

# Outpacing China: Expediting the Fielding of Innovation

House Armed Services Committee

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**William LaPlante**

Under Secretary of Defense for Acquisition and Sustainment

**Heidi Shyu**

Under Secretary of Defense for Research and Engineering

**Doug Beck**

Director of the Defense Innovation Unit

**MIKE ROGERS:** Committee come to order. I want to thank our witnesses for being here and the time they took to prepare for this hearing, and we appreciate your service to our country. Today, we continue our review of the DOD efforts to outpace the threats we face from the Chinese Communist Party. Specifically, we will examine why the DOD continues to struggle with rapidly developing, scaling, and delivering innovation to our warfighters.

In recent years, the department created new offices and initiatives like AF, RDER, RCCTO, DCO, OC – OSC and now Replicator to get after this problem. But this alphabet soup of programs has had only minimal success. For years, we’ve been hearing complaints from industry about the glacial pace of acquisitions, and from small innovators that they lack the capital and support necessary to bridge the Valley of Death.

But mostly we’re concerned about what we hear from our warfighters. They tell us how upset they are with the failure to timely deliver the capabilities they need to protect themselves and defeat our adversaries. And when capabilities are finally delivered, they tell us they often don’t meet their needs. This is immensely frustrating to us because this committee has spearheaded dozens of efforts over the last decade to reform the department’s acquisition process and to make it easier for the DOD partners and academia in the private sector to expedite fielding of innovation.

It’s also frustrating because our time to solve this problem is running out. Where we’ve had trouble, the PLA has been successful. They’ve invested heavily in new capabilities that are critical to success and future battlefields, and they figured

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out how to rapidly deploy them. We're seeing them outpace us on hypersonic technology.

They're making advances in AI and quantum computing that we struggle to keep up with. And our own military leaders have described the PLA's progress in space and in nuclear modernization as breathtaking. And make no mistake, these capabilities are being developed specifically to defeat our military and deny our ability to freely operate in the Pacific.

We cannot let that happen. We can't let China, our adversary, outpace us on innovation. Fortunately, the United States has something our adversaries do not, a robust innovation system. From our universities to military science and technology labs to startup companies, there is no shortage of innovative Americans with the ideas and knowhow to keep us ahead of our adversaries.

It's time for us to take advantage of this. As we've seen in Ukraine, new technologies are emerging faster than tactics are changing. This side – the side – this is faster at innovating, scaling, deploying has an advantage on the battlefield. I hope to hear from our witnesses today how the department will harness our country's innovative spirit.

But most importantly, I want to know what more Congress needs to do to help the department finally fix this problem. With that, I will yield to the ranking member for any opening comment he may have.

**ADAM SMITH:** Thank you, Mr. Chairman. I thank you for holding this hearing. This is an incredibly important topic. I thank our witnesses for being before us today. And I think you correctly outlined the problem and the challenge – just how important it is to innovate in today's national security environment, to come up with the best new technology to deal with the rise of drones.

What is your – the counter drone plan to deal with all of the new technologies that are out there? And I will start that the positive side of this is what the chairman alluded to. There's no economy in the history of the world that has ever been as capable of innovating as ours. It's built into the system, into our universities, into our capital markets.

So, we have that opportunity. And we've also – we have made some progress in the last decade or so. Secretary Ash Carter was one of the first ones to recognize the challenge and begin to set up programs to try to address it. We have in this committee – I also want to give a shout out to Mac Thornberry, former chairman, who was such a great leader on this in terms of giving other transaction authority to various different entities within DOD to allow for more rapid innovation.

And also Mr. Beck with the DIU for – that basically has really helped with the R and D side. You know, if you have an innovative idea that you're trying to

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develop, we do a decent job providing capital to help you develop that idea. Now this is where the good news stops, and the bad news starts. What we're not good at is procurement.

Once we've developed an idea and we come to the point where we're like, gosh, that's awesome, we want it, it takes too long to buy it. That, number one, keeps a lot of some of the more innovative technologies from even wanting to start the process. Because if you tell me, OK, we'll give you a little bit of money to develop the idea, but you're not really going to have a chance to sell it to us at the end of it. A number of folks are just – they're not going to play because there's – there's no – there's no upside.

They don't mind winners and losers, but they do mind sort of – heads I lose, tails you win sort of situation where they can't get there. But also, even if they do go through that process, we're not able to buy the technology as quickly as possible. But it's important to understand why that happens. It's not an accident and it's not stupidity.

It's because we don't want to buy the wrong thing. You don't want to spend billions of dollars on something that is a mistake, which we have in fact done before. I always think of the Navy, Marine Corps intranet and the Expeditionary Fighting Vehicle as a couple of examples, but there are many others. We also want to make sure that there's no corruption involved.

You give one person the power, you don't want to find out that they just happened to give the contract to their brother-in-law. So, we have all these processes put in place to sort of people proof the system, to make sure that we never make a mistake. And what I want everyone to understand – we can't afford to do that anymore.

We can't. And I also want you to understand that if we make the type of changes that are necessary, which is to give greater flexibility to the department, and empower individuals within the procurement process to make decisions without having to go through the normal nine layers of bureaucracy before that decision can be implemented, mistakes will be made.

It happens all the time in the private sector, you know. It is the language of Silicon Valley. They tolerate failure. And the reason they tolerate failure is because that leads to the bigger successes. So, don't think that this is just some sort of bureaucratic idiocy and, if we just got smart, everything would be fine.

What we have to do is we have to increase our tolerance for risk at DOD and within – and within Congress. And the appropriators are the big challenge here. They like to hold on to their money. They like to know exactly where it's going. And if you say, look, we need you to give a lot of money that's flexible, they flinch and don't like that.

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That's what we have to change. I think we can – I think we can do it, but not if we kit ourselves that this is just some stupid thing that if we just started being smart all of a sudden, it'd be fine. We have to increase our tolerance for risk at the Pentagon, build that into the legislation, and then what I'm really interested in hearing from the witnesses, how do you change the culture at the Pentagon?

Because the culture at the Pentagon is don't stick your head up, OK. Don't innovate, follow the rules, follow the process, you will be rewarded for that. You will not be rewarded for taking chances. We need to change that culture. Enormously important problem and I look forward to continuing to work on it and to our discussion today.

And with that I yield back.

**MIKE ROGERS:** I'm in complete agreement with every word just uttered by the ranking member. I want to recognize our panelists today. Ms. Heidi Shyu is under secretary of Defense for Research and Engineering. Dr. Bill LaPlante is the under secretary of Defense for Acquisition and Sustainment. And Mr. Doug Beck is the director of the Defense Innovation Unit.

I welcome you all. Ms. Shyu, we'll start with you. You're recognized.

**HEIDI SHYU:** Chairman Rogers, Ranking Member Smith, and House Armed Services Committee members, thank you for the invitation to provide testimony for this hearing. I am pleased to be here with my partners as we deliver enduring technological advantage for our warfighters. I submit my detailed opening statement for the record.

The department relies on delivering leading-edge technology at scale to maintain our strategic advantage. As the department's chief technology officer, I am proud to take on this challenge. My organization spans from developing leap ahead technologies from DARPA and our labs, to demonstrating advanced prototypes that will enhance the capability of our joint forces, to the Missile Defense Agency whose responsibility is focused on defending our homeland.

We are moving aggressively, instituting new initiatives, and quickly delivering capabilities. To address the near-term threats from Indo-Pacific, the department launched the Rapid Defense Experimentation Reserve, or RDER, in the summer of 2021, to focus on the joint warfighting challenges in a highly contested fight.

RDER works closely with the Joint Staff, the combatant command, the services, and both the commercial and defense industry to accelerate promising prototypes and demonstrate their military utility in integrated experimentation with military users. We're focused on enabling multi-chain, multi-domain command and control, countering our adversaries' kill chain, conducting distributed joint fires, providing information advantage, and enabling logistics in a highly contested

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fight.

The initial demonstrated capability that was tested at RDER from last year are already transitioning to the services to produce and fuel at scale from close collaboration with acquisition and sustainment. All of these were fully filled before 2027. Thanks to the committee, the Accelerate Procurement and Fielding Innovative Technologies program, or APFIT, is a catalyst for small and nontraditional companies.

And we have successfully accelerated production for many critical capabilities across the services by two to four years, such as: mine detecting sensors for unmanned underwater vehicles; anti-jam antennas; vertical takeoff and landing unmanned aerial systems; unmanned surface vehicles with modular payloads; and a paint removal system that improves naval maintenance time by 94 percent.

Many RDER and APFIT candidates benefited early in the technology development lifecycle. From the Small Business Innovation Research Program, SBIR, as well as SBIR – service funding and DIU solicitations. This interconnected process illustrates how small businesses and nontraditional companies receive direct support from the department at every stage of development.

We're also capitalizing the asymmetric advantage of our allies and partners as we bolster integrated deterrence. My office's foreign [ph] comparative test program delivers affordable near-term solutions to develop by partners' nations to enhance joint warfighting. We have 98 ongoing projects with 23 countries.

In the Indo-Pacific we're already leading AUKUS Pillar Two integrated trilateral experiment exercises that will demonstrate connected platforms from the seafloor to the stratosphere. The first exercise will take place in Australia this year, enabling trilateral production, sustainment, and fielding. We also recognize the need to bolster our nation's supply chain resilience.

This year's NDAA established the Office of Strategic Capital in statute [ph] which will catalyze private investments to counteract the PRC. Our manufacturing innovation institutes are accelerating manufacturing of biofuels at the point of need, bio cement for rapid repair, and developing innovative ways of harvesting rubber using dandelion to onshore production.

In close collaboration with my partners at A and S, DIU, the services to Joint Staff and the combatant commanders, we are outpacing the PRC so our warfighters can achieve overmatch in any future conflict. Thank you for the opportunity to appear in front of this committee and I look forward to your questions.

**MIKE ROGERS:** Thank you, Ms. Shyu. Dr. LaPlante, you're up.

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**WILLIAM LAPLANTE:** Yeah, Chairman Rogers, Ranking Member Smith, and all the members of the committee, thank you for your work and thanks for all your help and all – in this really important topic. I'm here representing the department's acquisition sustainment workforce. All the folks out there working every day to deliver capability at scale.

And reminder, we are – we are essentially at a wartime footing right now in several of the things we're doing. So, it's a – it's a full-time endeavor. We are implementing a national defense strategy, of course, which has the pacing threat as being China. But as I think we all know, the developments with Russia over the last – even the last few months has been very, very concerning.

I particularly am concerned about Russia going to capacity and to scale with what they're doing, which is going to lead to my point here about this innovation group. So, a clear acquisition pathway to production, and you've given us very good acquisition pathways. You guys gave us the MTA Section 804 Rapid Fielding.

You gave us a software acquisition path for 2020. It's all part of the new DOD 5000, if you want to call it that, the adaptive acquisition framework. But as was said by the chairman and the ranking member and by Heidi, and my battle buddy Doug knows this too. If we're not in production, it sort of doesn't matter.

What I pay attention to, and I think you all do, is sure, an interesting technology that China or Russia has, but I'm really paying attention to are they getting into production and what's the rate of production. And it gets to this issue of these companies who are putting themselves at risk in developing technology.

If they don't see a path to get this thing at scale, which is a business case for an enduring line of business, what's in it? Well, that's production. And it gets to this risk averse issue I think that the ranking member said, which is that we are – we as a country have been reluctant to go into high rates of production since the end of the Cold War. And I think we're going to have to fundamentally take a different look at that to deal with this issue.

The other piece of it is that we do need to make sure that companies and these innovators are themselves ready to go into production. We've all been asking them recently when they come with the – with a prototype of a counter-UAS or UAS say what would it take for you to go into thousands of those a year?

What kind of capital expense do you have to spend? What do you need the government to do? Do you have the workforce? I think we have to shift the conversation to not just the technology and the prototype, we've got to keep that, but to really tell the people in the innovation world, are you prepared for success?

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And then tell us in the government, are we prepared for success? Are we prepared to fund them at high rates of production? In the counter-UAS situation, which of course is a very dire situation for us right now, we have about 40 different prototypes out there, both kinetic and non-kinetic, high powered microwave directed energy.

Different ways of – particularly for Level 3 UAS, which is a certain class, we have to get those into production at high rates. And there is another thing you can help us with – is that right now we’re operating off of a budget that was constructed in 2021 before Ukraine happened largely. OK, we have no more supplemental.

We were largely rebuilding our industrial base on the supplementals. We sort of – on the counter UAS, we’re sort of right now waiting to get the money so we can start turning up these production lines. So, this is all related. So, in closing, I just want to say we really welcome your help. There’s a lot that you’ve done for us. We do want to get these things across the valley, the so-called valley of death.

And we work together across our teams, but I would just ask all of us to start thinking about the production side of things, which we frankly haven’t thought of as a country for many, many years. And I think that that’s something we’re going to have to change. It’s a different mindset. And frankly, it’s also about are we going to fund it? Are we in the department going to fund it and with the Congress’s help.

Subject to any further questions in the hearing, I appreciate having this. Thank you.

**MIKE ROGERS:** Thank you, Dr. LaPlante. Mr. Smith, you’re recognized – Mr. Beck, I’m sorry.

**DOUG BECK:** Chairman Rogers, Ranking Member Smith, distinguished members of the committee, thank you for the opportunity to testify for you here alongside my teammates regarding the Department of Defense’s efforts to outpace the PRC and expedite innovation to the warfighter. I also want to thank the committee for its support and codification for DIU and the FY24 NDAA. I come at this mission with a combination of lenses.

Before joining DOD, seven months ago, I spent 13 years at Apple, but I’ve also spent 26 years in uniform and a lot of years living and working across Asia with both those hats on. Today, I want to leave you with three thoughts: first, what DIU 3.0 is all about; second, how we’re getting after it; and last, some thoughts on risk.

Technology in critical areas such as AI, autonomy, energy, biotech is evolving most quickly through the commercial tech sector’s relentless efforts to meet the



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insatiable demands of billions of consumers and the enterprises that serve them. The heart of that incredible innovation is right here in the United States in the Silicon Valley where I live, and emerging tech hubs across the country.

Secretary Ash Carter was prescient in seeing that we must harness that capability alongside our more exquisite bespoke defense efforts to meet the strategic challenges facing the nation. DIU 1.0 focused, in 2015, on building a bridge at all between the department and the commercial tech sector. DIU 2.0 then proved you could use authorities already provided by Congress to solve real military problems with commercial tech and get prototypes into the hands of the warfighter in weeks or months rather than years.

Those early efforts have already resulted in a 51 percent transition success rate across the Department of DIU and have also spawned a diverse set of organizations across DOD designed to do the same thing. This is fantastic progress but is not good enough. What we must do now is take the capability that has been built and apply it for strategic effect – by focusing it on the most critical gaps we must solve to deter major conflict or win a force to fight, and then by working with partners across the department to scale those solutions with the speed the imperative requires.

This is what DIU 3.0 is all about. It's why the secretary elevated DIU to be a direct report, and it's why I stepped away from a position I loved at Apple to join this team. DIU 3.0 is deeply embedding personnel with the combatant commanders to understand their strategic gaps and help shape solutions. As just two examples, DIU's AI tech lead is embedded at INDOPACOM's Joint Mission Accelerator Directorate as deputy director and CTO, and another DIU teammate is at UCOM [ph] Security Assistance Group Ukraine as Lieutenant General Aguto, science and tech lead.

DIU 3.0 is also deepening partnerships with the department's true engines of scale, the services to ensure we're helping solve their most critical problems and working with them, the Joint Staff and my colleagues on this panel and across OSD to help eliminate roadblocks to scale, including through leadership roles in the new deputy's Innovation Steering Group, co-chaired by the deputy and vice chairman, which also provides the governance for replicator, which I'm sure we'll talk about today.

DIU 3.0 also helps catalyze the vibrant community of innovation entities across the department into a cohesive community of impact. We're already hard at work together building synergy and eliminating confusion for the market while identifying barriers to entry for commercial capabilities, and particularly to small businesses for escalation by DIU. DIU is working with teammates, including R and E and A and S, to establish physical and digital on ramps for nontraditional talent vendors and investors to enter DOD. DIU [ph] has already lowered the

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barriers to entry for commercial companies and continues to expand outreach and programing across all 50 states.

Nearly a third of DIU vendors on contract are first-time DOD contract award recipients. We're also working closely with our allies and partners to help them leverage the best of their own tech sectors create opportunities for US companies overseas and help all of us harness the very best tech in defense of the international system upon which we all rely.

The net of all of this has to be focus, speed and scale. We need that to meet the strategic imperative facing the nation, and the tech sector needs it to make the economics work so they can continue investing and taking risks along the areas that we require for our national security. So, let's talk about risk.

I came home from Iraq and Afghanistan with the understanding that most of what I had considered risk in my career as a private sector executive wasn't. Risk is something different. It is risk to mission, risk to force, and strategic risk for our nation. Meeting the strategic imperative will require all of us to work together in new ways, taking process risks, financial risk, reputational risk to get there.

