captioning, there is a button down here that says CC Closed Caption. You can just click on that.

We also have, next, Q&A. We're going to be opening up for lots of questions. This is going to be a very free-flowing discussion. There should be plenty of time to chat. If you want to put in a question, there is a button down there that says Q&A. If you have comments, you can put those in the chats. For actual questions, I'll be monitoring the Q&A.

Remember that this is being recorded and we are live on YouTube as we speak. Hey, mom. Next slide, please. I think we're done. With that, I would like to hand it over to Victoria to ask you a first question.

Victoria, what's going on? What's happening in outer space, and why do we need to be worried about space security?

Victoria Samson: I can sum it up quickly. Thank you everyone for coming. Really glad to be here and have the opportunity to speak about counter space capabilities. What I'll be talking about is an early view of Secure World's Counterspace Threat Assessment. The existence of a counter space capabilities are not new, but the circumstances surrounding them are.

Today, there are increased incentives for development and potential use for offensive counterspace. Secure World has started an open-source counterspace threat assessment that is updated annually. The purpose is to provide public assessment of counterspace capabilities being developed by countries based on cost information.

This year's report will be jointly released with CSIS's Counterspace Threat Assessment, April 8th. Information on our website will be there as closer to the event.

We look at counterspace capabilities being developed by the United States, China, Russia, France, India, Iran, Japan, and North Korea across five categories -- direct ascent, co-orbital, electronic warfare, directed energy, and cyber.

We look at the current and near-term future capabilities for each country along with potential military utility. The evidence does show significant research and development of a broad range of kinetic that is to say destructive and non-kinetic counterspace capabilities in multiple countries. However, only non-kinetic capabilities are actively being used in current military operations.

Just really quickly, I don't have time to go through all the countries. I'm happy to answer questions later on. Again, I would direct you to our website for the counterspace threat assessment.

There's strong evidence that China has sustained an effort to develop a broad range of counter space capabilities.

China has conducted multiple tests of technologies for rendezvous and proximity operations and both low Earth and geosynchronous orbit that could lead to a co-orbital ASAT capability. However, the public evidence indicates that they have not conducted an actual destructive co-orbital intercept of a target.

There is no public proof that these RPO technologies are being definitively developed for counterspace capabilities. China has at least one and possibly as many three programs underway to develop direct-ascent ASAT capabilities, either as a dedicated counterspace capability or as a midcourse missile defense system that could provide counterspace capabilities.

China has engaged in multiple progressive tests of these capabilities since 2005, indicating a series of sustained organizational effort.

There is strong evidence that Russia has embarked on a set of programs since 2010 to regain many of its Cold War-era counterspace capabilities. Russia has been testing technologies for RPO on both low-Earth and geosynchronous orbit that could lead to or support a co-orbital ASAT capability.

Some of these have links to Cold War era, LEO co-orbital ASAT program. The technology has been developed, but these programs could also be used for non-aggressive purposes. Most of the on-orbit RPO activities date matches missions.

Russia is almost certainly capable of some limited direct-ascent operations, but likely not yet on a sufficient scale or sufficient altitude to pose a critical threat to space assets.

The United States has conducted multiple tests of technologies for RPO on both low-Earth orbit and geosynchronous. These tests and demonstrations were conducted for non-offensive missions such as missile defense, on-orbit inspections, and satellite servicing. The United States does not have an acknowledged program to develop co-orbital capabilities.

However, the US possesses a technological capability to develop that should they decided to do so. While the US does not have an operational, acknowledged direct-ascent ASAT capability, it does have operational midcourse missile defense interceptors that have been demonstrated in ASAT role.

The US could probably possess the ability in the near future should decide to do so. As well, the US is undergoing a major weaponization of its military space operations as part of the renewed focus as spaces of warfighting domain has culminated in the reestablishment of US Space Command and the establishment of the US Space Force.

Right now, the mission of this new organization is a continuation of previous military space missions. Some have advocated for expanding their force to include cislunar activities in space to ground weapons. I know I'm running close on time, so just really quickly to...Daniel's going to give me the hook in a sec.

While France has long had a space program as well as military space activities, it was not until recently that France has an explicit focus on offensive-defensive counterspace capabilities. This dates back to July 29, 2019 with the release of the first French space defense strategy.

India has over five decades of experience and space capabilities, most of it has been civil and focused. However, there's been an increasing interest in military space capabilities culminating with an anti-satellite test in March of 2019 as well as the stand-up of the Defense Space Agency later on that same year.

Iran has a nascent space program that includes building and launching small satellites that have limited capability. However, Iran's military as of last year now has the independent ability to launch satellites separate from the civil space program.

When I talked earlier about non-kinetic efforts, this is what we see particularly with Iran. Iran has a demonstrated electronic warfare capability to persistently interfere with commercial satellite signals.

Japan has also been a long-established space actor and space activities historically have been civil in nature. However, in 2008, Japan released a Basic Space Law that allowed for national

security-related activities in space. Since then, government officials have begun to speak about counterspace capabilities in using Military Space Situational Awareness.

Japan is currently undergoing a major organization of its military space capabilities. While Japan also has a latent anti-satellite capability via a missile defense system, it's not been tested in that capacity.

Last, North Korea has no demonstrated capability to mount kinetic attacks in US space assets. Officially, North Korea has never mentioned anti-satellite operations or intent. It does not appear motivated to develop dedicated counterspace assets. However, it has demonstrated that it can jam civilian's GPS signals within a limited geographical area.

With that, I'll stop. I know there's a lot more information to get through. I thank you for your time and looking forward to hearing from my fellow panelists and of course questions and discussions later on. Thank you.

Daniel: Thanks Victoria, and I do note that the counter space report is getting longer. For those of us who work in the arms control business, that's never a good sign.

Doug, if I could ask you to flip your camera on so we can see you, and then I can ask you this question which is what can we see? Sir, from a security standpoint, what are you seeing? What are you picking up on, and what's going on? What's happening? Where's the technology more than anything?

A big question that a lot of folks here today are going to want to know is, "What can we see and what can't we see?" What are the limitations also of our current technology?

Doug Hendrix: All right. I'll go straight to some slides here and show you what we can and what we can't see.

For those of you who don't know, ExoAnalytic is a private commercial space situational awareness company. Let's get my slides on. 100 percent privately funded, so that means we don't answer to anybody as far as where we point our telescopes or what we do with the data that we collect.

We have sites all over the world which means that for all longitudes of the sky, and pretty much most latitudes, we have some coverage. The main thing being that we are collecting in real-time but we do have limitations.

Number one, here's a chart showing you the different orbit regimes, and if you look at the hairy ball here, Earth, that's where most of the stuff is. That's Low Earth Orbit. That's below 2,000 kilometers.

That's primarily where you would use radar to observe though there are a lot of advances coming in daylight small or short-wave infrared cameras that are allowing folks to start tracking the LEO satellites as well during the daytime.

Where we have a real problem though is the sun pretty much shining down on the land makes it difficult to observe satellites with telescopes, so radars are very effective for that. Halfway to the geosynchronous orbit, here is what we call Medium Earth Orbit and that's where all the GPS satellites live.

