Ms. Morgan Brennan (00:03):

All right. Well, good afternoon, everyone. Thanks for joining us here for this panel, and thanks to the panelists for being here as well. Key topic today, we were talking about it backstage a little bit, this idea of the national security innovation base. It's certainly been coming up throughout conversations and I think throughout panels in general today. And so I think just to start, and we'll go on the line, and I'll start with you, Congressman Calvert, how you would assess the state of the national security innovation base.

Rep. Ken Calvert (00:32):

Not good. It's ironic. We come from a country of innovators. So we've innovated virtually every invention in mankind here in the United States, but we've lost our way. Today, to take an idea from the Department of Defense to actual deployment takes a ridiculous amount of time. And so here we are with the problems with hypersonics and problems in other types of weapon systems, which is basically self inflicted. So we have to basically just totally turn around this paradigm and get back on track, where we can get these systems and weapon systems on track as quickly as possible, or we're going to lose any future conflict.

Ms. Morgan Brennan (01:15):

And so secretary Shyu, I want to get your thoughts on the same question. How you would assess the state of the national security innovation base.

Hon. Heidi Shyu (01:25):

Well, I would say actually from my perspective, looking around in terms of a number of companies, I don't see a shortage of innovation. Where I see the problem is they get sea money to develop designs, prototypes, and they die on the vine because our acquisition system is too rigid. So this is the piece that the Secretary of Defense talked about, the valley of death that they fell into. So I'll be happy to chat a little bit later on about what is the initiative we're doing to try to pave over this bridge.

Ms. Morgan Brennan (02:03):

Sounds good. And General Brown, I'll put the same question to you.

Gen. Charles Q. Brown Jr. (02:09):

Sure. When I think about the national security innovation base, I look that it's not just what we do in the department, but it's also what we do with the academia, with our national labs, and what we do with the private sector. And I look at two metrics. One is the access to those, and then how we transition out of the innovation. I think the access is actually pretty decent and pretty good. So a lot of dialogue and discussion, but the transition is where we fail, and fall really short. And I don't know. Shyu just mentioned it. Representative Calvert just mentioned it. Secretary Austin mentioned it today, the valley of death.

Gen. Charles Q. Brown Jr. (02:44):

And so we have a lot of things that happen, really good innovation wise on one side of the valley. We just can't get it to the other side of the valley and scale it and be able to have a mix of what we do from a DoD standpoint, but also from a broader, what becomes a commercial opportunity out in the private sector.

Ms. Morgan Brennan (03:01):

And of course, the valley of death, I think is something we're going to get into and talk quite a bit more here about over the next 51 minutes. But Joe, I suspect you have some thoughts on this topic, on the innovation base, as well as the valley of death, given the fact that you're not only a co-founder of several companies several times over, but an investor as well.

Mr. Joe Lonsdale (03:24):

Well, I agree with what our leaders here have said so far. I might augment it, but there's a couple big problems I see. First of all, there's no top technology cultures within the Department of Defense, and they're not very good at understanding what's a top technology culture or not. So if you ask a great football coach at a university that has a serious football program, they're going to know who's a good football player and who probably wouldn't even make the high school team. They don't have that same self-awareness at the DoD about their computer programmers and computer scientists. And that's a huge problem.

Mr. Joe Lonsdale (03:56):

And it's a huge problem when they're evaluating technology companies they want to be working with as well. So there's a lot of transparency and a lot of work we need to do there. And then I think the other problem related to this, which maybe contributes to this valley of death problem is the way the whole structure is set up, the way the whole system is set up is very difficult. There's so many great Americans, men and women who are leaders in the DoD, but the whole system was designed in 1961 by McNamara back when innovation was much more expensive, innovation was around hardware. It was a top-down system in a time when the main economics textbook at that time, Samuelson was convinced that Soviet Union was going to pass us this centralized thing is we're the best way to run things in the world.

Mr. Joe Lonsdale (04:34):

We've learned since then that there's markets and there's open innovation, they're the best ways to run things. And yet we're not using a lot of the advantages of markets and open innovation and dynamism that we could be using and how procurement works. And so those are a couple of the problems that I think are holding us back.

Ms. Morgan Brennan (04:48):

And General Brown, I want to get your thoughts on that as well. How you see this concept evolving. When you think about, for example, modernization of the Air Force. We were talking about this, you and I, a little bit earlier today too, but the role that software and some of these new and emerging technologies are increasingly going to play in the future and the evolution of war fighting, how you get those on board and how you're able to do it quickly.

Gen. Charles Q. Brown Jr. (05:11):

Well, part of it is talent. Joe, he just mentioned. I don't necessarily think we have to have all that talent in uniform, but enough talent inside the Department of the Air Force or the Air Force that can actually understand it. And part of how we bring that down maybe as I've thought about is bringing some of those that actually have this expertise to come work very closely with us to help be that translator, to help us work through the aspect of understanding what's out there and be able to understand how we bring it into the systems that we have today.

Gen. Charles Q. Brown Jr. (05:42):

In some cases some of the systems we have today, because they're so old, it's not worth the effort, but there's other places where you actually go, we need to start a new, or how do we merge with the current technology and innovation and increase the capability of whatever the platform might be?

Ms. Morgan Brennan (06:00):

So the Air Force has been pretty cutting edge in terms of being able to go out, interface with Silicon Valley, some of these tech companies, AFWERX, for example, to help put some of that seed funding out there, invest in R&D. Just to go back to this idea of the valley of death, General Brown and that transition, what more can be done by the Air Force right now specifically to enable that transition and be able to see some of these companies and some of these R&D projects actually transition to production?