And that's about culture, sir, as you said. But it's far better for us to take those risks today than to transfer that into real risk to our sailors, soldiers, airmen, marines, and guardians who would have to fight any future conflict. We're committed to ensuring Congress has the confidence and transparency you need to help us take those risks responsibly.

I welcome your partnership to meet the imperative facing us all together. Thank you again for your consideration and the support you provide to DIU. I look forward to your questions, sir.

**MIKE ROGERS:** I thank all the witnesses and recognize myself for questions. Dr. LaPlante, you acknowledge, and Ms. Shyu acknowledged, that we – this committee has given – and Congress has given a variety of authorities over the years that you all are now starting to employ. But you talked about this need to look at the production side.

I'm trying to understand what, if anything, you need from us on that point. Because I don't see where we have a role in that. So, tell me, enlighten me.

**WILLIAM LAPLANTE:** Yeah, so I think – I think – and this is a – I've been thinking a lot about this, Mr. Chairman, and thanks for all your work over the years. I think we need to focus more on things like – and this may not be the answer, but a minimal sustainable rate – ensure that when the department budgets for things that there is a minimal level of production that is done, because otherwise it's not going to happen.

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I know that we're not the appropriators, this is the authorizers, but I think there's something that could be done there that says, for example, if you have a section 804 or an OTA or whatever and you are successful, you have to budget and plan for a minimal sustainable production rate. Now how you get that, the methodology for it, that's work to be done.

But I just think that we have to force the system for successes to go into production.

**MIKE ROGERS:** Well, you – you asked the question, you said are we prepared, meaning the DOD, to fund private innovators at high rates of production? What's the answer to that question?

**WILLIAM LAPLANTE:** Well, the answer is historically we've not been funding high rates of production since the end of the Cold War, with exceptions. And as people often say, we simultaneously want budget stability but also flexibility. And those two are not at odds, but I would argue that you don't get flexibility if you don't have high rates of production.

An example of all things is with the F-35. We're at high rates of production for the F-35 for all you want to say about it. We had an FMS case come with Finland two years ago. We got an approval to do it and within a year and a half they're going to get their airplanes. Well, why is that? It's because we're in high production.

Whereas if you said to us, I want a high production – I want to get large numbers of harpoons or a large number of F-16s, and you look at a production situation in both of those, which are FMS cases, not so much. So, I'm trying to get us all to think about how do we get these production rates up, how do we force the system to do that?

**MIKE ROGERS:** And what I would ask is if there's something you need from us as authorizers to facilitate that, please get that language to us. We want to partner with you to help solve this problem.

**WILLIAM LAPLANTE:** Yeah, I think that's exactly right. I think – I also stood up a joint production accelerator cell to just make sure that we had production experts in the DOD, not just innovation experts there. So, I think anything the committee can do to help us focus on that and I'd be happy to work with you, Mr. Chairman.

**MIKE ROGERS:** Well, I would ask you – and you and Heidi and Mr. Beck have all been around the DOD for a long time. Going to the ranking member's point about risk and culture, the fact is there is a culture in the Pentagon where officers don't want to take risks because they're afraid it could inhibit their next promotion.

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And that is a cultural indoctrination. What is it that we have to do to change that and turn it around so that you won't get your next promotion unless you're demonstrating you've been taking risks? Failure is OK as long as you learn from it and then try to do better. Or is it possible for us to do that outside the Pentagon?

I'm asking – I don't know the answer to this, but it is a institutional problem that's killing us.

**WILLIAM LAPLANTE:** Yeah, this is a – we've all – Mr. Chairman, we've all been thinking about this a lot. And you know with your expertise in space, we all used to say that if the DOD had done five attempts to land the first stage on a barge, we would have an IG investigation. And we'd be asking who was held accountable for that, you know.

So, there is something about the risk equation that is different in the government than what we would accept for entrepreneurs. And somehow, we need to get that. And when we – and somebody said this to me once, is that most things start very flexible with policy and law, and they end up over time getting more and more prescriptive and specific.

Because over time you have more trends times, you have things that happen that are real problems, and they get more specific. Somehow, we have to turn that back. And I also think flexibility is really, really important which gets to trust between us.

**MIKE ROGERS:** Well, and I would just leave you with this, be thinking about if there's a role that we can play in shaking that culture up. I don't know what it would be, but I'm – I'm open to any ideas. And with that, I'll yield to the ranking member for his questions.

**ADAM SMITH:** So, I'll build off of that last point, build off actually both of the points that the chairman made. And Mr. Beck, I'd ask you this question. I've oftentimes cited – and when we met, I cited with you a story a year or so ago in Foreign Affairs that analyzed the Pentagon and basically concluded that the Pentagon is built to be the Ford Motor Company in the 1950s. And it needs to be the hit Apple in 2022. I come from the land of Microsoft and Amazon, so you know – any one of a number of different innovative tech companies.

But you've been in Apple, you've been at the Pentagon. If we were going to make that change to – to move it from the 1950s Ford Motor Company to 2022 Apple, what – what are three things that you'd do to change the Pentagon? A whole bunch of different options there. You know, in fact just focusing on what the chairman talked about, you know, we have a constant review process and IG inspections and challenges to every – I mean, what could we change to really begin to – to move in that direction?

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**DOUG BECK:** So, thanks very much for asking that question. And you know, the first thing I'd say is I don't think that there's any company out there that can exactly provide the – the exact model that – that we need in the department. But what we do need to do is we need to figure out how to do disruption at scale.

And that starts with – as we think about the incredible disruption that we're – that we're bringing in from the commercial tech sector, for example, as Under Secretary LaPlante talked about, it talks about it – it requires us to begin that process with thinking ahead to not just is there a transition partner in the department, but is there a pathway to scale?

How are we going to get there? Because, as I mentioned, we need that strategically in order to meet the strategic intent. And the tech sector needs that in order to have their return-on-investment work or their economics to work over time if we're going to be able to make the investments we need. I want to come back to your culture point though, because I think this is a really critical one.

We have a really hard time – and I've lived in both these cultures for kind of my entire professional career. We have a very hard time in the department with protecting failures. Brilliantly led that thing that we decided not to do is not a great fitness report bullet for any military officer and we need to change that.

That's about celebrating successes where somebody took a risk and it paid off. It's about protecting the failures so that we don't have people's careers destroyed because they made the right decision to turn something off or to call something out. It's about forcing things through the system, which is why the actions that the secretary and the deputy and the vice chairman have taken, for example, through this new deputy's innovation steering group where they are bringing the entire team across the department together and saying we are going to meet these timelines and we're going to have to break some glass to get there.

That is critical. And it's also about partnership here between Congress and the department, because we are going to have to take risks. And as the chairman said, there are going to be mistakes, and we've got to be in a position when that happens to responsibly address those mistakes, but also to move on to the next thing.

So, I think all those pieces together, including that partnership, are critical to our ability to get to disruption at scale.

**ADAM SMITH:** And in the one piece I'd like to say publicly, we've talked about a couple of times, is in terms of the people you hire. And I think right off the bat, we slow everything down because it takes forever to hire anyone at the Pentagon is because they're doing a background check. And look, you know, is there risk in who you hire?

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Sure. But there's also a risk in not hiring people – and I'm struck – going to use this line when we met from the movie Oppenheimer when they were, you know, analyzing Oppenheimer years later and they asked the general in charge if he would – if he would have hired him given what he knew now. And he said I wouldn't have hired any of them, OK.

And we never would have built it because if you look – if you looked into the background of every single one of these people, there was something there that was going to make you worried. But you know, de-risking that and not having the people we need to innovate, you know, again, it's about balancing risk.

Lastly, Dr. LaPlante, on your point about production, I think one of the things is – I think you're right, but one of the things that we have to do is understand. The reason that we don't do production at scale is because it's more expensive, OK, in the short term, it's no big mystery here. So, if we're going to get to production at scale of the things we need, we're going to have to start making choices.

And that's something we just don't do. And we in Congress are as much to blame for that as anybody. You know, we get our pet program, we get our relationship and we're going to protect it to death's door, OK? And when you can't – when you can't do it, you're like well, OK, well, just don't kill it. You know, maybe if we just did this many or we did that many, then I can go home and say, well I did something, all right.

This is a message as much for my fellow members here as it is for you. And I'm not going to put you on the spot here and say what are the five programs that you'd kill tomorrow? If you want to do that, that'd be helpful. But how can we get after that aspect of the problem? You know, we build a little of a lot instead of saying this is what we need, let's go get it.

**WILLIAM LAPLANTE:** Yeah, thank you. Thank you, Mr. – yeah, and I could say the five programs I would kill tomorrow, but I'd lose all my friends that I have, so – which I don't have many. All kidding aside, I actually think there's another word we have to really – and I know this is going to sound stunningly obvious to everybody in the American public, but I use the term APUC. I'm sorry for the acronym, but it's basically cost per unit.

That matters. So, when we go to these – when I'm going to some of the companies, and Doug and I and Heidi, and we talk to them, we've got some innovative counter-UAS, with asking them, as I said, how quickly can you get up to these high rates of production, I'm also asking them to plot on the same chart versus time what the unit cost does.

Because, obviously, as you produce more, the unit costs should come down, and really know the unit cost. And the fact of the matter is – this gets right to the

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point you made – if you looked at some of the unit costs of some of these counter-UAS interceptors, it's a concern. And you have to recognize that, where the UAS situation is going around the world, they're cheap.

And so, obviously, if it takes you \$1 million all-up-round to shoot down a, you know, \$20,000 thing, which cost curve would you better be on? So, we've got to get that into the vocabulary, and you have to make the all-up-round or the unit cost cheap matters.

**ADAM SMITH:** Thank you. I'm out of time. Thank you, Mr. Chairman.

**MIKE ROGERS:** My friend from Colorado, Mr. Lamborn, is recognized.

**DOUG LAMBORN:** Thank you, Mr. Chairman, for this vital hearing that we're having today. And thank you for the witnesses and for what you do for our country. Secretary Shyu, as you know, China is currently outpacing us on hypersonics development. This is because we as a nation have allowed test failures to disrupt or cancel previous programs, just as we've been talking about.

And I believe that we have to adopt more creative ways to test hypersonic capabilities and get away from the all or nothing approach that is slower and more costly. So, could you please discuss the department's plans for programs like MACH-TB to improve our testing capabilities over the next two years?

**HEIDI SHYU:** Thank you very much. This is a great question. Something that I was very passionate about as soon as I came into the building. I can tell you this is why last year we're putting \$1.5 billion into hypersonic test infrastructure.

**DOUG LAMBORN:** Excellent.

**HEIDI SHYU:** OK. And one of the things that we have done is the \$1.5 billion is going to triple our rate of test. So, this is – this is absolutely great. In terms of MACH-TB, what we demonstrated last summer, literally using a commercial launch to test a Mach payload at a hypersonic trajectory to make sure that works.

So, going forward, we're utilizing not just our test assets within Tennessee and other places, but we have opportunity to look at different commercial launches as well.

**DOUG LAMBORN:** Great. And are we utilizing commercial industry and academic institutions like Purdue University and others to build out our hypersonic testing infrastructure?

**HEIDI SHYU:** Absolutely, we have a joint hypersonic university consortium, literally to bring together the best and most brilliant minds in the area of hypersonic to solve a lot of these problems, OK? So, I'll give you one example.

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One of the activities that the researchers developed is a very high-performance propellant [ph] that would enable us to triple the range.

I mean that's pretty awesome, right? It came out of a – from a university research project. So, we're absolutely leveraging universities to solve some of our very pressing challenges in the area of hypersonics. Thank you so much for your interest.

**DOUG LAMBORN:** Excellent, we've been talking a lot about UAS problems. We're seeing what's happening in Ukraine, in Israel, Yemen and other places. So how – what are we learning and what are learning and how is that shaping – and I'll start with you, Secretary Shyu, how is that ship – shaping our priorities for investing in anti-UAS capabilities including directed energy for instance?

**HEIDI SHYU:** That's a great question. I can tell you as the Army was working to integrate lasers onto their platforms, and by the way their systems are fielded as we speak, OK. We within the research and engineering community worked on developing lasers that's six times more powerful. That laser source has been delivered to all three services.

All three services is now integrating 6X more powerful systems into the trucks, into their ships, etc., OK? And last summer, we initiated the development of a laser that's 10X more powerful than what's being fielded today. And that capability will be delivered in – over next year. So, this is how fast we're accelerating our capabilities.

**DOUG LAMBORN:** Thank you. And Dr. LaPlante, I have to take a slight diversion here and talk about the Sentinel Program. That's slightly outside of our topic, but it's related. I know we've had Nunn-McCurdy concerns. We talked about that. Would you agree though that a ground-based leg of the nuclear triad is a critical part of our national security?

**WILLIAM LAPLANTE:** Yeah, and thank you, Congressman. And so again, as the Nunn-McCurdy process goes, there's a – they have to reaffirm the requirement and all the rest of it. And those teams are off working now. We're hopefully going to have that all completed as statute by 120 days from when the president's budget go over.

So, putting that aside, broadly, the national – the last NPR reaffirmed the need for a triad, which of course has a land-based part of it. And so, that's – that's the position. I have been around the nuclear enterprise for 40 years and, I'll tell you, the situation today from the threat perspective, it's not good.

It's not good, I would just say that.

**DOUG LAMBORN:** Thank you for your work. I yield back.



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**ROB WITTMAN:** Thank you, Mr. Lamborn. We'll now go to the gentleman from Connecticut, Mr. Courtney.

**JOE COURTNEY:** Thank you, Mr. Wittman, and thank you for the witnesses for being here today, again, on such an important topic. Dr. LaPlante, on page three of your testimony, you mentioned that the department just released a month ago a national defense industrial policy and – which is the first in terms of trying to get to that full rate production and get, you know, again, everything from munitions to chips to, you know, every other technology.

We really have to go back and really look at what's happened to the industrial base. Over at the Navy office that's working on the submarine program, they did an analysis that, at the end of the Cold War, 36 percent of the US economy was employed in the manufacturing sector. Today, that's 11 percent. So, obviously, F-35, things have been going well, but if we're truly going to be able to meet the moment, we really have to expand investment in all of the human capital that's required.

And again, the Navy has been doing that and we put money in the last year s – in this year's budget and in the NDAA for that as well. But as you and I talked about in California, this is actually really for that – how do you change that number is really an all-of-government approach. Starting with the Department of Education in terms of Perkins Grants programs for career and technical Education, the Department of Labor for the Workforce Investment and Opportunity Act for pre apprenticeship training, the Fitzgerald Act for apprenticeship training.

So again, I mean, this is something that people really have got to get out of their silos and recognize. If we're going to have a defense industrial base, we need an industrial base. I just wonder if you could comment on that.

**WILLIAM LAPLANTE:** Yeah, I appreciate that, Congressman. So, I'm thinking – like you, I've been thinking, and all of us, I've been thinking a lot about this and going back and reading World War II, books and books about the early Cold War and a couple of things jump out at you. Number one is what you said was that the manufacturing in this country, of course, is not what it was.

This is not about defense; this is across the board.

**JOE COURTNEY:** Trade tax policy –

[crosstalk]

**WILLIAM LAPLANTE:** It's across the board, it changed. The second thing you learn – or you relearn is we have to be honest with ourselves, not criticizing it. We're at 3.2 percent of our GDP for the defense budget. Not complaining,

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that's where we are. When Eisenhower gave his famous speech about the military industrial complex, I think we were at 10 or 12 percent.

Even in 1986-87, which I'm old enough to have worked in defense, we were at six percent. Realistically, we're at 3.2 percent. Is there – is there places we can find money? There should be and we should be held accountable to that. But you have to recognize that. The second – the second thing that jumps out at me, and thanks to people like you and others, the leadership here, the submarine industrial base, the work across federal, local level, state, has been incredible for the submarine industrial base.

Having said that, even with all of that work, we're – it's strained. Now this relates to some fundamentals like capital. Is industry investing capital? Now in the submarine case, there was a great work between General Dynamics and EB and the Navy to split the cost of capital, but there's workforce. And as you know, in the workforce situation with the industrial base, particularly the submarine industrial base and this amazed me when I heard about it, is a lot of the attrition is with people who are newly hired.

So, we have a whole new generation of people that are going into shipyards to work. So, this is going to take a systemic push across the country, not just – and everything's regional – regionally different, to really recognize that we have to rebuild manufacturing in this country, which includes the industrial base.

**JOE COURTNEY:** Yeah, I mean, one of the great books is Freedom's Forge, which talks about the fact that the way we were able to convert to tank production and airplane production is because we had a really strong automobile industry in this slackened state. And we don't really have that right now to really make that – that transition.

But I have a quick question for Dr. Shyu again. We passed the AUKUS provisions in the NDAA, including the Defense Production Act, to accelerate development of some of the technologies that you're working on. And I'm glad to hear you're on Pillar Two to really quarterback that. Again, if you could talk quickly about, again, how that Defense Production Act authorities in NDAA is going to help the cause.

