Zero Gravity, High Stakes: The Future of Space
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https://www.youtube.com/watch?v=h_QIsjQWuK4&list=PL7fuyfNu8jfP8TWSJzPCsyScNGwbW6xbQ&index=10

Speakers

- General Tim Ray, President and Chief Executive Officer, Business Executives for National Security; Former Commander, Air Force Global Strike Command
- Nina Armagno, Chair, Council on Foreign Relations Task Force on U.S. Space Policy; Former Lieutenant General, U.S. Space Force
- Jane Harman, Chair, Council on Foreign Relations Task Force on U.S. Space Policy; Former Congresswoman; Chair, Commission on the National Defense Strategy; Aspen Institute Trustee
- Robert Lightfoot, President, Lockheed Martin Space
- **Moderator:** Gordon Lubold, NBC News

Gordon Lubold
Great to be here. Welcome honor to be here, I guess. Now the first panel talking about a great topic. I was chatting before we came up here that has been prepping for this panel. I was talking to various smart people I know what's a good thing I should think about on space questions or whatever. And one guy was particularly smart. Jane and I were just chatting about he said, Yeah, like, I want to know more about space. I just don't have time, or I just didn't, really haven't spent a lot. I should be more into it, but I'm not. It's kind of like I should teach or I should learn Mandarin someday, but I just haven't gotten there. So I think with that, I what I'm hoping we can do in the next 37 to 40 minutes is have a short conversation with smart people, obviously about this topic, but even recognizing the caliber of the people who are gathered here today. Not everybody knows enough about space, as much as they might like to. So I'm hoping that kind of, one of the takeaways here, ultimately, is that you come back or come out of here thinking like, maybe I should be thinking more about space. I think I probably will now having prep for this and then have this conversation, you know, where in this moment, President Trump has focused some on space. He did create space force. You know, candidly to, you know, people thought it was kind of a joke and this and the uniforms, and it was like Star Trek or whatever, but it's actually like it was a smart move. And I'm not saying that politically. I'm just saying I think we're gathered here to talk about this for a reason, and we'll get later to golden dome, which is a signature initiative of the President, but somebody in the audience who shall remain unnamed, gave me a good question to kind of start out with the panel, because I'm hoping to kind of get like a two or three minute take from each of you on kind of how you see the world in this context, but recognizing a lot of People don't necessarily understand what space means, what it is, how it affects us, our phones, our GPS systems. The question is, what is a day without space? Assuming recognizing that we don't always know what a day with space is. So we can just go down the line on this one. Jane, if you want to start, I'd love it.

Jane Harman

Good morning everyone. I would just say a day without space is a catastrophe, both personally, commercially and strategically. I can't imagine how many of you use GPS. Oh, look, guess what wouldn't work. Thank you, Lockheed, by the way, for helping us with GPS. How many of you use cell phones? How many of you? I mean, we could go down the list, but it is not just personal use and personal comfort. I would argue that everything we do, and certainly militarily, something I have focused on over time, depends on space. The US is the largest user of space. You can hear more details from the smart people to my left, and we are the most vulnerable in space. And I'm sure we'll get to China and asat tests and what everything else that China is doing to win the race against us in space. But I would just say a couple more things. When I was elected to Congress in 1992 in the Aerospace Center of Los Angeles, where the LA Air Force Base is, it now has a new fancy name and the Aerospace Corporation, nobody knew what it was. Nobody knew how you could have an Air Force base that had to do with space, and the firms that worked in space were small, but I mean the big names that you all know. But then 20 years later, as our task force report for the Council on Foreign Relations, which Nina and I co chaired, documents, there's been an explosion in space, and leading that explosion is not the US, it's China. Final comment, Mike Pence, whom I had served in Congress with for five terms, approached me during Trump one and said, We really need a Space Council. And he was the driver of the focus in the White House on space. I would say in bipartisan fashion that the focus in space lagged in the Biden administration, and with the exception of some guy who used to be my constituent, his name starts with E, wasn't really a focus of President Trump, and needs to be much bigger focus of President Trump and all of us.