Gen. Charles Q. Brown Jr. (06:31):

Make a decision. What I mean by that is we have a lot of activity on one side of the valley. We've got a lot of companies that we've got excited. We've got a lot of venture capital that has been pretty successful, but we've got to make a decision and pick several of key programs and get them across the valley, and shepherd them across the valley. And when they get to the other side of that valley, we got to continue to nurture them to show some success. Because if we don't do that, then I really believe all that venture capital is just going to walk. They're going to find someplace else to go. And that's the thing we got to do. We got to be very focused on a couple of key capabilities, a couple of opportunities. And I think that's what's going to help us move forward.

Ms. Morgan Brennan (07:09):

Are we at a critical moment, Joe? As a venture capitalist, you hear this, I see you nodding your head. Are we at that moment where if you don't find some transition, a way to cut through the red tape, you're actually going to see that private sector funding dry up?

Mr. Joe Lonsdale (07:21):

There's a lot of money that's gone to work in the venture capital ecosystem, the last three, four, five years. In part inspired by a lot of these smaller programs that have helped get things going. There's lots of hacking for defense programs, lots of smaller awards. And yes, people are watching. Is this an area where people can actually make money? I think there's a Twitter thread by Katherine Boyle, who's one of the great leaders in venture capital at one of the big firms I was mentioning earlier. And I think she put it really well, which is a lot of us are watching us. A lot of people put a lot of money in their work and so far we haven't seen the big wins, because it's so hard. So I think it is a critical moment to figure this out.

Ms. Morgan Brennan (07:56):

Secretary Shyu, how are you thinking about this? During your testimony, your confirmation process in the Senate, you talked about this, in the fact that you were looking to focus on some of these next generation technologies to really be able to support small businesses and startups. As you've now come into this role, you're getting your arms around it, what do you see in terms of the companies that have been funded and how those investment dollars, I guess from a DoD standpoint are actually going to be able to transition?

Hon. Heidi Shyu (08:24):

I would just emphasize the point. I've seen a lot of really innovative small companies. And one thing that I really am trying to focus on is a lot of these commercial companies, their product is commercial, but if we can work with them upfront early in the design stage, we can leverage their capability for commercial product into the DoD. I've engaged with a number of commercial companies up early in front, tremendous potential to produce solutions. They say, "Look, if you engage with us early, it doesn't cost much for us to add this design feature that you need." It'll be a lot more expensive after you come back, "Here's my separate requirement." And then it will be unique to you and your volume's way too low.

Hon. Heidi Shyu (09:19):

So the early engagement, they value that so much. So this is the piece that we're trying to thrust and push ahead. Engage with the commercial company upfront early in their design for the next generation of whatever product they're working on. Great enthusiasm in that area, I want to tell you about that. So I'm really excited about that. And I think the other piece I want share with you guys, our SecDef actually talked about the Raider Fund. If you can give me a minute, I can explain what we're doing there. So what we've done is take a look at the joint war fighting capability gaps, not just to a single service, but across the joint war fighting capability gaps.

Hon. Heidi Shyu (10:08):

We work with all the COCOMs to understand the current state, what their shortfalls are and looking in the few future, what are the joint capability gaps? Then what we have done this summer, literally went to the services and asked them, "Do you have prototypes you would like to demonstrate in a joint experimentation?" In five weeks, we received over a hundred white papers. There's that much enthusiasm. We reviewed all these white papers, rack and stacked it in terms of which project has the best bang for the buck in terms of fulfilling these joint capability gaps that was defined by the joint services and COCOM.

Hon. Heidi Shyu (10:57):

And then what we did is we briefed to all the services, the COCOMs, vice chairman, and DepSecDef. Thumbs up, pushing ahead in terms of our recommendation to fund these 32 projects. We're putting the FY23 budget, and I mentioned to DepSecDef I could do two sprints per year. Therefore, we can map two scenarios that's vested. I will say these scenarios are of significant interest. I won't say what it is. I think this is an unclassified facility, but you can imagine specific scenarios we're interested in. So we'll be mapping to that. I'm super thrilled I'm going to be doing two sprints per year. The funding is baked into the FY23 request. And the COCOMs are already asking me, how quickly can we get these capability in our hands?

Hon. Heidi Shyu (12:01):

I said, you guys will be the ones evaluating the capabilities. If you like it, we can go into rapid fielding. That is the path we have to be on. Rapid development in terms of prototypes, rapid experimentation, get it to the hands of the users, and the operators, the war fighters. They're the one who ought to evaluate, "I need this. I need this now. Get me 5,000." That's a path we have to be on. Let me tell you a bottleneck, it's the pitfalls. Let's say the COCOMs love that capability and they want it. And Aquilino will say, "I demand this. I need it right now. How soon can you deliver this?" Well, I'll have to go back to the service and say, "Did you pump for that?" There's no transition budget.

Hon. Heidi Shyu (12:55):

The PPBE process that we have is so rigid. So this is part of the thing we were trying to do to reform the PPBE, but this is the budgeting process. You guys all know that. So it's not a two year process. I need some flexibility. If the COCOM say, I really need this capability. I'll take this solution now, rather than refine the requirement and give me exquisite solution a decade from now. So give me this capability now. Give me the authority and a mechanism so I can enable that. So I ask for some bridge funding, the ability to do that. So this is something that I got to work internally within the DoD, and got to work with Hill because they want to count every penny that we have, right?

Ms. Morgan Brennan (13:44):

All right. So speaking of working with the Hill, I know somebody knows a little something about budget that's on this panel as the ranking member of the House Appropriations Subcommittee on Defense. What do you think about what Secretary Shyu just said? And also just as importantly, what can Congress do to enable this process, to enable more innovation, to enable more work in a more timely and more, I guess, capitalistic manner with private sector?