**HEIDI SHYU:** Well, I will say – highlight part of the responsibility we have literally is working with all three countries to figure out what we can work together as quickly as possible, OK? And Bill and I actually chair a commission to – jointly with our Australian counterparts. So, we literally meet regularly with them.

One of the things that we're focusing on literally is figuring out all the capability we have across our three countries, how we can integrate the capabilities as quickly as possible. And the first demonstration of that is happening this year,

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which is really awesome. OK?

**MIKE ROGERS:** The chair now recognizes the gentleman from Virginia, Mr. Wittman.

**ROB WITTMAN:** Thank you, Mr. Chairman. I'd like to thank our witnesses for joining us today. I'd like for all of the witnesses to reflect on this assertion. We live in a world today that is digitally driven, software directed. We see that around us, 5G, AI, software defined networks. We even see that our cloud has now become distributed.

And we understand that that is the future. And really the Pentagon further through the years, really since its inception, has been a hardware driven organization. And what happens with that is it becomes slow. It's all – it's all focused on big programs and, unfortunately, it also becomes very focused on process.

I argue today it has to be, as I said, digitally driven, software directed. And everyone in the enterprise – I don't care if you're in uniform, I don't care if you're in the Pentagon, I don't care if you're in the industry – every day, the question that should be asked is not, did I follow process today?

Did I check the box? It should be – did I support the warfighter today? Did I do things that will deter our adversaries today? And if the answer to any of those questions is no, you need to find another place to go because that's – that's the all-hands-on-deck call that we have today. Give me your perspective about how we achieve that.

How do we get the Pentagon into a software driven organization? How do we get the mindset across the Pentagon, across the enterprise, not just Pentagon, but everywhere to say this: Did I deter our adversaries today? Did I support the warfighter today? Ms. Shyu, I begin with you, then Dr. LaPlante and Mr. Beck.

**HEIDI SHYU:** Yeah, that's absolutely a great question. I think one of the things that the Hill has really helped namely putting into language modular open systems architecture is mandated for – so for the last several years, all the programs are heading down modular open system architecture. Why does that benefit you?

Because you can separate the hardware from the software. You are now able to iterate software and put the latest software in without redesigning the entire system. So, that is exactly the pathway we're heading down, to rapidly insert the latest technology via software.

**ROB WITTMAN:** Very good. Thank you. Dr. LaPlante?

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**WILLIAM LAPLANTE:** Yeah, so thank you for the question. I co-chaired the Defense Science Board's study on software acquisition. So, you know, once we realized that modern software was all continuous development and we realized that it's going to blow the heads out of people in the – in the Department of Defense and in the way we appropriate, because that's not how we – we have waterfall appropriation.

We do R and D, production, sustainment, that's waterfall, it's continuous development, OK? So, we got the software acquisition pathway. It was very interesting. This is sort of a radical thing. The software acquisition pathway allows you to bring the requirements people together with the developers and the money people and do sprints and do what – modern software.

Of course, you can deploy software much faster than the sprint, the sprint might be six weeks, but you can deploy it every day, OK? That's what we – we pointed that out in our study. I had one of the – my program manager say the other day, he's doing incredible stuff in space, say you know what, the fact that we have to have a software acquisition pathway itself is not right.

Because actually, to your point, he said in industry today, that's how you do everything. You do it all that way. You do sprints with the hardware coupled to the software, you can't – and you just – and you go through it, modular systems helps. But I would just encourage – we're probably not ready for it, but if we could – if we could take the software acquisition pathway and do it broadly, that would be great.

**ROB WITTMAN:** Yeah. Thank you. Mr. Beck?

**DOUG BECK:** Thanks very much and I obviously agree with everything that my teammates have just said. I – maybe just make two quick points on the two parts of what you asked. The first one is, we obviously have to be thinking about hardware and software in integrated – in a completely integrated way. And I actually think our problem isn't just that we don't think about software.

It's that when we think about – we think about hardware and software separately, even when we think about software. That's a mistake too. We have to think about hardware and software together. That's why every single project we're doing at DIU the – the sUSV prime project that we just launched – CSO we just launched recently starts from the beginning as being about hardware and software together.

So, that would be point one. Point two is about the culture change that – that you asked and the metrics. And if I reflect on this from the DIU's perspective, our metric back in DIU 1.0 was what meetings do we even have and would anybody show up between the department and the tech sector? Obviously light years past that, right?

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The second iteration of DIU was how many prototypes could we make and how fast and – and that’s OK. But that’s not good enough because the metric now has to be – have we meaningfully changed the deterrence options? Have we meaningfully changed the O plans in some way that it actually changes what Admiral Aquilino or Admiral Paparo is able to do or able to avoid having to do?

**ROB WITTMAN:** Right, good. Thank you, Mr. Chairman, I yield back?

**MIKE ROGERS:** The Chair now recognizes the gentleman from California, Mr. Garamendi.

**JOHN GARAMENDI:** I thank you, Mr. Chairman, and I see the ranking member has left for a few moments. Thank you both for recognizing the problem. I’ve got a whole bunch of questions here, but I – in a previous conversation with the three of you, I asked this – we’re going to write the next NDAA here in the next couple of months.

The committee seems to want to help you create innovation and bring it to scale. My question to each of you is in the NDAA, what do you need to carry out your task? Let’s start with Ms. Shyu, if you could talk about – you’re on the innovation side, the research side. And then all the way down the line and, Dr. LaPlante, I’ll let you finish because presumably you take it to scale.

What do you need? What specific things do you need? And then I want you to write the language so that we can then review it and put it in the NDAA, if it’s appropriate.

**HEIDI SHYU:** Well, first of all, thank you very much for asking this question. This is obviously the most important thing we – figure out how to get innovation to scale. I will say thanks to Congress, is giving us the APFIT authority, Accelerate Procurement and Fielding of Innovative Technologies. This helps the small companies tremendously because, as you well know, a small company delivers a product, we like it, it has proven capability.

And then we want – we want to palm it, and it’s a two-year process. So, the small company will die in the Valley of Death waiting two years.

**JOHN GARAMENDI:** Do you have specific language that can solve that problem?

**HEIDI SHYU:** The APFIT, you guys have given us the funding already. I would love to get the appropriation, so I can award some companies. OK, we’ve awarded 21 companies to date to help to accelerate production, OK? What would really help is for us to get a FY24 budget, I’m waiting to – I have a number of other companies waiting to get funded.

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**JOHN GARAMENDI:** So, you have the authority, it's an issue of the money to support that authority?

**HEIDI SHYU:** Absolutely.

**JOHN GARAMENDI:** OK, you have a number that you would like to have – one, two, three, four, five?

**HEIDI SHYU:** The higher the better.

**JOHN GARAMENDI:** OK, deliver that information to us.

**HEIDI SHYU:** We got \$150 million last year, but certainly I would be happy to accept higher.

**JOHN GARAMENDI:** Mr. Beck.

**DOUG BECK:** So, the first thing that I would say is thank you, because – because the Congress has already acted and the NDAA that you just completed took an enormous step in helping us in huge ways from DIU to be able to get after this mission. And I want to say thank you for the trust that that represents, and we take that incredibly seriously.

In terms of what we need going forward, obviously, all of us in the department need a budget. The thing that I want to focus on is talent, which came up before in the – in the chairman's statements. We need – we have incredible people who speak fluent military-ese [ph] and tech sector-ese [ph] who want to take 95 percent pay cuts and come work for us in the department to get after this mission.

And we need to make it easier for them to come and do that. It's very frustrating how hard that is to do, for them and for us. And so –

**JOHN GARAMENDI:** You're focusing – excuse me, we've got another minute and a half. I wanted to get to Dr. LaPlante. You're focusing on the people that are out there. You're not able to hire me, not able to bring them on. So, you've got specific language that you would want to put into the law so that you can do that. Is that correct?

**DOUG BECK:** That's correct. We have specific –

[crosstalk]

**JOHN GARAMENDI:** When will you deliver that language?

**DOUG BECK:** We can provide it to you – we can provide it to you immediately. And the only thing I'd add is these are – what we're asking for is

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nothing new. It's just authorities that already exist in DARPA, SDA, my friend Jen Easterly over in cyber has it. We just need that help.

**JOHN GARAMENDI:** Dr. LaPlante.

**WILLIAM LAPLANTE:** Yeah, thank you. Thank you, Congressman. I'll just make it very fast – and I apologize if this sounds like acquisition nerd speak. We need – the contracting flexibilities that we have for Ukraine, we need that more broadly other places. And what I mean by that is, for example, when you do undefinitized contracting action – I apologize for the nerd speak – it allows us to move very fast, get people on contract within one or two weeks.

We need that in other places too, without having to definitize the entire contract. It's in the details. We'll work with your staff on this, that's really key. The other key – again, I apologize for the nerd speak – but rapid authority to operate new IT systems for cyber. Every time it comes up in a new system, it's a different journey.

**JOHN GARAMENDI:** OK, presumably we write the law, we don't allocate the money, but we start here, so please get us that information.

**WILLIAM LAPLANTE:** Absolutely.

**JOHN GARAMENDI:** Finally, with regard to the Sentinel question, \$130 billion, can we spend it better somewhere else?

**MIKE ROGERS:** The gentlemen will have to take that answer to the – for the record. The chair now recognizes the gentleman from Tennessee, Dr. DesJarlais.

**SCOTT DESJARLAIS:** Thank you, Mr. Chairman. Secretary Shyu, my district includes the Arnold Engineering Development Complex where most of the cutting-edge technology must pass through for testing before being deployed to the field. I'm keenly aware that a huge bottleneck for innovation is found in testing and evaluation. Can you just briefly talk about what steps the department has taken to mitigate the effects of the testing shortfall, and how are you leveraging nascent tech-like simulation and virtual modeling to accelerate innovation?

**HEIDI SHYU:** That is absolutely a great question. So, by the way, I visited Arnold Engineering Development Center and spent several hours there visiting each of the testing facilities. And I can tell you, after living in Tullahoma, Tennessee when I was 11 years old, OK – yes, I lived there – I fully understand the importance of AEDC, OK?

This is why a big chunk of the \$1.5 billion in terms of test center is going into AEDC, to increase the facility. I can tell you, talking to a lot of the test site folks

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there, they're thrilled. They say it is utterly going to triple our throughput. So, they're already working on that. So, it's – it's coming.

OK, I'm really excited about that.

**SCOTT DESJARLAIS:** And I'd like to open this up to the rest of the panel as well. This committee has taken action through the past few NDAA's to provide DOD with authorities to more rapidly develop and deploy emerging technologies. How much of this is just an issue making decision makers aware of the authorities, and what actions are you taking to raise awareness of these recently enacted authorities?

**WILLIAM LAPLANTE:** Yeah, I'll be very quick, but for example, I mentioned this competitive acquisition, Pathfinders, it's a bureaucrat thing. Basically what it is is that if you – it's called Big A acquisition, you have acquisition itself which is contracting the strategy, but you have the money and you have the requirement.

If you think about putting an addition on your house, you do that all the time where you and your spouse have to agree on what you want. That's a requirement. You have to hire a good contractor and have a decent contract. That's the acquisition strategy. And you better have the money. If those three are – if any of those three are out of sync, it's not going to work.

We wanted to see what we could do in the department by moving across those three legs and we did it. And we did it by using these open architectures that Heidi talked about, by basically building software, taking software that's developed by the Navy, port it to the Army and vice versa. So, there's a lot of those things that we're showing, but it's to train people, to your question, to show people in the workforce, you can do a lot of these things.

Just a simple thing like a requirement – the Army doesn't have a requirement for something that the Navy has. Well, there's a database you can search, and you can quickly get that requirement, sounds very simple, teaching people that. That's the kind of thing we're doing.

**DOUG BECK:** I mean, I might just build on that quickly. This is a huge area of focus for all of us working together. And the first thing I'd say is as you – as you suggested, the tools are in the toolkit. This is about figuring out how to leverage those tools effectively. So I'll just mention a couple of things quickly.

First, we have partnered in creating through the Defense Acquisition University, an ICAP program, which is all about figuring out how we can help train people across the department in the acquisition community on these latest tools so that they can – they can get the increased comfort, number one. Number two, we work very, very closely with our partners around the department, both on the



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other innovation entities, but also through the – through the services acquisition functions in order to help them gain experience in leveraging these latest tools so they can take them back with them.

The most important thing that we need to do though is keep delivering success because success breeds success breeds success and the most important thing we need to do is show successful transitions to scale using these authorities so that that whole acquisition community out there knows they can take the risk and it's not a risk.

**SCOTT DESJARLAIS:** OK. Secretary Shyu, we've only got a minute, so I know you can't probably get into great detail, but can you describe the concept of the reusable hypersonic aircraft and what it will mean for our ability to project force over China? And how would this capability allow us to overwhelm Chinese anti-access area denial capabilities for critical ISR and strike missions?

**HEIDI SHYU:** I'll be happy to come to your office and give you a classified briefing on that. It is a tremendous capability that could push us forward in terms of having a reusable system that can fly to a desired endpoint and come back and refuel.

**SCOTT DESJARLAIS:** OK. I would love to facilitate that briefing and I will yield back the balance of my time.

**MIKE ROGERS:** The chair now recognizes Mr. Kim in New Jersey.

**ANDY KIM:** Thank you, Chair. Thank you to the three of you for – for joining. Mr. Beck, I'd like to start with you. I appreciated that you raised the issue of talent in response to a previous question and you dedicated a good chunk of your testimony about this. I guess I want to elucidate this a little bit more because we spent a lot of time talking about hardware, software, but I guess I want to hear from you how – how big of a magnitude of a problem is it about, you know, making sure we can attract talent?

Like how are we doing on this, and in your mind, you know, what is the gap, You know, what is it that we're trying to fill here?

**DOUG BECK:** OK, well, I want to start – I'll start first of all with – first of all, thank you for asking that question is one of my favorite topics in life. – As is for me too – number one. Number one – number one, talent is the absolute heart of what we do at Diu what we do across the defense innovation enterprise.

There is incredible dual fluency talent out there and we are generating more and more dual fluency every single day as the energy and excitement and – and interest from inside the force around commercial technology and its capabilities grows. And as the energy and excitement among both founders and funders in

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the tech sector grows for working with us. So that's fantastic.

And that's why so many people are willing to come do this. To answer your question about how we're doing, I don't think we're doing that well yet. We're doing great in terms of attracting folks and – and the energy and their willingness to come – come take it on. We still have a long way to go in terms of our ability to harness that capability.

And I'll – I'll throw out, first of all, the – the processes that we have in place around vetting people around bringing them on board and around it, not being – they may be willing to take the pay cut, but they're not willing to have uncertainty for two years to do so, we also need to get a lot better on the other side of the equation about helping make sure that those great talented folks from from the department military folks who may be taking experience in this space that they are successful that they can go back to the force and eventually help lead it or if they get out, they can stay in as a reservist, and they can and they can manage this.

We're doing a lot of that, but we need to do more.

**ANDY KIM:** Yeah, thank you for that. And this is something I'd love to work with you on because I do think it's easier for us here in the Armed Services Committee to understand gaps when it comes to hardware gaps when it comes to the warfighter. But it's harder for us to understand like what – what more can we accomplish if we had 20 percent stronger or bigger workforce when it comes to certain types of talent, things like that.

So if you don't mind, let's engage on that. Undersecretary Shyu, I wanted to come at this from a little bit of a different direction. You know, a lot of our private sector engagement, a lot of the innovation in this country, it's coming not just from talent from here in the United States, but global talent that we're able to attract.

And that causes some challenges sometimes in the national security space. Of course, we want to make sure that things are secure and that our national security is secure on that front. But I want to get your thoughts on how important is it that we find ways to be able to securely bring in global talent into our innovation sector in the United States to be able to affect and support our national security.

**HEIDI SHYU:** Thank you so much for addressing this very important topic. We are in a competition for talent worldwide, right. So having the best universities in the world to be able to track the most talented minds is critically important. One of the things that we're working on is also making sure that we have these talent and have a talent pipeline that could potentially become citizens and have them to go into the DOD. So I will tell you one of the things that my office focuses on

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is a smart scholarship program.

In the last two years, we have funded 1400 students undergraduate, master and PhD programs, right in Stem fields in 21 different Stem fields, literally attracting them. It's a fee for service. So if I pay four years of your college degree, you owe me four years of service in one of the DOD laboratories, right.

And I can tell you this program has been going on for decades and we have huge success in terms of retention even after when they finish their obligation, greater than 70 percent of the folks after they finish their commitment, choose to stay to work in one of our DOD labs, so it's a – it's a great mechanism for us to attract talent and bring them forward to help the DOD.

**ANDY KIM:** Great. Thank you. I'm almost out of time, so I'll just say I think you'd have a lot of positive response from committee members here on both sides of the aisle to think about how we can try to bring in the best talent. And let's try to make that a priority this coming forward because sometimes it gets lost in the mix.

When we talk about so much of the hardware, the software, the innovation trends, but it's about the people that drives it. Thank you and I yield back.