Then out here at GEO where most of the value is, there's billions and billions of dollars of value out there. That's where we focus quite simply because that's where most of our customers are interested in protecting their assets. That's a little bit of a primer.

This is what it looks like from our perspective, but each one of our telescopes pointed up in the night sky runs a simulated view of the night sky. All these named objects are objects that are up there in space, and all these little rectangles are where we have telescopes pointed at the time I took the snapshot. We have more than 300 telescopes pretty much looking everywhere all the time that we can.

The data that we collect comes in three forms. Astrometry, which is where is the object. Photometry, which is how bright is the object, and if you have a radar, it would be roughly how big is the object. You bounce the signal off it. Also, some folks listen to the satellites and you can get a sense for the power strength of the emissions of the satellite. All of that is part of photometry.

The imagery we take from our distance to GEO satellites looks like a dot, but from just that information, where is it, how bright is it, and looking at the dot, we can tell a lot of stuff. I'll give you some examples here.

We can tell you if the satellite has changed its altitude. The way it's pointing in space, we can tell you if it has maneuvered. We can track satellites during proximity operations. Victoria and Daniel, you kind of laid the groundwork for that.

Current state of the art with what we can do there is when satellites are within half a kilometer, we cannot track them. Currently, between half a kilometer and a kilometer separation, the tracking is a little difficult.

We think the promise with adaptive optics is about 135 meters separation and we can still track two satellites independently. That's a more recent technological advancement that we made for tracking the MEV docking with Intelsat.

We're going to show an insertion event. We see deployments, we see thrust events, and we see debris generation events. Let's go ahead and look at a few of those.

This was an event that happened in 2018. One of the things we like to say is that what we do provides a lot of transparency to what's happening in space. This particular satellite experienced some onboard anomaly. The operator said that they were having an antenna pointing error and it was proving difficult to fix.

While that was true what they said, clearly not the whole story. We learned a lot about this from looking at the data, and we could even identify threats to the neighboring satellites from debris that was coming off of this one.

That kind of transparency is important. You always get the truth from the operator but you don't always get the full story.

Next. This one happened...Oh, gosh, I guess it was a couple of years ago now. It was a satellite that over three days was experiencing many anomalies. The consensus of the review board was that it

did have a...Some sort of it the damage it resulted in a fuel leak. We definitely saw evidence of the fuel leak on day one.

What they didn't know was that many pieces of debris came off of the satellite over two days and several those we still track today that are still up there in the geosynchronous region. The important thing to note here is again, that the current military systems that do track objects up in space were unaware of this debris that came off of it, so it is important to have a second set of eyes.

Lastly, here's another debris-generating event and the official statement from the company was they were not able to confirm that debris spotted in the vicinity of the satellite, broke off, was spacecraft or originated elsewhere. I will let you look at it and decide what you think.

Again, they're absolutely right in saying that because at this time we couldn't track things within two kilometers. It would be possible to generate an event like this by having a few pieces of maneuverable debris hanging around a satellite but then bug out, so to speak.

It's really difficult to say definitively what has happened, but we can sometimes infer what we think happened.

Let's see here. On the subject of ASATs from the ground, heading up the geosynchronous orbit, we're able to track everything that leaves planet Earth, as long as we don't have the sun making our life difficult, and watch them on the way up to geosynchronous orbit.

When conditions are favorable, we can track everything on the way up, which is what we did in this case. Here you're seeing satellite moving in, stopping on a dime at geo, doing some thrusting events. It's going to deploy the satellite right now, after doing a few burning events.

It's important to be able to see those. They tell you what stage of the insertion the satellite is in. I'll let this go just long enough to see the payload deployment and then the fuel dump, which is going to happen, which you can see with the naked eye. This next thing I watched with my own eyes, really bright in the sky, and it's also pretty.

Next chart. Lastly, maybe about every year a satellite will deploy a satellite. When that happens, we do see it. It'll appear as a new object in the catalog, and usually, we will be the first to see it.

One of the things that we focused on here at Exo is being able to see very dim objects. We can see down to about a 1U CubeSat or a 10-centimeter-sized object at GEO. We're also very persistent. We watch, for as much time as we can, every satellite, which can be up to 20 hours a day, watching a satellite.

With that level of persistence, we're usually the first people to see a deployment. When we do have a deployment, the key is to look at the track of the new object coming off, which, in this case, is magenta, and then look at the image to see whether or not we do see a second object with our own eyes and then look for indications in the photometry of some kind of change.

Those are the kinds of things we see. I'll just do this real quickly. This is how we do it live in real time as we maintain an alert status on every spacecraft up there. This is our live tool. I've got a satellite selected over here. Then different satellites are colored here with little halos indicating some level of interest about...

Daniel: Doug, I don't think we're seeing your screen right now.

Doug: Oh, I'm sorry. It turned off. There you go.

Daniel: There we go.

Doug: That was weird. Very quickly, this is our alerting common operating picture. What it does show is, it shows different satellites at different levels of alert status. We're looking at anything that's in proximity with another satellite. Anything that is tumbling or drifting or tumbling and drifting is colored with a color. We monitor this.

Some examples would be DirecTV-14. They're currently undergoing a relocation. That's GHOST14. Looks like it might be spin stabilized. Inmarsat-3F2, they're drifting to a new slot. We're watching that all the time. At any given time, there's about 20-30 objects that are in some state of elevated status, and we watch those all the time. With that, I'll turn it over to you, Daniel.

Daniel: Thanks, Doug. This is key information, particularly for UN member states, because we always talk about verification. If we're going to have an agreement on space, are we going to be able to verify it, to make sure that folks are following their obligations? Your technology is going to play a key role in making sure of that.

Next, I'd like to jump over to Pamela real quick. Pamela, you will be coming at this very much from the security perspective. I wanted to ask you. There are three parts to the UK resolution. It's looking at identification of threats, trying to describe a little bit more what are responsible forms of behavior. What are some possible ways forward for a country like Chile?

That's a lot of countries, countries that are emerging space actors. What does this mean for you? Where is Chile coming at this from?

Pamela Moraga: Good afternoon, Daniel. At the outset, let me thank you and Secure World Foundation for inviting me to participate in today's discussion. Also, let me add, I'm honored to be sharing this virtual stage with such distinguished fellow co-panelists.

Before I tackle your specific question, allow me to broadly contextualize the multilateral diplomatic environment in which the UK resolution was presented. Circumstances, as Victoria said, affect diplomacy, as you know.

At this point, I believe it's safe to say, or even to reiterate, that outer space is of vital importance for modern societies and will continue to be so in the future. Space-based assets are a part of critical national and international infrastructure. Its political, economic, military, technological importance continues to increase. At the same time, there's a growing number of actors involved.

Besides the traditional space-faring nations, there are around, I believe, 80 additional states active in outer space. At the same time, the private sector and other international consortia are increasingly engaged in an outer space activity.

Space generates billions of dollars in revenue for the private sector. In practical terms, the lines between the realms of military, civil/commercial space activities is blurring, if not already erased.