Rep. Ken Calvert (14:11):

Well, first I want to say the U.S. government's been a lousy partner, quite frankly. We don't protect the intellectual property. We get companies in, we waste their time. Then we're wondering why we're not getting the technologies we want. One of the things I'd like to do is create an innovation fund in an appropriations process to start out, say with about $100 million. And then we can pick a number of people that we want to succeed and get them through that valley of death, where they can actually get to procurement.

Rep. Ken Calvert (14:48):

Ideas like that and also how we can clean up some of the regulatory processes that are out there today, where we can move things more rapidly. Over the years, we've decided not to take risk anymore. And we want to perfect this process. There is no such thing as perfection. We want to get there, but we want to make sure that we get the systems out in a timely fashion, in an affordable fashion.

Ms. Morgan Brennan (15:17):

Why do you think there's no risk? And I ask that because I know you've been at this for three decades now. You've seen a lot of stuff. Could point to the F-117 that's sitting outside here. It's been pointed out to me by multiple people over the last two days as an example of productivity, moving quickly, innovation, but doing so in a realistic timeline. How did we get away from that? That was what, 40 years ago? How did we get away from that?

Rep. Ken Calvert (15:44):

That's interesting you point that out. That was designed Kelly Johnson who created the P-38 in World War II. I think I mentioned that earlier today to some folks. He went to a bar I heard in El Segundo. Went over a cocktail napkin, laid down the P-38, nine months later it came down the production line. We lost a lot of pilots. It was a tough plane, but it won the war. It knocked out to zero population at the beginning of World War II. We've lost our way, and we need to get program managers that take responsibility and stay with these new technologies until they succeed. And nobody wants to take responsibility and they're afraid of taking risk because they think that's going to ruin their career.

Rep. Ken Calvert ([16:31](#)):

Risk is acceptable. I think that the private sector folks here will tell you that they expect people to fail. They don't want them to fail every day. They want to get them to success, but that's how you get there.

Ms. Morgan Brennan ([16:44](#)):

So, Joe, I have to get your thoughts on this.

Mr. Joe Lonsdale ([16:47](#)):

I think courage is a really key thing here. And I think you guys both mentioned that and I really appreciate that, because it does seem like there is a lack of courage in certain parts of the DoD, which is ironic because our greatest, most courageous warriors are within the DoD as well in this society. And you definitely still have that courage from so many great men and women and so many people I know who truly are the most courageous people who work in the DoD. And yet ironically, there is a lack of courage from my perspective in how they engage with and pick winners. We were also speaking backstage about the whole big drone program. There's a problem where there's no clear standard for what small drones we're going to use and work with in America.

Mr. Joe Lonsdale ([17:25](#)):

And I think they had a big competition, The Blue drone program. And there were a bunch of companies that entered, but there were five that were better than the rest. And rather than pick one, they just picked all of them, which means there's no standard, which meant that most of them are bankrupt today because they couldn't make enough money. So we need courage to actually choose and actually make decisions and actually try things. And that's what it means to be more like the U.S. and less like the Soviet Union is that not everything is going to work, but more things are going to work better.

Ms. Morgan Brennan ([17:52](#)):

General Brown, I want to get your thoughts on this, especially since I do know you very actively interface with Silicon Valley, with the tech community. What are the technologies you're most excited about? Are there certain companies that you're excited about, and how do you work with them to continue to enhance these relationships and capabilities?

Gen. Charles Q. Brown Jr. ([18:10](#)):

I'm not going to name any company.

Ms. Morgan Brennan ([18:12](#)):

I tried.

Gen. Charles Q. Brown Jr. ([18:14](#)):

But I will tell you areas that we're interested in. We have a lot of data, and so it's how do we move our data to make decision? And when you think about advancement on our management system, it's really about moving information. So there's aspects of that. We're doing things with our folks in AFVentures on eVTOL. And so how do you look at the electrical vertical takeoff and landing capability? And it's interesting because folks are looking at it, how do you use an air taxi? Well, I'm not necessarily interested in air taxi. I'm looking at something that can move people and cargo. And so there's maybe a natural fit there in some cases. And the other thing is I don't know what I don't know.

Gen. Charles Q. Brown Jr. (18:58):

And so part of this is I've got operational problems. I need to be able to go to the tech sector, to the industry and go, "Here's what I'm thinking about." And they probably have something that they're working on that may be suitable that we can bring together. Maybe not today, but it may be something we can work with very closely. And at the same time, I really think it's important that we have something that we can iterate with, which goes to the innovation fund that Rep Calvert talked about. So you can innovate this and move at quicker pace and have our operators very closely with those that are doing a technical piece.

Gen. Charles Q. Brown Jr. (19:30):

So it's not that they build it and then throw it over the fence. Then we go, it doesn't work. We throw it back over the fence. We're working on it together day in and day out. And it's a cultural shift. And I think we as a nation have done this before. We can do it. It's just we got to put our mind to it, and we got to get serious about it, particularly in the environment we're in today.

Ms. Morgan Brennan (19:51):

Secretary Shyu, Secretary Austin earlier today, one of the messages he delivered was the calling for deeper ties between the Pentagon tech companies to counter China. He also noted that more than 2,500 small businesses have been awarded funds. How many of those businesses are still active? How are you gauging or how are you looking to gauge success?