**MIKE ROGERS:** Yeah, and I would emphasize Ms. Shyu, that's an outstanding program and I'd love to see if you need more resources to expand it to a larger universe of people. I'd be happy to help you with that. The chair now recognizes gentleman from Mississippi, General Kelly.

**TRENT KELLY:** Thank you, Mr. Chairman. And good morning to our witnesses and thank you for being here. I'd like to address the pressing demands of our Navy's fleet to provide persistent ISR and MDA coverage at sea. China's naval fleet is now the world's largest expected to grow significantly by 2030, while the US Navy faces fleet reductions.

While growing conventional warships is vital, a traceable unmanned systems can allow us to accelerate – accelerate strategic overmatch, achieving and maintaining persistent maritime domain awareness where we most need it will be impossible without leveraging long endurance unmanned vehicle technology. Mr. Beck, the Navy's fourth and fifth fleet are integrating rapidly scalable uncrewed maritime assets.

My understanding is that these uncrewed assets are proving to be very capable providing a persistent presence in areas that could otherwise not be fully covered or not covered at all by our limited number of manned assets. Mr. Beck, do you share that view and what role do you think long endurance uncrewed assets can play in INDOPACOM?

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**DOUG BECK:** So the answer to your question is, I absolutely share that view and it's a huge part of what we are focused on, focused on solving. You talk about INDOPACOM and the the – the value that a tradable autonomous assets can play in that space. This is actually the entire focus of the replicator initiative. This replicator one piece of it that the deputy announced recently and that we are now four or five months into that is all about both delivering real capability against that need, and at the same time, it's about building the muscle for our ability to do this again and again in – in uncrewed assets over the – we, you know, we just launched just dropped a week and a half ago, a small amount of surface visit vessels.

Commercial solutions opening, which is focused on exactly the kind of capability and it builds on all the lessons from Task Force 59 and all the ongoing lessons we're seeing both from Fifth Fleet and Fourth Fleet. And we're working extremely closely with the Navy on what they need to solve those INDOPACOM and broader problems around the world and how commercial tech can help leapfrog to get there.

**TRENT KELLY:** Yeah, and my next question was on the replicator initiative. And on that, is it more focused on technologies that haven't been deployed or is it looking to scale technology that is already operationalized?

**DOUG BECK:** So – so the answer is all of the above. So what replicator is about – is it's about taking the absolute best technology that we have, whether it is already shovel ready and in place and or it's something that's maybe a little bit newer. But in all cases, we've got to be able to leapfrog ahead to that 18 to 24 month objective that the deputy laid out, and that's not moving, it's not moving because we're not moving it. It's not moving more importantly because the adversary is not moving their timelines on things.

So that I don't know if that answers your question, sir.

**TRENT KELLY:** Absolutely and Undersecretary, Dr. LaPlante, shifting our focus to another critical aspect and outpacing China. Let's examine the strategic significance of solid rocket motors. Limited supplies pose a dangerous bottleneck for DOD missile programs and our ability to deter China. What is the department's plan to use the significant industrial policy resources at your disposal to invest in new domestic solid rocket motor producers?

**WILLIAM LAPLANTE:** Yeah, thank you for the question. We've in the last year invested both for Allegheny Ballistics Lab as well as, the – the – the Aerojet deep combination of DPA and other funding for exactly the reason. However, having two solid rocket motor producers is not enough, I think we need at least four. But this gets back to getting us the budget and getting us the DPA funds and getting us the multiyear contracts because it's all related, but it's absolutely critical.

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Thank you.

**TRENT KELLY:** And Ms. Shyu, I don't have a question for you, but I've got a minute and six. And so if you have something that's just been itching to get out, please let it out.

**HEIDI SHYU:** Thank you so much for the opportunity to share with me as soon as I get the FY '24 budget. I am going to drop it on a small company that is going to do additive manufacturing of a solid rocket motor. OK. We've been working very closely with the Navy on this and we can't wait to get them on contract, OK.

So please give us a budget, OK.

**TRENT KELLY:** I am so glad I asked you sometimes your genius is revealed by not asking questions and with that Mr. Chairman, I yield back.

**MIKE ROGERS:** Genius is a strong word. Dr. LaPlante, you mentioned help with DPA funds, get us some language how we can help you part, you know, we'll partner with our proprietor friends, but we want to help you with that. The Chair now recognizes gentleman from new Jersey, Mr. Norcross.

**DONALD NORCROSS:** Thank you, Chairman, and thank you for calling this hearing. It's – it's something we deal with every day, especially in acquisition and oversight when it comes to what they call the hardware committees. So Mr. Beck, number of questions come immediately to mind is, how do we use America's great strength and its nimbleness, its ability, what you heard from Mr. Smith?

And say you can drive them in and then they find out it's really difficult to deal with the Department of Defense for a variety of reasons. And we said, well, this time it's going to be different. It reminds me of that, Peanuts, when you know, Charlie Brown's here kick the football this time it's going to be different.

How is it that you say come in? Now, there's reasons why we're slow cyber issues, but they're all comes under risk and we take that risk or collectively take the risk on what we can wave and what we can. How do you get those new innovative groups to come in and let them know that you'll Have a fair shot at that?

How do you tell them it's going to be OK and you're not going to lose your shirt. Bigger companies have a little bit wider breadth to do this. How do you deal with the small nimble companies?

**DOUG BECK:** So the first thing that I'd say is, first of all, thank you for – for asking that question. It's incredibly important. It's kind of what we do every day. The – the vast majority of the – of the companies that we work with are small

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and nontraditional companies. And I mentioned about a third of them our first time with the department.

And we got to make it easier for them to work with us and we got to give them a chance to succeed. I do want to be clear though, Silicon Valley wasn't built on everybody succeeding, right. Some of them succeed, some of them are not going to succeed and they expect that right, That's – that's part of taking the risk.

We just got to give them a fair shot as you say. So I'll just touch on two parts there. First is about making it easier to get in the first place. So instead of them having to show up and build all the expertise with all the lawyers to have 100 page, whatever it is in order to submit, we make it very easy.

It's a 15 point PowerPoint, 15 page PowerPoint presentation or a short white paper they got to provide in order to get into our process in the first place. But more important than that, it's what happens afterwards. As Under Secretary LaPlante is talked about there's got to be a pathway to scale. So we're reorienting our entire focus of – of where we're asking for those questions to places where we know that they are top of the list for most critical, most critical requirements from the combatant commanders standpoint to deter major conflict or when it forces force to fight.

And where we've already done the work with the two engines of scale, the services to ensure that we can get from point A to point B. So that if they make the bet and it works that there's a chance to get all the way through. And the last thing I'll say is what's really going to prove it to them is success cases because that's what makes it all go round.

**DONALD NORCROSS:** Let me keep in the focus of how do we deal with things. So, obviously you hear many questions on the very hot and needed issues of the day. But logistics are more. I want to talk about what your group DIU is doing in the energy, particularly with being able to deliver power to where it is needed, no matter where it is in the globe.

It's not generally talked about a lot, but so much of the systems we deal with, deal with power and if you can't get that, it's like running out of ammunition, talk a little bit about that.

**DOUG BECK:** Yeah, actually, I'm glad you asked that one too. Energy is actually this year actually might even wind up being our largest single area, which is one that people don't talk about all the time. And it's an area that in my former life in the – in the tech sector, we spent enormous time thinking about energy.

I'll just touch on maybe on one example, one concrete example or – and then maybe touch on a second and I might then refer this back to Under Secretary

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LaPlante. So an example of tactical vehicle hybridization is a great example. This is taking technology that you are used to, a lot of you probably use it every single day and grafting it on to the thousands and thousands and thousands of vehicles that we have out there in a way that allows us to hybridize tactical vehicles that takes their consumption of fuel down to 20 to 30 percent.

That means extended range. It means more on target time. It means fewer soldiers and Marines having to go out and resupply them. It means greater time that they can be silent running for more hours at a time. All of that is massive value and it's all about – it's all about using existing commercial tech in the energy space, and that's one that's already ongoing.

The Army's already primed for it for '26 and is planning to expand it in '27, '28. It'll be on thousands of vehicles. Another quick example is the Defense Advanced Battery Supply Chain project that we're working on together with ANS, and this is about leveraging that incredible capability that's in the \$100 billion battery market out there.

So that we don't just make these incredibly complicated bespoke nobody else wants some batteries. We – we leverage battery technology that's out there, so we can go faster, cheaper with better yields and less temperature.

**DONALD NORCROSS:** Dr. LaPlante we ran out of time. I'd love to hear it, but I want to yield back.

**MIKE ROGERS:** I think I want to pause and make sure everybody recognizes what a point Mr. Beck just made and that is Silicon Valley expects a high failure rate. To give you an example, I've spent a lot of time in the recent years talking with Silicon Valley venture capital groups. They have a 10 percent expectation of success, but they make the point that the 10 percent of investments they make in companies, when that one tenth percent successful, it pays for all the – the losses they had on the 90 percent they bet on. That's the kind of risk culture that I want us to try to figure out how we can – can harness and work with.

I don't expect that the Pentagon to do that go that far, but just recognize failure, it's just part of learning how to be successful. Recognize gentleman of South Carolina.

**JOE WILSON:** Thank you, Mr. Chairman and thank each of you for your service. It's never been a more important time. We're in a war we did not choose and that is that we are in a conflict clearly with dictators rule of gun invading democracies rule of law. We saw that February 24th, 2022 when war criminal Putin, invaded Ukraine.

We saw it again October 7th when we had the circumstance, which is almost inconceivable the mass slaughter by the Iranian puppets of Hamas into Israel and

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we see the threats to the people of Taiwan. And so what you're doing is just so critically important and we need to indeed in every way back up our allies and something you see is remarkable bipartisan cooperation with Chairman Mike Rogers and the Ranking Member Adam Smith and we're in this together because indeed I – I'm very, very concerned.

The FBI has warned that we have – it's imminent terrorist attacks again here in the United States. And with open borders, it's just inconceivable to me how dangerous this is and so what you're doing is so important. The department last updated and published their Counter Unmanned Aerial Systems strategy January 7th, 2021 at the end of the last administration was reported to update the strategy by this new year.

And so Secretary LaPlante, I look forward to reviewing the strategy and hope that it includes lessons learned with the invasions of Ukraine and Israel and the attacks on US forces across the Middle East and with the threats of murderous invasion of Taiwan by the Chinese Communist Party. So what – when – when do we expect to receive the strategy?

**WILLIAM LAPLANTE:** Yeah, I will – I will, as soon as I get back to the Pentagon, I will get you an answer on that. We need – we need to do that as we – as we promised. Let me tell you Mr. – Mr. Congressman, just to make your point about the counter US situation, it is different than it was two years ago when that strategy was written.

So it absolutely needs to be updated. Here's the conundrum we have for all of us about it. We need counter US at scale. We need lots of them, whatever they are, kinetic or non-kinetic yet the threat is changing every couple of weeks. So we have to figure out how we get something at scale, but can push out changes every couple of weeks.

Yes, software, I think is part of the answer there, but that's what we need to do. And as I said earlier, as soon as we get the budget or the supplemental, we're going to fund a bunch of these systems. We're just waiting for the – for that to happen.

**JOE WILSON:** And you know, sadly as the conflicts do develop, it's changing every day – it's changing every day – and hey, it was actually encouraging that we learned from the different rocket attacks by Iran through their puppets on Israel that we learned air defense capabilities that we never and missile capability defense that we never had before.

And we don't want to learn it that way, but we are – so we, with our allies of Ukraine, Israel, Taiwan, we need to be right there to live and learn as we see what the enemy are doing too. Additionally, with combat operations in Ukraine, there's been a vulnerability as you really just implied of armored vehicles by



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overhead threats.

And we have a certain class of – of primary defense being a class one through three UAVs, four battalions, just four battalions medium weight, Stryker mounted and mRAP mounted solutions. What is the status of applying and fielding more armored brigade combat team capabilities against near competitors?

And what would our armed brigades perform any better than the Russian vehicles that are provided?

**WILLIAM LAPLANTE:** Yeah, I'll – I'll say what I can say in this open forum. The Ukrainians have, I would say them, they are the experts right now in the world as well as the Israelis on countering – countering US as a missiles because of necessity, they produce these mobile fire teams that go around the country and are basically maneuvering to Set up sometimes with small caliber to shoot these things down.

The issue for us and for the Ukrainians are what they call – I hate the word effectors think of it as the interceptors and this gets to a price point. We want to have interceptors that they can shoot to take down these that are not millions of dollars. We do have some really positive things that we provided to them called APKWSs. Very cheap.

They seem to be working, but we need more of those and – and production is what matters.

**JOE WILSON:** And indeed, air mounted air defense systems need to be in place – and thank you for bringing it up. We're using multi-million dollar defense systems against \$39.95 drones. And – and – and – and we're so thrilled they're working but good gosh, we can do better. So thank you, and I yield back.

**WILLIAM LAPLANTE:** And that's why Doug and his team has to tell our friends in tech, price matters.

**JOE WILSON:** Here, here and – and effectiveness, thank you. I yield back.

**MIKE ROGERS:** Thank you gentlemen, chair now recognizes gentleman from California, Mr. Carbajal.

**SALUD CARBAJAL:** Thank you, Mr. Chairman and thank you to our witnesses for sharing your insight with us today. Our science and technology programs, the Small Business Innovation – Innovation Research Program as well as universities and commercial firms are constantly developing new innovative technologies and systems. We often hear frustrations that these emerging technologies fall into the notorious valley of Death and are not integrated into our existing systems.

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Dr. LaPlante, while not every technology can or should make it across that valley, what successes have you seen across DOD to better integrate new technologies, capabilities from universities into the existing force?

**WILLIAM LAPLANTE:** Yeah, the successes are largely around open architectures. I say this all the time about B21, which is the – the – the current bomber that's on cost and schedule, it's built with an open system. So, if you're a small business or a university and you invent a new sensor or sensor, we haven't thought of and you understand the interface, you'll probably get on to the B-21. What is really important though, Congressman, and this is for all of us and this is on for me too, is we have to educate the innovators on what it means to be part – has to or your – your widget or your technology has to fit in a certain size weight and power or a certain interface, it's not going to get into the system.

So it's got to be working both ways.

**SALUD CARBAJAL:** Thank you. The department announced in the summer of 2023 its replicator initiative which works to field autonomous systems at high speed and broad scale. Ms. Shyu, can you provide us with an update on the replicator, how the replicator is being implemented and what we can expect in coming months And how can we expect replicator to streamline technology translation processes in the department?

**HEIDI SHYU:** So I will say that the department is working very, very closely across all the services with DIU on replicator to scale the capability. DIU has been working very closely – work with all the services, as well as research and engineering to figure out what are the system that's mature enough that we could literally ramp up rapidly in manufacturing.

I will give you one example of – we have a number of unmanned system that has accelerating low rate production. Those are potential candidates to go into replicator. So I will yield the time for Doug to speak about replicator.

**DOUG BECK:** Thanks Ms. Shyu. So maybe just build on that a little bit to say we are – we're making tremendous progress. I think I mentioned we're now after four and a half months, the vice chairman, recently was saying during a deputy's innovation steering group meeting that after four and a half months we were at a place where ordinarily take two, three, four years to get there if we ever even got there.

And – and that's a result of incredible teamwork across the entire department with that leadership from the deputy and the vice to say we are going to meet this time frame. So we've got that first set of that first tranche of – of capabilities and – and systems that are – have been selected. We're working already on – on the next group.

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There's already a programming request that is up here with Congress to help with that. That's – that's the department getting after sorting through how we can best help make these things happen as – as fast as possible. Obviously, we need a budget for the continued on pieces of that. And – and the last thing that I'll say is critically we're working not just on the – what – because we focus a lot on the what, but it's also the how.

And that's why the services are part of this from the beginning to think not just about what, but how will we employ these things? How will we execute? What are the con ops – the condoms for that? How do we sustain, how do we store, how do we deploy?

**SALUD CARBAJAL:** Thank you. Our nation's research system which is largely driven by universities is critical to advancing and innovating technology. My district is home to not one, but two Premier public universities, UC Santa Barbara, my alma mater, and Cal Poly San Luis Obispo. Ms. Shyu, how do universities contribute to ensuring foundation of research and development, which is one of the three strategic lines prioritized in the National Defense Science and Technology strategy?

**HEIDI SHYU:** University are absolutely critical. They developed the basic research and the advanced research. There's the initial seeds that you plant to come up with innovative ideas. I can tell you UCSB, as you probably well know, is – has one of the Army, UARC, right, university affiliated research center. So they participate in all the UARC activities that's funded by the DOD to literally to help to solve the toughest challenges that the DOD has.

So they're are critical component of what we do.

**SALUD CARBAJAL:** Thank you very much. Mr. Chair, I hope you heard that about the great Central Coast that I represent with that I yield back.

**MIKE ROGERS:** Not surprised at all. It produced a product like you. The chair now recognizes the gentleman from Florida, Mr. Gaetz.

