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Final Frontier: Space Strategy for the Future

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David Ignatius

I want to begin with, Ezinne and I want to ask her gee whiz question. So, I don't know about you. But when I saw the images last week from the James Webb state space telescope, I thought again, the majesty of this space adventure blew me away to see that those images of our universe and I want to ask isn't a in the White House, this president with our national security, Jacob Sullivan, who you work for. What's the vision that you have about space? And in particular, let me ask you about one thing that's on your agenda. The International Space Station that's been part of our presence in space is going to be retired in seven years. We got to have some new platform. So talk about that. But talk more broadly about the vision if you if you as you talk about your colleagues.

Ezinne Uzo-Okoro

Thank you, David, and good day all. It's an honor to be here. Thank you to the Aspen security forum for having me. Aarthi Prabhakara likes to say that OSTP is overarching purpose is to strengthen advanced science and technology for the benefit of all Americans and to help us reach our nation's greatest aspirations. And so when you think of the richly complex innovation vehicle that we have, and where we are today, we are using this rich, complex system to move us into the next the next chapter, the next era. And in space, what that means is creating resilient, critical infrastructure that does not have to be that is resilient against the effects of space weather, ensuring that we are mitigating and tracking and remediating orbital debris, ensuring that we are successfully transitioning the International Space Station to a US commercially owned space station and that we remain a partner of choice amongst our allies and partners. And so we really strive to continue to achieve US leadership by maintaining safety, security, stability, and sustainability not just in low Earth orbit. But in MIO, and Geo and all across celestial bodies in space. So that's the vision. And with the International Space Station, we really are at an exciting inflection point. I still remember when the shuttle program retired and I was working at NASA at the time and I got calls and do you still have a job and you know, so here we are. We have agreed to retire the International Space Station by 2030. And we will be replacing it and hoping to bring all our partners with us partners that are allied with us partners, some of whom are strategic competitors, and then new partners,

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and we want them to come with us to a commercial space station that will be owned by a US entity. And we want to we want to be active in that area of science and technology. We want to leave we want to retain us preeminence. And so while we had this focus, with our lunar program to go back to the moon, we are not yielding on preeminence in low Earth orbit for Space Research and Development.

David Ignatius

I don't know about all of you but I miss the space shuttle. I used to love love to watch to watch it. John, your assistant secretary of defense for space policy. And last November, your colleagues and you completed a document that was called the Space strategy review spaces teacher review nicknamed I discovered today scissors. wonder about that. So that document. I don't believe it's this unclassified version. But I am hoping that you can give this audience a sense of the broad concepts that frame our strategy as you put together that document that you can try and carry out so

John Plumb

well thank you, David. And also thanks to the Aspen security forum for this opportunity. The spatial Dziejdzic review, scissor SSR was actually just a Herculean undertaking by by my office, Department of fence that was tasked by the National Security Adviser to the Department of defence to really take a base level real again this the environment, national security environment for space, where we are and where we're headed. And a couple of really important things. One space is in our DNA for the military. It's it's absolutely essential the way we fight this part of our way of war. So that's the first thing that has been elevated to a very high level everyone now understands that and that's part of the reason that space has become increasingly important. Second, as Secretary Austin has directed us to focus on China as the pacing challenge China is also our pace of challenging space. And that has a ability to focus what we need to do. And when we look at that environment is very different than it was 10 years ago, for instance, since the Obama administration, massive change. And so what the department needs to do and these are the two main pieces out of the, the scissor are make sure that we can deter conflict in space. Right. And that conflict in space is completely related to conflict on the ground because space is in our DNA for military missions. Every military mission relies on space. We have to ensure that mission for our men and women to be able to execute their mission properly. So that means we have to protect and defend our systems and devalue adversary attack on our systems. One of the reasons we're leaning heavily into resilience, how do we devalue an attack? And the second part is our men and women in harm's way are also in harm's way when they face that space, enable threats from the adversary and so we have to be able to protect them from those as well.