This collective dependence on our space-based assets is part concern over the current space security regime, meaning the security of the assets.

Traditionally characterized as global commons, this race to space has increased the risk of confrontation to the point where there are serious concerns of an arms raised in outer space, which endangers the preservation of the space for peaceful purposes.

We have negotiated a number of legal instruments that among others prohibit the placements of nuclear weapons or other weapons of mass destruction into orbits around the moon or around celestial bodies, prohibited the militarization of the moon. We've advanced on confidence-building measures or identified them, at least, just to name a few.

Nevertheless, the scope of all of these instruments is limited. For example, silence over deployment of conventional weapons in outer space, for example. Over the years, it has been emphasized that they are, and I quote, "far from effective in preventing an arms race in outer space."

The international community has recognized this gap and called upon the Conference on Disarmament already since its inception in 1982, to take up discussions on a treaty for the prevention of the placements of weapons in outer space within a specific-agenda item, entitled Prevention of Arms Race in Outer Space, or PAROS.

However, the CD, because of many, many reasons, has been unable to make any progress. There are long-lasting differences in threat perceptions and the appropriate measures to undertake. Do we take legal instruments or political commitments? None of these considerations have stopped negotiations.

Here's where the acronym start. We have PPWT, TCBMs, GGEs, whatnot. In this context, the development of multilateral solutions to mitigate a potential outbreak of conflict in outer space has been slow while the development and proliferation of technology, space-related technology has continued at a fast pace.

In parallel, the worsening relations among the major space-faring nations, along with ruthless rhetoric regarding counterforce capabilities and testing of ASAT weapons have taken center stage.

It's against this backdrop and at the outset the UK resolution was in our view a positive step in reviving space security diplomacy dialogue.

In the current state of affairs as I have just described, this resolution provided for the much needed excuse to conduct multilateral dialogue on space security challenges and hopefully envisage options for revisiting the outer space legal regime.

Back to the initial question that you've posed, why are the three parts of the UK resolution helpful? I would argue that it's not only the parts, but rather the entire conceptual framing of the resolution that is helpful for us.

At first, it allows for a novel approach to identify drivers of an arms race focusing on behaviors, actions that exacerbate tensions and competitions whereas traditional arms control regime is focused on objects and/or capabilities.

Second, we find merit in the bottoms-up approach taking into account the existing challenges and threats and how member states understand them and this being relevant, how do we understand threats to be. Not imposing from the start a specific format or instrument to deal with those threats and challenges so that gives us a lot of liberty.

Third, and I think that this is the most important issue for us, it acknowledges that every state whatever its capabilities or aspirations are has a stake in this issue not just space-faring nations or military space powers. Space security issues are issues of collective security and are of interest to all.

This approach is much needed taking into account that at this point not only states, as I have just announced are interested parties, but also non-state actors such as commercial sector and academia. If we are to develop new rules, collective views need to be taken into account.

From the perspective of developing countries, I would say or emerging space-faring nations, this is a welcome sign of the democratization of the multilateral dialogue on space, fostering open and inclusive processes which have been proven key in tackling other global challenges. I'll leave it there but happy to answer any questions further. Thank you.

Daniel: It's really disappointing that we can't actually hear the audience clapping because that was really excellently put. I'm glad that you're highlighting the fact that every country needs to be a part of this conversation.

We're all space users. I was really struck by a statistic I heard at a conference in New Delhi where it was pointed out that the average Indian depends on 11 satellites a day. Everyone can think a little bit about how much you depend on a satellite in your own country and it's everyone.

It's ubiquitous. It's around the world. You also lead into another aspect which is the commercial sector. I'd like to pop over to David real quick because the companies like Eutelsat and SCS and SpaceX are not typically part of the security conversation.

Usually, we are talking about militaries, we're talking about governments doing things, but the commercial sector has become even a larger part of the space environment than militaries and governments.

David, from your perspective while you're sitting at Eutelsat, what are Eutelsat's concerns regarding space security? What do you see as being some of the necessary discussions that need to be had amongst the space community?

David Bertolotti: Hello Daniel and good morning or good afternoon to everyone. Thank you very much for actually including me and through me Eutelsat and the private sector in the conversation as you did.

I'm pleased the Secure World Foundation is doing that job. It is true that with a fleet of 37 satellites serving more than a billion end users in about 150 countries, Eutelsat is one of the first space operators with global activities.

We believe we have a major interest in this security-related conversation because of course a secure space, to put it bluntly, is also the key to securing out profits which is always a major driver.

One of the first points I'd like to make is that I know I'm addressing crowds largely of specialists, but is that space infrastructure should increasingly be viewed as a system especially for telecoms but I believe not just. It's pretty much the same for navigational or imagery I guess. What does that mean?

It means that there isn't really any separate treatment of the different orbits. It means that there isn't a single perception of the Earth's space relation.

It means also that the future of space will be very much about the combination of different orbits linked together communicating with increasingly sophisticated terrestrial infrastructure, gateways, data centers etc., the resilient and protection of which will be equally important.

Please do realize that for a space operator, safety and security of space operations do not just happen in outer space, they actually start on the ground and they continue all the way up to the birds up there. You asked me to give views about the perceived threats.

Perhaps to start with and again at the risk of disappointing some who are looking at the fancy kits and the ASATs and the futuristic weapons, I'd like to recall that since the very beginning of the telecommunications age and the start of space-based services, interference has been the nightmare of all the operators.

The operators have done a lot to limit, reduce, escape them. From a regulatory standpoint of course a lot of work is done within framework of the ITU. The hostile interference remains a prime and pretty cheap way to disable or disrupt satellite operations from Earth, so worth recalling.

Cyber security is also a must. A satellite operator is potentially just as vulnerable as any other company to a cyber-attack. Actually, this is not quite true, because obviously we take extra precautions, in particular to maintain our ability to constantly control our satellites in all circumstances.

But there are many information flows to a satellite. There's the C2 that's content, of course, in the case of telecommunications, and alongside those networks, they are just the corporate networks.

The bottom line again is it's not necessarily worth shooting a missile in outer space when you can disable a ground station or just wreak havoc in the HQ of an operator. On-orbits maneuvers are a source of increasing concern as well, especially of course, when they are performed by objects with unclear intentions or that are unregistered.

Rendezvous technologies suddenly have very positive applications if you think of cleaning the lower orbit, for instance, but how do you know that one spacecraft that approaches another is doing that peacefully? How can you be sure?

Another interesting item perhaps to take into account is laser links between satellites at the same orbits or at different orbits seem to attract an increasing level of attention and interest as a way to, of course, transport data. Powerful lasers can have different kinds of users and therefore it is important also that it doesn't become a new source of interference or disruption of activities.

Of course, I would say at the high end of the spectrum, there's everything that can cause debris. All the activities that cause debris, including destructive or kinetic action, which is certainly not a responsible behavior.

As you can see, I would place this quite high in the spectrum. Very briefly, what can we do about it and what would be our expectations as a private actor?

First of all, having a picture of all of this is key. Certainly, space situational awareness or space traffic management is not yet really at a level commensurate with the challenges. Of course, there are some now great private sector resources, not just US military resources. There's a lot of improvements that can still be made for all operators to have a clear picture.