**MATT GAETZ:** Dr. LaPlante, you're the undersecretary of defense for acquisition and sustainment at the Department of Defense, a timely or timeless mission, I should say. But I have what is perhaps a timely question, what is in our acquisition pipeline or our sustainment strategy that can give Americans comfort that Russia will not have the ability to nuclearize space.

**WILLIAM LAPLANTE:** Generally, what we have in acquisition pipeline broadly for Russia and for China and broadly is, I would say, call a couple of things Mr. Congressman. One is the Space Development Agency is developing rapidly, two to three years from development to launch a proliferated Leo constellation as well. This is just on, on generally on space, domain awareness and other things.

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On sustainment, what we're doing right now on sustainment is rapid and – and regional sustainment framework around the world, learning from what happened in Ukraine of setting them up in Poland, but also setting them up around the Pacific. And it's been said the difference between acquisition tourists and acquisition professional is an acquisition professional cares about sustainment.

**MATT GAETZ:** Yeah, so – so I know we can't get into the specifics in this setting, but as a general matter can Americans take comfort that we have an acquisition and a sustainment strategy that will successfully stop Russia from deploying a nuclear weapon in space?

**WILLIAM LAPLANTE:** Yeah, without speaking as you know, Congressman about any specific capability of the Russians broadly, the whole strategy we have is around China and Russia. It's entirely about China and Russia, broadly.

**MATT GAETZ:** There's a difference in focus and efficacy, so I don't want to blend those two. I get the focus, trust me, but – but in terms of efficacy broadly, can you say to the American people, yes, yeah, we have an OK, great. And same question to you, Ms. Shyu. You are the undersecretary for research and engineering, can you give the American people comfort that we are researching and engineering things that will stop Russia from deploying a nuclear weapon in space?

**HEIDI SHYU:** I will say we are working on across the spectrum a lot of technology that can counter our adversaries at the unclassified level. I would love to get into a skiff with you to talk about some of the capability that we're developing.

**MATT GAETZ:** Yeah, but it's – and you know just as Doctor Lapointe talked about the focus, what I gleaned from your response that we can't get into the specifics is this isn't some surprise to us. We aren't shocked to learn it, that we have a – we have a real research and engineering focus to deter and – and deprive access of Russia to the space domain for any sort of nuclear deployment, right?

**HEIDI SHYU:** This is hard to talk and classify environment, but like I said, I were happy to get into skiff with you anytime you want.

**MATT GAETZ:** Well, you're – you know, I appreciate that. I also appreciate your smiling and delightful demeanor and if this were all terrifying and driving us to the brink, my senses, the manner in which we're able to have this conversation might be somewhat different. I want to double tap, I think the excellent point that the chairman made about Silicon Valley and their approach to innovation.

And I guess out there they say go fast and break things. Right, and I think what the chairman is rightly focused on is it's OK if we break things, but we can't go slow and break things. We have to go fast and break things. I was drawn to the

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executive biz 2023 Hypersonics forum. I care a lot about Hypersonics.

We discuss it a great deal in the committee. And one of the key takeaways was from doctor Mark Lewis, who's the president at the Purdue Applied Research Institute, and he asserted that one of the main roadblocks to hypersonic success lies in the testing process. Because right now, we're testing sometimes every couple of months, every couple of years.

And his critique of DOD in this space is that we are not like testing on a weekly basis every few days because we can fail at 90 percent, but you have to do that at sufficient volume to be able to achieve the result. So just like from – I know you guys don't run the entire testing regime, but maybe miss you, I mean what would it mean for our ability to increase the volume if this committee authorized more test assets and more test capabilities in the area of hypersonics?

**HEIDI SHYU:** In terms of testing in Hypersonics, this is exactly why we're putting \$1.5 billion in 23ft up to accelerate our hypersonic test capability. OK?

**MATT GAETZ:** One final note, and this is a bit of a parochial concern. One of the places that hypersonic component parts are tested over the Gulf of Mexico and the Department of Commerce shut down that testing because there were 54 whales there that had had inbred and had been deemed some sort of new species. We've tried to give the DOD the ability to Bigfoot that so that our national security isn't surrendered to a few whales and the fast testing to get us a better results will – will proceed.

Thank you, Mr. Chairman. I yield back.

**MIKE ROGERS:** Thank you, gentlemen. The chair now recognizes the gentlelady from Texas, Ms. Escobar.

**VERONICA ESCOBAR:** Thank you so much, Mr. Chairman. I'm grateful to you and the ranking member for this important hearing and many thanks to our witnesses. I'd like to focus a little bit on not just how we need to tap into the innovation in our universities, but also the innovation happening in our communities as well. I have the incredible honor and privilege of representing Fort Bliss, which is America's second largest military installation.

But I also have the privilege of representing the University of Texas at El Paso and Ms. Shyu, thank you for visiting, I'm so sorry, I was not able to join you during that visit, but so glad you had an opportunity to be there. I want to tell you a little bit about what's happening there between the university and the community because I think there's an incredible opportunity for us to capitalize on the work happening.

The university campus is home to two nationally preeminent research

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powerhouses, the UTEP Aerospace Center and the WMG center for 3D innovation and they are performing cutting edge aerospace, defense and advanced manufacturing technology research including digital engineering, hypersonics, so Mr. LaPlante, you're invited to join us as well.

And also additive manufacturing, all of which will meet our defense, our nation's defense needs. For greater context about UTEP, it is a tier one Hispanic serving institution. Many of the students, there are first generation Americans and first generation college students as well. In addition to this incredible research happening at UTEP, the leaders of those two programs that UTEP have built a great community collaboration around retooling our small and medium sized manufacturers who were previously manufacturing all sorts of widgets for different industries, but basically retooling them and redirecting them in order to help our own defense space.

The – and UTEP recently, along with the community in this collaboration won a \$40 million Build Back Better grant that is helping with that retooling. And then recently it was announced really just like a week or two ago that the National Science Foundation, Regional Innovation Engine Grant, which will be a transformative investment was won by UTEP and the collaboration, as well.

And that has the potential to be worth up to \$160 million over the next 10 years. So thinking about our needs, everything we've just talked about, the way that that we have neglected our supply chain and defense industrial base for decades, this really is a moment when we can meet the moment and capitalize on that innovation happening at universities like UTEP and communities like El Paso.

So Ms. Shyu, I'd like to begin and actually before I do that, I'd like to ask the chairman if I can have unanimous consent to enter into the record an El Paso Times opinion piece about this program entitled UTEP Aerospace Program, Propels El Paso to new heights.

**MIKE ROGERS:** Without objection, so ordered.

**VERONICA ESCOBAR:** Thank you Mr. Chairman. So Ms. Shyu, how can we – how can you integrate manufacturing capabilities in communities like El Paso and West Texas into what we are all trying to do here today?

**HEIDI SHYU:** Thank you very much and sorry, I didn't get a chance to meet with you, but I spent entire day at – at University of Texas in El Paso, and I learned a tremendous amount. First of all, just from the outcome of my visit. I was so impressed with what they were doing in the additive manufacturing folks. I tied them into my critical leads.

So – so my technical leads on some of the RF, in the integrated sensing and cyber world is now collaborating with them, OK, just a result of that visit. And

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the other thing is I learned also what I could do from you from the DOD perspective in terms of helping the students. Understanding the community probably cannot afford to have their students be gone for the entire summer.

We completely revamped our internship program so that the students could go to one of our DOD lasts for a week to understand and get to know the people and spend the rest of the time at home working on the projects. So it was a tremendous opportunity. And by the way we have a follow on discussion that's coming up in April was 21 Hispanic universities for entire day.

So thank you so much for raising this.

**VERONICA ESCOBAR:** Thank you and Mr. Chairman, I'm out of time, but Mr. LaPlante and Director Beck would love to have you visit as well because the opportunities are endless. I yield back.

**MIKE ROGERS:** Outstanding. The chair now recognizes this gentleman from Nebraska, General Bacon.

**DON BACON:** Thank you, Mr. Chairman. I thank all three of you for being here today and for your leadership in the DOD. My first question is on Hypersonics. I know the two main systems that we're developing is the Navy's conventional prompt strike and the Army's long range hypersonic weapon. What concerns me, the projections are it's gonna be \$125 million a round.

Is that sustainable? How does it compare to what the cost of Chinese hypersonics and I just – how can we do this better?

**HEIDI SHYU:** So that number is not accurate, that is way too high. OK. – I'm glad to hear those estimates given to me – yeah, I don't know who – who pumped that number of somebody's going to get a lot of money in their pocket, but that's not the cost, OK, of the rocket, and by the way we – the Navy as well as the Army has collaborated very closely on the development of – of this hypersonic system, and we're – we're very excited in terms of upcoming test and where it's leading.

So we're – we're on our way.

**DON BACON:** Do we have an estimate of what the cost would be?

**HEIDI SHYU:** It would be far less than that.

**DON BACON:** OK? Well, maybe try to get it later if you don't have it now.

**HEIDI SHYU:** We'll be happy to share the cost number with you. But you got to remember it's a cost if you buy really limited quantities, the costs are going to be high. This is exactly what Doctor LePlante talked about. You have to drive

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the cost down if you're going to buy volume. Right? And the other thing that's really important to understand is on the research side, we are developing ways to reduce the costs and all the companies as well as small business and university is working to focus on exactly driving the costs down.

**DON BACON:** Thank you. A second question is on future air operations and the vision. I think the – the vision that I hear from the Air Force fifth and sixth generation fighter stealth fighters matched with up to five unmanned collaborative combat aircraft. Is that technology here is – is this doable?

**WILLIAM LAPLANTE:** It is doable there. The CA program, the Air Force is running is they're using all the things that we all talk about, digital engineering, rapid, the advanced manufacturing, it is doable. It's actually really, really exciting. Yes, it's doable.

**DON BACON:** Sure sounds like it will complicate the targeting from our adversaries.

**WILLIAM LAPLANTE:** Numbers matter, yes, numbers matter and this gets back to what my theme has been. Our theme has been all day. It's about production, production, production. One of the reasons we want to proliferate Leo in space is to make the adversaries targeting more difficult. We need numbers across the board.

**DON BACON:** My final questions dealing with the Navy, it seems like in a fight with China or Russia attack submarines will be maybe the most important. Are we – are we producing the right balance right now in our Navy acquisitions or production when we're looking at our tax summaries? Because I hear sometimes we're not doing enough.

**WILLIAM LAPLANTE:** Well, I think that's – well, it's well said that we – we need to be at two Virginia class per year. We have to be at two Virginia class per year because of workforce issues and others are about 1.4 needs to get to two as rapidly as possible. The other piece of it is we have to remind ourselves the most effective anti-ship weapon is a heavyweight torpedo, Mach 48, and that's what our SSN carry.

**DON BACON:** Thank you. Just follow up what – what can we do to help you to get to two?

**WILLIAM LAPLANTE:** Um, I think your continued focus with – it's really on what we talked about earlier and hearing the workforce. I – I really think it's a General Dynamics in Newport News. It's – which is really Electric Boat with the workforce and all the local and regional efforts that have been done because keep pressing – keep pressing, keep pressing.



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**DON BACON:** OK, thank you very much and, Mr. – Mr. Chairman, I yield back.

**MIKE ROGERS:** The chair recognizes the gentleman from Massachusetts, Mr. Moulton.

**SETH MOULTON:** Thank you, Mr. Chairman. The new Chairman of the Joint Chiefs, CQ Brown, he famously said, accelerate, change or lose. We will lose if we not only change but actually accelerate change. We have to move faster. Now as an example of a service willing to take risks. Since we've talked a lot about why we need to take more risks in changing, the Marine Corps took a bold risk with Force Design 2030. They took a risk including with those of us here in Congress.

By the way changing innovating rapidly to meet the new challenges facing our nation, not just from China but from every other military that is buying drones for \$5,000 that can kill a \$5 million tank. So I gave them Marine Corps a lot of credit. And in fact, I've only encouraged the Marine Corps to move faster with this evolution.

But at the same time, I know that marine companies training today are running essentially the same exercises that I did 20 years ago with just a couple of drones running around on the side for color, barely integrated into infantry maneuvers and marine captains and lieutenants at Twenty Nine Palms are actually coordinating troop movements by personal cell phone when their radios don't work.

Because guess what? Some of the same radios that didn't work 20 years ago still don't work today. We just didn't have – we just didn't take our cell phones to the field as backup. So there's a disconnect between the incredible innovations that you are developing and how our frontline troops are actually training.

It's not just the Marine Corps, it's across the services. Trust me, if this is happening in the Marine Corps, that's innovating so quickly, it's certainly happening in the other services as well. So, Undersecretary Shyu, how are you working with the other DOD components to ensure that for each innovative capability that is fielded, there's also doctrine sustainment and training to complement it?

**HEIDI SHYU:** This is an absolutely critical point about innovation. You can't just develop a widget and have a widget sit there without the rest of the DOTMILPF associated with it. Otherwise you have a whole bunch of shiny objects that troops don't know how to use. So I will say as a part of the radar activity, what we are doing is we are literally utilizing the National Guard to test the items out.

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They are the ones that give us feedback. This prototype works, this one needs a modification. So we're providing the – we are getting the user feedback and providing that directly back into industry to say this is what you need to do to change or modify your system.

**SETH MOULTON:** It's so important, Director Beck, can you speak to this as well, How have your personnel embedded at the combatant commands? You know, helped identify how you deliver these tailored things And how can we assume essentially how can we actually ensure a quick handoff? Like how do you hand off these amazing technologies that you take and mature at the IU to the operating forces?

**DOUG BECK:** So first of all, thank you for asking this is an incredibly important question. This is why I mentioned in the context of replicator that the how is as important as the what because you only get capability when you combine them. So in specific answer your question about the embeds in the at the combatant commands, it's not completely a handoff at least at that stage.

Right? Because we're there alongside them, working through those issues as Undersecretary Shyu talked about and bringing them back to the – to those commercial tech players so that we can turn things around quickly, quickly, quickly and continue to improve the tech as we go. I think you're also asking a really important other question though, which is about how we make sure that we're testing, refining and evolving our capabilities and our doctrine and our tools.

In this scenario, we're working very closely. For example, we work very closely with the Marine Corps on this. We're working really closely with the Army as well, so General Raney at Army Futures Command. We're working super closely with them on the – the leverage of unmanned systems in tactical formations, taking everything that we're learning from Ukraine.

He's got director requirements he's already put in place and we're working closely together on how do we help get those in the hands of – of individual infantry units so they can try it, use it and learn from it and it's so.

**SETH MOULTON:** Important and I tell you what we're going to be going out to see training exercises to make sure that this is happening now. Dr. LaPlante, we've been talking about getting these innovations down to the troops, but I also worry that there's a disconnect between your innovations and how our how our next generation defense budget is actually evolving.

I mean, everything we're discussing today is impressive and important because adversaries like China are improving their military capabilities faster than we are. We're still ahead, but their rate of change is faster. When will senior leaders at DOD make the tough choices to actually prioritize innovation and get rid of the

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old heavy expensive things that are frankly just big fat targets in a future conflict?

**WILLIAM LAPLANTE:** Well, thank you for the question. The budget the – the next president’s budget is going to be coming over in the next three or four weeks. There’s going to be some difficult choices that are going to be made there. But I think we should be challenged on that. The other piece, as you know, Congressman I – we’re all worried about the numbers.

We’re all worried about the production numbers and I think that that’s – that also has to be prioritized. It’s not as sexy, but it’s really, really important. Final comment on the DOTMILPF and I apologize for the acronym, but what we find with Ukraine is most of the time the new things we give them, it’s it rises or falls by not the technology, but by the DOTMILPF how easy it is to train, how easy is it for use And as somebody once said to me, you innovators need to know how to spell.

**SETH MOULTON:** Thank you, Mr. Chairman.

**MIKE ROGERS:** Thank you, gentlemen. Chair – I recognize the gentleman from Indiana, Mr. Banks.

**JIM BANKS:** Dr. LaPlante, last month, the DOD announced that it was ready to send Ukraine the new ground-launched, small-diameter bomb, a weapon that went from a concept to entering mass production and barely over a year and just overnight was confirmed to be deployed in its first combat use. If the Department of Defense can test, buy and deploy a new system for Ukraine, why is it so hard to do that for ourselves, especially when it comes to technologies related to a potential war with China.

**WILLIAM LAPLANTE:** Thank you for the question. Simple answer by the way that what you just described is happening many, many other places where we have with Ukraine have deployed things and develop things that have been delivered overnight. So people say, well, how can you do that? And why isn’t the normal system that way?

Number one is we have rapid contracting authorities for Ukraine. As I mentioned here, we don’t have that more broadly. The second is this is really, really important. We had money, we had the supplementals. So when you have the supplementals, you quickly put Boeing on contract which we did last year and talk to the CEO of Boeing, SECDEF did and got them to deliver the small diameter bomb.

We have no money right now. So if you don’t have money and you don’t have the rapid contracting authorities, it’s not a mystery that this is not going to happen. And I know that it’s boring answer, but that’s the truth.

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**JIM BANKS:** It's the – it's the big answer, it's the big point. It's why we're here authorities, funding for Ukraine, but we tie our hands when it comes to developing those technologies that we need and a potential conflict with our biggest adversary.