Hon. Heidi Shyu (20:13):

This is a great question. That's the question I had when I first walked into the Pentagon four months ago. Just who are the companies? So one of the things that we are doing is literally taking a database that we have, that can actually extract the data from all the SBIFs, small business innovation funds. All the phase one contracts, the phase two contracts, and then the program manager, the program who has to pick it up. They're all in diverse databases. Have no visibility into it. And all the innovation organizations, we have over 20 different innovation organizations within the DoD. We have DIU, we have F-

Ms. Morgan Brennan (21:00):

F sounds like it's slowing things down. Am I crazy to think that? That sounds like it's slowing things down, to have so many different programs, so many different areas where this could be happening.

Hon. Heidi Shyu (21:10):

So I would say having a single innovation organization I don't think will work. You're overwhelmed with bureaucracy. It's much better of to have Air Force have their own, Marine have their own, because they're not necessarily the same. So I'm not trying to stamp out innovation. What I'm trying to do is make sure that if the Marines have a innovative idea and got a product, does the army need it, or are they all searching for the same things? Perhaps there's a database they can actually share and search. So that's step one.

Hon. Heidi Shyu (21:43):

When we talked to over 20 of these innovation organization across the DoD, they all said that they would love to have that. So we're moving forward. I actually search a number of companies that has ability to do this software, to extract data everywhere so you have the analytics capability as well. So

we're going to pull that together. I want to pull that together rapidly, and share that. And what are the best practices? And then the next piece I wanted to understand is what are the problems that these small companies have?

Hon. Heidi Shyu (22:20):

I wanted to engage with a venture capitalist, and I actually I spoke to Joe a little bit earlier. I want to have the ability to get their take on what are the shortfalls? Why is it so hard to do business with the DoD? And I'm engaging with small company to understand what are the impediments that they have. And then I can start tackling each and every one of these pieces, the most common, critical problems that they have. For example, it's really extremely hard, when I went to visit one small business in Santa Monica. Superb Product. They said, "We're running out of money." I said, "Hello. You're just telling me today. You think I have a bank account I can open up and give it to you tomorrow?"

Hon. Heidi Shyu (23:01):

So that's the problem. We need to have a lot more feedback and interaction. They actually have some Air Force funding. They have venture capitalists that's interested in putting funding in them if they have production contracts. So here's the valley of death, they have a design, the prototype won't be ready for another year and a half. So I'm going to go back. And I wrote that down. I'm trying to figure out how I can find them some money to bridge them over so they can build a prototype. So these are the problems that these small companies have.

Ms. Morgan Brennan (23:39):

And you've all mentioned this, but it's this being able to move more quickly, move with a sense of urgency. I want to bring up a slide from the Reagan Defense Survey, and it is the greatest concerns about China's technological progress. And I realize China's been a pretty big topic here, today as well. And it's not just military buildup, but it's also things like technology and that's case in point here on this slide where artificial intelligence is actually 23%. It actually matches supply chain vulnerability, which I think is what everybody everywhere has been talking about in the midst of COVID and transportation bottlenecks and inventory shortages, et cetera.

Ms. Morgan Brennan (24:26):

But to see artificial intelligence taking on a majority here on this chart, I guess, Congressman, how do we move with more of a sense of urgency? And when it comes to something like artificial intelligence, which everyone is talking about, and which is so critical to the future, including a national security, do there need to be rules of the road?

Rep. Ken Calvert (24:51):

Well, that's interesting technology, but we're going to have to go in that direction because these weapon systems are becoming more and more complex. And so we just can't go through the data fast enough in order to make determinations on how to utilize that technology. I want to go back to that we need to create more efficiencies. I'm going to disagree a little bit. I've been a critic of the growth of the civilian population in the Pentagon for some time. And I think we need to reevaluate that to skinny down the number of civilians relative to the military. It's the highest number in the history of the Pentagon. And that does not create efficiencies in my mind.

Rep. Ken Calvert (25:32):

And so that we have to do. We've got to make sure that these types of new technologies, whether it's new computer technologies, that we can't get into or AI, the private sector, quite frankly knows a hell a lot more about this than we do. We need to depend on them.

Ms. Morgan Brennan (25:47):

Joe.

Mr. Joe Lonsdale (25:51):

China? Well, listen, we're still ahead of AI than China. It's something that people misunderstand. The most important new papers, most important new breakthroughs, the majority of the top stuff's happening in the U.S. We still have an edge there. China has things they're allowed to do with data that we're not allowed to do with data that's allowing them to learn certain types of things, whether it's in biology or whether it's in watching all of the people and learning mass control. There's things they could do we can't, but we're still pretty far ahead.

Mr. Joe Lonsdale (26:16):

I will say that maybe because the talent issue we were talking about earlier with when we do our top AI things, we don't usually ... The first thought's not, let's go work with the military. I'll give you an example right now I'm not supposed to probably talk about, but we're part of putting maybe about $100 million along with a few friends into a new company, which is some of the very top talent, in our opinion, in AI in the country. There's a group called OpenAI that Elon Musk and a lot of other people were involved and has done some great things. And there's a group that actually beat them and did something even better than their GPT-3 at one of the two big tech companies.

Mr. Joe Lonsdale (26:47):

And a lot of that group is very frustrated at that company because they're not able to publish it because it's very controversial right now. So they're leaving and we're going to be backing them to do a business. And I'll be honest, we had a bunch of strategy discussions last three weeks but we didn't even think about defense as a thing because it's just like, we don't think they're going to be recognized by the defense world for being the best, just because that ability's not there right now in our national security apparatus. Maybe eventually we'll bring it to defense after doing lots of other things with it, because at that point maybe they'll recognize it.

Ms. Morgan Brennan (27:14):

General Brown, how are you thinking about artificial intelligence?