National norms, rules, or even simple principles of good behavior. I belong to an operator based in France. France has a very stringent space law. This is far from being the case in all space-faring nations. That's very, very important.

I mentioned risky maneuvers, especially proximity maneuvers. It would make sense to have a place where we can discuss those, be warned in advance, exchange information about this, especially in LEO, in lower orbits. Similarly, a commercial or civilian-agreed concept of how to make use of lasers in space could be of importance, again, to create confidence.

The key at the end of the day -- and I'll stop there -- is really to protect space access to all countries, of course. We just spoke about those aspiring nations, but also new private actors. The freedom of access to space has to be protected. Of course, preventing the weaponization of space is equally very important.

I know that at least, in some corners have this idea that the product sector is very excited about new capabilities and warfaring capabilities because this is more expensive kits to manufacture and send it out to space. From the point of view of an operator, this is more of a danger than anything else. This is not the kind of kits that we want to put in orbit.

Daniel: Thank you, David. That's what we want to hear. I think we all have very similar hopes that industry probably sees things in very similar light and will also continue to be a part of this conversation and to provide additional impetus in building momentum towards eventually coming up with some kind of a framework that will ensure access to space.

Let me bring the conversation back to Victoria real quick. Victoria, David actually just gave some great examples of various areas that seem to be lacking in terms of rules or principles. Also, he talked about close proximity operations. He talked about destructive anti-satellite weapons.

At the moment, what do you see as being some areas where states might actually be able to have some convergence? We have some common interest and maybe some possible activities that could be the subject of discussions for some type of arms control framework.

Victoria: Sure. To start off, I don't think it's helpful to say, "Our end goal is going to be a treaty" straight up. The last treaty was 40 plus years ago. The way that we handle things has really changed. Having said that, there is a whole spectrum of responses that can be done when we're looking at, "How do we determine what is responsible behavior? How do we determine good intent? How do we share information about capabilities?"

Things like, having discussion about saying, "We're not going to have debris-creating ASAT test." Just in general. That's something that you decide not to do. That would be a positive step because, A, no one likes debris, as David just said. It affects all users, whether or not you are the one that created it.

It also demonstrates that there are expectations, guard rails on behavior, and that you have a responsibility to other users of space to, not necessarily limit your behavior but recognize your actions affect others. I think that would be a really positive step in that direction as well. It could be built on, eventually, a legal framework. I really feel like the norm is the established path you got to there.

Then the other thing that I find very encouraging is, there are a lot of discussions by the commercial sector about what sort of responsive behavior they want to see. I'm talking about rendezvous proximity operations. There's the Consortium for Execution of Rendezvous and Servicing Operations. Secure World is sort of affiliated with that.

That's how you get the commercial sector involved in developing what guidelines and principles for on-orbit servicing you want to see, so you can identify behavior that's in the norm. That way, you can call out when it's not. That's a really great way of doing it.

You have the Space Safety Coalition, which is a living document by satellite operators talking about what do they see as responsible behavior. There's a lot of different ways you can go about approaching it. There is not going to be any one particular approach. It's not going to be just, "We had one discussion at the CD. Hey, we fixed it. Space is secure." Space is complicated. The approach to fix it to stabilize it will be complicated as well.

I think all stakeholders have a role to play to this. It's really helpful to have a strong, bolster foundation to get them all involved in the conversation, as Pamela said. Thank you.

Daniel: Pamela, would you like to follow up on that? Any comments?

Pamela: Thank you, Daniel. Yes. What we are expecting from this resolution is, at the minimum, we would end up with a better collective understanding of current threats to space security and their implications for all of us. Motivations, aspirations as well.

As Victoria has just stated, we can also be able to outline a common ground for the international community in advancing shared objectives for sustaining a secure environment in outer space. I would like to quote Ambassador Liddle, the UK ambassador to the CD, for those who don't know him.

Their expectations on what this resolution will do are really humble. It's to start a discussion. I think that that is really needed. We believe that it's one step. It's the first step, but we believe that it's also in the right direction. Back to you, Daniel.

Daniel: Thanks. Doug, I noticed also that a lot of the things that Victoria was talking about related more to behaviors rather than types of technology. A lot of the conversations that we've had in the past have always been about trying to limit certain types of technology that might get deployed in space.

In terms of what you can see, what would be easier for us to deal with from a visual perspective of what we're monitoring? Can we tell what a satellite is or what it can do, or do you have to wait until it does it to know?

Doug: In my opening slides, you should have been able to see what the capabilities were, but that may not have completely translated to what can we tell about a spacecraft.

I would say, think of us as like a news organization that knows who, what, when, where. We don't know why. When we track the satellites, we know whose it is. Sometimes, it can take a while to disentangle it.

We'll generally know what its capabilities are from a maneuvering sense, what we've learned on the ground, but there's always a little bit of unknown. We know where it is, when it is. We know those things.

Establishing intent is difficult. Before, we would even talk about those kinds of advanced things. We know pretty much what things are doing up there. The role of this body would be to come up with some resolution that would change behaviors, make space safer.

Number one, you have to agree on what are the behaviors that you don't like. The simplest one that we know how to measure is, how close do two spacecraft get? Do they have to have a license to get close? You have to have an agreement that there's some minimum distance, then you have to be able to monitor it.

I think we do a good job monitoring it, but everyone has to agree. We might not agree with another country how close two spacecraft got, and that can be very difficult. Then you have to be able to enforce it. "Well, what is the enforcement? Maybe that's not the role of this body." I would say, we know how to do all those up to the enforcement part.

Right now, there's this 10-kilometer guideline rule that everyone seems to stick to. Even something as simple as that I see being challenging to get through a body like this, and that would be the first place even to start.

Technically, I believe we know how to do it. The hard part would be getting people to agree that when you say it's 10 kilometers, or when you say that I got within 10 kilometers, I disagree. That might be the sticking point.

In addition, too, if I want to do things that require me to get within 10 kilometers, then I don't want to give it up. That would be the simplest one.

Victoria: If I could just...

Daniel: That's...Go ahead, Victoria.

Victoria: I'm sorry, Daniel.

Daniel: No, please. Go ahead.

Victoria: I want to emphasize something Doug said about it's difficult to verify behavior. One of the things that happens a lot with these arms discussions is we look at capabilities and we assume we can modify things from there.

It is very hard to verify capabilities. What you're doing is you're seeing objects, as Doug said, and then you have to guess at that point what they're trying to do.

That's where sharing information and improving transparency about space policies, about missions. Budgets, if it's possible. You are just kind of giving a signal as to what your intent is. That's one way to get some of this guesswork out of the way.

The other way that is super helpful, until we get to that point of open access and shared information all the way around, we may never get to that point of complete transparency, is the idea of using these SSA capabilities to verify actions and to verify behavior.

That's something that can give you a starting point for conversations about what do we see as being the norm. What do we see as being responsible? What do we see as being irresponsible?