**WILLIAM LAPLANTE:** We had in the supplemental, we had USAID, You all generously gave that to us and we spent it on things like the ground launch, smaller bomb and we did it rapidly. We notified you within 30 days and we got it on contract and it's now delivered to the Ukrainians. We know how to do this. So that's why we don't have any supplementals left and we don't have a budget.

You know, that's the thing I want to be. I want to tell people that prevents us from doing this.

**JIM BANKS:** What other lessons do we learn from the war with Ukraine to better arm Taiwan for a potential war with China?

**WILLIAM LAPLANTE:** I think that the – the lesson to learn by the way is the environment electromagnetic warfare which involves electronic protection, but also electronic attack and other things that that is real. It's – it's – it's a factor that changes almost every week and the adversary has learned from it. And so if you're going to rely on SATCOM for navigation or on comms links for whatever don't bet on it and by the way your system can work up until and also stop working in two weeks.

We've had that happen, that's why we all have to be thinking about these technologies be prepared, that the adversary is going to get your technology or figure it out and they're going to jam it. So I think it just means that we and the adversary is very smart, they learn and so that's some of the things I would think we take away.

**JIM BANKS:** So compare that to why, why, why will it take us five or six years to get Taiwan, all of the ground launched harpoon missiles that they want when it only took us a year to do this for Ukraine?

**WILLIAM LAPLANTE:** Yeah, so – so here's the answer. We actually working with a country in Europe, you probably know this in 2022, May of 2022 took three weeks to take existing harpoons off a naval ship from this other country, put them on flatbed trucks, give it to Ukrainians. They were firing them within three weeks. We can do that.

The issue is the harpoon production line and their – the production line was stopped and they had a lot of obsolescent parts. And so basically it's building that up again. But it's again, we need to get the money to the industrial base to – to put these production lines faster.

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**JIM BANKS:** Got it. Well put. As Congressman Lamborn and and Gaetz both briefly touched on, China is far ahead of us in hypersonic weapons. Our own hypersonic testing programs are struggling with large costly test that set back the program by several months and tens of millions of dollars each time they fail. Ms. Shyu, could you talk more again why the MACH TB program is so valuable for getting us past these costly setbacks?

**HEIDI SHYU:** The MACH TB program is utilizing commercial capabilities that we can leverage. Literally, we're working with commercial launch companies. We're working with companies like Stratolaunch that literally can carry hypersonic weapons and we can do testing in addition to wind tunnels, OK? So we're absolutely leveraging them as well as we demonstrated that last summer.

**JIM BANKS:** The Air Force's aero system is the only hypersonic weapon that the DOD has successfully tested so far and yet the DOD currently has no plans to move the program forward. Why is that?

**WILLIAM LAPLANTE:** Uh, let's just say that there is a plan. It's not something we can talk about in this open session, but we'd like to talk – we'd be happy to come over and brief you in a SCIF.

**JIM BANKS:** OK, thank you. I yield back.

**MIKE ROGERS:** Thank the gentleman. Chair now recognizes the gentleman from New York, Mr. Ryan.

**PATRICK RYAN:** Thank you, Mr. Chair, and thank you all for being here. I am now more encouraged and more optimistic and just we have obviously our never moving as fast as we want and need, but I just want to thank each of you your leadership is refreshing and your candor is refreshing. And we want to continue as I think you've heard from all my colleagues support and – and bolster that.

Mr. Beck, I want to ask you a question, but others can feel free to join in. Not only is this exciting to me for what it means for our warfighters, for our COCOMs, for our national security, but also for what it means for communities like mine. And you heard this from my colleague Ms. Escobar very powerfully I think.

So really I would ask you, Mr. Beck, how can we expand on not just the hub in Silicon Valley, but hubs, and I'll be biased. New York for example, which by the way is in most data you see second and rising in terms of innovation in other really synergistic areas and to just add a little bit, one more level of detail there.

For example, the Marine Innovation Unit, a newly flagged unit, which I know is not directly under your authority, I think at this moment, but is in my district in

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Newburgh right across the street from West Point, how can we start to build other and reinforce those hubs and what can I do and we do to enable that and accelerate that?

**DOUG BECK:** Great, well, so thanks very much for the question. And the first thing I'd say is you're 100 percent right? We've got to leverage the full power of the – of the tech universe that's happening across the country. And in fact, actually just this last year, we had submissions in a DIU programs from all 50 states.

So that's already happening. And in my last life, when I was at Apple, we spent a lot of time thinking about how do we leverage that whole tech sector all around – around the country as it develops or maybe throw out just a couple of concrete things that we're already doing. And I think there's a lot more that we can and should be doing here.

One of them is that we're creating these defense innovation hubs. We've now opened four of them in Kansas, Ohio, Arizona, Washington State, the fifth opens in Hawaii in March. And we're looking to expand those over time with support from Congress in order to provide more centers for – for hubs. And we also work super, super closely with the – with R and D through our National Security and Innovation network for presence in the universities and communities across the country to help both talent and companies that have something to add in this system and know that they've got something to add that we want and b, make it easy for them to get aboard.

So we're pulling every lever to do that. And MIT is a great partner by the way.

**WILLIAM LAPLANTE:** I would – I would add to what the excellent comments that Doug make to point out, something that that Heidi can talk to, which is the advanced manufacturing institutes. They are around the country. I was on the board of one of those before I got in this job. They're doing incredible work there. They're in New York.

They're in there in New York, they're in – the one I was on was in Detroit, fascinating thing. Now what we got to do in Heidi and I and Doug have talked about this is get these advanced manufacturing institutes into the mainstream of what we do in manufacturing in the DOD and Heidi can say more about that.

**HEIDI SHYU:** I tell you the Advanced Manufacturing Institute is a catalyst to tie together academics with small companies with large companies, right, and they are actually creating new companies, as well. So I'll give you a new market. I will give you an example like bio made this bio made literally has a company that figured out within six months to extract rubber from dandelion.

We don't have rubber plants within the US, right? If you want to build aircraft

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tire, you have to buy rubber offshore, but literally they figured it out, OK. So they're creating new markets, right?

**PATRICK RYAN:** So thank you. No, I appreciate it and would welcome the discussion particularly about a New York hub and would have – would love to follow up on that. I'm running short on time, but Mr. Beck, we talked a little bit in my colleague, Mr. Courtney talked about AUKUS and I think really commend the decision to host the ministerial at DIU. Can you talk briefly just what more we can do to to think with a coalition and ally mindset here to – to enable that?

**DOUG BECK:** Thank you and in the – in the 30s here, first, this is a core tenet of DIU 3.0 strategy. The entire commercial tech sector is built on the fact that we've got friends around the world who are incredibly capable. We've got to harness all that, all that ability. So we are working closely with all of our partners who have a DIU like entity.

We're helping those who don't stand them up and we're getting very concrete in AUKUS with the Australian and and British partners, and with the Indians as well and in other places on putting concrete challenges in place where they've got great tech. We've got great tech and we share strategic and operational problems.

The first of those in India, actually the results come out later this month.

**PATRICK RYAN:** Thank you. Yield back, Mr. Chair.

**MIKE ROGERS:** Thank you. Chair now recognizes the gentleman from Texas, Admiral Jackson.

**RONNY JACKSON:** Thank you, Mr. Chairman. I want to thank our witnesses for being here as well. And I want to echo the sentiments. You guys have been great witnesses today. I learned a lot. I appreciate your time here today. I know this committee knows the importance of science and technology ecosystems and what it brings to the table.

We cannot underestimate our adversaries investments in research and development as they seek to, to cause disorder and unrest around the world. Obviously, they do things faster. They do things cheaper than we do and it's hard to keep up. China is effectively overtaking the United States in some areas and getting closer and closer each day and others to deter this and remain perched at the top of the defense food chain.

We must fully invest in streamlining technology flows, reducing barriers and getting the best products in the hands of the American warfighter. Now I'm going to do something that the ranking member Smith had scolded us about doing, but I'm going to bring up something that's somewhat district specific.

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But about a week ago, the Army made a decision to cancel the Future Attack Reconnaissance aircraft program.

The third failed attempt over the past two decades to develop a new attack and reconnaissance helicopter. I had the army come into my office and provide me an update on FARA about six weeks ago, and there was absolutely no mention of this even when I asked directly about this possibility. While I'm disappointed in the decision to cancel FARA overall, I'm also very disappointed in the lack of transparency about this decision.

Bell Helicopter, which of course is in my district is one of the premier industry partners and had invested heavily in this program and currently has a ready to test prototype that could meet the Army's requirements. My concern is that this is the third failed attempt at fielding this capability at a time with constrained budgets and record inflation.

We simply can't afford these missteps by government to – to mislead our industry partners to some extent. I want to ensure that we here in Congress, the Department and our industry partners are all on the same page moving forward and share the same commitment to these programs. That said, Dr. LaPlante and Ms. Shyu, I assume this is not the only example of this happening.

As a matter of fact, I know it's not. And I want to know, do we have an accounting of how much total money is invested in these massive programs at the time they are scrapped? And if you do, could you please at some point at your convenience provide to my office what that number was for the FARA program?

Uh, further, while the Army remains committed to the future long range assault aircraft is the Department of Defense overall committed to fielding this new critical type of aircraft?

**WILLIAM LAPLANTE:** Yeah, I'll start with an answer directly to you. We will get – make sure to work with the Army to get those numbers to you, Congressman. Just a couple of things and I know understand the – the, the disappointment and the concern about the – the Army announcement. It's often been said and Frank Kendall, who's now the Secretary of the Air Force, who's one of the most experienced person in acquisition, always taught us. This is milestone B and I'll explain what that is, is the point of no return in an acquisition program.

That's when the department decides really no kidding to go into the development and really to buy it. Cancellation of a program after milestone B is should – should not happen. This did not. This was before milestone B. So really what the Army was doing was coming up to a decision of whether or not I'm actually going to go and put in the significant amount of money to actually commit to develop and produce them at scale.



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So if there was a time for them to reassess, it was before milestone B, not after. Having said that, the question you're asking about how much resources have been put, what's the message industry are all good questions and I'm sure the Army's going to have to explain that – but I always say to people, the government, the government's point of no return is when it releases the RFP for development and production and they were not there yet.

**RONNY JACKSON:** OK. Well, thank you. I appreciate that. It just seems like there's – I mean, you know we deal with a lot of waste and stuff in this committee all the time and I figure we could clean that up. We could spend the money we're, you know, we'd be more valuable to us and it just – it seems like, you know, to get to that point even though I understand what you're saying is it seems like it's a lot of money.

That was, and I'm sure that you know, next time we get these companies that you know, that have been involved in these projects that have been canceled and involved in something that they're actually going to do for us. We're going to pay more for it to make up for some of the costs that they invested in, stuff that didn't work.

And I guess it goes back to some extent to the, you know, we have to fail in order to succeed, but when it's a big project like that, it just seems like that's a lot of money to dump into something you know. But I yield back. Thank you.

**MIKE ROGERS:** I thank the gentleman. Chairman now recognizes the gentleman from Pennsylvania, Mr. Deluzio.

**CHRIS DELUZIO:** Thank you, Mr. Chairman. Hello, everybody. It's been an interesting hearing. Thank you. I want to talk about the National Defense Industrial Strategy in our defense industrial base. The strategy in the report emphasizes a pretty uncomfortable reality, I think for all of us. Over the last three decades and everything from shipbuilding to microelectronics, the People's Republic of China has grown industrial capacity that vastly exceeds not only ours in the United States, but when coupled with our allies in Europe and Asia, for instance, I think why that's happened is pretty obvious consolidation of industry, both defense and non-defense shipping good American jobs overseas while an under investing in our own industrial power and letting adversaries, skirt trade rules and other nefarious actions.

Dr. LaPlante, I think the strategy on page 44 lays this out and I'll quote here, "The compounding effects of unfair trade practices and predatory investments combined with consolidation of certain defense markets have significantly increased the risk and cost to US and allied defense supply chains," end quote.

So let's talk about the foreign component there. First, those unfair trade practices and predatory investments, what can we in this committee and in

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Congress do and which of those practices most concern you are the most urgent problems?

**WILLIAM LAPLANTE:** I would say what's been going on for many years, and I'm not an economist, I'm an engineer and a physicist is that it's been a deliberate strategy by – by other countries, particularly the China to – to capture markets or capture – and the 5G example is one, I think we're all familiar with where – how Huawei basically wired up Africa and as somebody said is a US company said you can't beat free.

That was basically subsidized by the Chinese government for them to get into these countries. That's a classic example of what we're talking about. I think point number one, like what happened with 5G is be aware that it's going on, number one. Number two, I think we – we need to continue to look at CFIUS and FERMA [ph], which I know this – this committee works on at other ways.

We can look left of acquisition to make sure we catch it before – before it happens. And so I think I would urge the committee to keep working with us on other novel ways that we can see when a hostile activity is going on. And finally and we saw this was TransDigm [ph] which was where it was a US company that went into our supply chain, found critical nodes, bought it and jacked up the price and did it all legally.

That very well could have been another country that could have done that. So it's also to pay attention to those things. And so it's all the above. And again, I'd love to work with you on this.

**CHRIS DELUZIO:** Sure. And I want to focus in on the domestic piece of this too. And the TransDigm examples is a good one. We've seen absurd consolidation of the defense industry. We can debate all day how we got there. We went from 51 aerospace and prime defense contractors to five in the last 30 years. We've seen massive, massive outsourcing shipping those jobs overseas, the state of competition, the defense industrial base, your predecessors report says this consolidations that reduced required capability and capacity and the depth of competition would have serious consequences for national security.

Have we seen those consequences? What are those – What do we need to do beyond encouraging more competition?

**WILLIAM LAPLANTE:** Yeah, so I'm going to say what we've seen and then I'll give you some positive news. What we've seen, for example, in the consolidation, I think happened, for example, in the solid rocket motor situation. I think everybody who was following Sentinel remembers that when one company bought one of the solid rocket motor companies, the other company decided not to bid because they thought it would be unfair.

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So we ended up – the government ended up in a sole source situation. That’s not good. So that’s an example of what we’re talking about. Here’s the positive, if I – and I know the chairman is acutely aware of this, the space launch situation, what the Air Space Force is doing now they’ve got a – they’ve got the multi lane strategy, one of which is for new entrants.

And the hope is for this phase one that they’re going to get a lot of new entrants for these kind of launches because we were – as you know, we were not a great situation with competition in space launch either. So there’s hope there. But it was a deliberate strategy by the part of the department and working with people like the chairman.

**CHRIS DELUZIO:** Well, I want to tease out, Mr. Beck, I think you had something you want to say. I’ll give you a minute. I want to just say one thing. You mentioned CFIUS and I’ll remind folks, I think there’s a contemplated sale affecting my region and much of our country’s industrial base around steel and US steel that I’ve encouraged CFIUS to block and take exactly those considerations into account.

Mr. Beck, will give you a chance for my last 30 seconds here.

**DOUG BECK:** Thank you so much. I was just going to say this is also – this is a critical way that that these commercial tech companies and dual use companies can really help because in addition to bringing capability to bear that we may not have through other pathways because of where they are in the tech, they also bring diversity and capacity to bear.

So as we – we can broaden things out as well as bringing capability in manufacturing to bear of the – of the kind that Undersecretary Shyu was talking about before that Secretary LaPlante was talking about. So whether it’s in solid rocket motors or drones or – or in commercial space launch, whether it’s in Leo satellite production in all those areas, it’s about both capability and capacity.

**CHRIS DELUZIO:** Very good, Mr. Chairman. Thank you. I yield back.

**MIKE ROGERS:** I think the gentleman. Chairman now recognizes the gentleman from Texas, Mr. Fallon.

**PATRICK FALLON:** Thank you, Mr. Chairman, and thanks the witnesses for – for coming today as well the – the NDA ETI reports that both hypersonics and directed energy weapons supply chains discuss the dominance, in course, China and raw materials and pretty critical raw materials Gallium, germanium and others. If the goal is, as we said at the beginning of the hearing, is to outpace China we can’t be reliant on them for critical materials.

I mean, that’s obvious. So, Dr. LaPlante, what I wanted to ask you first is what

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steps are you taking to diversify our defense supply chain and reduce our reliance?

**WILLIAM LAPLANTE:** Well, let me talk first about rare earths, which you brought up as as has been said, oftentimes rare earths are not that rare. It's the issue with rare earths is of course the processing of them and that's what China locked that up 30, 40 years ago. And we're in the – we've been in the process for the last three years of undoing that by the Defense Production Act, by friend shoring.

So it's a systemic effort. We can go – we can go rare earth by rare earth and telling you the plan to do it. We've got – we've got more work to do. We need your help with the Defense Production Act.

**PATRICK FALLON:** Well, that was one of my next question is what are we doing to bring mineral processing capabilities back to the United States? And furthermore, what role does Congress and what can we play in your opinion?