Nina Armagno
I'd like to just pull on the theme that Anya stated yesterday about the entire theme of this conference. Question, your assumptions? We assume that we're going to have the capabilities that come from satellites. The United States military certainly relies on exquisite capabilities that come from satellites, from communications, strategic communications, all of our nuclear command and control go over satellite systems, our weather, our missile warning, yes, GPS, bringing it to this room. You know, for the military, not one operation, certainly not any joint operation, but not even any single operation. From that happens in the Army, the Navy, the Air Force or the Marine Corps. Nothing happens without space. So the if you question your assumption, a day without space, this room would be dark. You would have had to pick up a map and walk here. There would be no air conditioning. We would not even be projecting our voices, and it's not because the satellites are controlling every single thing in you know, individually, but very specifically. It is that GPS timing signal that has become so important to everything we do, from running the timing on your phones, which coordinates everything else that happens with your phone, to the timing that runs our energy grid, our banking systems. It is that important. So assuming that space will always be there is a very dangerous assumption, and that's why Jane and I co chaired this task force. Little plug, I actually have some of our reports here, or whoever would like one, I'll autograph. Yes. Would you like to Jane with me? Okay, special autograph versions of our report. The reason I love our report is because it is so digestible. We set up the situation up front, which is our satellites are relied upon by not only the United States but the world. They're vulnerable to attacks by Russia and China. We can get into the threat later, if you'd like, the number of satellites in space are growing thanks to launches

and mega constellations and our amazing commercial space and industry space capabilities. Debris is increasing, though, because of those launches and because of satellites that are aging out. And this all comes together in what I call a train wreck, unless we as the United States make a point to prioritize space. This is so digestible because it gives you seven findings, seven recommendations, and you can read it in about five minutes, we put everything right up front. Thanks to Jane Harman, who cracked the whip on our task force every time we met. So you know, please pick up a copy at the end, and Jane and I will sign for you. Well put,

Tim Ray
yeah. Thanks for being here. My first chance to come to this forum, and so was hoping to just be in the forum, willing to find myself on my drive up from Denver that I'm on the panel. So so it's great to be here, sincerely, and I know many of these people here, so great opportunity. So where I come from is a couple of experiences, I think that helped shape this. Spent a lot of time in the nuclear community. And so what it means to operate the nuclear forces, little bit of time in the acquisition community, with some success with the B 21 a few other things, and some some success with the operational experience of being the deputy commander in Europe for a couple of years from 16 to 18, but more recently, running business executives for national security, a nonprofit where we bring the business leaders, the non defense primes, alongside the government of delta and think about industry best practices. So I'm really much more informed now on the finance side of things and what it really takes to get done. When I first think of a day without space, you would all be wise to worry about nuclear command and control. For those of you who would like to see us not do nuclear weapons, you would like to know that we could not do nuclear strikes and turn them off, which is really dependent on space, or that, if we needed to, in that regrettable scenario, that we could use it completely dependent upon space, and we have to be able to do it. But really, in a bigger sense, the things that we would call national security 10 years ago was a pretty small group of topics we could all quickly agree on. And 2025 that size of topics now expands to almost the entire society that we live in because of everything we do, from supply chains, grid management, energy abundance, not just energy resilience, but you know, how we do our workforce, how we deploy capital. And I think now for us to go forward into this area, you're going to have to have a tremendous relationship between finance and freedom to be part of the underpinning conversation. You see the gridlock in DC. It can't get there by itself. So how you manage the development of capabilities in the public and the private sector, and how you master that art, I think, is going to be one of the things that define our success going forward. So that's how I see this as a really important part of that chapter.

Robert Lightfoot
Yeah, I think my take on it is a day without space is simply chaos, right? Don't know if we we really understand that we talk about space, the folks that work in space, we understand that perfectly. I'm not sure the general public, or a lot of people that are very educated understand that. And so when you think about what we what we began to use space for decades ago, it was to allow terrestrial operations, operations on Earth, things that would happen, whether it was business, whether it was finance, whether it was military, reasons right for that, that purpose, a fundamental shift probably occurred as we got more dependent on space. I think the fundamental shift was 2015, when, when, when the PLA decided, or China decided that they

declared space a war, fighting domain, and when they did that, they actually changed the narrative, because everything we had built before that was to support things that are happening here on Earth, so we didn't have to worry about protecting that domain. So if you think about the domains, when we when we talk about domains as land, sea, air, cyber and space, I think cyber and space, and so I'm glad their panels on both today are the two that are least understood. You can see land, you can see sea, you can see air, you see planes, you see tanks, you see ships, right? That's a you get that vision. You don't get to see satellites. And I think the understanding, if we can, have one takeaway from from today, would be this group, this thought leadership group, that that's assembled here has a better understanding of your reliance on space and why we need to protect it, and what's so important about that domain in our daily lives, but also in the security of our country.