As Pamela said, one of the key things that we're all hoping comes out of this response is resolution. Right now, if you talk to delegates in the city, there's not a shared common understanding as to what the threat is for space security. You can't fix a problem if you don't agree as to what the problem actually is.

If we can start off at this point and say, "OK. Generally speaking, we identify these threats to not just be to satellites but to the ground system, to the user segments. It's not just threats from space but threats to space and everything in between."

That helps us start off with a more positive view in terms of how we're going to accomplish getting out of the gridlock that we've seen so far in multilateral form. Thank you.

Daniel: You strike there on another important note about all this just trying to agree on where to start. What is the problem? Where do we go? David, I wonder if I could bounce back to you real quick.

One of the conversations that we often have in this field is how to get the commercial sector involved. Given that the commercial sector is doing most of the activities, how do you see the commercial sector providing input in terms of how to establish norms?

What do you see are the best avenues available to you at the moment for engaging with the United Nations? Is it going through your host countries? Maybe Eutelsat goes through France or through someone else? How do we get the commercial sector more involved in these types of conversations?

David: Thank you, Daniel. That's indeed a very good point. Again, I think that space operators have a lot to bring to the conversation because they have an experience of what they see, what they can witness in outer space.

My first answer based also on our practice at least for the biggest operators is to convey views to the national authorities. Typically, in the case of Eutelsat, subject to the French space law. Subject to a number of licensing requirements.

We have a continuous dialogue with France's CNES and the responsible ministry. We have quite a number of ways to make our views known. It doesn't mean that those views become France's views. They are one element among many others.

Perhaps I take it upon myself as a task but especially for global operators. We should probably be speaking more globally and not just to our national authority. For a global operator in a case of, let's say, in a case of conflict, it can become a very challenging situation.

Of course, we want to stay perfectly politically neutral, but given that we have operations in many countries, who are we supposed to talk to in case of conflict? Would we not receive contradictory messages or even requests from various parties to that conflict? [coughs] Sorry. We have to pay attention to that as well.

National authorities and probably not just those of our flag, and then, of course, any open framework you untie, but open to non-state actors is also very, very useful.

Now, you increasingly if I take the example of the cyber domain, there are ways in which the private sector can make its views known. Private players, companies can speak to a GGE to an OEWG. They can be invited to that. At the end of the day, if you want to have the views of the private sector, you can find ways.

More fundamentally, and I have myself this question, being a former diplomat, in the event the international community would want to draft another treaty, or even a protocol, let's say, to the Outer Space Treaty, could it still be done like in the '60s or '70s, when it was inconceivable that private players would have access to space?

Now, the perspective is almost the opposite. Should there be an even bigger room for those players? That's a question worth considering. Perhaps, we should look at experiences like in climate-related negotiation, where big room now is made in the multilateral process for private players.

Daniel: I also want to flag something that my colleague Raji from Observer Research Foundation pointed out recently too, that we have to be careful also when we introduce industry. A lot of times, other countries will mistake industry perspectives for being a Western perspective.

What we want to show, or what is important to demonstrate, is that space companies are doing work all over the world at providing data for many people. It's important to have them be a part of the conversation and providing their views.

I've got some really interesting questions that are coming in from the audience now, and I think I'd like to go ahead and start diving into some of those. Victoria, Pamela, the first one is very much geared towards y'all.

That is, do you see naming and shaming -- many times when we're talking about legally binding instruments versus voluntary instruments or political instruments, for political instruments, the main tool for enforcement of the obligations there is naming and shaming.

Somebody steps out of line or does an action that does not conform with norms of responsible behavior, you call them out.

The first question is, "Will this type of strategy actually work on major countries, so countries like China or the US or Russia? Do we have any instances where this has been shown to be effective?"

Who wants to take a first crack at that? Victoria?

Victoria: I can. The whole ITU is based on this very theory, name and shame. They are deliberately built to be toothless. They're meant to just call out bad behavior. You take it from there. Specifically in terms of maybe counterspace capabilities, I would point to the 2007 China anti-satellite test.

It was the third one they had tried. It was the first one they successfully intercepted, and there was a huge outcry about the amount of debris that was created, to the point where I think the Foreign Ministry was kind of caught off side in terms of how much stress and Sturm und Drang it would create in the international system.

I think you see what happens is a few years later China has another test. Same interceptor, same type of target. They called it a missile defense test that time. Everyone's cool with a missile defense test. They didn't want to bring on that level of notoriety and consternation, being perceived as a bad actor.

China in particular is very interested in presenting itself as an alternative to the United States in the international system, that it's a global power that brings other space actors with it. That is how they are trying to sell themselves. I think people tend to underestimate the power of perception for these international things.

I mean, in the grand scheme of things, that's truly what international relations come down to, is how you're perceived. Because countries are going to do what they're going to do, but they want to be perceived as being good actors and they think it could be helpful.

The last thing I'll say before I stop on this -- North Korea, which is not typically perceived as being perhaps the most cooperative country in international discussions -- when they have their launches, they do things you're supposed to do.

They do a notice to mariners. They do a notice to airmen. They go through the processes that are set up to be able to do this in a safe and a stable manner.

I think there is a lot of power to be said for this. It's not bulletproof, but I think there's more strength than people give them credit for. Thank you.

Daniel: Pamela, what do you think?

Pamela: I will present the perspective from the diplomatic angle. I completely agree with Victoria from the civil society academia angle. As a diplomat, I would say, it's not a good idea, the naming and shaming strategy because what we need to do is promote a collaborative international environment when you're in the room negotiating.

This is not idealism. It's really being pragmatic. If we don't try to engage, all the actors, and especially the space-faring ones, we will not achieve any more secure outer space. That's from my experience. Thank you.

Victoria: If I could do a quick follow up on that, I agree, Pamela. I was working on the assumption that there had been something like this resolution. We have an established list or guidance of principles of something. We have response behavior identified. Then you can identify when people step away from that path. That's what I was thinking. I yield to your knowledge about diplomatic discussions as well.

Daniel: David, I would look to you as well. In your experience, both as a former diplomat and also in industry, do you see naming and shaming as being a useful tool? How should we use it?

David: There have been instances in the past when we made quite publicly known some of the troubles we were encountering with some countries. Probably, those who are a little bit of experts understand what I'm alluding to. In particular, when it was referring to interferences, it can be a bit tricky, of course, depending on the type of relation you have as a private actor with the country, if it's country, which is the origin of the problem you're encountering.

What is sure is that the very diplomatic, below-the-radar way of dealing with things at the ITU is not always extremely effective. Naming and shaming could be another avenue. The more subtle ways to do this, if you witness some behaviors in space, maybe you can go through also your national authority. They can relay that to the country that, for instance, is sending strange objects, sniffing around your own satellites. That's another possibility.

What I would add is that at any rate, if you name and shame, at some point, it also has to come with responsibility or liability without opening another entire debate for another seminar. It certainly begs the question of where the international liability in space is. It's another under-subscribed convention. We may want to address that problem as well.