**WILLIAM LAPLANTE:** I think helping us with that get just keeping us, keeping the Defense Production Act going and making sure that we are using it for rare earths in the right places. We – I – we have many meetings with members about rare earths and again it's really about the companies in this country that are – that are standing up processing of rare earths and making sure they get over the hump and they can survive in the market.

DPA is not supposed to be being on the dole, it's supposed to help them over a hump so they can get into the market. That's what we need continued help with and support with on Defense Production Act.

**PATRICK FALLON:** Well, and I don't think there's anything more important quite frankly. And also I want to make sure that we do what we can for to monitor regulation because sometimes red tape and regulation can strangle some of these kinds of things. Because I'm so thankful that you pointed that out rare earths aren't necessarily all that rare.

They're there I would rather go and get them here because as an environmentalist, I believe we can do it safer and better and cleaner in the United States and we can do in China when you have an authoritarian regime that doesn't really concern themselves with those kinds of things.

**WILLIAM LAPLANTE:** Spot on.

**PATRICK FALLON:** You know when we're running war games we see think tanks. And this is, again, for you, Doctor, we – we're seeing these war games where if China were to go into Taiwan, what happens And they're not one thing is clear. And they have different methods of these war games. But we're not ready. I'm concerned about the only times it seems that we're successful is when

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to repel an invasion is when we're relying on simulated capabilities that don't even exist now.

And we all know that that be tremendous amount of loss of life and equipment, if this occurs. I mean, one of them I think that we lost a thousand fighter jets and you know in a very short order. If that's the case, we're going to have that kind of attrition. What can we do as far as speeding up critical procurement in the Pentagon to replace this kind of equipment if the attrition is going to be that horrific?

**WILLIAM LAPLANTE:** Yeah, and I apologize for being a broken record here, but Frank Kendall, secretary of the Air Force says this very well, the – the operational imperatives that he's put in place, which are really good about China. He's been in office three and a half years and not a dime of the money has been spent on it because we don't have a budget.

We're operating off a budget from that was put together in '21. We got to get a budget because in the budgets we have all these things. The second thing I would I would call out two things for China. One is numbers matter, numbers matter, numbers matter, that's why production and getting the price points down is really, really important.

The second is kill chains matter, our kill chains and protecting them and going after their kill chains. That's what it's about. It's about numbers and kill chains.

**PATRICK FALLON:** You know, as far as that when you point it out with what I think, Mr. Chairman, CR stands for is China Rocks because when that you know and you all can use that, no pride in authorship here because we're not passing a budget. They cheer. I'm sure they're popping champagne corks every time.

**WILLIAM LAPLANTE:** We should teach them CRs.

**PATRICK FALLON:** Yeah, yeah. What do you think we need Doctor, from Congress to increase industrial capability and procurement capacity on our munitions specifically?

**WILLIAM LAPLANTE:** What we need again, we have them over there and we really need your help. We need the multiverse. We've got seven, I think seven munitions, standard missile six, it's lorazepam, you got it. We got to get those passed and right now and again broken record because we don't have a budget, we – we can't go ahead.

And why is multiyears important because then industry knows that we're serious because generally when the DOD does a multiyear, it doesn't back away from it. So then their – their investors can say, OK, you can do a CapEx investment.

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Right now if I'm an investor and one of these companies and they say, I want to make, I want to build a new production line.

If I'm an investor, I'm going to say really how do you know the DOD is going to fund that. So that's what we need.

**PATRICK FALLON:** All right, my time is up. Thank you, Mr. Chairman. I yield back.

**MIKE ROGERS:** Thank the gentleman. Chair now recognizes the lady from Hawaii, Ms. Tokuda.

**JILL TOKUDA:** Thank you, Mr. Chair. You know among the many challenges of working with the Department of Defense that small businesses and academia face is getting adequate access to a SCIF. You know, to be able to do the sensitive classified work that they need to do. The significant requirements of constructing a SCIF are often cost prohibitive to a startup or a university or other organizations.

And even if they do have these particular funds, as you know, the process is time consuming and often challenging to be able to navigate through. On the other hand, those seeking to share an existing SCIF oftentimes must go through a very burdensome process. And even when they do succeed, they must coordinate their access in advance, making it hard for them to quickly do the classified work that they need to. And you know, quite frankly these challenges at best slow down and at worst can prevent innovative technologies like we talked about and ideas from finding the success they need with the department.

It's also especially disadvantage – disadvantages startups and new organizations. And I worry that this is a growing problem. In my home state of Hawaii for our small businesses, our universities and laboratories where more innovation is happening right next to INDOPACOM. And this issue is of such concern to this committee's work that in the committee's markup of the NDAA last year, it included a reporting requirement to understand how the department can help small companies get access to existing government-owned SCIFs. The Defense Innovation Board also addressed this problem in its recent report on barriers to innovation, Dr. LaPlante, Ms. Shyu, and Mr. Beck, within the lines of effort that you oversee, how are your organizations stepping up to help address the challenges of SCIF access to support small businesses, universities and laboratories?

**WILLIAM LAPLANTE:** I'll start and then go to Heidi and Doug. Heidi did a pain point for small business exercise about two years ago and this came up at the top of the list. So there's a whole effort by the deputies leading to try to streamline this. But I will just say this, I was the CEO of Draper Laboratories in Cambridge before I was in this job, nonprofit but high tech lab.

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I had my CFO come to us and say you know this classified work, it's too expensive, get out of it and that was a – that's a lab. So it is a real, real problem. The other piece of it that's related is authority to operate your biggest fear. If you're one of these companies, if you do get the SCIF and you do get it that any day somebody could come in and say, you know what, we're going to take away your authority to operate and the authority operate rules are very, very local.

So there's efforts to reform all of that. I'll let Heidi talk some more about that.

**HEIDI SHYU:** Thank you. Yeah, absolutely. This is exactly a critical problem for small business, completely concur with you. So one of the things we are exploring whether we could have a rental SCIF namely a SCIF that's common for a number of small companies. Saint Petersburg down in Florida is doing that for – for startup community.

Literally, they built a SCIF and you could, let's say, you only need an hour of the time because you need to go in there for classified conversation, you could literally just run one hour at a time. So we're absolutely looking at how we can accelerate this type of capability with small business. Thank you very much for bringing it up. Thank you.

Thank you. Mr. Beck, did you want to expand?

**DOUG BECK:** Yeah, maybe just to build on this, this is such a critical issue. And so the – this defense innovation community of enterprise was all the defense innovation entities out there that were now kind of chairing that group. This is top of the list of the things that we're then bringing to that deputy's Innovation steering group that is all of the department getting together to say how do we break through.

So we're very focused on this. A couple of concrete things. One, it's about capacity and a lot of the ideas whether it's building more, whether it's leveraging we work type models for – for SCIF access, which there are commercial companies now looking to do. It's also about prioritization of access because the access that's there.

It's sometimes if you're the small company that's maybe coming out of that new, you know, Hawaii defense innovation onramp hub that we're – that we're putting together, you're not going to be top of the list necessarily for how you get in there. We've got to help them get there and that's one of the places where we come in to help.

We've got to make that systematic. And the last thing I'll say is we also have to think about the way we classify things because we often make something that's particularly come from commercial tech into the department. We often instinctively will classify it even before we need to. So one of the things we work

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on a DIU is, hey, how far can we take this capability And it's development for needs that we have at an unclassified level before we even have to classify it.

**WILLIAM LAPLANTE:** Now I just want to add one other item that's very closely related to all of this, what Doug and Heidi has said, it's access to classified cloud computing. If you're a small business and you want to do business in modern digital engineering or AI, if you don't have access to cloud, you're – you're not serious and yet classified cloud.

And so this has been a real strong effort that we've tried to have across the services to make make it. So companies can have access to cloud again if you don't have access to cloud, you're not doing modern digital engineering.

**JILL TOKUDA:** Thank you and I know my time is about up, but truly appreciate these responses. As you can imagine being in the middle of Pacific, we can't just drive to the next state or or county to be able to access a SCIF. So appreciate this and hope to see you rent a SCIF in Hawaii soon. I yield back, Chair.

**MIKE ROGERS:** Thank you. Chair now recognize the gentleman from Texas, Mr. Luttrell?

**MORGAN LUTTRELL:** Thank you. Mr. Chairman. Ms. Shyu, are you familiar with the RELLIS Campus Texas A and M University by chance, hypersonic testing facility at Texas A and M University? Have you been out there yet?

**HEIDI SHYU:** I have not been out there yet.

**MORGAN LUTTRELL:** Oh, well, there's your invitation and I'll gladly escort you to that facility. I have a quick question for the panel and I'll be – I'll be brief. So through the questions that you've received today, we're talking about hypersonic capabilities. We're talking about anti-drone capabilities. We're talking about the war in Ukraine and the industrial footprint and how we're trying to increase build capabilities for submarines and ships.

And then we're trying to increase our output of weapon systems that we're shipping overseas. Hypersonics exist in China, effectively anti-drone or drone capabilities have been around for for years. My 10 year old flies went around. We lost our service members recently to drone technology. One thing I don't hear coming out of the mouths of the Department of Defense very much is that's very reactive.

We're on our heels, we're trying to catch up to hypersonic – hypersonic capabilities that exist in nefarious actors across the globe. We're in – we're conducting warfare with drone anti-drone technology, but in the spec the net has been cast very wide. My concern is that we're being innovative and creative



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enough to move past the existing capabilities of actors across the globe and and defeat them that way instead of instead of trying to consistently be on the defensive posture.

And keep up, that's a very broad question. I mean, dig into as best you can.

**WILLIAM LAPLANTE:** I'll say a few things in turn over to my colleagues. You're exactly right. The philosophy behind places like DARPA, places like even DIU or like what I used to run the SSN security program at Johns Hopkins for the submarine force is to get ahead and – and look at the potential threat and figure out what the threat is and build the countermeasure.

So we have processes to do it. It's called red blue teaming. The issue is it's a difficult issue, is getting the significant funding to field large scale amounts of the system. So we've had hypersonics for many years. We've – we've known about the US for many years. We have not, as it goes back to the beginning of this hearing, we have not funded the production of those.

And that's been where we've – we're and my belief that the system has failed, we know the threat, we know where it's going to go, the people the thing is committing the money at large amounts.

**MORGAN LUTTRELL:** That is – and that is an absolute breakdown in communication between the entities that we have to course correct. I agree the community that I came before I got here was very innovative and we took things upon ourselves to get ahead of the threat. Now, I know DARPA and the other agencies, they live in that space.

But – and then that's on us sitting on this side to absolutely open our ears and listen to to what your – the assessments that you're making and moving on that and we need to – you've heard it a thousand times in here today move outside of our comfort zone. We have to take – we have to have the ability to take those risks.

Failure is creates absolute success.

**WILLIAM LAPLANTE:** I was on the Defense Science board and we were asked to do many studies on surprise and we said there's no surprises, meaning it's really not a surprise. We just chose as a country not to deal with it and there's true surprises. Many of these things are known surprises.

**HEIDI SHYU:** Yeah, so I'd like to.

**DOUG BECK:** Sorry, ma'am. Ladies first, I'm sorry.

**HEIDI SHYU:** I think I'd like to offer an opportunity to talk to you in a classified environment on how we're addressing all of these threats holistically,

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OK? There – there’s – you’ll be very pleased.

**MORGAN LUTTRELL:** Well, that’s good. I could use that in my life. I appreciate that. Sir?

**DOUG BECK:** Yeah, so I just want to say, I think this is an incredibly important question. If there’s one thing that I’ve learned in 13 years of living in the commercial tech sector is that you win by winning, you don’t win by go and figure out what the other guy did and then trying to, you know, do it after. So that is absolutely critical.

That’s one of the reasons that when – when we think in the department about how we’re going to solve these problems, one of the things that we get the traps we fall into is we start with a very, very detailed of requirement of exactly what we think we want – and then we put that out, that’s not actually the way the DIU goes after it. DIU does a lot more the way Silicon Valley does or the company I used to work for which is what’s the problem we’re trying to solve in our language that’s what’s the war was fighter centric demand for what we need to solve.

Let’s start there, let’s figure out how technology can solve that problem, whether it’s leveraging these areas that are being pushed so quickly in the commercial tech space, then let’s leapfrog ahead to executing on that. That’s what we’ve got to do. We’ve got to win by winning.

**MORGAN LUTTRELL:** Yes, sir, I don’t want us to get bogged down in the commonality of normalcy and because this we’re – we have an appetite. We are hungry for innovation and – honestly. Thank you, Mr. Chairman. I yield back.

**MIKE ROGERS:** Ms. Shyu, I would urge you to take Mr. Luttrell’s invitation seriously to go to Texas A and M. I’ve been to that campus, College Station there, 75,000 students there, 25,000 of them are engineering undergraduates. The RELLIS hypersonic training facility or testing facility is spectacular. They have the Bush Combat Development Center there.

They’re doing some serious directed energy research. It’s just a really – I can brag on them because they’re in the SEC. So it’s OK even though –

**WILLIAM LAPLANTE:** They’ve got it – they’ve got a president, that’s a pretty good guy in Mark Wright [ph].

**MIKE ROGERS:** Former chief of staff of the Air Force. So I just urge you to think about going out there and accepting Mr. Luttrell’s invitation. It’s a pretty incredible place to see. With that, I’ll go to the gentleman from California, Mr. Panetta.

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**JIMMY PANETTA:** Thank you, Mr. Chairman. Gentlemen, ma'am, thank you all for being here and answering some pretty tough questions. So I appreciate that. Look, you've all been strong supporters of leveraging the private sector companies to field new cutting edge technologies for the DOD. Meanwhile, Secretary del Toro of the Navy has been improving the Navy's relationship with small businesses and academia, including through launching – through the launching of the Naval Innovation Center at the Naval Postgraduate School, which just happens to be in my Congressional district.

The center, I think, as you know, based on your head shaking, will propel innovation by transforming how the DOD does business through leveraging private sector innovation rather than developing everything in-house. The plan is to have an industry and academic partnership that are going to work together side by side with the Navy Postgraduate School's 1,500-plus students and faculty in an integrated and multi-domain warfare warfighting environment.

I guess Mr. Beck, considering you're shaking the head the most, I'll propose my question to you, how do you envision the DOD not only leveraging the private sector to expedite taking that sort of idea and turning it into a product, but by integrating that with Academia and leveraging the unique tactical level experiences of our nation's service members and institutions like the Navy Postgraduate School?

**DOUG BECK:** Great, well, first of all, thanks, it's great to see a face from home the – and so I think –

**JIMMY PANETTA:** A face or a nose?

**DOUG BECK:** You know, I may share that so the – so first of all, I've actually – I've spoken to Admiral Rondo three times in the last week and we're working very, very closely on how we can help to partner on those critical efforts that the Navy is taking it at NPS. We will be embedding DIU with – with that center from the start and thinking of it as a – as a partnership from the get go. What you described is incredibly, is incredibly important.

And I want to actually tie it back to the talent point because part of it is about how we take these ideas and the testing that we can put there and small companies that may be able to come through these – these – these centers and work together with folks who come from the force and have the latest and expertise and bring that quickly into places like DIU as well as NavalX and elsewhere to help them accelerate into the force and then scale to the – in the ways that Undersecretary LaPlante has talked about.

It's also about talent because we've got to be cross-pollinating talent in places like the Naval Postgraduate School. So that when the people come out of there, whether they ultimately stay in the department, we retain them and they either

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help lead innovation or they go back and – and wind up being one of the people the CNO looks at around the table when they see – when they're looking at their senior leaders and they've got experience from there or if they leave and go found the next company that's going to create the maritime drone that we want.

**JIMMY PANETTA:** Great. Thank you. Mr. Beck, I appreciate that miss you. Can you speak to how we can better leverage academia and our students unique experiences to create and rapidly deliver solutions for tactical problems and where you think academics should evolve to better absorb failures and risk taking?

**HEIDI SHYU:** We have a significant amount of interaction with academics. We fund university across all 50 states. So there's significant interactions between academia with our government laboratories as well as with DARPA. Oh, so a lot of their creative ideas gets pulled through that way as well as some of these academia will end up working with innovative small company to go after separate contracts, so a lot of collaboration in that world as well.

**JIMMY PANETTA:** Thank you. Now part of what makes Monterey ideal for having the – the Navy's new innovation center, are there hundreds of foreign officers studying there alongside our US personnel, we know that over classification though especially the use of no foreign in cases where it may not be appropriate or authorized can be a significant barrier to joint research and innovation to tackle shared problems with our allies and partners.

I guess I'll kind of open it up to any of you who want to take this. Are you working to review the classification procedures to ensure that the department is appropriately using its classification system and protocols so that we're not hindering innovative developments with our allies and partners?

**HEIDI SHYU:** This is a great question. I can tell you two years ago when I started talking to companies and they actually indicated no form is a real issue. So that was one of the pain points that I collected. And I raised this to SECDEF to say this issue of slapping by default everything has no form, creates significant problems for us to share information with our allies and partners.

As a result of that, undersecretary for Intelligence and Security, literally put out a memo internally, you are not going to use no form as a default. So it's a success.