Gordon Lubold
That's great, real well put. And also, to drive home the point, we're not talking about just a day without space. Potentially, it's not like lights out and we lose power for some hours in our house. This is like, potentially you don't just turn it back on. Whoever attacks space or attacks the satellites that control our phones or whatever else. It could be a much longer term proposition. I wonder if we could just kind of dig down a little bit more on the threat posed, particularly to the US by our as Americans, reliance on space satellites all the rest of it, you know. Well, let me just back up and say, I think we understand that American capabilities in space are amazing. You guys can speak to that if you want. But it's in particular, China's ability to blunt some of those capabilities, their counter capabilities, that I think, is where you see the rub of this kind of space race. So I wondered if you could all just talk about that, talk about the threat. And not everybody has to answer every question. Everybody can jump in. You all know each other jump in, argue, disagree, agree, whatever. But whoever wants to jump in

Nina Armagno
first, our satellites are vulnerable, because when they were first designed and built and taken through a very lengthy acquisition process. There was no threat in space. And we are talking about like, unfortunately, a 20 year cycle, pretty much the same as a fighter aircraft, actually. I mean, you know, these exquisite military systems have have had the luxury of taking years and years to develop, but we don't have that luxury anymore, because Russia and China have built weapons and deployed them in space all the way back to 2007 when China launched an anti satellite missile, destroyed one of their own defunct weather satellites, created 1000s of pieces of debris. And you know, space in space debris creates even more debris. So it's, it's, it was a terrible situation. At first, the community said, Oh my gosh. How could they be so irresponsible? But very, very quickly, the community said, this wasn't irresponsible. This was a statement. This was a show, a demonstration of their capability to destroy not only Chinese satellite, but any satellite that they could reach, and this was in lower Earth orbit. Today, they can reach geosynchronous Earth orbit, which is 23,000 miles above the earth's surface. That's just Russia. China have ground based anti satellite missiles in space. They can attack our satellites, and they have, especially Russia has demonstrated this. There are ways to attack our ground control stations. I mean, that would just be a kinetic attack. We're vulnerable to cyber attacks in space. Of course, everything is connected from the satellite, the connective tissue to the ground

segment, and then the connective tissue to the user equipment. And for this audience, the user equipment is your iPhone. All of those connections are vulnerable, and so that the Space Force was actually established to protect and defend the domain. And we can certainly get into to that, but the threat is real. And I think Jane wants to add to this.

Jane Harman
Well, I wanted to segue to the threat to commercial and personal use of of space, because it's not seamless. The military uses is, you know, a specific focus, but the rest of it gets hurt too. And just think of all that debris called Space junk floating around that can attack, not just military satellites, which are vulnerable, but commercial satellites. And again, let's go back to GPS and all the things we can't live without. All of that stuff can go down basically accidentally, maybe intentionally, but possibly accidentally, because of things crashing around in space. So so our report doesn't just focus on the military threat, which is crucially important, and this is the Aspen security forum, but we also focus on search and rescue missions, on how to regulate space junk, on how to regulate space. Space doesn't respect national borders. I mean, President Trump can issue any as many executive orders as he wants, but he's not going to take over the management of space with an executive order. Even Elon Musk, with his prowess, isn't going to take over the management of space. And just one little segue, in the 90s, when I was in Congress, this young South African called and he was in a rental facility in El Segundo in my district. El Segundo is also where the Aerospace Corporation and the and the LA Air Force Base are. And he said, I want to talk to you. I'm building these less expensive missiles with Russian technology, and I want to sell them to the Pentagon. So I don't know what your reaction would have been. Mine was really and shows what my judgment is worth. But more seriously, I'll just make one comment on that. He has shown his incredible genius, but so have other companies, one of whom is on this platform, and it is important not to rely on sole source contracts. It's important for our government to use all the innovation the private sector can provide. This was a recommendation of the Commission on national defense strategy that I chaired as well, and to leverage respect, applaud, help amplify the prowess of the private sector?