Gen. Charles Q. Brown Jr. (27:18):

I do believe to Joe's point of how our adversaries may use artificial intelligence different from how we might. And so there's really no international norms or behavior in how they may be used. And so, although we may be handcuffed based our own ethics and our own values. And we got to think about that, which is why we have to look at advantages in other ways as a nation and not just focus on AI versus AI. And so that's at least my thought process.

Gen. Charles Q. Brown Jr. (27:48):

I always believe that even when we have AI, you're still going to have a person ... AI's going to provide us options faster so we don't have to actually sit around a table and talk about it, but it provides you options much faster. And I think the other thing is we work with AI is our ability to trust the AI. And I think that's going to be a cultural piece we'll have to work through as well.

Ms. Morgan Brennan (28:09):

Well, it also speaks to ... And Joe, you've touched on this, and Secretary Shyu, I'm going to go to you first and then probably we'll go right on back down the panel because I think everybody has thoughts on this, but it touches on talent and what the future pipeline of talent is going to entail and what those skill sets are going to be.

Hon. Heidi Shyu (28:29):

So can I finish the AI piece-

Ms. Morgan Brennan (28:33):

Yes, absolutely.

Hon. Heidi Shyu (28:35):

So trust the AI tied together with trust the autonomy is big push from my office. I've engaged with a number of companies on this topic, and I'm pretty excited because of the number of people who is jumping on that bandwagon to focus on the technology. I even looked at a company that builds processors that will enable that. That is a path we're definitely going, because in my mind, in the next highly contested conflict, we want to be able to penetrate with more UAS's. And you want to be able to autonomously fly and have ability to share information with your wing man autonomously.

Hon. Heidi Shyu (29:26):

So anyway, we're absolutely focused on that and we're moving forward on that. Back to the talent base. The talent base is extraordinarily important. DoD this year funded 416 SMART scholars. This is a scholarship program for undergraduate, masters, and PhD programs into STEM fields. And I was really thrilled to actually last night meet one of the SMART scholars that was here, that's going to George Washington University. So that's great. And she told me when she graduates, she's going to the army to help them to do analytics organization.

Hon. Heidi Shyu (30:11):

So this is exactly what we want. We want to groom the STEM pipeline or bring into the DoD, into our laboratories and become part of our knowledge base. The new knowledge base. The other thing we've done this year, which I think is pretty exciting, because I think it's important to build a knowledge base before you head into universities. You want to grow your pipeline, you got to grow a lot earlier. So we created more than 10 different STEM camps for junior high school kids. Over a thousand junior high school students went to this one week long STEM camp that's to interest them to get into the science and engineering fields in the future.

Hon. Heidi Shyu (31:00):

And what we're doing now is reaching even lower into fifth grade to create these STEM education programs, to get them interested going into engineering, because that's the shortfall that we have. We

don't have enough of a pipeline within the U.S. to even draw from. So I'm pretty excited about all of this. And the other thing that I've asked the DepSecDef that I would love to is increase the exchange of engineers with the commercial industry, because I think that's absolutely important for each of the services to do that.

Hon. Heidi Shyu (31:32):

Let's go to our commercial industry. Let's spend a year there and bring one of the commercial industry folks into the DoD. They can bring the best practices from the commercial industry into the DoD to start to change the culture. I actually spoke to Microsoft this morning and they were enthusiastic about it. So I want to start that to increase the sharing of information and the best practices to start to change the culture.

Ms. Morgan Brennan (32:02):

Joe, I want to get your reaction to that. And also I know you're very focused on talent too. And over the last couple of years we've seen it, and seems like maybe it's subsided somewhat, but there had been debates and controversies and certain flareups at certain companies with certain employees who maybe didn't want to be doing national security or defense work. Are we past that point? Can we attract the talent necessary?

Mr. Joe Lonsdale (32:25):

And I think a lot of what the undersecretary talked about makes a lot of sense in terms of pushing STEM talents and getting them engaged. We're definitely not past that point in Silicon Valley. A lot of companies in Silicon Valley, a lot of the big tech companies don't want to be working with the DoD, and that is a big problem here. In China, they don't have a choice. I'm not sure that's a good thing either, by the way, but it's a big problem here that we haven't engaged them.

Mr. Joe Lonsdale (32:47):

I think the other issue here, which I mentioned a little bit earlier is really understanding what a technology culture is and really being able to measure technology cultures. One of the unique things about top technology cultures, when Apple wanted to do something new, they actually had a rule that it was a separate group and only one person, maybe Steve Jobs or maybe someone else could talk to that group. And the engineers were helping to run that group and set the vision. And you didn't want a lot of senior people, senior bureaucrats reaching in and having opinions and getting in the way.

Mr. Joe Lonsdale (33:15):

And the way we ran things even early on at Palantir and in other companies I've built that have succeeded in the technology world is the engineers helped run the company. They helped set the strategy. They helped iterate. They knew what was possible. And within a very big command and control system, that's very hard. The way that DoD is set up is the engineer's in the basement and he's being told or she's being told what to do, as opposed to their part. They belong next to the leaders, iterating. They understood that leadership's part of it.

Mr. Joe Lonsdale (33:42):

And so I think naturally the way that DoD is set up and the system, it's very hard to fix it. And you're going to have to try new things and really disrupt the way it works if you're going to attract the top

talent to make them feel empowered, to make them feel like they're actually helping run the things they're doing.

Ms. Morgan Brennan (33:54):

And General Brown, I want to get your thoughts on this, and also just this idea of how some of these best practices, maybe in private sector, whether they could be incorporated from, I guess, a workplace and a talent and cultural standpoint. Whether there's aspects of that, that could actually in fact be incorporated into the Air Force structure.