**WILLIAM LAPLANTE:** I want to add something about Heidi Shyu. She's too modest to say Heidi is very technical. When she goes to these other countries, Australia and other places. She asks several questions and pretty soon they trust her and she starts having conversations about really good and high tech. And our partners and allies have some great stuff and she's a great ambassador to find out about it.

**JIMMY PANETTA:** Great. Thanks to all of you. Mr. Chairman, I yield back.

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**MIKE ROGERS:** Thank you, gentlemen. I have had the privilege of visiting the Naval Postgraduate School and it is pretty impressive. Thank you. Chair recognizes the gentleman from great state of Alabama, Mr. Strong.

**DALE STRONG:** Thank you, Mr. Chairman. I thank each of you and your staff are joining us here today. A very impressive panel. I'd like to amplify the previous comments of Chairman Rogers, Ranking Member Smith, and my colleagues and those of this witness the witnesses speaking to the importance of stabilizing the defense industrial base.

I personally believe that a healthy innovation environment is a result of collaboration and to create a robust competition is beneficial to all of us. We have the second largest research park in the nation in Alabama's 5th Congressional District and they've even coined the term for that. It's competitive markets.

The companies are competitors, but they're also teammates working toward a common goal of ensuring a strong and superior national defense. Dr. LaPlante, as you have mentioned in your opening statement, a key point of a modernized defense industrial ecosystem is flexible acquisition. In last year's NDAA I championed a provision to extend and clarify a pilot program language which allows the Department of Defense to award noncompetitive follow on contracts for 100 percent employee owned small businesses.

Can you speak to the – the positive outcomes of this pilot since it was first established in FY '22, NDAA and benefits esops bring to the defense ecosystem?

**WILLIAM LAPLANTE:** Let me talk about the concept and then I'll get – I'll have to get you the numbers on how – how many have been participating pilots. I don't have them with me today, but the concept is really powerful. We have this dual problem right or challenge in the – in our business, right. We all want – that's a competition contracting act.

But then also some of these things you want to have directed buys you want to – for the reasons you said you want to do sole source. And so things like this that allow us thoughtfully to be able to do sole source without running into the problem of the law is very, very helpful. I'm not suggesting we go there, but China doesn't worry about source selection.

**DALE STRONG:** Thank you and look forward to that information. Ms. Shyu, the DOD Adaptive Acquisitions Framework has established new pathways intended to increase speed and relevancy of capabilities delivered to the warfighter. What corresponding changes, if any, has the Defense Research and engineering enterprise made to its business processes to support these goals?

**HEIDI SHYU:** I think this is probably a better answer by Dr. LaPlante.

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**DALE STRONG:** OK.

**WILLIAM LAPLANTE:** Yeah, so so the adaptive acquisition framework, which I have a copy of there in front of me, really what it is and it's thank you to all of you. It really provides about five or six different paths you can use to tailor how you buy something depending on what you need and really the end state of mind. So for example, if you have a software oriented system, you can a software pathway if you're just going to buy a service.

By the – by the way, we spend \$150 billion on service and we acquire space launch as a service. There's a whole services pathway. The MTA is the one to me that's the most interesting, which is the mid-tier acquisition which allows you to go to rapid prototyping, rapid fielding as long as you do it within five years.

I really ask you all to pay attention to what the Space Development Agency is doing there. They're fielding and launching within three years whole constellations, all under the mid-tier acquisition. We could not done that. We could not have done that five years ago. So there's really a lot – what we really were about now is training the workforce on how to use it and also looking at what tweaks need to be made.

And that's where we are.

**DALE STRONG:** Thank you. Ms. Shyu, controlled unclassified information otherwise known as CUI classification contract requirements were first implemented in the Department of Defense contracts. I've heard from top tier research institutions, including the University of Alabama in Huntsville, Auburn University of the challenges that are posed by CUI research work.

What characteristics or criteria are used to determine if work at universities should be CUI versus unclassified secret acceptor?

**HEIDI SHYU:** So this is exactly a real issue that I have heard, certainly from small companies as well as universities. So what we've done is gone to the – the undersecretary of Defense for – for Intelligence and Security to say, please clearly identify what are the criteria for CUI so we can provide that to the academics and for the small companies.

So the clear definition has been provided if there's – if there's still additional question, we'll be happy to follow up with.

**DALE STRONG:** Thank you. Do you believe these US universities are fully equipped to navigate CUI work?

**HEIDI SHYU:** Some are.

**DALE STRONG:** Mr. Chairman, I yield back. My time has expired. Thank

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you and I appreciate all that each of you do for our country. Thank you.

**MIKE ROGERS:** The chair now I recognize the gentleman from Georgia, Mr. McCormick.

**RICH MCCORMICK:** Thank you, Mr. Chair. I'll cut straight to the point. Dr. LaPlante, I'm admittedly concerned about the cost of some of these munitions, specifically the hypersonic munitions produced under the Navy's conventional prompt strike and the Army's long range hypersonic weapons of approximately \$125 million per round.

This is a single-use weapon that costs approximately, 1.5 times more than the production of an F-35 a weapon system that's reusable. Obviously when you're talking about the hypersonic attack, cruise missile it set the it set field rounds until the early, I think fiscal year '27, 2027. And I struggle to see how we get much capacity of weapon systems and capability, which expires by the way in a single use with such an expensive round, especially with the capacity that we need to deter China, the amount of munitions we need with that kind of price tag and a single-use expiring weapon system.

How do we get that cost down? That's – that's the big thing is I know some of its production capacity and some of its the number of rounds we produced, but that's a large price tag.

**WILLIAM LAPLANTE:** So – and I'll defer it also to Heidi, that number is not as best we know, not correct that that would be way too expensive, agree with it so – so there is a – it's a much lower number and we're going to get you, you all the number. To the point though, you're making, which is a broad point and we have to emphasize everybody the cost per round matters.

It doesn't just matter on hypersonics, it matters on counter UAS and counter counter missile. And so we're really trying to emphasize with the innovators, the cost per round really matters. Otherwise as you pointed out, it'll just price you out of the market. So but no, the 100, that's not a correct number.

**RICH MCCORMICK:** OK, do you have a robust estimate on how much the round would cost and then the number of munitions we need to be competitive in that strategic arena?

**HEIDI SHYU:** So I think a couple of things to happen. First – first of all, that number is way off, OK. And second of all, I think if you buy very limited quantities, the first initial cost is going to be high because you're developing very limited quantities, right? As we get into production that costs are going to drive just like everything else that we buy, production costs drives the cost down much lower.

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The other thing that's important to – to know that we are developing a number of different technologies that can be incorporated into there to drive the cost down significantly. So happy to share the details with you.

**RICH MCCORMICK:** I'd love to hear those details since I'm way off. I just haven't heard the details that's – that's way off yet. OK with that said, I know that we're starting to focus and shift our focus on the way we develop some people are doing off the shelf R and D projects themselves which comes up through a product that's way outside the box of of normal thinking.

And you're seeing billionaires who actually investing in this R and D process aside from the government, which is a really exciting new venue. I've seen this overseas too. When you go to India and you see these midsize and small companies that are starting to come up with great new technologies that will shape the future battlefield.

This provides great capabilities, but of course, I hope that it doesn't come to the expense at the expense of innovation in midsize and small companies. Outside of our normal purview, outside of our normal contracts, which are now integrated into the big companies too. The Valley of Death exists for a reason.

And I worry that midsize and small companies have been put at a competitive disadvantage with the large companies, which sometimes they don't get to bid against based on the contract size and what they're trying to produce. Mr. Beck, how do you – how do you incorporate the very few midsize and small companies left in the defense space within the overall DIU efforts?

**DOUG BECK:** Yeah, so it's a huge focus of what we do. The vast majority of the companies that we work with are nontraditional small companies, about a third of them. It's the first time they've done anything with the department. And our whole process is built to A, find them where, because they may not even know that they've got great technology that is relevant for us and then, B, make it easy for them to, to get on board.

Now that starts with our commercial solutions opening process, which, for example, instead of having to fill out hundreds of pages that drive you to drive you to have a lot more lawyers than technologists. It's a 15-page PowerPoint piece with a – or a short white paper that allows you to get into the – into the system.

And – and – and then we – we help them help them get into the system with the other side of this, which is ensuring that those things we're working on with them and that we're bringing them toward have a pathway to scale because they're connected to those most critical needs from the combatant command and they're connected with the critical needs from the services perspective and the services already on board with a plan to go from here.



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If we don't do that, then they will rightly say, well, I'm not – I can't tell which one of these things is the right one for me. You mentioned all this investment that's coming, which is great. We've got to be a better counterparty for that investment. That's not about taking the risk out, it's just making it easier for them to assess the risk.

**RICH MCCORMICK:** Thank you. Madam Secretary, I have lots of things for you, but I'm out of time, but I appreciate your responses. Thank you.

**MIKE ROGERS:** Thank the gentleman. Chair now recognizes the gentleman from Florida, Mr. Waltz.

**MICHAEL WALTZ:** Thank you, Mr. Chairman, and thank you to all the witnesses for coming out today. I think this is probably one of the most important hearings that we will have this year. I also sit on the – on the House Intel Committee and – and – and have a real concern as many of us do about the Chinese Communist Party flooding our universities or research centers.

Many of our academic institutions with what they term as nontraditional collectors and many of these are wonderful well-meaning people. But just to be clear under Chinese law if they're required to provide information, not only are they held accountable, but their families back home are held accountable, so they may be well-meaning wonderful individuals.

They really literally have no choice. So Ms. Shyu, as part of this, what the CCP is employing as a talent superpower strategy their term it's designed to incentivize their scientists to go abroad and work to advance China's weapons research programs. In 2022 alone, over 8,000 Chinese nationals, not dual citizens, Chinese nationals either visited or researched or conducted activities at these labs, literally thousands and we've had a private intelligence firm that, that highlighted at least 150 scientists working our national labs were recruited by the CCP to then help with their civil fusion program.

Fifteen of them were permanent staff. So can you just talk to me for a moment? Since obviously critical classified DOD research happens at these labs, including nuclear warhead design amongst other things. What are we doing to and why is it so critical that we even have these people there and accept this risk?

**HEIDI SHYU:** So this is obviously a huge concern for the DOD. OK, you're spot on. I'm 100 percent in agreement.

**MICHAEL WALTZ:** 8,000 Chinese nationals, Ms. Shyu. Again, maybe well-meaning, but have no choice but to collect what they're told to collect.

**HEIDI SHYU:** Concur. So one of the things that we have done is establish a policy last year that focus on academics, OK, as well as SBIR small – a small

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businesses, OK? So the policy that we have instituted literally requires every grant you're going to receive from us, you have to submit a disclosure, so the disclosure you have to talk about what affiliation you have, what organization you belong to, what funding are you receiving.

**MICHAEL WALTZ:** Ms. Shyu, I thank – I also have served on the Science Technology Committee. I'm very familiar with the disclosures. The problem is often these agencies, National Science Foundation, the labs themselves do not have the resources, even if they suspect something to follow up to see if these disclosures were falsified.

But my question I want to get to why are they even allowed into our labs? Why don't we take a policy – I don't think we would have done this in the 1960s and 1970s of allowing 8,000 Soviet scientists into our national laboratories. Multiple administrations have identified him as the number one the Chinese Communist Party's the number one threat we face.

It's the basis for this hearing. Why are they allowed at all much less, having to have the resources to then dig into disclosure forms, which can easily be falsified?

**HEIDI SHYU:** I would say on the disclosure form, we literally are utilizing a software that the Air Force Office of Special Investigation utilizes. So that is looked at. Every person that submits a proposal, not whether you even win the proposal. So it – it is instituted –

**MICHAEL WALTZ:** Ms. Shyu, I'm sorry, I'm just running out of time. You're talking about grant submissions. I'm talking about Chinese nationals physically in our labs. We're talking past each other. But I would welcome a follow on sit down with you. Just in the time I have remaining. Mr. Beck, can you talk to me about the so-called blue UAS list?

I'm hearing repeatedly from innovative drone companies that they can't get on this list and that agencies don't have the resources to evaluate to do the evaluative criteria to even allow them access and we're literally leaving innovation on the table. I'm out of time. Can I request a follow up briefing with you on how you're managing, the department is managing this blue UAS list?

And – and I think it's well-intended, but actually could be fencing off a lot of – a lot of innovation without the right resources. Thank you. Thank you, Mr. Chair.

**MIKE ROGERS:** Thank you, gentlemen. Chair now recognizes the gentleman from New York, Mr. LaLota.

**NICK LALOTA:** Thank you, Chairman Rogers, for convening this crucial hearing on defense innovation challenges and for our witnesses for being here. I represent the eastern end of Long Island which stands as a beacon for defense

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innovation and as Long Island boasts a robust defense industrial base. We are comprised of over 167 companies, 10,000 full time employees and over \$3 billion in economic activity.

And among these Long Island stalwarts are companies like Brant [ph] and Ross Mixers [ph] who supply our warfighters with various battery technologies. With this backdrop, I'm eager to delve into discussions, encapsulate the spirit of innovation, collaboration and national security. I'd love to hear your feedback on how we can harness the potential of battery technology while safeguarding against overreliance on foreign sources and fostering collaboration with our partners in the defense industrial base on Long Island.

Ms. Shyu, the first question is going to be for you with that backdrop as the undersecretary for Research and Engineering. Can you share with the committee what strategies the DOD is implementing to promote domestic battery manufacturing capabilities through partnerships with small businesses like the ones on Long Island to reduce dependency on overseas suppliers, particularly China?

**HEIDI SHYU:** So one of the key things that I have done is hire a principal director whose background is in renewable energy, exactly like what you're talking about. So he is leading an effort. He's come on board just the last couple of months. He literally is going to work across the board to lay out our detailed strategy.

How do we increase our domestic sources? So we all get back to you on the details, but.

**NICK LALOTA:** We at least agree that it's a fundamental issue to be relying on overseas suppliers, especially the one that we're competing the most strongly against.

**HEIDI SHYU:** Absolutely. Absolutely.

**NICK LALOTA:** Excellent. Continue with the focus on battery technology given the department's commitment to rapid fielding. How does the DOD plan to support and integrate defense suppliers to enhance the adoption of battery technologies and military applications? Also for you, Ms. Shyu.

**HEIDI SHYU:** Well, if you look at what the each of the services are doing, they're looking at electrification. So the Army is looking at how to electrify their combat vehicles. So a lot of activities ongoing in that area. There's also activities looking at how they can electrify a rotorcraft as well. So prototypes are – prototypes are ongoing in that area.

**WILLIAM LAPLANTE:** I would just add to that, in '23 there was an

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executive order on Critical Defense Production Act components. There are five, one of them is energetics, exactly for this reason. And as you know, when you pull apart a lot of the limb facts on different technologies and also the safety issue, particularly with naval ships, it comes down to the batteries so.

**DOUG BECK:** Yeah. Maybe I'll just build on that because this is an area that our teams are working very closely together on you know the – the ability to leverage the very, very best of what's happening in our commercial battery technology arena. A lot of which actually happens right here in the United States is – is a core part of what we're doing.

So we're looking at, for example, how do we take the very best EV battery capability that's being developed out there and get it on online for defense applications without having to come up with new form factors. Because we don't really need to do that. That allows for on shoring for supply chain resilience, all kinds of things that we've got to do together.

**NICK LALOTA:** Help me out with this before you go on to the next thing. If you're a small and medium-sized defense supplier and your challenge is to integrate yourself into a larger issue to help supply the military with the things it needs the innovative things it needs. What can DOD do to make it easier on those smaller guys, reduce the bureaucracy, reduce the overhead to ensure that they can compete so that they can lower costs and they can innovate more?

What are we doing as a federal government? What is DOD doing specifically to make it easier to unleash this amount of innovation.

**WILLIAM LAPLANTE:** Yeah, we've – we've – first of all, you need the money, OK, the money that we've got for a DPA, it was about \$700 million last year. We need more money this year because we don't have money, nothing else happens. That's number one. The second thing is we – we know how to do rapid contracting with low red tape, but we – we have to make sure that it happens.

So when – when a company has a problem runs into an obstacle, raise their hand and we'll get in and we'll fix it if they run into red tape, those are things that we're doing. And I'll turn over to Doug for other examples.

**DOUG BECK:** I would just – I would just say that's – that is – that's the heart of what – what DIU is all about, is helping that happen. And actually the example you gave, Bentronics [ph], there are – there are DUI company.

**NICK LALOTA:** Yeah, I would offer this, I've only been in this job for 14 months. Everybody comes with the first answer. We need more money and I appreciate that you have to say that to the second issue of reducing the red tape, the regulations and making it more streamlined. I hope that we can find ways to work together to do just that.

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**WILLIAM LAPLANTE:** I appreciate it. Thank you.

**NICK LALOTA:** I yield, sir.

**MIKE ROGERS:** I thank the gentleman. I thank the witnesses for bearing three hours with our committee, but as you can tell people care about what you do and I do appreciate your service to our nation and being present today and with that, we are adjourned.