Tim Ray
Yeah, I'd like to pitch in there. I always think about these as the margin to respond. You can't, you know, on the surface, to stop somebody from acting, you need to deter but the capacity to take a punch and respond appropriately is a really important part. You know, what James has said is a really important piece about what the industry can do. You've got a really big challenge in our country is that we've never scaled real capability since the end of the Cold War. We bought a lot of things for the war on terror. We've lost that gene, right? So how do we tap into that? Innovation becomes a question of mastering the finance question of how we get the players on the field. You've got about 8 billion a year playing in the venture capital world, and it's pretty stable, but you're not seeing the private equity world come in, because there's no cash flow, free cash flow scenario. So when you want to say, go faster, tap into it, there has to be a realistic approach to the finance piece of it to actually pull it off, and so you're pretty healthy from a venture capital perspective. I think the relationship between the Space Force in the commercial space industry is really a great example. But because there's been that venture

capital that's played, there's a pool to pull from other sectors of the industry are not as fortunate. So there has to become this acceptance of who can play and what we do with them, and the fact that we're not going to pull all those venture capital people across. You actually need to reconcile what you're going to do with the things you don't buy. So the Chinese don't buy them at times on the dollar. But to tap into that innovation, we don't have an innovation problem. We have an adaptation problem. We have a scaling problem. We are very good at innovation. How do we pick up those pieces currently, put them together and build margins? The real question, and that takes all those great recommendations and goes to the next if you think you can go to Congress and make that happen, that's that's probably not a great strategy, but really, knowing how we tap into the commercial financial markets to make that risk reduction a reality, I think that's going to be one of the formulas for success.

Robert Lightfoot
Yeah, I think to pile on that one, I think it's really important. I've got a lot of my competitive mates out here in the audience that build these systems, and how do we bring in the new ideas, but help them scale. You take a company like Lockheed Martin. We've got plenty of scale, we got plenty of legacy, but we're also used to exquisite and bespoke. We do plenty innovation, but others do innovation too. And how do we partner, as opposed to compete, right? And that's the way we're going to deal with this threat. Because the one thing that we're, I think the biggest threat we have is time. We can't buy time. And if you look at the threat space in the last I forget the numbers. I think since 2015 China has increased the number of satellites they have for intelligence, surveillance and reconnaissance by 500% 500% I don't have, I don't have time to go bespoke and perfect and everything. I need to get the capability on orbit that deters. This is a deterrence discussion, not necessarily a defeat, defendant defeat discussion. So so our ability to, as maybe a more established company, to work with folks like, like general. The general is talking about, we've already been doing that. We're doing that in several places with our technology demonstrations, but that's the way the country is going to be more successful. I think going forward. The other piece of that, really, if you think about threat, and then we're talking about in space, the threat is, is, can we get the workforce, how do we excite the next generation to come into science technology, as you can STEM, STEM roles, right? Engineering, Math, that's drying up. China's graduating ridiculously more engineers than we are. And so how are we going to how do we incentivize that as well, so that we've got the workforce? I mean, in some cases, it's not about the money, it's about the time and the people and the infrastructure. Yeah, good point.

Jane Harman
Could I just add a PS, about the United States Congress? Anybody ever heard of the United States Congress? Anybody care about the United States Congress? You know, I admit I bailed at a time when it was becoming more partisan, and headed the amazing Wilson Center for 10 years. Sadly, that is going away due to drastic cuts by this administration. But my point is that Congress does have a role, a big role here. It did have a role. It does have a role. For one thing, the proposed budget cuts NASA by 25% and if you think about what NASA does, sure you all aware, a lot of it is hard, hard power, you know, helping our military project power. But a huge amount of it is soft power, through all of the ways that it excites the world about space, the

Artemis Accords, which are a program to enlist states to go to Mars, and sadly, with less money, that's not going to be funded. And things of that nature, all of the advanced ways we have viewed into space, and the gift we've made to the world about what we can see in the universe, it's just astounding. So Congress can restore those cuts. And why I wanted to raise this topic is Congress is working on a bipartisan basis to restore the cuts to NASA and maybe even increase NASA's prowess. It's a key agency, and Congress also could help assure that we recreate fund and use a Space Council to coordinate activities in the White House, which has atrophied both under the Biden administration and now under this administration.

Gordon Lubold
So good, by the way, I want to come back to the debris thing at some point, because I think it's fascinating, but kind of stay on the scene for a second. You know, I wonder if you could just talk and help educate our audience a little bit about space force in the context of what we're talking about, like, what does it do? Like, I said, people kind of made fun of it initially, because they thought about the uniforms and like, this is silly, but it's relevant certainly in this conversation. What do they do and how can they help protect the US in this context?