Gen. Charles Q. Brown Jr. (34:14):

I think there is, but to build on what Joe said, if we just bring ... Kind of like the Honorable, she said, you bring in this talent but you put it into these regular bowels of the Air Force and not actually set it aside and actually allow it to show us how this innovative culture can work, that's where it's going to fail. So we really got to think about if we bring from outside, how we bring it in and set up an organization so they can really thrive.

Gen. Charles Q. Brown Jr. (34:40):

The other part I do think about, even as think about, whether it's various STEM scholars that we bring into the Air Force and bringing uniform is how we develop them throughout their career. So they may have a traditional career path and we still got to get them promoted and make it exciting for them to want to stay with us because otherwise, they'll go work for Joe, which may be good or bad because now we have someone who actually knows the DoD, but really we need to think a little bit harder how we do talent management.

Gen. Charles Q. Brown Jr. (35:07):

And the thing I'm thinking about as the chief of staff of the Air Force is what specialties do I not have in the Air Force today that I'll need 15 years from now? And what specialties do I have today that I won't need 15 years from now? And how do we make that transition, and how do I make it so they want to stay with the United States Air Force, whether it's in uniform or as a civilian, or a relationship, which is even more important is having good relationships so you have companies that want to work with DoD versus the other way around where they go, "It's too hard to do?"

Mr. Joe Lonsdale (35:34):

And we want that. We need those cultures to be there. I don't want to tell you too many horror stories, but a common thing that would happen is there'd be a technology problem that our company knows we can solve and it's a big contract and we're subbing through someone that's actually in touch, one of the big, giant legacy contractors. And we're solving the problem, but we're getting, "Okay, you guys can come do this for us. We're going to give you 3% of it." And we're like, "We get 3% of the pay, you get 97%, but we're the one who's solving it."

Mr. Joe Lonsdale (35:59):

And there's no one to appeal to because there's no one who understands the technology well enough within the top ranks to know, "Oh, these guys are getting taken advantage of, and it's a mess. And actually we don't need to be paying 120 million for this. This is actually obligated now by the new way of

doing it, but the old big companies still gets paid that because they take it." So we need those cultures there in order to get the best solutions and the most efficient solutions to win.

Ms. Morgan Brennan ([36:18](#)):

So we have a bunch of questions from the audience. I'm going to try and get to all of them here. Our first question is the Biden administration has prioritized R&D much more than procurement. Dangerously so, is R&D or procurement, the proper focus NSIB related developments? Who'd like to take that question?

Rep. Ken Calvert ([36:39](#)):

I might, because for 20 years we were at war in the Middle East, obviously, and we neglected our R&D budgets. We cut them down considerably. We borrowed from those accounts and used them for other things. The budgets we're talking about now have increased R&D, because we have a lot of catch up to do. We created the technology for the hypersonic missile, and the technology was stolen by China. They perfected it and they now are deploying it in the hundreds. And so now we're having to play catch because of that situation and other problems in the technology field. And so we had to increase our R&D budgets in order to make sure we are in a position to procure these new systems as soon as possible.

Hon. Heidi Shyu ([37:35](#)):

Oh, would like to chime in.

Ms. Morgan Brennan ([37:36](#)):

You have some thoughts on this, right?

Hon. Heidi Shyu ([37:40](#)):

A few thoughts. First of all, I complete conquer with your comment. That's exactly what happened. What we don't have within this country is a consistent roadmap that doesn't change. We need a long-term strategy instead of strategy that pivots every four years. And I think part of the problem, DARPA actually spun off the hypersonics technology. They have a lot of great innovative ideas, but the problem is bridging over to a service who wants to accept that and turn it into a program of record.

Hon. Heidi Shyu ([38:16](#)):

I will tell you one other thing that we're doing now. Hypersonic, yes we're behind, but my job given by SecDef was looking for the asymmetric ways to counter hypersonics and I'm briefing him next week. So I've created a whole list of asymmetric way, much cheaper.

Ms. Morgan Brennan ([38:41](#)):

But you can't share any of that with us.

Hon. Heidi Shyu ([38:44](#)):

I can't share it with you. Sorry. It's multi-caveated.

Ms. Morgan Brennan ([38:49](#)):

It's a cliffhanger. We'll wait for it.

Hon. Heidi Shyu (38:52):

A few people I maybe able to ... I'll come brief you.

Rep. Ken Calvert (38:56):

Oh good.

Hon. Heidi Shyu (38:56):

You'll love it.

Rep. Ken Calvert (38:57):

Oh good.

Ms. Morgan Brennan (38:57):

So we have another question, and I think this one's for you, Congressman. Appropriations committees are known for resisting budget flexibility for innovation efforts. Can that change?

Rep. Ken Calvert (39:07):

Well, that's exactly what I was talking about earlier in creating this innovation fund, where we have flexibility within the appropriations process, where we can work with the DoD and the agencies there to make sure that we fund technologies that we want to fund to get them through this valley of death and to get it to the procurement process. And it's frustrating as hell. We run into this every day. And so I'm working to do that. I'm going to work with my friends on both sides of the aisle in the Senate to do that. And I'm hoping that we can do that as soon as possible.

Hon. Heidi Shyu (39:44):

So can I chime in?

Ms. Morgan Brennan (39:47):

Yes.

Hon. Heidi Shyu (39:47):

So one of those things that we want to do via the Raider concept literally is to be able to take prototypes, and we're involving industry or early to share with them, here's a capability gap we have. And help us, trying to figure out solution to that, and then bring a prototype. We're going to test it out and I want to rapidly transition it. So that's exactly the path we have to be on in order to get ahead of the Chinese. There's no other way.