David Ignatius

So you mentioned resilience, I just want to follow up our nest security space architecture, often described as exquisite. The Inaros satellites is an extraordinary piece of technology. We're also very vulnerable. And I think in recent years, you and your colleagues have realized that vulnerability was

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a serious problem. And that somehow you had to put the more eggs and more baskets and reduce vulnerability. Have you completed that? I mean, do we now have a genuinely resilient space architecture or is it worth it still vulnerable to an attack during this window, in which we you know, we weren't attentive enough.

John Plumb

So first, resilience is never complete. It will be a constant back and forth. But second, we are truly investing in becoming resilient are picking off certain mission sets. I think missile warning missile trackers I think we talked about a lot. We're moving from an architecture that has a few very large and expensive satellites in geo and logical orbits to a proliferated architecture. In Leo. And that has a couple advantages. One devaluing the tech two the refresh rate and the satellites over the last three to five years provides an ability to be innovated speed and not have to look out for my requirements 20 years from now in America quirements five years from now on the knowledge that I'll have to refresh that. So a lot of advantages there. From a military standpoint, I think we are all in on getting there but resilience is is a kind of a never ending quest.

David Ignatius

Tory your United Launch Alliance is in the space business big time. And your new sort of make or break Rocket is is the Vulcan centaur. And unfortunately, you had a setback in March, an explosion on a test Launchpad that led you to delay the initial launch that rocket I think was scheduled for May. It has now been put back in it's unclear to me quickly scanning the press just when it's gonna go up. But are you at this point confident that it will be in space, first launch will be will be up by the end of this year?

Salvatore 'Tory' Bruno

Yeah, we did a pretty detailed discussion for the press just a few days ago and explained everything that happened and when we're going to fly, expect to play in q4. To put it in context. You know, we when I came to ULA and started developing this new rocket I had a choice to make. Do I develop a rocket that is optimized for commercial leo missions, like every other rocket in the world? Or do I choose to focus on national security space in what we call the high energy missions or high energy orbits that only the government uses? The government uses Leo, they also use these much more complex, much longer duration, much more difficult technology missions. I chose to go that way because I felt that the challenges our country are facing especially relative to China and Russia, we're going to demand that of our industrial partnership. So this is a fairly sophisticated rocket. The thing that is the most complex and high performance about it is its upper stage. And David what you're referring to is a structural qualification test. We were performing on that very exquisite of uppwe stage back at the Marshall Space Flight Center in April. The very last test I needed to do before flying the rocket that was sitting down on the pad at Cape Canaveral. And what happened was this paper thin 40 foot long 18 foot across stainless steel tank so thin I've had wedding invitations that were thicker than the steel on this. It won't hold its own shape if it's not pressurized

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because every kilogram every ounce of mass on the stage like that matters. It's exactly another kilogram payload to these very high orbits we fly to the bottom line was it was a little too thin right at the top. There was a local stress riser that misses the first analysis was leaked hydrogen got out. Hydrogen will always find its ignition source and it caught fire. So exquisite technology but not an exquisite root cause in the corrective action is gosh darn I wish it was 20% thicker. I guess I'm going to weld a plate over the top of the fourth version of the stage. That's it, building it now a few days from now you could ask me I'll send you a picture of the completed new Ford dome. And we'll get all that done and still have to finish that testing we weren't quite done with and then we'll fly before the end. Of The Year. Not sure in that new era.

David Ignatius

So the takeaway for me is that the image of that show was as thin as a wedding invitation. I want to ask you, where can we go any further what it's like competing with Elon Musk. You're a big competitor, obviously SpaceX which has been this symbol of new space. What SpaceX like as a competitor?

Salvatore 'Tory' Bruno

SpaceX is a very aggressive competitor. And competition is good. Before I got to Ula there was only one domestic company that could fly government missions, either for NASA or for the national security space, infrastructure. So we were a sole source. We were a monopoly. We were an extension of the Air Force. And our mission has been to have extreme reliability coming through an era where the spacecraft on orbit were aging out the replacements were years late because they were technologically ambitious. And our job was to fly anything that showed up to the launch pad whenever it came on to the factory and don't break any because we're short. ULA did all that. But when I got there, Elon Musk had just shown up and so we had competition in our competitor was litigious. I'm not going to pull any punches on that. The first thing they did was sue our customer to break open existing contracts. But I will tell you, the competition is good for industry. And at a time when our country is facing into these challenges a broader industrial base is something we need. So I've been supportive of that from day one and I'm not afraid to compete. So we have developed a rocket we have competed. We beat him in national security space for the first place. And then we've landed a massive commercial contract with Amazon, which is allowing me to essentially double the launch infrastructure that our nation enjoys. This is a healthy environment. I hope it continues and I welcome new entrants as well.