Nina Armagno
Well, let me start by saying that Netflix series called Space Force would still be running if they knew me, because I was the first Director of Staff for the United States Space Force as we were standing up, I have tons of material for that show career. It was hilarious, especially at the beginning when they showed the rivalries among the services and the poor Coast Guard was always at the bottom of the rung no matter what. Sorry, Coast Guard, I love you. We, you know, we can't function as a nation without you. But they really then they got silly, but they would have had a lot of really good material from me when we were standing up the Space Force. The impetus was the threat. There needed to be a group of experts that could control their own budget. Will be given a budget, control the expenditure of that budget, control their their people, and develop their own workforce and and focus on space each and every day. And that's what the United States Space Force is doing. It came from the Air Force. It was a major command. It was Air Force Space Command, and largely Air Force Base command just moved over and became a service. That's what it looked like the first few weeks and months, certainly, of the Space Force. And what I what I like about what they're doing now, yeah, those first few months and years were about the uniform and the song and it was just, it was an effort to establish a separate culture. You know, internally, a separate look externally. But what I like, what they're doing now. I mean, there are, there are, there are doctrine documents being written about how not only to protect and defend in space, but how to ensure that those capabilities that we have continue to operate through conflict, so that the Army, Navy, Air Force and Marine Corps in all domains, air, land, sea, under sea, can continue to function. You know, to to win wars. That's what the Space Force is all about. But there's a new domain, and in space with the threats I did explain earlier, there needs to be a very deliberate approach to not only protecting and defending our satellites, but just like any kind of other military you we are now starting to talk about defenses and offensive capabilities in the space domain. Congress is on board. The Department of Defense is on board.

Gordon Lubold
Wasn't there a cut to the Space Force budget, though, and then maybe reconciliation helped it out?

Nina Armagno
The Space Force budget is flat. The first couple years, you did see almost a doubling, but it has been flat. And, you know, I have been critical of a flat budget for the Space Force. They are mission focused. They are small, maybe not as savvy as the other services. As far as arguing for their capabilities when you see, I'm just going to be honest, when you see the army growing in in those first couple of years, the army growing and the Space Force, you know, 3% of the DoD budget, that's a fall and and you're right, the reconciliation bill has very much boosted space capabilities, or has a promise to as well As golden dome.

Gordon Lubold
I want to come to Golden Dome

Tim Ray
But let me throw something on the top of that, because I was on the sidelines watching it. Know Jay Raymond pretty well, and listen to how he thought about it. I think if we prevail as a nation in the next 50 years, one of the most strategically important decisions we made was to build the Space Force. It will be an elemental move, because you went from an Intel perspective in space and a lot of very expensive programs, you needed somebody as savvy as these guys to grind the gears with Congress to shift, because that was really a, not a very ungraceful transition, but there was no other way, right, and you can't get This without Congress, but I will always admire the strategic wisdom to go down that path and to create this DNA. And I'm a strategic nuclear guy, but I'm their biggest fan because of how they did it. It was a huge lift, but you really needed those experts in the room making Congress allies and to get those big shifts in the programmatic piece. But, you know, I think it's going to be a game changer for us before.

Gordon Lubold
I'm just fascinated by the debris thing, so I just want to come back to it really quickly, because I'm pulling from the report that we can now plug, once again, 40,000 items in space that are bigger than 10 centimeters long, traveling at speeds of up to 18,000 miles per hour, which, by the way, I didn't know that was a thing, what's but like, but that's like, a tangible thing that people can kind of like, grasp onto. Okay, there's a bunch of litter up there. So how does, how do you manage the problem? How do you work with allies and potentially adversaries to manage even that problem? Anybody?

Nina Armagno
Hey, I just want to see if Robert will jump in here wearing his NASA hat, just talking about the practical impacts of debris on the International Space Station.