Ms. Morgan Brennan (40:20):

I actually want to get your thoughts on this, Joe, before I move on to the next question. We were talking a lot about on this panel today, how and where perhaps some of the DoD culture needs to change. Does the culture of Congress need to change too to enable this?

Mr. Joe Lonsdale ([40:38](#)):

Well, I think there's some amazing leaders in Congress. I've always wondered why Congress doesn't have a little bit more staff and ability to understand what's going on in some of these places and engaging in the right way, and why they don't reach out more to the innovation world when they're making these plans with those staff. And I guess they're really busy and there's only so much staff, so you I guess have a lot to do there. But there probably could be some things they could learn from our side too, and how they engage with it.

Ms. Morgan Brennan ([41:05](#)):

We're going to go on to the next question. With clear need to help innovative companies cross the valley of death, what changes need to be made to DoD budget process? Is it time to move away from the PPBE process? Do I have any takers on this?

Hon. Heidi Shyu ([41:20](#)):

Yes.

Gen. Charles Q. Brown Jr. ([41:20](#)):

Yes. Yes.

Ms. Morgan Brennan ([41:21](#)):

I'm not surprised. How about it?

Rep. Ken Calvert ([41:22](#)):

Yes.

Hon. Heidi Shyu ([41:25](#)):

It's way, way too risk averse, right?

Rep. Ken Calvert ([41:28](#)):

Yes.

Hon. Heidi Shyu ([41:29](#)):

I gave Representative Thornberry example back when I was in the army. The first time when I was in Pentagon. And his question to me is, why does the acquisition take so long? I gave him an example. There's something that's called an acquisition bus. The program manager is the driver of this bus, and every single stakeholder you have is on this bus. And every single one of them has a steering wheel and a break. That is the process we're in. Because anybody can say no. And when a new product gets-

Rep. Ken Calvert ([42:07](#)):

Sounds like the Senate.

Hon. Heidi Shyu ([42:11](#)):

Longer bus. So when a program fails, in industry, I'll tell you what we do. I came from industry. We put all the best people we have across the company to turn the bus upside down, because it's in the ditch.

We've got right side up because you're bleeding cash. We throw all the best people on, stop the bleeding, right size it, fix the problem, move on. In the Pentagon, what happens? They'll come look at it, they shoot out the tires, the windows and the kneecap of the program manager, because they can then take their money to do something else.

Hon. Heidi Shyu (42:49):

And then there will be investigation, "Why did you fail?" So there's 10,000 meetings that was placed on top that you got to answer, what happened. The press wants to know. The Hill wants to know. All your 10 chains of command wants to know. That's what happens. And you've got to stretch out programs or the Hill's going to cut your budget. You're obviously not on track, right? So it's a death spiral we created for ourselves. We got to change that. If you want us to be more risk averse and move fast, don't kill us the first time we trip. So don't tie our two feet together and expect us to run a marathon as quickly as possible. It can't happen.

Ms. Morgan Brennan (43:33):

Sounds like the definition of accountability needs to change in a sense.

Hon. Heidi Shyu (43:36):

Yes.

Ms. Morgan Brennan (43:39):

Wow. So the next question, actually I think dovetails really nicely into this, and that is how do we measure innovation and how do we know if we're successful? I suspect everybody in this panel could probably answer this question.

Rep. Ken Calvert (43:54):

It works.

Ms. Morgan Brennan (43:57):

General Brown, I'll start with you.

Gen. Charles Q. Brown Jr. (43:59):

Well, that it transitions to the capability that we can actually produce. We have a lot of innovation. There's not a lack of innovation. It's a lack of innovation that actually is in the hands of the war fighter. And that to me is where the issue is. And it goes back to what Honorable Shyu just said. The bus is all over the place. It's usually in the ditch, it's in valley and we can't get it out of the valley. And then what happens, some stop before they even get to the valley. And that's where Joe has highlighted, they don't want to work with DoD.

Gen. Charles Q. Brown Jr. (44:27):

So we really got to think differently about finding some of these and moving them across the valley. And Honorable Shyu also talked about it. And we do this a lot. We'll come up with a lot of good ideas. We'll do the innovation and then we want to get it across the valley. It's a lot of tag, not-it. Nobody wants it. Well, you asked for it. You asked for all this innovation, but then when you're ready to go bring it over and start paying for it, then we don't get to follow through. And that's the part I think we got to do.

Gen. Charles Q. Brown Jr. (44:55):

So don't ask for stuff you don't want. Or here's the problem we're trying to solve, that we got to be able to come in behind that and make sure we're going to pay for it and make it a program of record and scale it. And I have been talking to some of the small companies, and Joe can probably allude to this. If we say we really want this, they'll figure out how scale, easily.

Rep. Ken Calvert (45:17):

I would just say, we need people to take responsibility, like said Admiral Rickover back in the day. We have the best submarine fleet in the world, bar none, primarily because he was a dictator. He took on the responsibility. He took on everything. A lot to say with Kelly Johnson in the Skunk Works. He would basically tell the CEO of his company to jump in the lake. But you need strong-willed individuals like that to take over the process, and we don't have that.

Gen. Charles Q. Brown Jr. (45:48):

There may be a way to just pick a couple of different projects where we know ... And this goes with the Raider. Once we decide, we pick someone and put them in charge and we carry this thing all the way to the end versus right now, it's just all over the map and no one's really responsible and you have too many people that have a vote.