David Ignatius

I like ways that we beat him. Relish. So Ezinne I want to come come back to you and ask you about another big idea and what this white us thinks about it, and that's project artists are returned. To the moon. And I'd be interested in hearing how you would describe the goal of that project the benefits, and since we've been talking about Elon Musk, Elon Musk, and Jeff Bezos, my my owner, my newspaper see going to the moon but even more going to Mars as a way of saving our

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civilization that they have the biggest ideas about about Planet Earth decay and the need to leap into the into the heavens to save ourselves does this White House have a similar vision when you think about Project Artemis? What does that mean to you?

Ezinne Uzo-Okoro

He said this. President Biden is very clear on ensuring that we have the first woman on the moon and the first person of color on the moon. So the astronauts are recently announced, and we've got three Americans and an astronaut from another from another country. So not only is there a prioritization of going back to the moon, there is a desire to go back to the moon together with other nations. And that fourth astronaut is Canadian. We're going with an allied partner. So there is a lot of excitement and the first test of the Artemis program happened last year was a successful rocket test. And then the astronauts are to fly and in two years, and then we have follow on missions. So it's a mission with multiple parts. But we're very excited to have the first woman in person of color on the on the surface of the moon in less than two years. Now with with the excitement on the civil side, we also have this excitement on the commercial side with individuals, which in itself is a seismic shift from where we were historically 60 years ago when the vision for space came from a president and now we have private individuals who are innovating in space, looking to lead in space, looking to go to the moon, who are supplying a lot of critical services, civil side for NASA, the defense side as well and are looking to go to Mars as well. And what we see here is just an abundance of innovative technology that's going to come out of it and space manufacturing on the surface of the Moon robotics technology and space servicing. This includes servicing satellites that are low on fuel. In space, this includes tagging maneuvering satellites and of course what works in low Earth orbit is different from what will work in Neo or geo. So we have to consistently innovate and update our thinking and think differently about solutions that are that are for each respective orbit. We also have to think about where not just supply chain resiliency but where the technology is coming from. There's some technology and research capabilities that will live in the government within the government. And then there's some where we rely on the private sector to provide so those are those are some of the strategies and guidelines that we have to follow to ensure that this ecosystem remains exciting and remains remains at the core, a system that strengthens and meets our greatest aspirations.

Salvatore 'Tory' Bruno

David, I just have to enter that because as an as being so modest, this is a moment in time. Our human destiny is going to be changed by this exploration. We now understand that there are more natural resources on the moon and just beyond the system or space than we can comprehend of this is going to move our species to a post scarcity human future. Outside walk around the outs in the institute. We're zero escaping and we're conserving materials and we're thinking of a model in which we are living on a planet with ever diminishing resources that will eventually be used up and our children will not have the lines where we have now. When we go to space and develop these resources that defy human imagination, where there is such abundance. This will change

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everything. It'll start on the moon. It's possible because the resources are there but also because rocket fuel now exists on them. Water 40 billion metric tons the most energetic rocket fuel we have when it's decomposed in the liquid hydrogen, liquid oxygen and we will go from there out further into the solar system. This is the time you will tell your grandchildren that you were there when the destiny of humanity changed, and Ezinne is part of that.

David Ignatius

That's that's cool. Well said you sound like like my boss, Jeff, who says our descendants will think of Earth as a national park. Then they'll visit occasionally to be really pretty and they'll enjoy it. So John, every time I try as a journalist and also up on the stage this morning, to ask detailed questions about space weapons systems and what DoD is planning and how we're going to compete with China. The usual answer is in effect, I can't talk about in this classified and I'm going to read you something that somebody you know, well, the former vice chairman of the Joint Chiefs John Hyten, General John Hyten said back in 2021. He said, in space we over classify everything. Deterrence does not happen in the classified world. Deterrence does not happen in the black meeting black classified superclassified systems. Deterrence happens in the white ie in public discussion and expression of some of what we're doing. So you said yourself a couple of months ago, that space is over classified. But I know from our conversation earlier today that you think General Hyden overstated that matter. Talk about this balance. These are super sensitive secrets, but it is important that the Chinese get some sense publicly, so publicly, isn't it?