Daniel: I've sent a link around to everyone in case you weren't totally sure what David was referring to. Moving along, I have some interesting questions here from some old friends. I'll just go ahead and read them out. There is one from Helmut Lagos. Pamela, imagine, you will also have to answer here. Helmut used to be in the CD. He was first secretary as well in Disarmament. He represented Chile in a number of space-related initiatives in the UN.

He says, "Considering the difficulties to agree on a new treaty, would it not be a good time, maybe, to convene a meeting of states parties to the outer space treaty, which could maybe be an opportunity to review and, if necessary, add an additional protocol to update and address the current threats to space security?" The old question about opening up the space treaty or finding an addendum. What do you think?

Pamela: Should I start?

Daniel: If you'd like to add to that, but Victoria and David, I think that might be going to the two of you.

Victoria: Pamela can take first crack.

[laughter]

Pamela: Thank you, Victoria. Just also to flag, Helmut Lagos is not only a dear colleague, he has been my mentor. Everything I know, I've learned from him, so gladly. We are of the view that the 1967 Outer Space Treaty remains the basis of international space legal regime.

Nevertheless, due to the remarkable achievements in the field of space technologies and the activities, this regulatory regime has lagged behind. That doesn't come as a surprise. It fails to address arms control in outer space adequately. There are a number of legal issues related with outer space which ought to be addressed and regulated, as David has also pointed out.

At the same time, military confrontations are now within the realm of the possible, taking into account that further militarization of outer space will lead or has already led to an arms race. We can't get those discussions in the current state of stalemate within the CD and other security-related foras. They are discussions that we need to have.

Yes, I would be of the view that having the first meeting of states parties to the Outer Space Treaty would be an advancement. As the NPT is the cornerstone of the nonproliferation regime, the Outer Space Treaty is the cornerstone for us because of the principles it lays out.

After the first meeting of states parties, you could also have a review conference, which is what is sorely needed. Thank you.

Daniel: Victoria.

Victoria: I think it's a really bad idea, with all due respect. What you're doing is you're opening yourself up to a dissolution of the treaty. We have not seen successful discussions in multilateral fora in space security issues when they're focusing on a treaty aspect. You'll just end up being the same issues we've seen. We've talked about PAROS or anything like that, PPWT.

It's just going to be the same discussion where everyone is trying to get their own particular hobby horse put into the discussion without actually fixing any of the problems.

Again, it comes down to the basic thing. What do we see as the common threat? What do we see as a way to go about to fix it? What are the ways forward? What do we see as responsible behavior? Those are all discussions that need to be had. They do not need to be done as additional protocol treaty. They can be done now.

I would also identify that the way that counterspace capabilities are proliferating, I don't think we can afford to wait the decades that it would possibly take. I would point to the long-term sustainability guidelines for the Committee on the Peaceful Uses of Outer Space, which is fantastic.

I highly support it. Full bias, my current boss was a working group chair for that. It took almost a decade to come up with these 21 guidelines. Those specifically focus on spaceflight safety. They do not include third-rail topics such as security.

That's a feature of the UN system. It's not a bug. Having recognized that we're in a circumstance now where the space domain is changing now, counterspace capabilities are proliferating now. We

have the opportunity to try and get ourselves on a new path moving forward to identify ways in which to help stabilize and make space environment more predictable and secure for all.

Going back to the previous arms control mechanisms that have not yielded for decades now would not be a good way to do that. Thank you.

Daniel: David, you're looking very pensive. What do you think?

David: I was listening carefully to Victoria. I find myself a little bit between Victoria and Pamela in the sense that, in particular, as a former diplomat, I cannot argue that it's a bad thing for countries to gather and talk and try to reach a result.

At the same time, I do acknowledge what Victoria has said. It seems to me that we are still very far from a global consensus on the issue. It might be dangerous starting to unravel a treaty that is among the -- let's face it -- very titanic treaties that are still standing.

At the end of the day, taking the point of view of an operator, I would say that right now, and given the pace also of technological developments, what we would need is sound and real implementation of some of the norms or guidelines that already exist.

The long-term sustainability guidelines are probably not a panacea. They're not entirely geared towards security benefits in the hard sense of the word.

Before any of these could be properly implemented, translated into national legislation where it has to, and with this translation, actively monitored, there could be some naming and shaming made about the countries that subscribe to these but are not implementing that.

For us, as private sector players, this would be wonderful, first of all, to ensure the safety of the spacecrafts but also in terms of level playing field and competition with actors that are not bound by those guidelines. To me, this is equally important.

Daniel: Pamela, you look like you want to say something.

Pamela: Thank you. Thank you, Daniel. I can't contradict Victoria and also take into account David's remarks now. We can all agree that the political and diplomatic negotiations are very difficult. That's true.

Here, I'm wearing my diplomat hat. The beauty of diplomacy, if the same fatalistic approach was assumed another processes -- just to mention the Paris Agreement and the TPNW, for instance -- the results would have been quite different. I wouldn't strike it out completely, acknowledging that it is very challenging.

Nevertheless, it's a different situation. It's much more complex. Perhaps the issue of having more actors involved also would create a different result. Thank you.

Daniel: That's very true. Thank you, Pamela. Doug, let's bring you back into the conversation. I have a question here that I'm going to flip on its head a little bit. In a perfect universe, I'm sure that the United Nations would suddenly have this amazing budget. They could hire you to monitor space

at all times and give you billions and billions of dollars for a whole new set of telescopes and computers.

But absent that, what do you see as being you like a good arrangement or framework or setup, so that countries can have access to the information that you're collecting and that they can be able to utilize it for whatever detective work they need to do for activities in space?

What do you see as being the ideal setup, apart from you getting a five-billion-dollar contract from the UN, which I'm sorry we just don't have it?

Doug: The simple answer, of course, is they certainly could hire us. No, this is definitely the way that the world is going towards a more collaborative space situational awareness capability, not call it a system like David did. If it's going to have meaning, it's got to be a system.

There have been a number of larger efforts. For example, the Europe SST programs, space surveillance program. Then, you've the United States Department of Commerce who was tasked with developing a similar system for the US.

It's not clear where those are going to go. One thing that is very clear is that each nation is looking to have its own sovereign capability, which I think is the best first step. That does mean having your ability to collect data and understand data at first.

Then, when we get to where we can share, and there are technical challenges to sharing, there are trust barriers, and there are trust issues for sharing, only then, if you have that techno expertise you developed in your own country, would you be able to take another people's data and get value out of it. There is some enormous steps that need to be taken at first.

With that being said, I am absolutely wholeheartedly in favor of the United Nations establishing, I think it was, a space situational awareness system open to all states. I'll say, "That'd be great. Who's going to pay for it? Who's going to develop the trust between the nation states?" The technical hurdles are going to monumental. Who's going to do that?

Daniel: Anybody else want to take a crack at that? I'm sure you have some thoughts.

Victoria: If I may, I think it's beneficial to have more SSA capabilities being spread out because I think it does give you a richer picture. I think what we're going to come into at some point is there's going to be, and Doug alluded to this earlier, a disagreement in terms of whether, let's say, for example, a conjunction's going to happen.

That happened, actually, last fall, where one company said, "This satellite's going to be hit by pieces of debris." Another company said, "No, we don't see that." How do you make a decision? That's really where you need to lay the groundwork where there's trust.