Rep. Ken Calvert (46:03):

How many program managers we have over the history on the F-35?

Gen. Charles Q. Brown Jr. (46:08):

I don't know, but it's probably a lot.

Ms. Morgan Brennan (46:12):

Joe, I want to get your thoughts on this.

Mr. Joe Lonsdale (46:13):

And I love what you guys are saying. One of my favorite books on this is Winston Churchill wrote about before the First World war. And he was Lord Admiralty of the Navy and he had to go in and basically just fix everything. It was a total screw up. And you needed a strong personality to come in and go through by tape and just push things through. Innovation means it's in the hands of the war fighter. I think innovation also means it's done efficiently at the end of the day.

Mr. Joe Lonsdale (46:36):

What that means is that certain things are going to fail, but how much money are you spending for what output and how honest are you about that? I'm not an expert on the Air Force, but I think you spend about $49 billion a year on maintenance. And I think if you'd use AI and technology ahead of time now to plan out those things, you'd probably be spending a lot less on maintenance, a lot more efficiently and getting a lot better stuff in the hands of the war fighters. So there's a lot of ways technology and innovation can apply to a lot of those types of problems on our spend as well, most likely.

Gen. Charles Q. Brown Jr. (47:02):

We're actually going down that path. It's just it'll take us a while to get there, as you might imagine.

Mr. Joe Lonsdale ([47:06](#)):

Awesome.

Ms. Morgan Brennan ([47:07](#)):

We have, it looks like four more questions and a little over four minutes. I think we can do it. Next question, can an In-Q-Tel VC funding mechanism that is used within the intelligence community have a place and be successful at a DoD level to improve innovation?

Hon. Heidi Shyu ([47:26](#)):

So we're actually looking at that right now. Literally this was a topic that popped up about a month ago inside R&E to think about, can we leverage something like a In-Q-Tel? So one of the thing I want to do is engage with a venture capital. As a matter of fact, I'm heading to a dinner tonight literally to engage with venture capitalists and get their take about how to better work with the DoD. What are the things we need to do differently? So I want to explore all the details before I go to DepSecDef and SecDef with a proposal. So right on.

Ms. Morgan Brennan ([48:11](#)):

How do you fix the innovation culture that you have all diagnosed? Is it an issue with the services or with the department leadership or both?

Hon. Heidi Shyu ([48:19](#)):

Both.

Rep. Ken Calvert ([48:19](#)):

Culture within the department, it has to change immediately. Winston Churchill also had the ... I think it was attributed to Winston Churchill, before World War II, the worst two words in English language is too late. And we're in a situation I think today that we don't want to be in. So we need to move as quickly as possible, and we need to get people that are going to work to make sure that happens.

Ms. Morgan Brennan ([48:48](#)):

General, you looked like you had something.

Gen. Charles Q. Brown Jr. ([48:51](#)):

Well, part of it is we got to promote them. They got to see a future. And that's all part of the talent management aspect. Particularly in a hierarchical organization like the Air Force or the military, they got to see a future they can move to a senior level or we continue to pay them more for the value of what they do as another opportunity to show how important they are.

Ms. Morgan Brennan ([49:13](#)):

We've got two more questions and we got two and a half minutes. We can do this. Would Congressman Calvert like to expand on too many civilians in the Pentagon? His opinion contradicts Hon. Shyu effort to

get top civilian talent in the Pentagon and the effort to get uniforms out of the Pentagon and back into operational roles.

Rep. Ken Calvert (49:32):

Look, there's a lot of talented people that are civilians in the Pentagon. That's not the point. The point is that there's too many people. So over time, we can bring down the numbers and the Defense Board actually said that's what we should do. If we brought it back to the historic norm, we would save approximately $125 billion over five years. And in my world, that's real money. And I suspect that the efficiencies within the Pentagon would pick up.

Rep. Ken Calvert (50:00):

The marines, by the way are doing a good job of doing that, and I'm hoping that the rest of the services look to them, and the rest of the enterprise. And that's throughout the country, by the way. And I'm not taught about depos and all that, I'm talking ... And I don't get Tom Cole after me. But about just the middle bureaucracy, especially.

Ms. Morgan Brennan (50:24):

All right. Our final question here, the civil space program at NASA has been successful utilizing services contracts and OTAs to develop new capabilities. Is there an opportunity for DoD to learn from some of those successes?

Hon. Heidi Shyu (50:37):

Absolutely. Absolutely. I think we absolutely have to think that way because the commercial world could very well provide a capability earlier than we can. And you can just buy it as a service-

Rep. Ken Calvert (50:53):

Space X has dropped our launch cost in half. Just that one. We had a monopoly. Well, now we're going back to a monopoly, but anyway.

Mr. Joe Lonsdale (51:06):

And there's a lot of us in the innovation world who are eager to serve and eager to work with the DoD. And if there are big things that need to be done on the outside, you can come to the people who run the big funds and the big companies, and a lot of them are really eager to help. And so that engagement would, I think be met with a lot of positive energy from the technology sector.

Ms. Morgan Brennan (51:24):

And I think that is where we're going to end this conversation on those words. Thank you so much for your time. Thank you for the questions. What a pleasure and what an honor, and a privilege to be joined by the four of you today. Representative Ken Calvert, the Honorable Heidi Shyu, General CQ Brown and Joe Lonsdale. Thanks for being up here today. I appreciate it.

Rep. Ken Calvert (51:49):

Enjoyed it.

Hon. Heidi Shyu (51:50):

Thank you.

Rep. Ken Calvert ([51:50](#)):
Thank you.

Gen. Charles Q. Brown Jr. ([51:50](#)):
Thank you.