John Plumb

So I'm going to take your question in two parts and thank you for this question. I'd say the first part is yes spaces over classified I've testified to this multiple times. Part of this legacy, right, just the basic idea of being able to take a picture from space, when we were really the US government could do that. That's the thing we didn't want people know. Well, now you can buy pictures from space online for I don't know a couple of dollars and I think why that should still just automatically be classified because it comes from space where a really high level is, I think we need to get over and we are working on that. I will say there's 100 problems that we're trying to figure out how to make things at least less classified if that is separate from this discussion about us typically called reveal conceal discussion. And I will just say that deterrence in the mind of the adversary, or the potential adversary, and is what they think. Right. And I do not need to reveal anything any secrets, the United States of America inside the beltway, so that we can have fun conversations. I'm not trying to be pejorative, but I think it isn't. That is not where to turn sounds. Alright. And we have entire China. Very enjoyable while listening to the ambassador here earlier today. China has entire statecraft and really steal secrets almost constantly. That's that's open information. And we need to keep them guessing there's value and ambiguity. They are deterred. We need to make sure that continues happening. I do not think that that requires un classifying anything.

David Ignatius

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So just to push this a little further, I got the sense from General Dickinson this morning, that when we think about deterrence, because of our deep concern, and this has been expressed by Vice President Harris, among others, about creating more debris fields and space to kinetic attacks, that we are really not in the kinetic attack business that we're looking at other things that can be done jamming, use of directed energy go down a list, am I right in thinking that that's a basic kind of guidepost for you?

John Plumb

So the Secretary of Defense has put out you know, tenants, but really, the United States intends to continue to be the world's responsible leader in space that includes the United States military, and what is in the interest of all spacefaring nations and companies and private entities is the safe, secure and stable space domain and that means minimizing debris, and we need to make sure we're minimizing debris and normal operations, make sure we have ways to remove debris if things go wrong or something fails during normal operations. And any military operations you might consider are included in that. So how do we make sure that goes what we want is no conflict. What we want is a secure stable domain it is massively important to the US economy is also massively important, really, to the world space is increasingly valuable to every citizen around the world and we need to protect it.

Salvatore 'Tory' Bruno

To put a point on it. Just to help my friend John, with with understanding maybe where you're going with the question. Yes, space is a unique domain. It's not like you're it's not like see, if an airplane is damaged or ship is damaged, you're rapidly leaves the domain spaces like that. If you do an ASAP test, like China did in Russia did, the material stays in orbit it's inherently global in circles the Earth if it's in Leo, every 90 minutes from the Chinese test, there are still 1000s of pieces of debris. It's a global commons, for which when we found it, we're all stuck with it for many, many years. And in the world of deterrence, John astutely pointed out it's in the mind of the adversary that there's a couple of different schools of deterrence. There's the classic many of you familiar with strategic nuclear deterrence. I spent decades in that, where we say go and attack do us harm will artificially impose retaliatory costs on you that will make it not worth it. There's a whole nother School of determines that one is inappropriate for space for a number of reasons. If we retaliate on the ground, there's likely loss of life. There won't be immediate loss of life from space attack, so it's inappropriate, morally ambiguous. If we retaliate in space, we felt the commons. The other school is go ahead and attack you won't work. And then you'll suffer the economic sanctions and the ostracization amongst the global community. That's where we are focusing, making our assets resilient. So that there's no Pearl Harbor is the first punch. They can take a hit and keep on going or asset should be less accessible to adversaries the weapons technologies that they are developing now are things that I personally worked on many years ago as Some people in this room have we set them down to prosecute the global war on terror. China stole that technology 20 years ago, they've been working on it all this time. And while that might sound like a daunting challenge, they have



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that 20 year advantage on us of applying it. It's also an opportunity, this country innovates we will innovate and invent solutions that render those old ideas of our own irrelevant and when we do that, we will send them 20 years back to the shower. We will deter them by showing them their actions won't work and will maintain peace and space, which is our ultimate goal.