We can verify through outside sources, what sort of information are you getting? That's part of a larger conversation that requires an international collaborative approach to this shared domain. Having said that as well, though, I think there's a minimum level of spaceflight safety data that should be shared and be available just because space is a public domain.

I want to make sure that it's not limited -- SSA data is only limited to those who can afford to pay for it. I think it's definitely right now, it's shared internationally, largely by the US military, and that's great.

Again, it's public spaceflight safety. I'd like to encourage at least a minimum level of SSA data being shared because of that because as Doug also said, the capacity for some owner-operators -- they don't have the ability to do their own analysis. They just take what the US says and go with it. We need to see, I think, capacity-building as well. Thank you.

Daniel: Anyone else like to add something?

David: Briefly, I mean, the truth is that today, commercial operators are extremely dependent on one source of information, the US military. Of course, with the addition of the information exchange between ourselves through the Space Data Association, for instance.

Certainly having something that is more of a public service is important. Also, I guess, and there, more with a national hat, also something that would not be at risk in the worst of cases, in a conflict case, being able to rely on a tool that would not be unplugged or disconnected because precisely there's a conflict.

It's also, I guess, a sovereignty issue, at least for the most active countries in space. You can't depend entirely on something that can be switched off or reserved to only a certain circle of countries.

My last point is that while of course it is very nice and it's an enormous progress to have more SSA, you also have to gradually move to STM and to manage this. To me, the awareness, the sort of picture, is only one aspect. Once you have the picture, as Victoria also was alluding to, you have to manage the potentially dangerous situations.

If it's talking to another operator, we managed today. Of course, there are new actors and not all of them are equally used to having this dialogue, like the GEO operators on their GEO orbits. LEO is more challenging. Let's say for instance, you have a problem either with a state-owned object or with an unregistered object. You don't know what it is.

How are you supposed to have this conversation about de-conflicting, preventing a hazardous event, all of this? Having the tool is fantastic, but there's another part of the conversation that also has to follow.

Daniel: I agree. First, we need to be able to see it. Then, we need to be able to manage it. I feel like Moriba's channeled himself into our discussion. Pamela, there's a question here for you. It's from Paul Meyer, former Canadian ambassador to the CD.

He says, "The existing UN General Assembly PAROS resolution also recognizes all states as stakeholders in preserving space security, solicits their views, and speaks to the need for further measures to prevent an arms race. Does the UK resolution really add value or does it risk diluting the near-unanimous support of the PAROS resolution?"

What do you think? It's a tough one.

Pamela: It is. It's a tough one and coming from Paul Meyer, the Paul Meyer, it's no big pressure, right? I will be quite honest. I believe it does not contradict. It complements the PAROS resolution as it engages all stakeholders in issues that have been traditionally concern for space-faring nations mainly.

At this stage, we have a bigger developing or emerging space-faring countries, sense of awareness of preserving security of all types of outer space activities beyond the defense and weaponization issues, having a resolution annually approved, every year, is good, but it's not enough. We need to update and make progress in this regard.

We need to start a discussion. PAROS has its political complexities as Ambassador Meyer knows. Thank you.

Daniel: I know he does. Victoria, what do you think?

Victoria: I think the name inherently, PAROS, Prevention to Arms Race in Outer Space, it has a very specific view as to what the security threat is. That is to say, weapons in space. It has a very specific perspective that it's hardware and technology that is the threat. Frankly, I don't think that is an accurate representation as to what is destabilizing space to this day.

You need to have a broader conception of threats to space from the ground, threats to space systems on the ground, threats to space users, threat to ground stations, as well, looking at TBDs on orbit. I don't think PAROS captures that nuance in terms of what is actually destabilizing. It doesn't talk about that at all.

Things like the UK resolution are really helpful because they bought in the discussion to incorporate space security and stability the way that it actually is, not the way it was perceived decades ago. Thank you.

Daniel: I'm going to go ahead and double up on you, as Paul also had a question that is probably aimed at you as well. I'll expand on this a little bit. "Will the Biden administration continue to characterize outer space as a war-fighting domain in which the US military is to pursue the goal of dominance?"

I'll add on to that, by asking, Victoria, in your expertise, do you see the United States maybe being more open to space arms controller, or at least to be more constructive in what has traditionally been a field where the United States takes a back seat and is not terribly proactive?

Victoria: Sure. Thank you, Paul. Very good question. The idea of space being a warfighting domain, that dates back at least openly being spoken about to 2014, so during the Obama Administration. It is not something that the Trump Administration, now that Biden's in, they could just chuck it.

It's part of a larger approach to space being a key national security enabler for the United States -- I am speaking as an observer, not as a spokesperson for the US government. This is a common discussion held in the security circles for decades now. How do you ensure that this military space capability is going to be there?

The idea of using space as a warfighting domain, it allows for things like space command and space force to be used. A space force organizes, trains, and equips forces that are then used by space command.

Has there been unhelpful rhetoric? Absolutely, and that was done by people who had an agenda that wanted to push for a more aggressive US posture for counterspace capabilities.

It is almost a fight for the soul of the US Space Force. Will it be primarily focused on establishing ease of access to space and identifying threats and making sure that space is usable for the US military for the long term, or is it going to go farther?

We're at a point where that's discussions being had. Generally speaking, in a space warfighting domain, that's part of a common approach that reflects more US military space for decades now.

In regards to your question, Daniel, about US and space arms control, the US National Space Policy has almost always been very pro-space arms control as long as it's effective, verifiable, and in the security interests of the United States and its allies. The Trump National Space Policy which came out minutes before they left office said that as well.

I think that is a common interest for the United States. Definitely, we would be approaching it. Having said that, this administration does seem more interested in having a global approach to these shared issues. I would point out the US has said under the Biden Administration that they will continue to support the Artemis Accords.

The Artemis Accords are outer space treaty principles that were picked up and brought out to how continued use of exploration of the moon and looking at space resource use eventually. The idea that there are responsible behaviors to ensure that it's still usable for all and then signing on from there.

There's interest and there is room now for discussions about whether it's not space arms control or, as I said earlier, guardrails on behavior, identifying responsible behavior. Part of that is because the US military is the one driving from the discussions within the US government.

The US military recognizes too its benefit to ensure that there are responsible actions in space because it's going to suffer the consequences if there's a rogue player doing things that are irresponsible.

With that, that gives more cover to the larger US government discussions about whether there's space arms control or any kind of identifying responsible actions in space. Thank you.

Daniel: We're coming up on about five minutes left. I'm going to let everybody give last comments before we close up, but I would also like to bring everyone's attention to recent comments that were made by General Burt who's a large second-in-command of the US Space Force.

I'm not going to focus so much on her comments regarding the binding element of the UK resolution. She did say that one of the things that she would like to look at is defining what is hostile behavior. Coming to some type of agreement around some of the terms that we don't know how to apply to outer space yet.

Things like use of force in outer space or self-defense in outer space. Even just trying to define what is a norm of behavior. How are people supposed to act? I wonder if that's not a conversation that might be had due to this resolution that has gone forward.