Robert Lightfoot

I think I was going to actually mention the speed, right? I don't think people realize that. You know, to escape Earth, you have to get to 17,500 miles an hour. All those rockets that go, they look really pretty, but ultimately there That's how fast they're going. If you're going less than that, you're going to re enter. Okay, so all this debris is cruising around up there, some greater than 18,000 so think about something here getting hit by a piece this big. Let's go in 18,000 miles an hour, it's gonna destroy it, right? And it doesn't have to completely disintegrate it. Well, the International Space Station, the walls on the International Space Station are pretty thin, and we used to deal with what we call micro meteorite debris all the time. And there's actually safe havens for the for the astronauts and the cosmonauts, where you would get a warning from what's the Space Force? Now they're just tracking all the debris. You have potential. You can't move the space station. Sometimes you can get it out of the way. Sometimes you can't, and people would have to go to their safe haven in case it got hit, because it would depressurize. And then, you know, it's a bad day. It's a Hollywood movie kind of thing. That's not good. So that was part of the and, by the way, it's in low Earth orbit. So this debris, no matter where it starts, is ultimately going to come decades. By the way, in some cases, it's ultimately going to come down and re enter and so I think that's the challenge, is everything between those debris sites, the anti satellite test, you talked about anything from there to the basically, the atmosphere is in danger.

Gordon Lubold
Is this the common problem that the US can work with allies and others?

Jane Harman
Yes, so, and this is one, I think some of the low, lower hanging fruit that we could work on, I mean, much harder issues are nukes in space. I'm sure we're going to get there, and the China challenge, oh, that but, but everyone has an interest in satellites not being destroyed accidentally by space junk. And satellites are hardened now. They're much stronger, more resilient than they used to be, but not, not totally. And another piece of this is space traffic management. Think about satellites crashing into each other, and what tools we have. We're good at, good, not perfect at air traffic management, but we don't have an adequate system in space. And all of, all of what we do is evolving towards space and away from some of our older analog. I don't know that anything is analog anymore, except me, but our older analog systems and I, we call for global systems, if possible, to manage issues like this. And the hope is that it would, it would from from more mundane, commercial traffic issues, it would somehow build the trust that's necessary to do what we really, really need to do, which is to have rules in place to regulate space so that we don't have a nuclear war in space, catastrophic, obviously, and those rules should be put together and established by a group of international experts, bringing in commercial space and the space industry, literally bringing them to the table for policy decisions and establishing rules of the road in the space domain.

Nina Armagno
One of the things that make this, makes this probably the scariest for me, is that there's, there are no rules. There are no rules. The very I mean, you know it ships have to pass to the right of each other, left, whatever it is that ships. Okay? You drive in our country, you you drive on the

right side of the road. You drive in some other countries, left side of the road. Back to horse riding. It's left, left. I'm not a horse rider, but I learned this during our study. You, keep the other person on your left, nothing like that in the space domain. And so with all of this extra activity up there, be it nefarious or just the fact that China is growing exponentially in space and using space like like we do in the United States, there is a chance for miscalculation. That is the and then you add to it that we don't communicate with China. Ambassador Burns mentioned it yesterday. Communication is the biggest thing, the biggest breakthrough that we need to make with China. Supposedly there is a hotline between the Pentagon and China. I've never seen it. T Ray, okay, he's not confirming nor denying.

Gordon Lubold
There is a lot. There is, I don't know if they pick up. They don't pick up, right?

Nina Armagno
The United States. Is the one who does space traffic management. It's a small squadron in Colorado of military Space Force guardians. They do it for the world, and they email China when there's going to be a collision or a potential collision, and do you think they get answers from those emails? No. So we need an international approach, and we need China to be at the table with us.

Gordon Lubold
We can explore that further. But I want to, if this thing's right, we have not that many remaining minutes. I want to hit golden dome real quick, because I think it's the, again, kind of a signature initiative by the President. I think it's a tangible thing that people can kind of be like to understand, kind of a system of systems to defend the American homeland. It's in its nascency. I'm not sure that there's a strategy necessarily that the administration has settled on various for various for various reasons that, but the President did throw out $175 billion number. I think somebody suggested to me that that number was maybe pulled out of space a little bit. But does the US need a golden dome? What's changed since President Reagan suggested Star Wars years ago, and is the President's vision, such as it is realistic for everybody.

Tim Ray
I'll tell you, divorce yourself from the source and embrace the idea that you now have two nuclear triads. You have to deter the Chinese or hammer down on matching us. Your triad is ancient and really struggling. You've got to rebuild it all. You can't keep up with two. So for every two I build, they just have to build one. You have to go there with missile defense. You saw my time in Europe. I was the three star who would run the Integrated Defense Systems with Israel. It's a numbers game, bottom line. But the homeland is no longer sanctuary on many dimensions, and you cannot deter, you know, with one triad without changing the relative magazine depth or adversaries. You got rogue actors, and we did great with with the North Koreans. But this is something that is going to be paramount. It's it's going to be key to our survival. It's going to be a huge infrastructure bill. It's going to be a huge tech bill. It's a big space piece. But we don't have the luxury of waiting to debate this year out of time and times the end of it.