David Ignatius

All right, well said again. So we're done about five minutes on as quick last question, so as to jump, isn't it? We talked about rules of the road for space. This morning. I'd be interested in a brief summary of where the White House is on that. And in particular, I'm curious about whether there's any dialogue between the United States and China that's meaningful about spaces or any channel in which we're exchanging useful information about this domain that you share.

Ezinne Uzo-Okoro

You mentioned that the Vice President has discussed in orbital debris and that's a great place to start with on norms. So we have been working on policy and norms of behavior To ensure that we are leading by example, leading bilaterally leading multilaterally and ensuring that we all use space responsibly. The Vice President announced immediately almost immediately after the last ASAP test, we witnessed that there would be now ban on us direct descent, anti satellite missile tests.

David Ignatius

shooting shooting that the satellite with kinetically and leaving all debris.

Ezinne Uzo-Okoro

That's right, because as Tory's explained we have this field of debris that is not just large versus small and lethal, sometimes degree that's less than five centimeters can take out an entire spacecraft. So that was part of our response, but it's rooted again in ensuring that we are maintaining safety. And in that case, it was safety for our astronauts. Who were put in harm's way during that particular test, security stability and again sustainability of space for the next generations and not just in low Earth orbit again, but for other orbits.

David Ignatius

any any dialogue with the Chinese?

Ezinne Uzo-Okoro

not particularly

David Ignatius

Just want to ask the question, so let's go to the audience. Please raise your hands and identify yourselves if you've got questions for our panel. Yes, sir.



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Audience question

I was talking to someone who's planning to launch data centers, land on the moon and operate there. He told me that China has already staked claim to land on specific parcels of land. Can you talk about that and what type of a threat is that to us, John?

John Plumb

So let me step back from the specifics of that question, but just say, I don't think militarizing the moon is a good idea for anybody. I also think that the logistics chain for that is unsupportable and a military contested environment. It's I think there are treaties that say we should not be doing that I'm not. I'm not tracking that specific instance. Obviously, if China was wants to land on the moon, then they should do that. And the US, is going to land on the moon to try to build infrastructure there as well. And that should all be healthy competition and exploration.

Ezinne Uzo-Okoro

We continue to follow all the treaties that we work very closely with the UN. So our relationships with the multilateral institutions is are strong and we have to we all have to both us and our strategic competitors we do have to follow those treaties.

David Ignatius

Let's say we grab another question or two any any other folks? Esther? Yes.

Audience question

Thank you, I'll just to pick up on that last point about creating norms for operations on the moon for two things. First, of course, that we are parties of the Outer Space Treaty, where which does occur in Syria. So one question is, should what sort of international conversations should we be having about spots John indicated to us in China, not the only countries who are planning to send it to the moon hewas put them let's put that to him, or John or right because he's working on we

Salvatore 'Tory' Bruno

were very interested in developing the moon and natural resources there. When we look at the body of law nationally, internationally, there's some pretty big gaps, right? So we're not supposed to stake territorial claims and we shouldn't but it does also say that we should any nation should develop resources that are there. Well, that's easily said. That means it's a business. I have to be able to go there. I have to at least for a period of time have exclusive access to a site if I'm going to extract minerals or water to make propellant I need to be to own thestuff that I extract that's not currently covered by any legal regime. I need to be able to sell it or it's of no value to me to own it, and so on. And all of this has to be international. So there is actually still a pretty big gap between the theoretical and the aspirational ideas that began even under the Eisenhower administration, believe it or not, and now actually being in a place where we can act on it. So this is a classical,

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International, UN, perhaps led by the west where we value things like innovation and the ability of people to invest in and create wealth for swatches of human beings. Now's the time. Let's get going.

David Ignatius

So maybe Henry Kissinger talked about this issue this week and his meetings with the Chinese defense minister and others who knows, so great, conclude the panels we've run out of time. This just reinforces one of my abiding beliefs these days, that space is cool. Space is just so interesting intellectually, as a business. I want to thank our three terrific panelists, please join me in thanking them.