I'd like to invite everyone to give some final remarks. If you have anything to add on whether or not it would be useful to get some new definitions going or some clarity on how to apply some of the laws that we have, I'll welcome your remarks. Pamela, you want to start?

Pamela: Yes, Daniel. Thank you very much for the question. It's a relevant one in terms of definitions for instance.

We have these two neatly committees in the UN. The First Committee and the Fourth Committee. We have them siloed in what belongs to COPUOS in Vienna, what belongs to the conference on disarmament in Geneva, or the disarmament commission in New York. Sometimes we see that there are issues in the outer space discussion that are cross-cutting.

The UK resolution, what it does is invites states parties, member states, to inform, give their views on what are threats specifically but also risks and hazards in terms of trying to understand and trying to make the discussion broader.

We know that risks and hazards are dealt within COPUOS and we know that threats are specifically security-related issues, but not every country sees that. As I said before, not every issue is neatly cut, it's not cookie-cutter in one or the other.

I would say that it will help us, and in the long term, I would hope to see more coordination and communication between this First Committee, Fourth Committee, or these two approaches.

As final, I have the floor, I would like to also add that this new approach, this discussion, that has been started, we hope that it will allow us to move forward, but it should not be understood as an emerging spacefaring nation and also as a member of this developing world.

It should not be understood as a substitution or a resignation of our more ambitious goals of a legally binding instrument on preventing an arms race in outer space but as a synergic process that contributes broadly to space security.

As expressed in the conclusions of the GGE on TCBMs in 2013, voluntary political measures can form the basis for consideration of concepts and proposals for legally binding obligations.

What would make this UK resolution successful or make this a productive dialogue, I would say, any recommendation or way forward which might be envisaged should be consistent with the interests of all member states.

From our perspective, take into account those of developing countries which is namely in the principle of outer space as a common interest of all mankind in progress of the exploration and use of outer space for peaceful purposes. That's all from my side. Thank you.

Daniel: Brilliantly put. That's a tough act to follow. Doug, take a shot.

Doug: Sure. I'll try to pull in some of the other questions. One of the questions was regarding the spaces of warfighting domain. A couple of the larger reasons why the US Space Force was started is that the United States has the most to lose if there's any conflict in space. I think that is something to keep in mind. That's both militarily and economically.

Militarily, we know that US is dependent on space, but our economy is the most dependent on space, maybe of any in the world. Any type of kinetic actions in space are going to be things that the United States doesn't want at all.

Getting back to David's comments of RF interference being the largest problem with the commercial operators, that's also the easiest to implement non-kinetic effect in space right now. When talking about how are we going to quantify, what are threats in space, I like to go back to...It was a personal moment for me sitting with Kay Sears.

She was the head of Intelsat General in the day, and they had a Russian satellite park next to them. We had noticed it a while ago, Analytical Graphics had alerted them to the fact that we were working with them at the time. I was sitting there with her, and we were showing her the live feed of her satellite and the Russian satellite.

She looked at me and she said, "What do you think they're doing?" I said, "Well, are they interfering with you?" She goes, "No." I go, "Well, I mean, we would just be guessing with what they're doing." I said, "Are they doing anything wrong?" She said, "There's no rules against what they're doing." I said, "Well, what are you going to do about it?" She said, "Well, we sent a letter to the embassy."

Even in that simple case, our discussion come up with anything that was wrong with what was happening because they were 70 kilometers away. Maybe technically right on the edge of a slot, in the slot a little bit. It was very difficult for us to even agree that they were doing anything wrong, but she knew she didn't like it.

Those kind of discussions are going to be very difficult, especially right now, there's a rule of thumb that 10 kilometers is the limit. We know how to measure that. Is there anything wrong with being within 10 kilometers, because when I'm here on Earth, 10 kilometers is far? That's the next town over.

These are going to be difficult conversations, but I wholeheartedly think we need to tackle them. This is probably the body to deal with.

Daniel: Thanks, Doug. And also, I would like to point out, just the feedback we've been receiving, you win the award for best background. Your dog is also really adorable.

Doug: Is it the dog?

[laughter]

Daniel: It's the bookshelf. Everybody wants the bookshelves.

[crosstalk]

Doug: ...the one thing I've carried with me everywhere.

Daniel: Excellent. David, what do you think?

David: Thank you. First of all, I point out that we're aware of the new challenges and threats. As a commercial actor, unfortunately, we have to take these into account as best as we can. We will not revert the trend by ourselves of space being a military operational domain. We should not be mistaken.

As I said, in the beginning, with the wrong debate or fixated with only one aspect, which is weapons in outer space, there are other threats out there. Again, in the best effort approach that are outlined, certainly, when it comes to some of these other threats, in particular cyber, there are things that we can do. We are doing them to protect ourselves.

My second remark would be to say that regarding all the already-existing rules of good behavior, the keyword is implementation. For us, implementation, implementation, implementation is the one important thing both for the safety of objects in orbits but also for having a level-playing field among players.

Finally, I would point to one challenge or dilemma, which we haven't talked a lot about. You did mention this, Daniel, I think in your introduction, or was Victoria perhaps.

Of course, we continuously wonder about the implications of the increasingly dual nature of the business of commercial operators. Whether it's imagery, telecoms or navigation we all support military actors, whether in peacetime or during operations. There are not enough purely military software and satellites to do the business expected.

How our assets would be viewed in a real time of conflict is a question mark. You would think the obvious targets would be the clearly national military satellites. What if commercial satellites are targeted as well? How should we react in that context is also something we need to have devote a bit of attention to.

Daniel: I'll take the opportunity to plug a paper by one of my mentors, Dr. David Koplow at Georgetown University. He was writing about how we might start seeing some issues, internationally, humanitarian, legal issues with the mixing of military and civilian services on a single satellite.

If anybody wants to check that out, I highly recommend that you read anything by Professor Koplow.

Victoria, would you like to close us out?

Victoria: I will. I recognize we're over time. I shall try to be succinct.

Regards to your question about norms, I would like to point out Project Ploughshares in Canada, which Jessica West and Gilles Doucet have done an excellent survey of what norms are for space and identifying gaps and contradictions. It would be helpful for people to read that and get an understanding of where we are.

The point that I would like to make about norms is that they can be good, and they can be bad. If we don't take an active role in identifying which behaviors you want to see, which behaviors you don't want to see, we can drift into a place where norms that are established and the norms we want to be established.

Things like the discussion raised by this UK resolution can be so helpful because it identifies the norms we want to see. Be the change you want in the world. You can identify that and, hopefully, move on so that space can be sustainable and stable for all the long term.

Thank you very much.

Daniel: All right everyone, that's pretty much it for today. We've gone over time, but it looks like a lot of folks still stuck around.

Thank you very much to our panelists, David, Pamela, Doug, Victoria. As always, it's been a pleasure. Big special shoutout to Jan for helping us with all of the production and to our team who is helping us with close captioning as well.

If anybody has any questions, please feel free to get in touch with us. Secure World Foundation. You can find us at swfound.org. Always around to help.

Transcription by CastingWords