Robert Lightfoot
I think the general said it, well, the difference between now and the Reagan era two things. It's just the threat space is totally different, and the capabilities of our adversaries are not just ballistic missiles, right? That's what we protected against. Now we have hypersonic glide, yeah, which is a tough putt. It's just a tough putt, right? And then the and then the second piece to me is we have a lot better technology than we had back then, and it's proven out a lot of technology is the same tech, the same technology we're seeing in the Middle East will be brought to this will be kit that is brought to this battle from a goal of dome perspective. And while we built all that from a deterrent perspective, it's working pretty well.

Jane Harman
I would just say I think the concept is worth pursuing. But if it eats the whole defense budget, and if it explodes our debt even further, that's a huge new vulnerability for us. So we have to do this carefully, strategically, and not just go to a sole source contract. Think somebody whose name starts with E, and which is what I think, Jen, I got that I generated this, although there are real threats. Just OK, that's not a partisan comment, Nick. I don't know where Nick is. I promise it's not, because he was my constituent. So OK, but my point is it needs to be considered in a context, and this commission that I chaired recommended that we have to use all aspects of national power, including soft power, to project adequate us strength against our enemies, China, Russia and others and rogue actors and obviously, terror groups. So let's keep that in mind as we debate this.

Gordon Lubold
I have one question for Robert please.

Nina Armagno
I just wanted to say I like the approach stitch together what we have currently and integrate it. That's That's not, you know, we don't have the capability today for all of those piece parts to communicate in any kind of a defense, a defensive way, only facing out over the Pacific and only for essentially North Korean ballistic missiles. So I like the fact that the first step is to take what we have and integrate it and then build and I like that some of that space technology, space based interceptor, is a program that is being funded under Golda dome. I like the fact that maybe some of that tech can be applied to the needs of your Space Force

Gordon Lubold
in terms of capabilities that exist now. Industry has some bad and Patriots are the things that we hear about all the time. We hear about it, not only in this context, but in the context of the operations in the Middle East and all the rest of it. Everybody wants a patriot, more dads, more interceptors. Can industry scale quickly and make enough for the demand?

Robert Lightfoot
I think it's to what General said about infrastructure, right? Yes, we can scale, but again, it's time. It's going to take a little while to do it. And I think what you'll see, I mean, not to make it

political, but the administration is now looking at funding munitions ramp ups, and that's in the reconciliation as well, recognizing, what is that magazine depth? What are we going to need to go do that forward? And so those fundings happen is an industry is ready to take that on.

Jane Harman
But there's a lot of work for the government to do to integrate the tech sector and the innovation sector, which is mostly outside of government, with government procurement. Government Procurement was built in the 14th century, and it is absolutely mind boggling how inefficient it is and how new inventions never get anywhere. It's not just funding, it's actually adaptation of of the technology. And the good news is the Pentagon does have something called the Defense Innovation Unit. I think Doug Ben will be here, but the bad news is, she Oh, we can't be here. Pardon me, Doug Beck has magically disappeared. He's a great guy, but the point is, diu is funded at about $1 billion out of an 850 billion growing to a trillion dollar budget. Go figure. And ask yourself, is that enough money to do what? What is really needed?

Tim Ray
Let me throw one last thought, and then we're going to get to hope, if you want the American military to come to your aid, which we absolutely must do, if you want us in your regions, in the Pacific, in Europe, we have to project power from the homeland and is no longer sanctuary. This is in the good of everyone's interest that we do this, because if we want to go to Europe, then we're going to be attacked in the homeland, and we're going to be stopped from a multitude of threats. And so this is about not just about America. This is about strategic depth to take care of our partners as well. Thanks

Gordon Lubold
Thanks so much. I actually had a great closing question, I thought, but I don't think we have time, because I think Niamh has given me the virtual hook. I wanted to get to some questions here. Didn't get that. There's a lot to talk about. Thank you for everybody for joining us. Please join me in thanking our panel, and also a special star for Tim, who stepped in at the last minute. So thanks very much.